

**UNITED STATES DISTRICT COURT
FOR THE SOUTHERN DISTRICT OF FLORIDA
MIAMI DIVISION**

ANDREA ROSSI, et al.,	)	
	)	
Plaintiffs,	)	
v.	)	No. 16-cv-21199-CMA (JJO)
	)	
THOMAS DARDEN, et al.,	)	
	)	
Defendants.	)	
_____	)	

**DEFENDANTS’ OPPOSITION TO PLAINTIFFS’ *DAUBERT* MOTION
TO STRIKE AND EXCLUDE DEFENDANTS’ EXPERTS**

Defendants Thomas Darden, John T. Vaughn, Industrial Heat, LLC (“IH”), IPH International, B.V. (“IPH”) and Cherokee Investment Partners, LLC (“Defendants”) hereby oppose Plaintiffs’ *Daubert* Motion to Strike and Exclude Defendants’ Experts. [D.E. 215].

INTRODUCTION

Plaintiffs’ Motion should be denied. Defendants’ expert disclosures were proper and the experts’ opinions satisfies the standards set forth in Federal Rule of Evidence (“FRE”) 702 and *Daubert v. Merrell Dow Pharms., Inc.*, 509 U.S. 579 (1993).

Plaintiffs challenge the Expert Disclosure of Joseph A. Murray (“Murray Disclosure”) on the grounds that it does not comply with Federal Rule of Civil Procedure (“FRCP”) 26(a)(2)(B). *See* Mtn. at 3-6. But the Murray Disclosure was appropriately made pursuant to FRCP 26(a)(2)(C) because Murray was an IH employee and a fact witness. Plaintiffs do not contest the Murray Disclosure’s compliance with FRCP 26(a)(2)(C).

Plaintiffs challenge the Supplemental Expert Report of Rick A. Smith (“Supplemental Smith Report”) on grounds that it was untimely. Mtn. at 6. The timing of the Supplemental Smith Report, however, is based upon the fact that he was not permitted until March 2, 2017, to

inspect the warehouse where the purported “guaranteed performance” testing at issue in this litigation took place (the “Doral Warehouse”). The Supplemental Smith Report addresses the information acquired in connection with that inspection.

Finally, Plaintiffs challenge Murray and Smith’s opinions on grounds that their qualifications and opinions fail to satisfy the *Daubert* standard. The record, however, makes clear that Murray and Smith’s opinions easily satisfy the *Daubert* standard and would be helpful to the trier of fact in making determinations on the merits of this case.

RELEVANT FACTUAL AND PROCEDURAL BACKGROUND

I. The Claims in this Litigation

Plaintiffs Andrea Rossi (“Rossi”) and Leonardo Corporation (“Leonardo”) filed the instant lawsuit against Defendants on April 5, 2016 (the “Complaint”). [D.E. 1]. Count I alleges that IH and IPH breached a License Agreement with Plaintiffs by failing to pay Leonardo \$89 million after Plaintiffs allegedly completed a year-long “guaranteed performance” test. This alleged test involved Plaintiffs’ operating a device – a plant containing a series of e-cat reactors (the “1 MW Plant”) – that Plaintiffs claim continually produced steam representing over one megawatt (“1 MW”) of power at the Doral Warehouse from February 2015 through February 2016.¹ They further claim a report prepared by Fabio Penon demonstrates that the 1 MW Plant had a “Coefficient of Performance” (“COP”) – defined as the amount of energy produced by the 1 MW Plant divided by the amount of energy consumed by the Plant – that was “often greater than sixty (60),” meaning it was producing more than sixty times the energy it was consuming (and eviscerating the law of conservation of energy in the process). Compl. ¶ 73.

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¹ If true, this would be enough to power several hundred homes. What is a Megawatt? <https://www.nrc.gov/docs/-ML1209/ML120960701.pdf>.

Defendants filed their Fourth Amended Answer, Additional Defenses, Counterclaims, and Third Party Claims (“AACT”) on February 1, 2017. [D.E. 132]. Defendants deny that Leonardo is entitled to the \$89 million payment under the License Agreement because, *inter alia*, Plaintiffs did not satisfy the Agreement’s “guaranteed performance” requirements. *Id.* ¶¶ 78-80. The AACT also alleges that Plaintiffs engaged in a scheme to induce IH to allow removal of the 1 MW Plant from IH’s control in North Carolina to a “real Customer” in Doral, Florida that supposedly needed and would pay for the 1 MW Plant’s steam power. *Id.* ¶¶ 68-72. It was later revealed that there was no “real Customer” in Florida in need of steam power; rather, the purported customer, J.M. Products, was a company controlled by Rossi that served no purpose other than to further the scheme to deceive and manipulate IH and IPH. *Id.* ¶¶ 72-78.

Another prominent feature of Plaintiffs’ scheme involved manipulating the operation of the 1 MW Plant at the Doral Warehouse and the data collected in connection therewith. *Id.* at ¶ 142. For example, Defendants obtained electrical power data from Florida Power and Light (“FPL”) for the Doral Warehouse in discovery and compared it to the power data reported by Penon and Third Party Defendant Fulvio Fabiani, two individuals involved in measuring the 1 MW Plant’s performance. *Id.* The FPL data shows that Penon and Fabiani’s power data was inaccurate; in fact, in some instances, Penon and Fabiani reported the 1 MW Plant consumed more power than was supplied by FPL for the entire Doral Warehouse. *Id.* For this and other reasons, Defendants contend that the data used to support Plaintiffs’ claims about the 1 MW Plant’s performance at the Doral Warehouse are inaccurate and unreliable. *See id.*

II. Defendants’ Expert Disclosures and Subsequent Doral Warehouse Inspection

On January 30, 2017, Defendants submitted their expert disclosures pursuant to the deadlines set forth in this Court’s scheduling order. [D.E. 23]. They served the other parties

with the Expert Report of Rick A. Smith, P.E. (“Smith Report”) (Ex. 1) pursuant to FRCP 26(a)(2)(B) and the Murray Disclosure pursuant to FRCP 26(a)(2)(C). (Ex. 2).

On January 20, 2017, Defendants served a FRCP 34 request to inspect the Doral Warehouse, which they amended on January 27, 2017 to move the inspection date back one day to February 21, 2017. (Ex. 3). Just before the inspection date, Plaintiffs took the position they were unavailable for the inspection on that date, and they also sought to limit the scope of the inspection of the Doral Warehouse. (Ex. 4). Accordingly, the parties held an emergency telephonic hearing before Magistrate Judge O’Sullivan on the morning of February 21, 2017. Magistrate Judge O’Sullivan ordered that the inspection occur either (1) on the evening of February 21, 2017, (2) on March 2, 2017, or (3) on another date mutually agreeable to the parties. [D.E. 148].

Because an inspection of the Doral Warehouse on the night of February 21, 2017 was not feasible, Defendants elected to proceed with the inspection on March 2, 2017. Declaration of Rick Smith (“Smith Dec.”) ¶ 5 (Ex. 5). During the inspection, Smith and Murray took photographs and measurements of portions of the Doral Warehouse, including the 1 MW Plant and the second floor mezzanine that purportedly once housed a “heat exchanger” during the operation of the 1 MW Plant. *Id.* ¶¶ 6-7.²

On February 16, 2017, Defendants served the other parties with supplemental information relating to the Murray Disclosure, which consisted of heat simulations and water

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² There are no pictures or records of this alleged heat exchanger (or of any workers who assembled or disassembled it). Rossi Dep. 235:5-236:17; 238:3-240:6; 291:13-19 (Ex. 6); Leonardo Dep. 265:1-267:4; 269:18-271:21; 288:21-290:6 (Ex. 7); JMP Dep. 114:14-117:12; 120:9-124:25; 140:10-143:4; 144:20-145:23; 153:13-23; 156:20-158:2 (Ex. 8). And according to Rossi, he took down all the parts of the exchanger and put them to other uses in early 2016, so the only “evidence” of the heat exchanger is Rossi’s self-serving testimony. Rossi Dep. 236:10-237:18; JMP Dep. 94:1-6; Leonardo Dep. 273:24-274:5

flow tests. (Ex. 9). They were not required to provide this information under FRCP 26(a)(2)(C). On March 20, 2017, Defendants served the other parties with the Supplemental Smith Report “[b]ased upon information received by [Smith] subsequent to his expert report, including his visit to the Doral site on 02 Mar 2017.” Supp. Smith Report at 2 (Ex.10).

LEGAL STANDARD

Pursuant to FRCP 26, “a party must disclose to the other parties the identity of any witness it may use at trial to present evidence under [FRE] 702, 703, or 705.” For a witness retained or specially employed to provide expert testimony, or whose duties regularly involve providing expert testimony, the disclosure must include a written report of his or her opinions per FRCP 26(a)(2)(B). For other witnesses offering expert opinions, only summaries of their opinions and underlying facts must be provided per FRCP 26(a)(2)(C). *See Cruz v. U.S.*, No. 12-cv-21518, 2013 WL 246763, at *2 (S.D. Fla. Jan. 22, 2013). An expert disclosure under FRCP 26(a)(2)(C) is “considerably less extensive than the report required by [FRCP] (a)(2)(B). Courts must take care against requiring undue detail, keeping in mind that these witnesses have not been specially retained and may not be as responsive to counsel as those who have.” *S.E.C. v. Bankatlantic Bancorp., Inc.*, No. 12-cv-60082, 2013 WL 11981913, at *6 (S.D. Fla. Dec. 6, 2013) (quoting FRCP 26(a)(2)(C) advisory committee’s notes (2010)); *see also In re Denture Cream Prods. Liab. Litig.*, No. 09-2051-MD 2012 WL 5199597 at *4 (S.D. Fla. Oct. 22, 2012).

An expert witness is required to supplement his or her expert disclosure “in a timely manner if that party learns that in some material respect the disclosure or response is incomplete or incorrect, and if the additional or corrective information has not otherwise been made known to the other parties during the discovery process or in writing.” FRCP 26(e)(1)(A).

Finally, under FRE 702, a “witness who is qualified as an expert by knowledge, skill, experience, training, or education may testify in the form of an opinion or otherwise if: (a) the expert’s scientific, technical, or other specialized knowledge will help the trier of fact to understand the evidence or to determine a fact in issue; (b) the testimony is based on sufficient facts or data; (c) the testimony is the product of reliable principles and methods; and (d) the expert has reliably applied the principles and methods to the facts of the case.”

FRE 702’s inquiry is “a flexible one.” *Daubert*, 509 U.S. at 594. The Eleventh Circuit breaks this inquiry into three parts, requiring District Courts to determine whether:

(1) the expert is qualified to testify competently regarding the matters he intends to address; (2) the methodology by which the expert reaches his conclusions is sufficiently reliable as determined by the sort of inquiry mandated in *Daubert*; and (3) the testimony assists the trier of fact, through the application of scientific, technical, or specialized expertise, to understand the evidence or to determine a fact in issue.

City of Tuscaloosa v. Harcross Chemicals, Inc., 158 F.3d 548, 562 (11th Cir. 1998); *Geyer v. NCL (Bahamas) Ltd.*, 203 F. Supp. 3d 1212, 1215 (S.D. Fla. 2016). “The Eleventh Circuit refers to these requirements as the qualifications, reliability, and helpfulness prongs, respectively.” *Id.* (citation and internal quotation marks omitted).

ARGUMENT

I. The Murray Disclosure is Sufficient under Rule 26(a)(2)(C).

As the lead argument in their *Daubert* motion, Plaintiffs allege that Defendants “failed to provide any written report prepared by Mr. Murray” pursuant to ***FRCP 26(a)(2)(B)***. This is without merit. As Plaintiffs are well aware, Murray was the Vice President of Engineering for IH from approximately May 2015 through October 2016. Murray Dep. at 30:19-31:9; 8:18-9:14

(Ex. 11).³ He was not specially retained or employed by Defendants to provide expert testimony in this matter. *See* Murray Disclosure at 1; Murray Dep. at 204:16-205:15. As a result, the applicable rule is **FRCP 26(a)(2)(C)**, and Defendants were only required to provide the other parties with a summary of Murray’s expert opinions and facts underlying those opinions. *See Cruz*, 2013 WL 246763, at *2.⁴ Defendants satisfied this requirement by summarizing Murray’s testimony and opinions concerning the performance of the 1 MW Plant and the accuracy and reliability of the report submitted by Penon about that performance. *See* Murray Disclosure at 1-3. Plaintiffs elected to present no arguments to the Court as to why the Murray Disclosure fails to satisfy Rule 26(a)(2)(C) and should be barred from doing so in their reply brief. *See F.T.C. v. Nationwide Connections, Inc.*, No. 06-cv-80180, 2007 WL 4482607, at *2 (S.D. Fla. Dec. 19, 2007) (this Court “does not allow litigants to introduce new arguments in reply briefs”).

II. The Supplemental Smith Report is Justified Due to the Timing of the Doral Warehouse Inspection.

Plaintiffs argue that the Supplemental Smith Report should be excluded because it was served “after the deadline to make expert disclosures.” Mtn. at 6. The Supplemental Smith Report was submitted when it was because Smith was not able to inspect the Doral Warehouse – which Plaintiffs continue to lease and occupy – until after the report deadline. “A party has a

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³ Deposition transcripts are cited herein as “[Last Name of Witness] Dep.” The first time a witness’ deposition is cited, it is also assigned an exhibit number to this Opposition.

⁴ Murray is a “hybrid” witness who will “provide both fact testimony and opinion testimony based on [his] scientific, technical or other specialized knowledge.” *Bankatlantic Bankcorp, Inc.*, 2013 WL 11981913, at *6 (citing *Ashkenazi v. S. Broward Hosp. Dist.*, No. 11-61403-CV, 2012 WL 760824, at *1 (S.D. Fla. Mar. 8, 2012)). Plaintiffs, Defendants, and Third-Party Defendants all listed Murray as a potential fact witness in their initial disclosures. *See* Ex. 12. Moreover, hundreds of email communications to or from Murray were produced by IH in fact discovery in this case, some of which were used as exhibits in Plaintiffs’ deposition of Murray. *See, e.g.*, Murray Dep., Exs. 3, 4, 5, 6, 8, 9, 10, & 14. Because Murray “has some connection to the specific events underlying the case apart from his preparation for the trial,” for this further reason he is exempt from the robust reporting requirements under FRCP 26(a)(2)(B). *Goodbys Creek, LLC v. Arch Ins. Co.*, No. 3:07-cv-947, 2009 WL 1139575, at *4 (M.D. Fla. Apr. 27, 2009) (citation and internal quotation marks omitted).

duty to timely supplement its expert report if the party learns that the report is incomplete or incorrect in a material way.” *Allstate Ins. Co. v. Levesque*, No. 8:08-CV-2253-T-33EAJ, 2010 WL 11479285, at *1 (M.D. Fla. Nov. 22, 2010). Smith, after analyzing evidence obtained during the site inspection, determined that there was additional evidence supporting the conclusions set forth in his initial report. Smith Dec. ¶ 7.

The conclusions set forth in the Supplemental Smith Report are essentially more detailed explanations of the conclusions provided in the initial Smith Report. For example, Conclusion #1 in the initial Smith Report states: “The Penon reports, standing alone, are not valid to tabulate and compute the performance of the E-Cat. The data are suspect and the methodology is not explained.” Smith Report at 21. Conclusions #1, #3, #4, #5, and #6 provide further explanation for why Penon’s report is flawed in light of information Smith learned during the site inspection. Supp. Smith Rpt. at 27. Similarly, Conclusion #3 in the initial Smith Report states: “The E-Cat never produced the energy which was claimed for it. This energy had to be rejected somewhere, and this analysis has shown, by the process of elimination, that the claimed energy never existed.” Smith Rpt. at 21. Conclusion #2 in the Supplemental Smith Report confirms that, based upon information obtained at the site inspection, there was no physical evidence of the existence of a heat exchanger that would have ejected from the Doral Warehouse the energy produced by the 1 MW Plant. *See* Supp. Smith Report at 27.

It was important for Smith to inspect the Doral Warehouse to supplement his analysis and conclusions with respect to the reported performance of the 1 MW Plant. Smith Dec. at ¶¶ 7-10. Because Smith could not conduct the site inspection until March 2nd, the timing of Defendants’ production of the Supplemental Smith Report is fully justified.

III. Murray's Testimony Satisfies the *Daubert* Standard.

Murray's opinions are admissible because (1) he is competent to testify regarding the matters addressed in the Murray Disclosure, (2) the methodology he used to reach his conclusions are reliable, and (3) his testimony will certainly assist the jury.

Murray is a mechanical engineer with specialized experience and training in the areas of heat transfer, fluid mechanics, turbulence, and thermodynamics. *See* Murray Dep. 17:6-23; 22:2-21; 26:18-22; 27:7-20; 28:13-21. In addition, Murray is uniquely positioned to provide both fact and expert testimony about the technology at issue in this case because he served as the Vice President of Engineering for IH and helped develop systems for analyzing and testing the E-Cat and other "low energy nuclear reactor" technologies. *See id.* 82:14-83:26; 56:3-63:8. He is well qualified to render the opinions in the Murray Disclosure.

A. Murray's Power Absorption Analysis is Reliable and Helpful to the Jury.

Plaintiffs seek to exclude Murray's testimony regarding his comparison of the power supplied by FPL to the Doral Warehouse and the power Penon and Fabiani reported was absorbed by the 1 MW Plant. Mtn. at 7.

Plaintiffs initial argument is that Murray's power absorption analysis is not relevant because "Penon's measurements are the sole and only measurements which are relevant to the issues raised in Plaintiffs['] case. *Id.* at 8. This argument is self defeating. If Penon's measurements are relevant, then an attack on the validity of those measurements is certainly relevant. Plaintiffs point to no License Agreement provision that bars IH or IPH from challenging Penon's measurements, for the simple reason that no such provision exists. Rather, the Agreement states that payment for "guaranteed performance" "is contingent upon the Plant operating at the same level (or better) at which Validation was achieved for a period of 350 days (even if not consecutive) within a 400 day period ...." License Agreement § 5. The Agreement

also requires that an “ERV ... confirm in writing the Guaranteed Performance,” *id.*, but that does not eliminate the initial “contingen[cy]” that guaranteed performance in fact be achieved. Under Plaintiffs’ bizarre reading of the License Agreement, IH and IPH could not challenge Penon’s report even if it was the product of bribery or fraud. Nothing in the License Agreement even remotely suggests such would be permissible.

Plaintiffs admit that “if Murray were opining that *some type* of manipulation had occurred, then perhaps his testimony could have satisfied [the relevance] prong of the *Daubert* standard.” Mtn. at 8 (emphasis added). Murray did in fact opine that manipulation occurred (or that Penon and Fabiani collected inaccurate data), *see* Murray Dep. at 260:5-14, but did not opine as to whom the manipulation or error should be attributed. Murray testified that if FPL verifies that its data is valid, it would be impossible for the Penon power absorption data to be correct. *See id.* 257:24-258:6. Murray’s opinion is not required to connect every dot for the fact finder in order to be relevant. Because Plaintiffs have taken the position that the Penon data is accurate, Murray’s analysis and conclusions about the discrepancies between the FPL data and Penon’s data is undoubtedly relevant.

Plaintiffs also attempt to minimize the technical sophistication required to analyze and explain over a years’ worth of data from three different sources (FPL, Fabiani, and Penon). *See* Mtn. at 8-9. Contrary to Plaintiffs’ suggestion that Murray “simply compared two sets of test data with the FP&L power usage report,” however, Murray’s analysis actually required a robust knowledge and understanding of complex analytical tools and scientific principles:

Q. What analytical tools did you use?

A. We used a series of tools called Python, which is a programming language, with iPython -- it's now called Jupiter Notebook, but it used to be called iPython Notebook. We used NumPy, which is a numerical tool kit; SciPy, which is a scientific library; and something

called Pandas, which is a data analytics tool to be able to compare data. And we plotted that . . . -- using Matplotlib to make comparisons between the various data sets.

Murray Dep. 247:5-14. Murray's analysis is not a simple "side by side comparison" of numbers.

See id. 256:15-18. For example, Murray described in detail the "probability density function analysis" he performed to analyze the FPL, Fabiani, and Penon data.

Q. What is that?

A. So what you do is you create a distribution of the two data sources so you can look at how those measurements correlate, so you can look at the distribution shape to find out if there's anomalous structure in the distribution.

...

Q. We're, we're comparing presumptively two data points on the same date to each other?

A. No. In a joint probability density function what you're doing is you're actually creating a distribution of all the days at the various power levels and corresponding the power levels measured by, in this case, Penon to the power levels measured by Florida Power and Light. So we could look to see how these distributions vary over time to see if there's structural changes in it.

Id. 266:22-267:17. Murray also testified about a "series of analyses" he completed that required examining the baseline power absorption of the Doral Warehouse, *id.* 259:20-25, cross-referencing the daily data against each data source "to make sure we were comparing apples to apples," and plotting the data to observe any differences between the various data sets. *Id.* at 250:15-251:6. Plaintiffs do not challenge the reliability of these methodologies; instead, they just ignore Murray's analysis.

Finally, Plaintiffs argue that Murray's power consumption analysis is not likely to assist the trier of fact. Mtn. at 9. But the Penon, Fabiani, and FPL data sets are voluminous. ___. Under this prong of the analysis, expert testimony is admissible "if it concerns matters that are beyond the understanding of the average lay person." *U.S. v. Frazier*, 387 F.3d 1244, 1263 (11th Cir. 2004). The average lay person is not trained in the sophisticated data analysis Murray used to analyze the Penon, Fabiani, and FPL data. The jury will certainly not have access to the

analytical tools Murray used in comparing the Penon, Fabiani, and FPL data. Accordingly, Murray's testimony and opinion regarding power consumption discrepancies in the data sets will be helpful to the jury.

B. Murray's Analysis of the Inverse Relationship between Power Input and Coefficient of Power is Reliable and Helpful to the Jury.

Plaintiffs seek to exclude Murray's testimony and opinions regarding the illogical inverse relationship between power input and coefficient of power reflected in Penon's report. *See* Mtn. at 10. Plaintiffs claim that Murray's opinion does not satisfy the reliability and helpfulness elements of the *Daubert* standard. *Id.* Plaintiffs' argument is without merit.

Murray engaged in a rigorous analysis in reaching his conclusion that the inverse relationship between power input and coefficient of power is illogical. Murray analyzed, among other things, the flow rate of the steam purportedly produced by the 1 MW Plant, the pressure measurements purportedly taken during the operation of the 1 MW Plant, the impact of the addition of water to the 1 MW Plant during the alleged testing period, the impact of Penon's report not taking into account unknown activity occurring on the J.M. Products' side of the Doral Warehouse, information relating to certain portions of 1 MW Plant being inoperable during the alleged testing period, the pump configuration of the 1 MW Plant, and the lack of defining the state for the output steam and the input steam. *See* Murray Dep. 286:21-287:4; 291: 3-22; 292:7-14. Murray's analysis revealed that, even when E-Cat reactors in the 1 MW Plant were taken offline, the Plant's output power still stayed the same, resulting in an inexplicable increase in the Plant's "COP." *Id.* 287:15-17; *see also* Leonardo Dep. 313:1-4 ("Q: It's hard to regulate the COP of an E-Cat? A. If not impossible. Q: If not impossible? A. In good and in bad."). In Murray's opinion, this result is "consistent with measurement error and particularly measurement error associated with the flow meter." Murray Dep. 287:18-20.

Plaintiffs' completely ignore all of the above-referenced steps taken by Murray to reach his conclusion and refer, in a misleading fashion, to a single quote from Murray's deposition—that he “review[ed] the data, analyz[ed] it, and look[ed] at the . . . history of the energy absorption provided by Mr. Penon and Mr. Fabiani”—as the sum total of the methodology underlying Murray's opinion. Mtn. at. 10-11. This effort to ignore Murray's preceding testimony and summarily brand Murray's methodology as insufficient must fail. Plaintiffs have not demonstrated that Murray's analysis is scientifically invalid or that it cannot properly be applied to the facts at issue in this case. *See Daubert*, 509 U.S. at 592.

As explained above, expert testimony is helpful to a jury when it concerns matters that are beyond the understanding of the average lay person. *Frazier*, 387 F.3d at 1263. The average lay person cannot be expected to understand, without sufficient guidance from someone like Murray, the relationship between all the variables Murray considered in determining that the notion of the 1 MW Plant maintaining a steady output power level while the power inputted into the 1 MW Plant decreased is impossible. Murray Dep. 292:7-293:8 (“A. What I can say as, as an engineer is that taken, taking all of these factors together, the flow rate, the pressure measurements, the, the adding of water, the inability to see what's on the other side of the plant, the lack of defining the state for the output steam as well as the input steam, taking them on the whole, it seems highly unlikely. In fact, in my opinion I would say it cannot happen. . . . A. . . . So this disproportion means the output energy was constant and the input went down and, therefore, the COP went up. . . . It's just completely illogical.”). Murray's analysis is supremely helpful, as it will provide the jury with valuable insight as to 1 MW Plant's operations, the measurements of the operations reported by Penon, and why Plaintiffs' claim of a magically increasing COP by the 1 MW Plant cannot be correct.

C. Murray Should be Permitted to Testify about his Thermal Simulations and Water Flow Analysis.

In seeking to exclude Murray's testimony regarding thermal simulations and water flow testing, Plaintiffs again improperly apply the Rule 26(a)(2)(B) standard to a witness offering testimony pursuant to Rule 26(a)(2)(C). Plaintiffs' claim that they were entitled to the "underlying data, test plan, test procedures, or other data relevant to the simulations and/or tests carried out by Murray" (Mtn. at 12), but cite no authority stating that Defendants were obligated to disclose such information to Plaintiffs. It is indisputable that when an expert falls under FRCP 26(a)(2)(C) and therefore "is not required to provide [an expert] report, "the attendant disclosure [in connection with that expert] is 'considerably less extensive.'" *In re Denture Cream Prods. Liab. Litig.*, No. 09-2051-MD 2012 WL 5199597 at *4 (S.D. Fla. Oct. 22, 2012) (quoting Fed. R. Civ. P. Advisory Committee's Notes (2010 Amendments)). Plaintiffs also suggest that Murray's thermal simulations and water flow analyses were never provided to them at any point. *See* Mtn. at 12. But, as Plaintiffs acknowledge in another portion of their Motion (Mtn. at 1), Defendants did produce the thermal simulations and water flow analyses in discovery. Exs. 2, 9. These disclosures were provided as a benefit by Defendants since "the requirement to disclose material considered by a testifying expert is applicable to experts who testify under Rule 26(a)(2)(B), *not* experts disclosed under Rule 26(a)(2)(C)." *Bingham v. Baycare Health System*, No: 8:14-cv-73-T-23JSS at *4 (M.D. Fla. Sep. 20, 2016) (emphasis added).

1. The Methodology Underlying the Thermal Simulations and Water Flow Analysis is Reliable.

a. Thermal Simulations.

Murray used a program called "Open FOAM" to create 3D steady-state buoyancy-driven flow simulations that would illustrate the temperature inside of the Doral Warehouse during the

operation of the 1 MW Plant. *See* Murray Dep. 303:13-304:19. Murray's opinion is that, during the operation of the Plant, the temperature inside the Warehouse would have been so hot that it was unsuited for a human working environment. *Id.* 304:20-23. To formulate this opinion, Murray gathered relevant information regarding the air transfer rate in the Doral Warehouse, the average temperature for the region, and the average wind flow velocity. Murray Dep. 311:25-312:1-6; 313:20-21. Murray also factored a 10 percent "waste heat calculation" into his analysis, giving Plaintiffs the benefit of the doubt that at least some of the heat was being dissipated through losses in the system or otherwise. *Id.* 314:17-315:2. The simulation, which was based upon an assumption that 100 kilowatts of energy was being produce by the 1 MW Plant (which is *only 1/10th of the 1 MW Plaintiffs claim* was regularly being produced) demonstrated that the inside of the Doral Warehouse would have ranged between 55 degrees Celsius (131 degrees Fahrenheit) and 100 degrees Celsius (212 degrees Fahrenheit) during the operation of the 1 MW Plant. *Id.* 315:10-16.

Murray has many years of experience performing simulations of this nature. *Id.* 327:17-18. He attended trainings that prepared him to properly use the OpenFOAM tool. The OpenFOAM tool operates by running data through certain diffusive heat transfer equations. *Id.* 328:3-5. The methodology underlying Murray's thermal simulations is more than sufficiently reliable to pass muster under *Daubert*.

b. Water Flow Analysis

Murray conducted testing to determine how the flow meter used by Penon during the operation of the 1 MW Plant at the Doral Warehouse operated when a limited amount of water flowed through it. Murray Disclosure at 3. The results of Murray's test showed that the flow meter used by Penon produced inaccurate data about the amount of water actually flowing through the Plant. *See id.* Plaintiffs do not challenge the methodology underlying Murray's

water flow analysis. Instead, they argue that the water flow analysis would not “serve to assist the trier of fact to understand any matter at issue in this case” because the “propriety and/or reliability of the protocol and devices are not at issue in this case.” Mtn. at 12. Again, Plaintiffs completely miss the mark on this point because the reliability and accuracy of the devices used by Penon are squarely at issue in this case. *See, e.g.*, AACT ¶ 1 (stating that the “mechanisms which Plaintiffs have used in their experiments and testing of the E-Cat technology are flawed and unreliable in many respects.”); *id.* ¶ 71 (“Defendants note that there were many flaws in how the purported Guaranteed Performance test . . . was performed. Several, but by no means all, of those flaws were identified in a document provided to Penon on March 25, 2016.”). The Court should reject Plaintiffs’ claim that Murray’s water flow analysis is irrelevant.

IV. Smith’s Testimony Satisfies the *Daubert* Standard.

A. Smith is Qualified.

Smith is a Professional Engineer with over forty years’ experience and is qualified to testify as an expert on the issues identified in his Report. *See* Smith Report, Ex. A. Plaintiffs concede that Smith “appears to be experienced and qualified to testify with respect to certain boiler systems,” but seek to exclude any testimony “beyond the realm of ordinary boiler systems.” Plaintiffs proposed limitations are improper. Smith’s opinion is that the 1 MW Plant is a boiler – its inputs, after all, were water and electricity and its sole output was allegedly steam – and he is accordingly qualified to opine on its operation and the purported measurements of its performance. *See* Smith Dep. 189:3-13 (Ex. 13); Smith Report at 13.

B. Smith’s Testimony is Based upon Reliable Methodology.

Plaintiffs challenge Smith’s methodology on the grounds that he “relies exclusively on his own personal experience as the basis for his conclusion[s].” Mtn. at 15. The Eleventh Circuit has explained that a district court may determine the reliability prong under *Daubert*

based primarily upon an expert's experience and general knowledge in the field. *See Adams v. Laboratory Corp. of America*, 760 F.3d 1322, 1330-31 (11th Cir. 2014) (citing *Kilpatrick v. Breg, Inc.*, 613 F.3d 1329, 1336 (11th Cir. 2010)). That said, Smith's methodology, as set forth in his Report, goes beyond his "personal experience" or "general knowledge in the field."

Smith's Report makes clear that his analysis relies upon his understanding of the basic laws of thermodynamics, as explained by Kenneth Wark. Smith Report at 2. He takes time to explain his reliance on certain foundational thermodynamic principles relevant to this case, such as the principles that "heat generated by indoor equipment must be rejected to the atmosphere by mechanical equipment," "the boiling point of water (or any liquid) depends upon the pressure of the liquid," "it takes a great deal of energy to convert a kilogram or a pound of water into the equivalent amount of steam," and "[s]uperheated steam (or any superheated vapor) is at a temperature above the saturation temperature." *Id.* at 7-9.

Smith's Report also explains that he relied on standards set forth in the American Society of Mechanical Engineers' Performance Test Codes to identify the proper parameters for measuring steam flow. *Id.* at 13. Smith explained that because the 1 MW Plant is a boiler, "its efficiency can only be accurately measured by accurately determining its actual flow out of the unit, as well as its temperature, pressure, steam quality, among other things." *Id.* Smith's extensive experience, coupled with the specific evaluative approach outlined in the Smith Report, more than suffice to satisfy the reliability prong under *Daubert*.

C. Smith's Conclusions are Relevant and Helpful to a Jury.

Smith's first conclusion is that "[t]he Penon reports, standing alone, are not valid to tabulate and compute the performance of the E-Cat. The data are suspect and the methodology is not explained." Smith Report 21. Plaintiffs argue that Smith's opinion is irrelevant because

Penon's findings cannot be challenged. As noted above, there is no support for this in the License Agreement. *See* page 9, *supra*.

Plaintiffs also claim that Smith is not qualified to opine as to the "propriety or validation" of the Penon report because he is unfamiliar with nuclear engineering, low energy nuclear reactions, test plans for low energy nuclear reactions, and/or the nature of the reaction allegedly occurring within the E-Cat reactors. Mtn. at 17. But Smith's first conclusion is not about any of these topics. Instead, it is grounded in the flaws in the methodology Penon purportedly utilized to measure the 1 MW Plant's performance in terms of the cooled fluid and electricity it consumed and the heated fluid it produced. Smith Report at 10-14. In fact, the term "nuclear" does not even appear in the section of the Smith Report focusing on Penon's measurement of the 1 MW Plant's performance. Plaintiffs' argument is red herring.

Smith's second conclusion is that "[t]he E-Cat test setup was not properly instrumented and there was no measurement of the E-Cat's actual output." Smith Report at 21. Plaintiffs contend this opinion would not assist the jury because the test plan used by Penon as the ERV was accepted by the parties, and hence cannot be challenged. This is erroneous on a number of grounds. First, the License Agreement does not make the test plan unassailable. Second, the License Agreement does require that "the ERV ... measure the flow of the heated fluid and the Delta T between the temperature of the fluid before and after the E-CAT reaction." License Agreement § 4. Smith's opinion that the flow of the heated fluid was not measured goes directly to a License Agreement requirement. Third, whether the test plan was accepted and implemented as accepted is a fact in dispute.⁵ Finally, Smith's opinion that the proper

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⁵ For example, in connection with his proposed test plan, Penon testified that he requested a condensate trap line be installed on the pipe carrying the heated fluid out of the 1 MW Plant (to capture any heated fluid that was not steam) and Rossi agreed, but Penon does not recall ever seeing a trap line on

instrumentation was not used to evaluate Plaintiffs' claimed "guaranteed performance" is clearly relevant to a jury's determination of whether in fact "guaranteed performance" under the Agreement was achieved.

Smith's third conclusion is that "[t]he E-Cat never produced the energy which was claimed for it. This energy had to be rejected somewhere, and this analysis has shown, by the process of elimination, that the claimed energy never existed." Smith Report at 21. Plaintiffs argue that Smith's third conclusion should be excluded because Smith "offers no methodology and/or theory upon which to arrive at this conclusion." Mtn. at 19. Plaintiffs further argue that this conclusion is improper because Smith refused to consider the existence of a purported heat exchanger located on the second floor of the Doral Warehouse. *Id.* Finally, Plaintiffs' allege that Smith's conclusion is nothing more than a regurgitation of Murray's findings. Plaintiffs' arguments are plainly incorrect.

The Smith Report devotes nearly seven pages to the analysis underlying his third conclusion. *See* Smith Report 14-21. Smith analyzed information generated by Plaintiffs and others to determine whether, under the conditions that existed at the Doral Facility, it is likely that the heat purportedly produced by the 1 MW Plant was sufficiently expelled or dissipated from the Doral Warehouse. *See id.* Smith's analysis, which is based in part upon his decades of experience with boilers, is sufficiently reliable under the *Daubert* standard. Plaintiffs seem to take issue with what they characterize as a "process of elimination relating to potential means by which heat could be dispersed from the Doral Facility." Mtn. at 19. But Plaintiffs cite no authority for the proposition that using a process of elimination is somehow unreliable in this

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this output pipe and Plaintiffs removed the trap line IH installed before the 1 MW Plant was shipped to Florida. Penon Dep. 162:5-163:6; 165:2-5 (Ex. 14); Dameron Dep. 78:11-79:14; 200:6-201:6 (Ex. 15).

context. Contrary to Plaintiffs' argument, courts have held that a trial court is permitted to admit expert testimony that involves a "process of elimination" analysis. *See Kilgore v. Reckitt Benckiser, Inc.*, 917 F.Supp. 2d 1288, 1295 (N.D. Ga. 2013) (citing *U.S. v. Santiago*, 2020 F. App'x. 339, 401 (11th Cir. 2006)). Plaintiffs also fail to recognize that Smith's inclusion of facts supplied by Murray in his analysis is not the same as an expert "simply repeat[ing] or adopt[ing] the findings of other experts." *See* Mtn. at 19. Murray is a hybrid witness who can supply both fact and expert testimony. Finally, there was no need for Smith to factor into his consideration a heat exchanger operating at the Doral Warehouse for the simple reason that there are no photographs of such a heat exchanger at the Warehouse and no records or receipts evidencing such a heat exchanger at the Warehouse. *See* note 2, *supra*. Rossi has testified that a heat exchanger did exist that he later dismantled/destroyed (*see* note 2, *supra*), but the Supplemental Smith Report done after Smith inspected the Warehouse demonstrates that Rossi's claim of a once-existing-but-now-gone heat exchanger is not possible. Supp. Smith Report at 27. Plaintiffs' challenge to Smith's third conclusion should be rejected.

CONCLUSION

Plaintiffs' *Daubert* motion should be denied.

Dated: April 3, 2017

Respectfully submitted,

/s/ Christopher R. J. Pace

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CERTIFICATE OF SERVICE

I HEREBY CERTIFY that on April 3, 2017, I electronically filed the foregoing with the Clerk of the Court by using the CM/ECF system which will send a notice of electronic filing to all counsel or parties of record.

/s/ Christopher R.J. Pace
Christopher R.J. Pace

EXHIBIT 1

UNITED STATES DISTRICT COURT
SOUTHERN DISTRICT OF FLORIDA

ANDREA ROSSI and LEONARDO
CORPORATION,

Plaintiffs,

v.

THOMAS DARDEN; JOHN T. VAUGHN,
INDUSTRIAL HEAT, LLC; IPH
INTERNATIONAL B.V.; and
CHEROKEE INVESTMENT PARTNERS,
LLC,

Defendants.

CASE NO. 1:16-cv-21199-CMA

EXPERT REPORT OF RICK A.
SMITH, P.E.

INDUSTRIAL HEAT, LLC and IPH
INTERNATIONAL B.V.,

Counter-Plaintiffs,

v.

ANDREA ROSSI and LEONARDO
CORPORATION,

Counter-Defendants,

and

J.M. PRODUCTS, INC.; HENRY
JOHNSON; FABIO PENON; UNITED
STATES QUANTUM LEAP, LLC;
FULVIO FABIANI; and JAMES BASS,

Third-Party Defendants.

EXPERT REPORT OF RICK A. SMITH, P.E.

Defendants THOMAS DARDEN, JOHN T. VAUGHN, INDUSTRIAL HEAT, LLC (“IH”), IPH INTERNATIONAL B.V. (“IPH”), and CHEROKEE INVESTMENT PARTNERS, LLC (collectively, “Defendants”), pursuant to Fed. R. Civ. P. 26 (a)(2)(B), hereby submit the expert report of Rick A. Smith, P.E.:

I. INTRODUCTION

I, Rick A. Smith, P.E. principal of Applied Thermal Engineering, Inc., located at 7400 Brown Road, Ostrander, OH 43061, have been retained by counsel for Defendants in the above-captioned litigation to provide my opinions concerning the reported validation of certain low energy nuclear reactor (“LENR”) technology referred to as the “E-Cat.” Specifically, I have been asked to render my opinions on the following issues:

1. Whether the device tested by Mr. Penon in Doral, Florida, from February 2015 through February 2016 operated at a coefficient of performance of at least 10.85 for a period of 350 days (even if not consecutive) within any 400 day period prior to March 29, 2016.
2. Whether the device so tested in Doral consistently produced energy more than 2.6 times greater than the energy consumed by the device and whether the temperature of the steam produced by the device was consistently 100 degrees Celsius or greater.

II. STATEMENT OF OPINIONS

Equipment Description

This author has not yet been able to inspect the E-Cat site in Florida. The address of this site is 7861 NW 46th Street, Doral, FL 33166-5470. However, based upon information currently available to him, the author believes that the equipment in question at the Florida site is: the E-Cat, a device invented by plaintiff, Andrea Rossi, a purported chemical processing/production facility run by J. M. Chemical Products, Inc. or J.M. Products, Inc. (hereinafter JM), and related

pipng, electrical equipment, utilities, etc. to support the two ventures. The author believes that the purpose of the E-Cat was to sell steam, via Mr. Rossi's company Leonardo Corp., to JM.

Background, Observations, and Narrative

One claim, perhaps the primary claim, of Mr. Rossi's invention, the E-Cat, is that it will produce many times more energy than it consumes. The author's understanding is that defendants Industrial Heat and IPH International, B.V. entered into a contractual arrangement with Mr. Rossi, based upon a hope that the E-Cat might, in fact, produce more energy than it consumed.

The author's understanding is that the plaintiffs contend that the Report dated 03/28/2016 by Dr. Ing. Fabio Penon is validation of the E-Cat's performance. The purpose of the author's investigation is to determine if the E-Cat did, in fact, produce more energy than it consumed, as Mr. Penon reported. The author has not been asked to form an opinion, nor has he formed an opinion on the physics of the reaction claimed by Dr. Rossi.

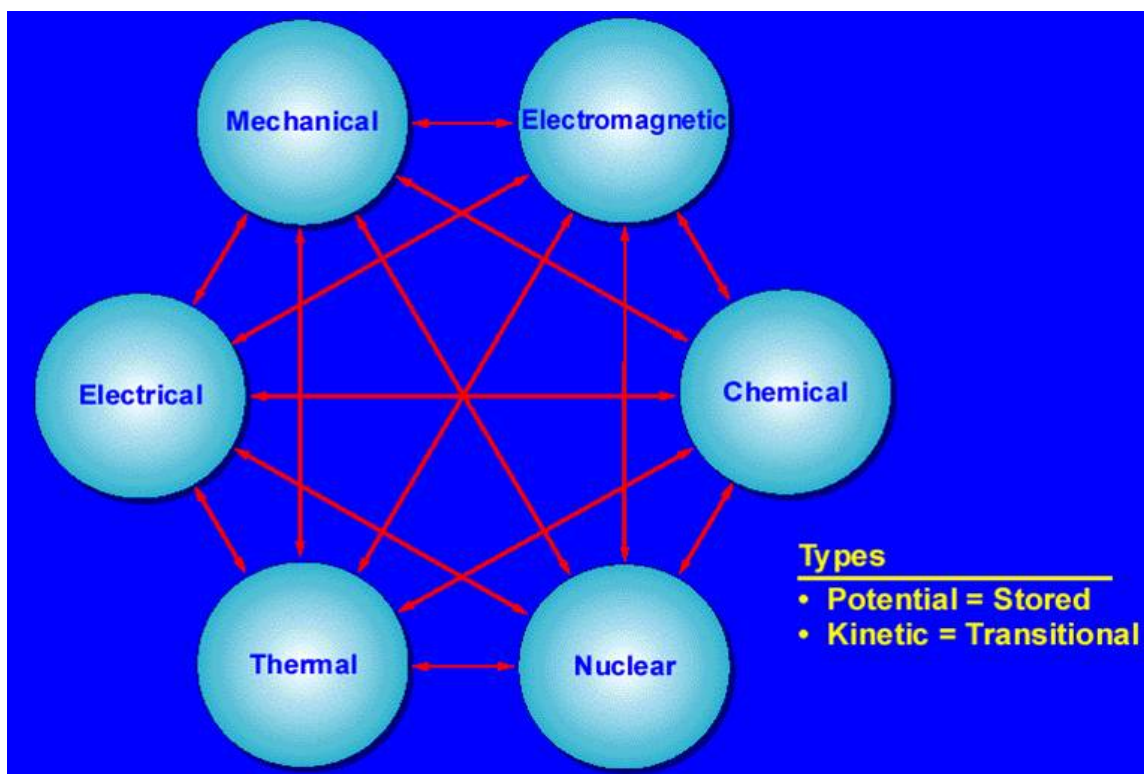
Basic Thermodynamics

The author will discuss the basics of thermodynamics before he analyzes the claimed performance of the E-Cat.

There are two foundational laws of thermodynamics, the First, and the Second.

The engineering definition of the first law of thermodynamics, in Thermodynamics, by Kenneth Wark, states: "When a closed system is altered adiabatically [i.e. without heat transfer], the work is the same for all possible paths which connect the two given equilibrium states." To put this into normal English, the first law of thermodynamics states that neither matter, nor energy, can be created or destroyed, they can only change form.

There are many forms of energy. A few of them are chemical, electrical, mechanical, nuclear, thermal, electromagnetic, and so on. Please see the picture below.

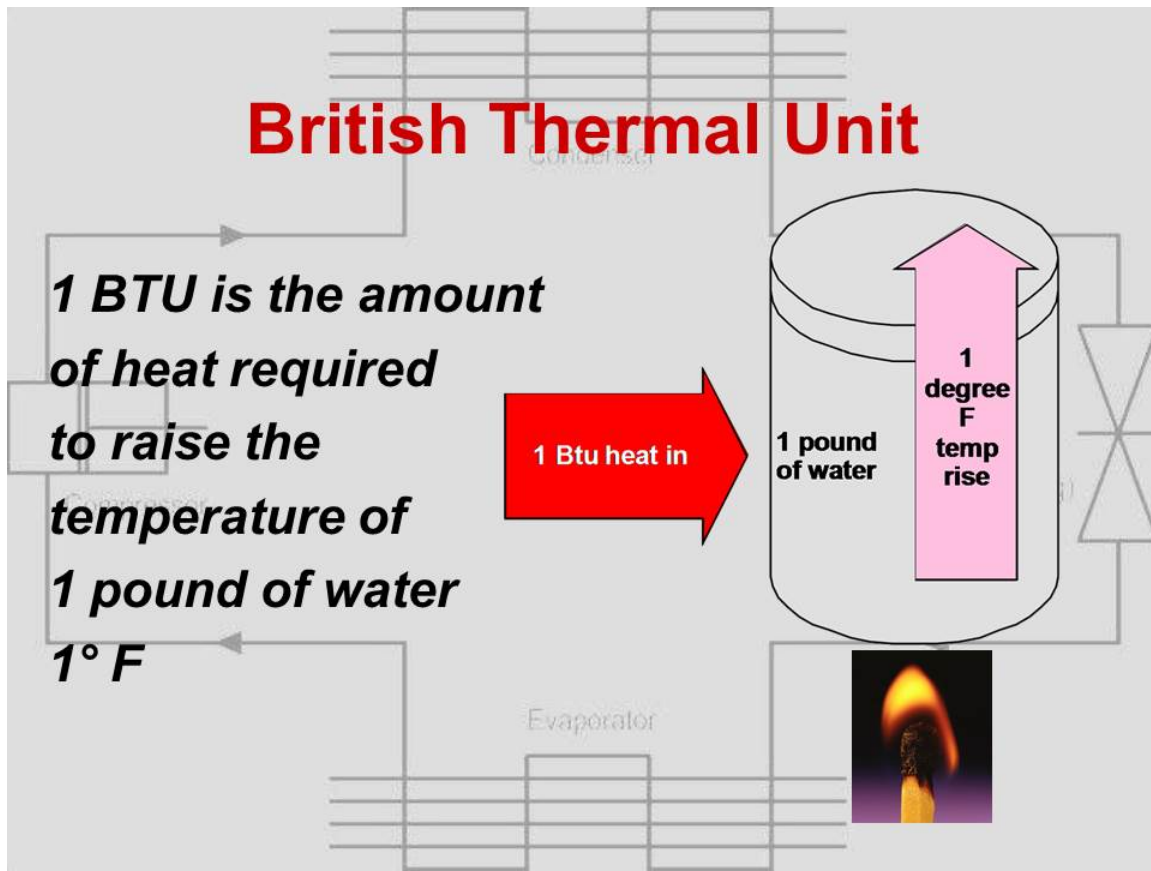


In theory, they are all interchangeable. A ubiquitous example is a cell phone battery. When the phone is in use, the battery is using chemical energy to generate electrical energy. When the phone is charging, electrical energy is being converted into chemical energy. These two conversions are very interchangeable.

In other instances, the interchangeability is somewhat limited. Nuclear energy is generally a one-way street. In a nuclear weapon, for example, the nuclear energy released by the explosion produces enormous amounts of thermal, mechanical, and electromagnetic energy. In a nuclear power plant, the controlled decay of the isotopes produces enormous amounts of thermal energy to produce electrical power or propel a ship.

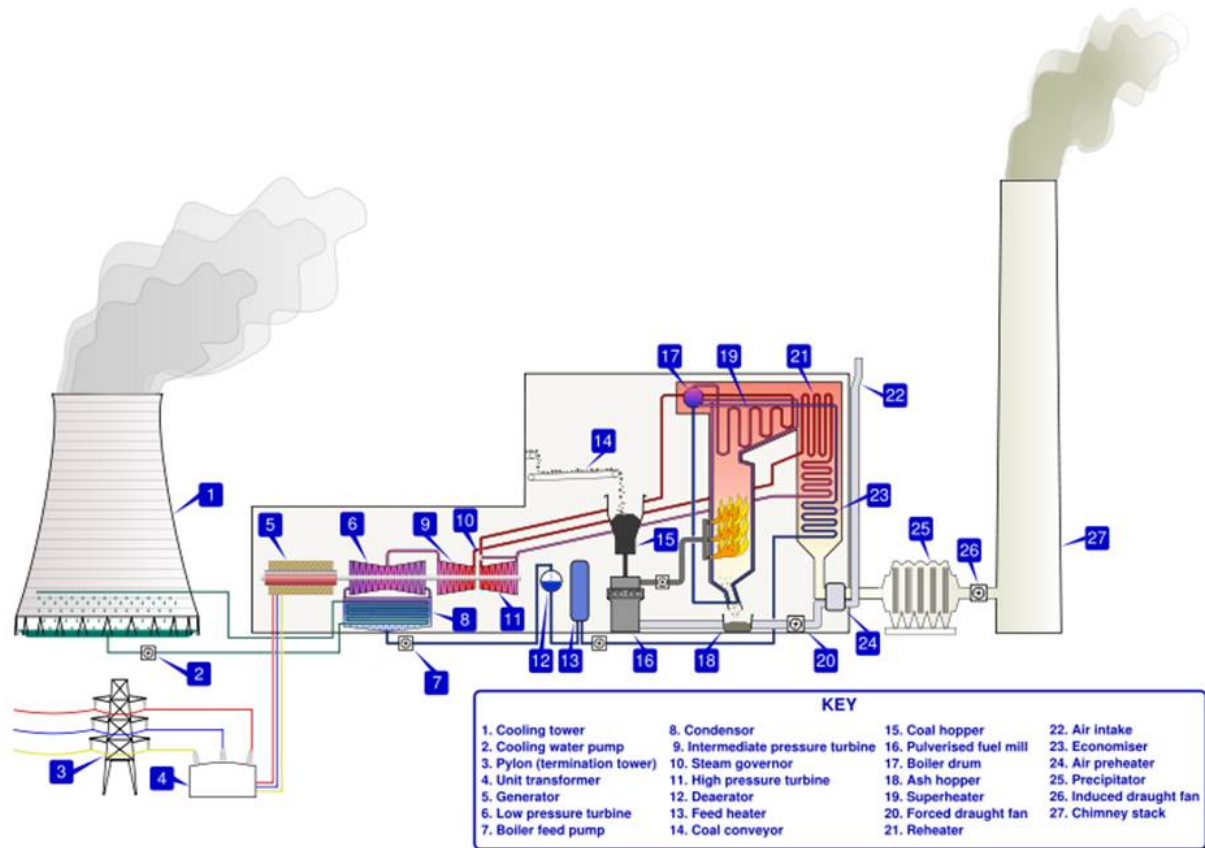
Dr. Wark defines the second law of thermodynamics thusly: “The entropy of an isolated system always either increases or remains the same when the system changes from one equilibrium state to another.” In other words, energy systems always “roll downhill” when left to themselves. Thermal systems will always proceed from hot (higher energy) to cold (lower energy), left to themselves; they will never go from cold to hot unaided. The human body does not generally become stronger, healthier, or more agile as one ages. The author has personal experience with this.

Another fundamental definition is that of a BTU, or British Thermal Unit. A BTU is the amount of heat required to raise (or lower) one pound of water one degree Fahrenheit.



A wooden kitchen match contains about one BTU, to put things into perspective.

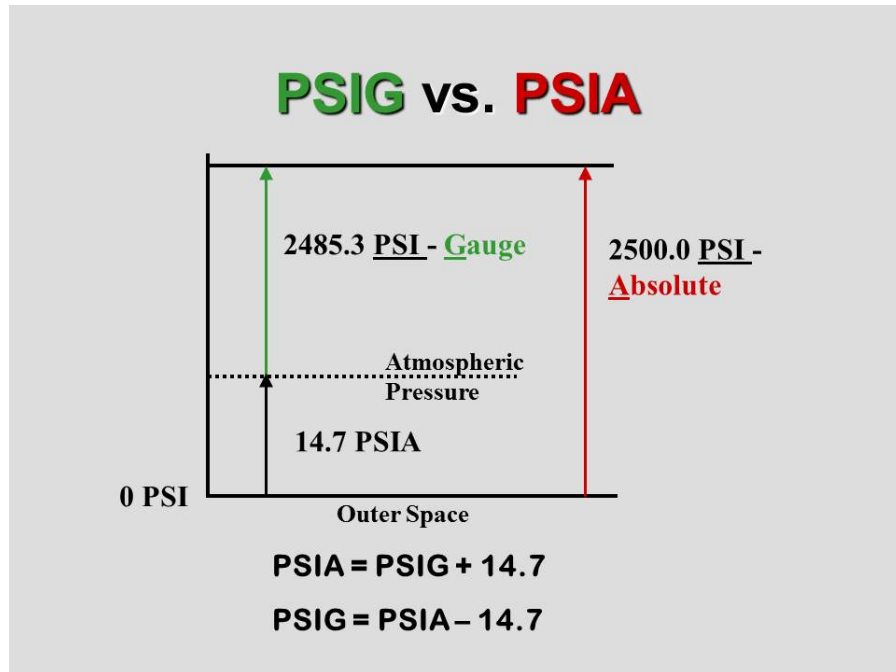
Let's do a quick entropy example in a hypothetical, but realistic situation. The picture below shows a conventional, coal fired steam power plant.



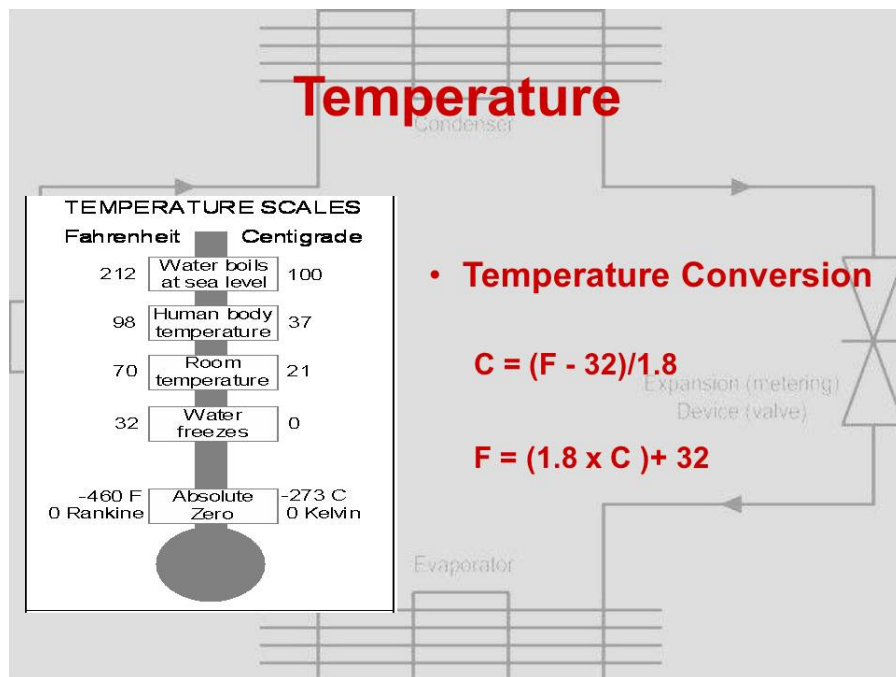
A conventional steam power plant might have steam leaving the boiler at a pressure of 2485.3 PSIG (Pounds per Square Inch, Gauge). This is equivalent to 2500 PSIA (Pounds per Square Inch, Absolute).

Gauge pressure has the local atmospheric pressure as its base, normally 14.696 PSIA, at sea level. Think Miami. Absolute pressure has zero as its base. Absolute pressure equals gauge pressure plus the local atmospheric pressure, and is used in most thermodynamic calculations. So in this example: $2485.3 + 14.7 = 2500.0$

Please see the following picture for pressure and temperature comparisons.



The leaving steam temperature of our hypothetical power plant might be 990° F. This is equivalent to 1450° R (degrees Rankine), or absolute temperature. Our Fahrenheit temperature scale is based upon water freezing at 32° F and boiling at 212°F (at sea level pressure). In our English measuring system, absolute zero is 0° Rankine. To obtain degrees Rankine from Fahrenheit, one must add 460. So, water freezes at 492° R.



Now, in our hypothetical steam plant with superheated steam leaving the boiler at 2500 PSIA, and 1450° R, the steam would have an entropy of 1.6966 BTU per pound per degree Rankine. The enthalpy (heat content) of the steam is 1741.7 BTU per pound of steam.

The condenser of our power plant will operate in a deep vacuum, in order to maximize the work output and the thermal efficiency of the plant. If the condenser operates at 0.6 PSIA, its condensing temperature will be 85° F (545° R), and the steam entering the condenser will have an entropy of 2.0218 BTU per pound per degree Rankine. As the power plant converts the thermal energy of the fuel into thermal energy in the steam, into mechanical energy in the turbines, and then into electrical energy in the generator, the entropy of the system increases from 1.6966 to 2.0218. This plant obeys the second law of thermodynamics, as do all legitimate power producing systems.

Remember that there are many losses in the system: the boiler shell as well as the steam lines give off heat to the environment, there are fluid friction losses in the steam and water piping systems and air and gas handling systems, there are combustion losses due to the inefficiencies in combustion and the exit gas temperature, there are mechanical and windage losses in the turbine and generator, there are electrical losses in the generator, wiring, and transformer. All of these losses are irrecoverable and unavoidable. Further, it takes a huge amount of internal power (pumps, fans, conveyors, etc.) to run a power plant, as well as the cost of running the pollution control systems. Utilities spend enormous resources to reduce these losses and maximize the efficiencies of their plants, as well as minimizing the plant pollution.

The steam entering the condenser has a total enthalpy of 1098.6 BTU per pound, and an evaporation heat content of 1045.5 BTU per pound. For each pound of steam that passes through the system, 696.2 BTU's (1747.1 – 1098.6) are available to do work and thereby generate electricity.

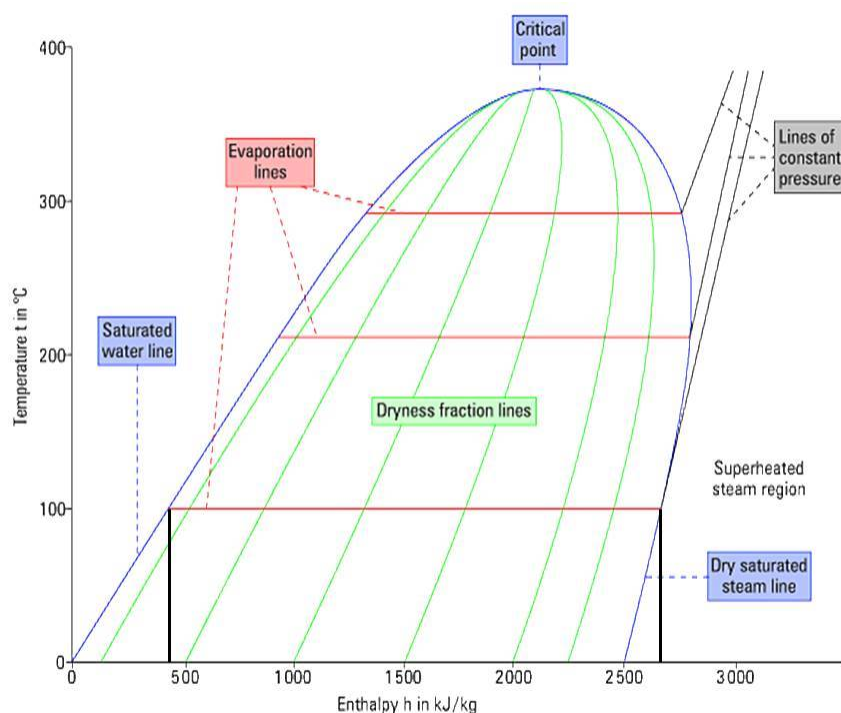
The astute reader has observed that the steam still has a lot of energy left as it enters the condenser, 1045.5 BTU per pound to be exact. Why can't more power be extracted from that steam? Because it is at almost no pressure, only 0.6 PSI above a perfect vacuum or zero pressure. There is no pressure left to spin a turbine and do more work. This heat MUST be rejected to the atmosphere. That is the purpose of the condenser and the cooling tower.

The condenser is a heat exchanger which uses water from the cooling tower to remove the heat from the low pressure steam and convert it back to water (condensate), so it (the condensate) can be recycled through the plant over and over. The cooling tower water loop pumps the water outside the plant to a cooling tower, where the water is cooled by ambient air passing over it. This is where the waste heat from the plant is rejected. The cooler water from the cooling tower then returns to the condenser to remove more heat from the low pressure steam in the condenser.

A crucial point that the reader must fully understand is that the rejected heat MUST GO SOMEWHERE. It does not just simply vanish, rejected heat generated by indoor equipment must be rejected to the atmosphere by mechanical equipment. This is true of any and every thermal plant. The "air conditioner" which normally sits outside one's house, is in reality only

the compressor and condenser section – the other parts, which are connected by a line set between the two, are inside the house. The box outside the house is that part of the system which rejects the heat collected from inside the house to the ambient atmosphere.

Another thermodynamic concept that must be understood is that the boiling point of water (or any liquid) depends upon the pressure of the liquid. At sea level conditions, water boils at 212° F. At Leadville, CO, which is at an elevation of just over 10,000 feet (the local atmospheric pressure is about 10 PSIA, not 14.7 PSIA), water boils at about 192° F. In a typical industrial boiler which operates at 150 PSIG (164.7 PSIA) the water boils at 366° F. When a liquid is at its boiling point, it can exist as 100 % liquid, or 100 % vapor, or any fraction in between depending upon how much heat has been put into it at a given time. The picture below shows this.



The units in the picture are metric, but the concept remains. Also, saturation is a term of art used in the thermodynamic world. It means that a fluid is saturated with heat. In a closed pressure vessel, where liquid and vapor are in physical contact with each other, the fluid in the vessel (water in a boiler or refrigerant in an air conditioning system) can exist as 100 % water (the left portion of the blue line), 100% vapor (the right portion of the blue line), or any fraction in between (the green internal lines) depending upon how much heat has been put into the fluid at a particular time.

Another crucial issue regarding the red evaporation lines is that each point on the line represents the value of the energy (enthalpy) in the fluid at that point. The bottom red line is at 100° C which also happens to be the nominal fluid output temperature of the E-Cat. Furthermore, the saturation pressure for 100° C water is atmospheric pressure or 1 bar absolute.

A pressure level of one bar is equal to one atmosphere at standard sea level conditions (14.696 PSIA English).

At the left, where the red line and the blue (saturated water) line intersect, the enthalpy is about 418 kJ/kg (kilo Joules per kilogram of water). On the right side, where red and blue intersect, the enthalpy is about 2676 kJ/kg (I looked them up. I cannot actually interpolate that well). The difference is 2258 kJ/kg. This difference is the amount of heat it takes to convert a kg of water at 100° C to a kg of steam at 100° C, both at one bar pressure.

In English units, the enthalpy of saturated water is 180 BTU per pound at 212° F and atmospheric pressure, 14.696 PSIA. The enthalpy of saturated steam at the same conditions is 1150 BTU per pound. Therefore, it takes 970 BTU's per pound of fluid to convert water into steam.

It should be immediately obvious to the reader that it takes a great deal of energy to convert a kilogram or a pound of water into the equivalent amount of steam. In fact, it takes over five times the energy to convert a pound of water to a pound of steam than it does to raise the temperature of water from the freezing to the boiling points.

Also, for any given fluid, the boiling temperature is dependent on the pressure the fluid is experiencing. Again, where liquid and vapor are in physical contact with each other, the temperature - pressure relationship for a given fluid is fixed and immutable. At a given pressure, the temperature of the fluid WILL be fixed by that relationship. And at that fixed temperature and pressure, there can be 100 % liquid, 100 % vapor, or any fraction in between. The horizontal red evaporation lines illustrate this concept.

Superheated steam (or any superheated vapor) is at a temperature above the saturation temperature for a given pressure. Obviously, the fluid is 100 % vapor, and there is no liquid present. Superheated steam is generated in a separate set of tubes which remove the steam from the liquid and then heat the steam to a temperature higher than the saturation temperature.

The author now begs the reader's forgiveness for subjecting the reader to the previous six pages of thermodynamics. However, a basic understanding of this subject is crucial if the reader is to understand the concepts which will be discussed below as they relate to the subject litigation.

E-CAT MW1 Energy Plant Final Report

This report, dated 03/28/2016 by Dr. Ing. Fabio Penon is claimed to be the validation report of the E-Cat's performance. Penon is referred to as the Expert Responsible for Validation (ERV) in various documents, and will be referred to as such in this document, although the author expresses no opinion on whether Engineer Penon was the ERV as specified in the parties' contractual documents.

This author's search of the internet reveals a prior relationship between Dr. Penon and Mr. Rossi. If true, this author wonders how Dr. Penon could have been an objective, dispassionate third party verifier.

Defendants' Third Amended Answer, Additional Defenses, Counterclaims and Third-Party Claims identifies many issues regarding the test protocol, adherence to the original test plan, number of cells in service, and related issues. Due to time constraints, this author will not address these issues in this report, but reserves the right to address them in the future.

In general, this author is not in this report discussing the E-Cat, per se. First, he has not had a chance to inspect it, although he has viewed many photos of it. Secondly, he has seen no documentation of the machine itself. Again, the author reserves the right to address this in the future.

Mr. Penon's Data

The author has inspected Engineer Penon's reports, and also summaries of Penon's data in Excel spreadsheets titled, ROSSI_00001075 and ROSSI_00008579.

Final Report Annexe 13: Daily valuation of the energy multiple - FEBRUARY 2016											
		days of functioning	average power supply (wh/h)	supplied energy (wh/d)	tank water T max (°C)	effective flowed water (Kg/d)	reduced flowed water (kg/d)	steam T min (°C)	steam pressure (bar)	produced energy (wh/d)	COP
01/31 22:30	02/01 22:30	330	10291,7	247000	68,1	36000	32400	104,6	0,0	2.03E+07	82,3
02/01 22:30	02/02 22:30	340	10375,0	249000	68,5	36000	32400	104,7	0,0	2.03E+07	81,7
02/02 22:30	02/03 22:30	341	10375,0	249000	69,2	36000	32400	104,7	0,0	2.03E+07	81,7
02/03 22:30	02/04 22:30	342	10375,0	249000	69,6	36000	32400	104,7	0,0	2.03E+07	81,7
02/04 22:30	02/05 22:30	343	10500,0	252000	70	36000	32400	104,7	0,0	2.03E+07	80,7
02/05 22:30	02/06 22:30	344	10333,3	248000	68,5	36000	32400	104,6	0,0	2.03E+07	82,0
02/06 22:30	02/07 22:30	345	10291,7	247000	70,3	36000	32400	104,7	0,0	2.03E+07	82,3
02/07 22:30	02/08 22:30	346	10375,0	249000	68,5	36000	32400	104,7	0,0	2.03E+07	81,7
02/08 22:30	02/09 22:30	347	10291,7	247000	68,5	36000	32400	104,7	0,0	2.03E+07	82,3
02/09 22:30	02/10 22:30	348	10291,7	247000	68,5	36000	32400	104,7	0,0	2.03E+07	82,3
02/10 22:30	02/11 22:30	349	10458,3	251000	68,9	36000	32400	104,6	0,0	2.03E+07	81,0
02/11 22:30	02/12 22:30	350	10458,3	251000	68,5	36000	32400	104,6	0,0	2.03E+07	81,0
02/12 22:30	02/13 22:30	351	10458,3	251000	68,9	36000	32400	103,6	0,0	2.03E+07	81,0
02/13 22:30	02/14 22:30	352	10375,0	249000	68,5	36000	32400	103,6	0,0	2.03E+07	81,7
02/14 22:30	02/15 22:30	-	10375,0	249000	68,9	36000	32400	103,9	0,0	2.03E+07	81,7

The picture just above is one of the pdf annexes of Penon's report.

The Penon reports generally (with some variation) contain certain data. The author understands that these data were provided to Industrial Heat as pdf files and not as Excel

spreadsheets. The columns are not labeled as in an Excel spreadsheet, so each column will be referred to by its title. The verbatim column descriptors shown below the title block will be reproduced for clarity.

The first four columns are the date and time columns. These are unremarkable.

The entitled “days of functioning”, is the cumulative days counter. This is also unremarkable.

The column entitled “average power supply (wh/h)”. This would appear to be the average power supplied to the E-Cat. (wh/h) is watt hours per hour, which equals watts. Some months are in wh/h and others are in Kwh/h. This difference in units is of no concern. An interesting thing occurs starting in June, 2015. If one takes the number in the column entitled “supplied energy wh/d” and divides it by 24, one gets the exact number in the “average power supply (wh/h)” column to five digit precision.

The column entitled “supplied energy wh/d”. This is apparently the daily energy supplied to the E-Cat. If one takes the values in “average power supply” column and multiplies by 24, one obtains the almost exact value in the “supplied energy wh/d”. Here is the problem. Instead of a value of 247,000 this column on Feb. 06, the author would expect to see a calculation here that would not result, in each entry, in a rounded number. The report does not explain the calculation or estimation that Penon made to arrive at the reported number. Additionally, this is inconsistent with the Florida Power and Light records which casts further doubt on the data in Penon’s report.

The column entitled “tank water T max (Celsius)”. This is the tank which feeds the E-Cat cells. It presumably is the large rectangular block in the center of Figure 2, on page 2/5 of Dr. Penon’s final report. Fig. 2 has an annotation pointing to this block titled “probe for water temperature measure”. This is also unremarkable.

The column entitled “effective flowed water (kg/d)”, is the total mass of water transited during the test period. The pictures of the flow meter shows that it reads in m³, or cubic meters. This author wonders if the data logger converted cubic meters to kilograms or is it done in the spreadsheet. This author has the same concern with this column as with the column entitled “supplied energy wh/d” regarding the cell contents, i.e., seeing a rounded number in each cell as opposed to seeing a formula in each cell, or an explanation in the report as to how this number was calculated. In the vast majority of the cases, this cell content was 36000, not 35837, or 36714, but 36000 exactly. 27000 and 29000 were well represented also. This is undoubtedly the most uniform data collection which this author has seen in his forty plus years of engineering. There is no reason or need to round data to the nearest 1000 in a report like this. In fact, one needs to use the “Round” function in a spreadsheet to get numbers to display like this. This author has more comments on the water meter later in the report.

The column entitled “reduced flowed water (kg/d)” is described at the bottom of page 3 of the ERV report. “Measurement uncertainties have been present during the test. To take this into account the total mass of water transited during the test period has been reduced by 10%.”

This column is simply 90% of the “effective flowed water (kg/d)” column. This author has the same concern with this column as with the “supplied energy wh/d” column regarding the cell contents, i.e., seeing a number in each cell as opposed to seeing a formula.

The column entitled “steam T min (Celsius)” is the measured temperature of the fluid leaving the E-Cat (This author has used fluid instead of steam intentionally. This will be discussed later in the report). The numbers themselves are unremarkable. What they actually represent is a different matter.

The column entitled “steam pressure” is the measured pressure of the fluid leaving the E-Cat (This author has used fluid instead of steam intentionally. This will be discussed later in the report). The numbers themselves are unremarkable. What they actually represent is a different matter. Every cell under steam pressure is “0” in the entire spread sheet.

The steam pressure in the “steam pressure” column is uniformly reported as “0.0” (bar). 0.0 bar is 0.0 atmospheres absolute. The way the data are presented the E-Cat is reported as operating in a perfect vacuum. If the ERV meant 1 atmosphere, the column should have been labeled “1 bar” or 0.0 (barg), (barg being bar – gauge). Another very serious data anomaly is that the steam temperatures are almost all reported as being over 100° C. The saturation temperature of water/ steam at atmospheric pressure is 100.0° C.

The column entitled “produced energy (wh)” is represented as being the energy produced by the E-Cat. The same comments about numbers in the cells versus formulas generally hold true for this column.

The “produced energy” numbers should have been generated and provided by a calibrated energy measuring device (to include steam flow, steam quality, temperature, and pressure) in the outlet of the E-Cat. However, there never was an energy measuring device in the outlet of the E-Cat, as shall be discussed in depth later in this report. Instead, the report raises suspicion that COP numbers (more on these later also) were not properly calculated, and the produced energy numbers may have been “back calculated”.

With respect to the column entitled “COP”, based on the above discussion, these numbers do not appear to have been properly calculated. If an appropriate energy measuring device had been installed in the outlet of the E-Cat, the “produced energy” column would be a tabulation of those actual readings. This value would then be divided by the “supplied energy wh/d” column, the actual supplied energy, to get the “COP”. Which gets us to COP.

COP stands for Coefficient of Performance. It is a term which is used in the air conditioning and heat pump industry, not the steam producing and power generation industries. The most general definition of air conditioning and refrigeration is removing heat from a place where it is not wanted and rejecting it to a place where it will dissipate to the environment. The COP is a measure of how much work it takes to move a given amount of heat from point A to point B. The more efficient an air conditioner is, the higher its COP will be because it takes less work to move the heat from inside to outside. To use “COP” as a measure of the efficiency of a

heat producing device (the E-Cat), as opposed to a work absorbing device (an air conditioner), is a misapplication of the term.

In summary, it is this author's professional opinion that the entire ERV spreadsheet is not a valid means to tabulate and compute the performance of the E-Cat. Its data are suspect and the methodology is not explained in enough detail to render the results valid, standing alone.

Test Instrumentation

The E-Cat test setup is briefly described by the ERV on pages 1, 2, and the top of 3. Figure 2 on page 2 purports to be a schematic of the test setup. With this setup, in the author's opinion it is not possible to accurately measure the output of the E-Cat.

The American Society of Mechanical Engineers (ASME), of which this author is a member, produces many Performance Test Codes for boilers and many other types of equipment. In the course of running one of these tests, numerous parameters which are delineated in the codes are carefully measured, one of which is the steam flow from the boiler. The steam flow, as well as its temperature, pressure, and quality in a saturated steam system are critical parameters to accurately measure and determine the actual BTU's per hour (BTUH) which the boiler is producing. Without knowing this, it is impossible to measure the performance and efficiency of the boiler.

The E-Cat is a boiler, albeit of unconventional design. Since it is a boiler, its efficiency can only be accurately measured by accurately determining its actual flow out of the unit, as well as its temperature, pressure, and steam quality, among other things. Steam quality is the percentage of steam in a given flow. A steam quality of 100% means that there is 100% steam in the boiler output and no moisture. A steam quality of 75% means that there is 75% steam and 25% moisture in the boiler output. Please remember that at a given temperature and pressure, there can be 100% liquid, 100% vapor, or any fraction in between, as was explained above.

By only measuring the temperature and pressure of the fluid leaving the boiler, there is absolutely no way of knowing how much fluid is flowing, and what the steam quality is. The E-Cat could have been producing 100% hot water, or 100 % steam, and no one would know the difference based upon the installed instruments.

It is this author's understanding that the E-Cat output line goes to an enclosed space which is or was occupied by JM Chemicals, or JM Products, or a similarly named entity. The return line from the enclosure to the E-Cat has a flowmeter installed in it. By any normal engineering standard, the flowmeter in the return line is measuring an input to the E-Cat. There is no way that this can be considered an output.¹ It is unknown what happens to the fluid inside the JM Products enclosure. Is it heated? Is it cooled? Is part of it drained off? Are city water or other substances added to the flow stream?

---

¹ Even if the flowmeter had been installed in the proper location, this author has serious concerns about the flowmeter's suitability for its stated purpose.

On page 3 of the ERV report, he states, “The measurement equipment has been placed and operates in a manner that is not necessary to study the client’s use of the energy produced or even inquire about such use.” This is not correct.

Back to thermodynamics, briefly. The reader should recall that a pound of 100% quality steam at 212° at atmospheric pressure contains more than five times the heat that the same pound of water (which is also 0% quality steam) contains at that temperature and pressure.

The point is that the E-Cat “system” could just as easily have been flowing water as steam. With the installed instrumentation, there is absolutely no way of knowing. Determining and establishing the whether the system was flowing steam would have been easy to do, if the person establishing the test plan was interested in knowing that data. If the E-Cat was in fact flowing water, and the output was not measured, but rather was only calculated, based on the assumption that the flow was steam, the calculated (not the actual) E-Cat thermal output would be exaggerated by at least a factor of five.

On page 4 of the ERV’s report, is the equation:

$$E_p = 0.9 \times \lambda \times M_w$$

E_p is the total energy produced in the steam as shown on page 3, section 2.1

λ is the heat of vaporization (the heat it takes to boil water at a constant temperature)

M_w is the mass of water vaporized during the whole test, coming from the tank

The huge and unverified assumption built into this equation is that the flow out of the E-Cat is 100% quality steam. This equation, while technically correct, is not valid if the system is flowing water not steam. Again, there is absolutely no way of knowing exactly what is exiting the E-Cat.

Mr. Joe Murray addressed some of his concerns to the ERV concerning the flow meter. This author shares Mr. Murray’s concerns and would like to see the ERV’s responses. This author also shares the other concerns Mr. Murray has about the other issues in his letter, to wit: 2. The consistency of the reported flow rate statistics, 3. The number of reactor units in operation varied substantially over time, 4. System alteration on the night of February 16 or the morning of February 17, and 5. The flow of steam through the pipe to J. M. Products. This author reserves the right to address these issues at a later date.

It is this author’s professional opinion that the E-Cat test setup was not properly instrumented and did not measure the E-Cat’s actual output.

E-Cat Heat Rejection

For the sake of discussion (but not agreement, just to be clear), let us assume that the E-Cat produced all the heat that the ERV says it did, and that it was 100% quality steam. During the test period, the average assumed output from the E-Cat was about 790 KW.

$$\text{E-Cat Output} = (790 \text{ KW}) \times (3413 \text{ BTUH} / \text{KW})$$

2,696,270 BTUH

$$\text{E-Cat Output} = \frac{(2,696,270 \text{ BTUH}) \div (33,465 \text{ Boiler HP} / \text{BTUH})}{80.57 \text{ BoHP}}$$

Crosschecking:

$$\text{E-Cat Output} = \frac{(790 \text{ KW}) \times (1 \text{ BoHP} / 9.803 \text{ KW})}{80.59 \text{ BoHP}}$$

An 80 boiler horsepower (BoHP) boiler is a small commercial boiler. For illustration, below is a generic picture of a very common Cleaver Brooks steam boiler of this type.



This conventional boiler does not appear to be greatly different in size than the E-Cat.

The E-Cat is putting approximately 2,700,000 BTU's into the JP enclosure every hour. What happens to this heat? Please remember that the first law of thermodynamics states that neither matter, nor energy, can be created or destroyed, they can only change form.

If JMP was actually performing any processing, they would have taken the steam, used it to heat some materials to create or enhance a chemical reaction, or to heat materials to kill biologicals, or whatever other productive use would require 212° F (100° C) heat. The product stream would then have to be cooled for further processing, packaging, shipping, etc. In other words, all of the heat that entered the product stream would leave the product stream, either by air cooling, or by some sort of heat exchanger.

To illustrate, if one boils water (212° F) to make sweet tea and leaves the hot tea sitting on the counter, what happens to it? Does it naturally get hotter or does it eventually cool down to room temperature? We all know that it cools to room temperature eventually, even though it may take a while.

In an industrial process, the product cooling is accelerated by the use of heat exchangers or fans, or some other mechanical means of cooling. This is done to maximize the production rate and minimize the space required to do so.

In the issue at hand, let us first assume that air is used to cool the product stream. Please keep in mind that 2,700,000 BTU's enters the product stream every hour of every day of the test period (24/7). This same 2,700,000 BTU's per hour then leaves the product stream and has to be rejected to the environment.

Mr. Murray has produced some simulation videos purporting to show what happens to the temperature of the entire facility if one assumes (or contends) that the rejected heat was left to naturally dissipate in due course. This author has not verified Murray's numerical analysis, but only viewed the videos, and therefore reserves the right to verify Mr. Murray's calculations and analysis regarding this. The Murray videos show a very marked temperature rise in the space, with temperatures approaching 373° K (absolute temperature), which is 100° C, which is 212° F. This is warm, even for Miami.

If the unit were generating the amount of heat that Penon claims, and that heat had been left to naturally dissipate, no human could have worked, or even survived, for long in the space. Obviously, this temperature rise in the space never happened.

Alternatively, JMP could have used a roof-mounted fan to remove all rejected heat. Fan sizing is:

CFM = Cubic Feet of air per Minute

c = Specific heat of air in BTU per pound of air per °F (BTU / Lb. °F) = 0.24

ΔT = Temperature difference of the air, in this case 130° F - 80° F

ρ = Average density of the air in pounds per cubic foot = 14.3

$$\begin{aligned}\text{CFM} &= (2,700,000) \times (1 / c) \times (1 / 60) \times (1 / 130 - 80) \times \rho \\ &= (2,700,000) \times (1 / 0.24) \times (1 / 60) \times (1 / 50) \times 14.3 \\ &= 53,625 \text{ CFM}\end{aligned}$$

A roof mounted fan to move this much air would have a blade diameter of about 54", a 10 HP motor, would have dimensions of about 60" square and about 48" high, and would look something like the next picture.



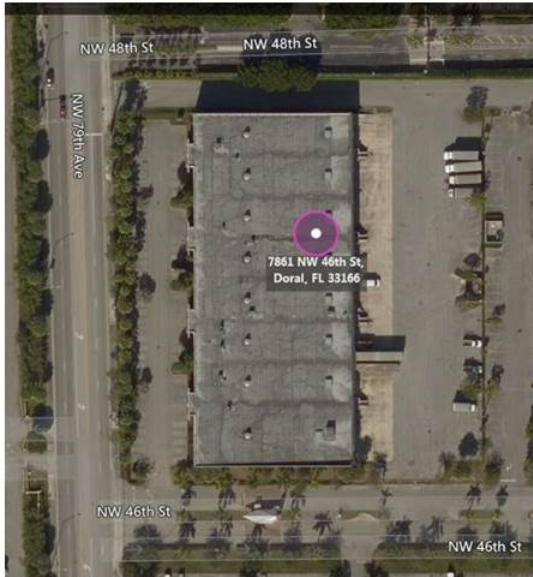
If most of the 2,700,000 BTUH were rejected to cooling water through a heat exchanger of some sort, the best way to remove the heat would be a cooling tower. Cooling towers are sized in tons of refrigeration or cooling. This refers to a ton of ice melting in a 24 hour period, not the weight of the equipment. A ton of cooling equals 12,000 BTUH.

$$\begin{aligned}\text{Tons of cooling} &= (2,700,000 \text{ BTUH}) \div (12,000 \text{ BTUH / Ton}) \\ \text{Tons of cooling} &= 225 \text{ T}\end{aligned}$$

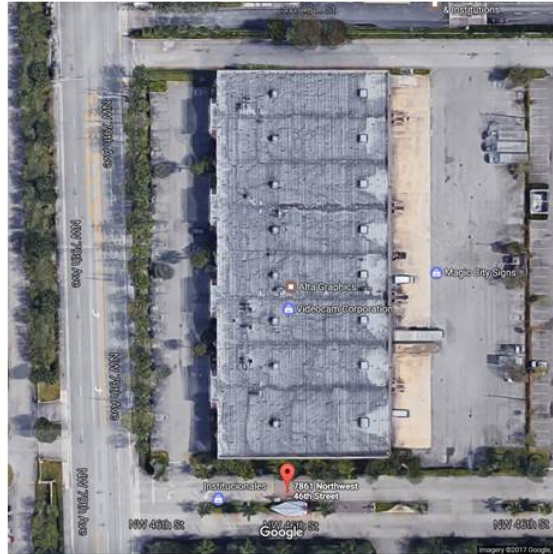
A cooling tower of this size would be about 12' x 12' x 12' and would look something like this.



The author has examined photographs of the site at 7861 NW 46th Street, Doral, FL, as well as aerial photos (below), and has spoken to Mr. Joe Murray, who inspected portions of the facility in February 2016. The author has seen no evidence that the plant contained any equipment resembling large rooftop ventilators or cooling towers. Aerial photos of the property are below:

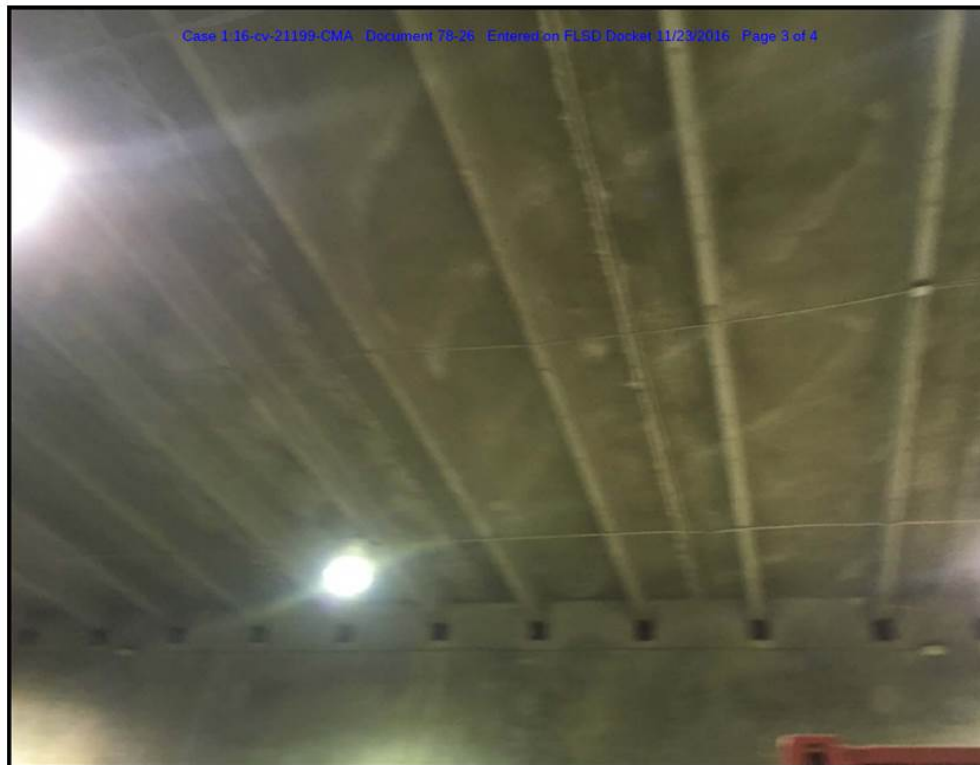


Bing Maps



Google Maps

The author has seen no evidence of cooling towers. There are some squares on the roof which may be roof-top ventilators. Let's look inside the building.





Only the first interior picture shows anything in the ceiling. Since the rectangular opening is light, it could be a skylight or a natural (no fan) ventilation opening. A powered roof fan with a cap (a necessity in Miami) would not let any light through. The other photos show no openings in the ceiling.

The last interior photo, showing the dark grey partition with the white door is very interesting. As mentioned, no openings can be seen in the ceiling. Other than the small items along the left wall, there are also no visible pipes, pipe racks, pipe drops, conduits, cable trays, transformers, switchgear, motor control centers, storage racks, or any other items which one normally associates with a manufacturing facility, even a small one.

Is there any place else in the facility where 2,700,000 BTUH can be rejected? Another possibility might be to use city water to absorb the rejected heat. This author has analyzed the Miami-Dade water bills for the subject property and has determined that during the validation period, the facility used about 40,000 gallons of water. This is about 4.6 gallons per hour. For this discussion, assume that all the water was used for heat rejection, none was used for domestic purposes.

Assume: a 50° inlet water temperature, 130° water outlet temperature (sewer temperature restriction)
Flow is 5 gallons per hour.
Water density is 8.34 pounds per gallon.
Specific heat of water is 1 BTU per pound per degree.
Q is engineering shorthand for heat absorbed by the city water.

The formula is : $Q = (\text{gallons per hour}) \times \text{density} \times \text{temperature difference} \times \text{specific heat}$
 $(5) \times (8.34) \times (130^\circ \text{ F} - 50^\circ \text{ F}) \times 1.0$

Heat absorbed by water = 3336 BTU per hour.

How much water under the same conditions would it take to absorb 2,700,000 BTU? Working the above equation backwards, it would take 4047 gallons of water per hour, or 67.5 gallons per minute to absorb this amount of rejected heat.

City water was not used for heat rejection.

Where did the rejected heat go?

Air cooling – no.

Cooling tower – no.

City water – no.

There are now but two alternatives left.

The heat just vanished. – no. The first law of thermodynamics prohibits this.

or

It never existed.

It is this author's professional opinion that the E-Cat never produced the energy which was claimed for it. This energy had to be rejected somewhere, and this analysis has shown, by the process of elimination, that the claimed energy never existed.

Conclusions

Based on the preceding and my more than forty years' experience as a professional engineer engaged in facility and utility engineering and operations, it is within a reasonable degree of engineering certainty that I conclude the following:

1. The Penon reports, standing alone, are not valid to tabulate and compute the performance of the E-Cat. The data are suspect and the methodology is not explained.
2. The E-Cat test setup was not properly instrumented and there was no measurement of the E-Cat's actual output.
3. The E-Cat never produced the energy which was claimed for it. This energy had to be rejected somewhere, and this analysis has shown, by the process of elimination, that the claimed energy never existed.

III. FACTS AND DATA CONSIDERED

In forming the opinions expressed in this report, I have relied on my education and experience as described in my curriculum vitae attached hereto as Exhibit A. In addition, I received and considered the documents and information identified in Exhibit B hereto.

IV. EXHIBITS THAT SUMMARIZE OR SUPPORT OPINIONS

I have not prepared any exhibits to summarize or support my opinion, other than as incorporated in the text of Section II above. I reserve the right to prepare exhibits in connection with my anticipated testimony at trial, after the completion of discovery.

V. QUALIFICATIONS

A summary of my qualifications is provided in the CV attached as Exhibit A, which includes a list of all publications I have authored in the previous 10 years.

VI. EXPERT WITNESS EXPERIENCE

Since January 2012, I have testified as an expert at trial or deposition in the following matters:

1. I provided my expert opinion in *Jerew v. Rhodes Heating*, Case No. 11-CV-0876, in the County Court for Marion County, Ohio, and testified at trial in December 2012.
2. I provided my expert opinion in *Akron Fairlawn Properties v. Edgell Plumbing*, Case No. 2012-09-5199, in the Court of Common Pleas for Summit County, Ohio, and testified at deposition and trial in October 2013.
3. I provided my expert opinion in *Richmond v. Sears Roebuck, et al.*, Case No. 12-CV-010718, in the Court of Common Pleas for Franklin County, Ohio, and testified at deposition in December 2013.

4. I provided my expert opinion in *Young v. First Energy*, Case No. 2013-CI-0408, in the Court of Common Pleas for Coshocton County, Ohio, and testified at deposition in April 2015.

VII. COMPENSATION

I am being compensated for my work in these proceedings at a rate of \$275.00 per hour, except that y rate for deposition and trial testimony is \$375.00 per hour. My compensation is not dependent on the opinions rendered or the outcome of this proceeding.

By: _____

Rick A. Smith

30 JAN 2017

Date

Respectfully submitted,

/s/ Christopher R.J. Pace

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Counsel for Defendants/Counter-Plaintiffs

Third Party-Plaintiffs

CERTIFICATE OF SERVICE

I HEREBY CERTIFY that a true and correct copy of the foregoing was served by e-mail on counsel of record this 30th day of January, 2017.

/s/ Erika S. Handelson

Erika S. Handelson

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EXHIBIT

A

RICK A. SMITH, P.E.

7400 Brown Road
Ostrander, OH 43061
(740) 666-4872

PROFESSIONAL EXPERIENCE

JUN 1988 - PRESENT

APPLIED THERMAL ENGINEERING, INC.

Principal of this specialty engineering firm whose forté is identifying and solving complex, intractable problems; industrial power plant engineering; utility generation and distribution; cogeneration; energy conservation and recovery; industrial process improvement; project design and management; forensic engineering and expert witness in the above specialties. Boiler, air conditioning, and pump instructor. Worked as a relief utility operator at a local R&D facility whose equipment includes two 750 HP, 250 PSIG boilers, an ammonia and a carbon dioxide refrigeration system.

Clients (direct or immediate sub) include:

• ALCON	• Honda America Mfg.	• Spirax Sarco
• Anheuser - Busch	• Johnson Controls	• State of Arkansas
• ARCCA, Inc.	• Level 3 Communications	• State of Ohio
• ATT	• Mead Paper	• Strategic Value Solutions
• Cargill, Inc.	• Nestlé	• The Ohio State University
• Climax Molybdenum	• NIBCO	• Thomson Consumer Elec. (RCA)
• Ford Motor Company	• Owens - Corning Fiberglass	• US Dept. of Justice, BOP
• General Motors	• PPG Industries	• Volcanic Heater
• Georgia Pacific	• RIB USCost	• Numerous law firms internationally
• Graphic Packaging Int'l.	• Ross Laboratories	• Numerous smaller companies

Please see last page for representative projects.

OCT 1983 - JUN 1988

THE OHIO STATE UNIVERSITY

Senior Mechanical Engineer:

- Successfully managed a \$7,000,000 steam line expansion project which encompassed 30,000 feet of superheated steam and condensate lines, several major road crossings, a river bridge crossing, and 15 building tie-ins / system upgrades, all on a crowded urban campus. Project management entailed:
  - Oversight of consulting engineers.
  - Review and approval of all plans, specifications, and change orders.
  - Coordination and liaison with all affected University departments.
  - Installation coordination and oversight.
  - Resolving conflicts between this and other ongoing projects.
  - Minimization of disruption to all University operations.
- Spearheaded a \$2,300,000 cogeneration project in McCracken Power Plant. Authored the feasibility study which withstood a peer review by outside consultants; overcame significant technical and political hurdles; supervised design, specification, procurement, and installation of the 3125 KW non-condensing turbine generator, and all associated piping and auxiliary equipment.
- Assisted in the completion and startup of a 125,000 pound per hour coal fired boiler and its associated flue gas scrubber system.
- Assisted in the preliminary needs assessment and scope of work development for a medical waste incinerator.
- Earned the Mechanical Engineering Advanced Professional Degree.

NOV 1981 - JUN 1983

CUMMINS ENGINE COMPANY

Facilities project manager for maintenance and engineering at five large buildings. Provided engineering services for an additional twenty-five buildings, totaling over 1,000,000 square feet.

Major accomplishments:

- Converted three boilers to dual fuel capability to minimize fuel costs.
- Analyzed major electric accounts. Through a transformer purchase, brought a major facility into a lower rate structure, saving thousands of dollars annually.

JUN 1979 - OCT 1981

ALUMINUM CO. OF AMERICA

Mechanical engineer in charge of energy conservation for a large aluminum extrusion plant. Provided engineering services for the boiler house and billet annealing furnaces.

Major Accomplishments:

- Initiated closing the doors of the homogenizing furnaces between loads to conserve energy and reduce furnace turnaround time. Zero cost, very large annual savings.
- Discovered and engineered a heat recovery project for an aluminum chip dryer.
- Designed and built a new boiler ash handling facility. Performed major equipment enhancements.
- Analyzed the condensate return system in search of a solution to a vexing problem only to find that the difficulty was caused by a faulty control valve diaphragm.

JUL 1977 - MAY 1979

PURDUE UNIVERSITY

Project engineering including design and installation of retrofit HVAC systems on campus.

JUL 1976 - JUL 1977

ARMOUR - DIAL, INC.

Project engineer, then maintenance supervisor at a large soap manufacturing plant.

LICENSES

PROFESSIONAL ENGINEER: Ohio

STATIONARY ENGINEER, 3rd CLASS: Ohio

UNIVERSAL REFRIGERATION TECHNICIAN: USEPA

STEAM SYSTEM SPECIALIST: USDOE

QUALIFIED AS AN EXPERT IN U.S. AND CANADIAN COURTS

MILITARY SERVICE

OCT 1968 - AUG 1972

UNITED STATES MARINE CORPS

Parris Island - 1968. Completed Officer's Candidate School at Quantico in 1969. Volunteered for and actively participated in Viet Nam as an artillery forward observer.

EDUCATION

OHIO STATE UNIVERSITY: Mech. Engineering Professional Degree, 1988.

PURDUE UNIVERSITY: BSME, 1976. Member - Pi Tau Sigma.

PROFESSIONAL AFFILIATIONS

MEMBER - American Society of Mechanical Engineers

PUBLIC SERVICE WORK

MEMBER - Columbus District Heating Task Force, 1984 - 1986

MEMBER & PAST COMMANDER - American Legion Post #115, Delaware, OH

COMPUTER EXPERTISE

Proficient in all Microsoft Office applications as well as AutoCAD. Have received extensive training in the use and integration of all these products. Can learn any other package as required.

REPRESENTATIVE ENGINEERING PROJECTS

- Corrected excessive gas consumption in an asphalt drying plant.
- Performed a gas line capacity and cathodic protection study for a glass blowing plant.
- Performed boiler house, steam, and condensate studies at various plants.
- Performed engineering design reviews and assisted with depreciation studies.
- Performed project engineering for an energy center upgrade.
- Performed cogeneration studies for a major university and a major auto manufacturer.
- Wrote standard air compressor specifications for a major food products company.
- Designed a steam reducing station for a large paper drying machine.
- Resolved HVAC problems in a paper mill machine room air conditioning system.
- Performed a cooling tower study for a large brewery.
- Re-engineered the heating system for a bottle washing tank at a large brewery.
- Confirmed the sizing of refrigerant and steam piping.
- Walked down and re-drew the chilled water piping at a large auto assembly facility.
- Walked down and re-drew the ammonia PID's for a large food R&D facility.
- Performed a compressed air study at a large steel mill.
- Performed a cooling study for a large natural gas pipeline compressor.
- Performed a boiler safety audit at a large food R&D facility.
- Perform Coast Guard / ASME design review and certification for thermal fluid heater manufacturers. Developed a complex, interactive Excel based program to perform the calculations.
- Have assisted in value engineering studies for the VA and the City of New York.

TRAINING EXPERIENCE

- Have taught hundreds of boiler, HVAC, and pump classes for American Trainco, Applied Thermal Engineering, Lewellyn, NTT, and Versa-Tech in the US, Canada, and the Caribbean.
- University of Wisconsin - Engineering Extension, Industrial Boiler Controls Course Presenter.
- Taught ME 625, a dual level course in Power Plant Engineering, while at Ohio State University.

REPRESENTATIVE FORENSIC / EXPERT WITNESS PROJECTS

- Steam line failures and explosions.
- Pressure vessel explosions.
- Boiler explosions, both fire side and water side.
- Boiler failures – non explosion.
- Pump and valve failure analysis.
- Coal supply issues.
- Cogeneration system failure.
- Atmosphere oven explosions.
- Carbon monoxide accidents and fatalities.
- Water meter failure.
- HVAC compressor failures.
- Hydro testing explosion.
- Large diesel engine cooling system failure.
- Boiler refractory failures.
- Investigate cooling tower freeze failure.
- Hot water burns / scalds.

PUBLISHED ARTICLES

- “Winter Storm Warning, NBBI *Bulletin*, Winter 2012, Volume 67, Number 1.
- “75-Ton Bottle Rocket Case Study”, NBBI *Bulletin*, Fall 2012, Volume 67, Number 3.

EXHIBIT

B

EXHIBIT B

1. The Complaint and all exhibits thereto [D.E. 1]
2. The Third Amended Answer, Additional Defenses, Counterclaims and Third-Party claims, and all exhibits thereto [D.E. 78]
3. The E-Cat MW1 Energy Plant in Miami Tests Plan, IH-00011128
4. Initial Queries for M. Eng. Fabio Penon as to Measurements of 1MW Plant, IH-00011086
5. Documents produced in response to subpoena served on Florida Power & Light Company, INDUSTRIALHEAT_FPL000004-000067
6. Documents produced in response to subpoena served on Miami-Dade Water and Sewer, INDUSTRIALHEAT_MDWS-0001-0049
7. The E-Cat MW1 Energy Plant in Miami Energy Multiple Evaluation Final Report by Fabio Penon, IH-00079630-79658
8. Fulvio Fabiani's Electric Data, produced in discovery by Fulvio Fabiani on or about January 13, 2017 on an unlabeled flash drive.
9. Fulvio Fabiani's Thermal Data, produced in discovery by Fulvio Fabiani on or about January 13, 2017 on an unlabeled flash drive.
10. Fulvio Fabiani's MW1-USA System Absorption Data (translated to English)
11. A video and photo of the flow meter time lapse conducted by Joseph Murray
12. Videos of the heat simulation conducted by Joe Murray
13. Photos taken by Joseph Murray at the Doral Location
14. Joseph Murray's October 31, 2016 Power Analysis
15. Photos taken in December 2014 at the Triangle Drive Facility, produced by Defendants in discovery as part of the three terabyte hard drive (Folder: 3 Triangle Drive>2014-12>Images)
16. Photos of the E-Cat and related equipment taken by Andrea Rossi, produced in discovery by Andrea Rossi on a thumb drive labeled 00000002.
17. Rossi's Testing Data, produced in discovery by Andrea Rossi in native format as ROSSI_00001075, ROSSI_00008579.

18. Industrial Heat spreadsheets summarizing data collected from Florida Power and Light
19. Industrial Heat spreadsheet summarizing the data from Penon's final report
20. Telephone interviews with Joseph Murray

EXHIBIT 2



To:
Cc:
Bcc:
Subject: Fw: Exhibits to Expert Disclosure of Joe Murray

From: Michael Maugans/JonesDay
To: jannesser@pbyalaw.com, bchaiken@pbyalaw.com, pturner@pbyalaw.com, pevans@pbyalaw.com, sgillett@pbyalaw.com, munez@acg-law.com, faran@acg-law.com, fleon@acg-law.com
Cc: Christopher R Pace/JonesDay@JONESDAY, "Bernard Bell" <bellb@millerfriel.com>, Christopher M Lomax/JonesDay@JONESDAY, Erika Handelson/JonesDay@JONESDAY, Christina Mastrucci/JonesDay@JONESDAY, Pilar Villa/JonesDay@JONESDAY
Date: 01/31/2017 12:07 AM
Subject: Fw: Exhibits to Expert Disclosure of Joe Murray



EXHIBIT A.pdf EXHIBIT B.pdf EXHIBIT C.pdf

Michael Maugans
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600 Brickell Avenue
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----- Forwarded by Michael Maugans/JonesDay on 01/31/2017 12:04 AM -----

From: Michael Maugans/JonesDay
To: jannesser@pbyalaw.com, bchaiken@pbyalaw.com, Christopher R Pace/JonesDay@JONESDAY
Date: 01/31/2017 12:01 AM
Subject: Disclosure of Joe Murray, exhibits to follow

Attached please see disclosure of expert Joe Murray,



JD_Expert Disclosure of Joe Murray.pdf
Michael Maugans
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=====

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=====

UNITED STATES DISTRICT COURT
SOUTHERN DISTRICT OF FLORIDA

ANDREA ROSSI and LEONARDO)
CORPORATION,)

Plaintiffs,)

v.)

THOMAS DARDEN; JOHN T. VAUGHN,)
INDUSTRIAL HEAT, LLC; IPH)
INTERNATIONAL B.V.; and)
CHEROKEE INVESTMENT PARTNERS,)
LLC,)

Defendants.)

CASE NO. 1:16-cv-21199-CMA

EXPERT DISCLOSURE OF JOSEPH
A. MURRAY

INDUSTRIAL HEAT, LLC and IPH)
INTERNATIONAL B.V.,)

Counter-Plaintiffs,)

v.)

ANDREA ROSSI and LEONARDO)
CORPORATION,)

Counter-Defendants,)

and)

J.M. PRODUCTS, INC.; HENRY)
JOHNSON; FABIO PENON; UNITED)
STATES QUANTUM LEAP, LLC;)
FULVIO FABIANI; and JAMES BASS,)

Third-Party Defendants.)

EXPERT DISCLOSURE OF JOSEPH A. MURRAY

Defendants THOMAS DARDEN, JOHN T. VAUGHN, INDUSTRIAL HEAT, LLC (“IH”), IPH INTERNATIONAL B.V. (“IPH”), and CHEROKEE INVESTMENT PARTNERS, LLC (collectively, “Defendants”), pursuant to Fed. R. Civ. P. 26 (a)(2)(C), hereby submit the expert disclosure of Joseph A. Murray:

I. INTRODUCTION

Joseph A. Murray, former Vice President of Engineering for Industrial Heat, LLC, shall be testifying as to his opinions concerning the accuracy and reliability of the report by Fabio Penon of the E-Cat plant as well as the performance of the E-cat plant itself.

II. SUMMARY OF OPINIONS

Comparisons Between Power Sold By Florida Power & Light Company to J.M. Products, Inc. and Power Reported As Absorbed By Fabio Penon and Fulvio Fabiani

Mr. Murray will describe how the data generated by Fabio Penon (“Penon”) and Fulvio Fabiani (“Fabiani”) pertaining to the power absorbed during the testing of the E-cat plant at ADDRESS OF DORAL LOCATION (“JMP”) is at odds with the the amount of power used at Doral location as demonstrated by Florida Power & Light Company (“FPL”) records. *See “Exhibit A.”* Using the values of power absorption into the reactor reported by Penon to Industrial Heat, LLC, Mr. Murray compared these numbers to the actual power provided by FPL to the Doral location and found numerous inaccuracies reported by Penon and Fabiani.

Mr. Murray also compared Penon and Fabiani’s data to the historical average amount of power that the Doral location used before and after the purported “guarantee performance test” (specifically before and after the reactor was turned on). Once again, Mr. Murray’s analysis demonstrates that Penon and Fabiani’s reports on the power absorbed into the E-cat plant are

inaccurate when measured against power provided by FPL to Doral location are riddled with inaccuracies when measured against the power actually provided by FPL to the plant. *See* “Exhibit B.”

Inverse Relationship of Power Input to Plant and Coefficient of Power

Using the values reported by Penon to Industrial Heat, Mr. Murray compared the reported power input to the E-cat plant reported by Penon against the reported coefficient of power (“COP”) reported by Penon as reflected in Figure *See* “Exhibit C.” After comparing the two sets of numbers, Mr. Murray’s results revealed an inverse relationship between the input power and the COP (i.e., when the plant draws less power, the COP of the E-cat plant increases). Mr. Murray will testify that there is no logical reason why the COP should be changing inversely to the amount of power inputted given that the same E-cat plant was used throughout the “guaranteed performance test.”

Heat Simulations

Mr. Murray will testify as to the heat simulations he ran to recreate the thermal conditions inside the Doral location. The thermal simulation involved a 500 kw or 800 kw power source uniformly distributed in a container at the Doral location, 7861 NW 46th Street, Doral, FL 33166 and releasing heat into the ambient warehouse of the Doral location. Mr. Murray’s simulation demonstrates how the heat would typically build over time to achieve a steady state temperature. *See* “Thermal Simulations” This means that the room would have been heated to a temperature unsuited for a human working environment.

Water Flow

Mr. Murray will be testifying as to the tests he conducted on the water flow into the E-cat plant. The results of Mr. Murray's test show that the measured flow meter used by Penon would report a much higher flow of water than was actually occurring. The purpose of the test was to determine how the flow meter used by Penon operated when a limited amount of water flowed through it. Murray's results showed that the water meter Penon used would show the results that Penon reported when in fact the actual water flowing through the meter was multiples less than what the meter showed. the behavior of the flow meter when a very minimum amount of water was going through it. See "*Water Flow Test Results*".

QUALIFICATIONS

Mr. Murray's educational background includes an ABD from University of Maryland, an M.S. from University of Utah and a B.S. from Michigan State University.

Dated: January 30, 2017.

Respectfully submitted,

/s/ Christopher R.J. Pace

Christopher R.J. Pace

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Christopher M. Lomax

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Christina T. Mastrucci

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Florida Bar No. 113013

Erika S. Handelson

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Michael A. Maugans

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JONES DAY

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Tel: 305-714-9700

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Counsel for Defendants/Counter-Plaintiffs

Third Party-Plaintiffs

CERTIFICATE OF SERVICE

I HEREBY CERTIFY that a true and correct copy of the foregoing was served by e-mail on counsel of record this 30th day of January, 2017.

/s/ Michael A. Maugans

Michael A. Maugans

SERVICE LIST

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Paul D. Turner
D. Porpoise Evans
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Rodolfo Nuñez
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rnunez@acg-law.com
Counsel for United States Quantum Leap, LLC and Fulvio Fabiani

EXHIBIT A

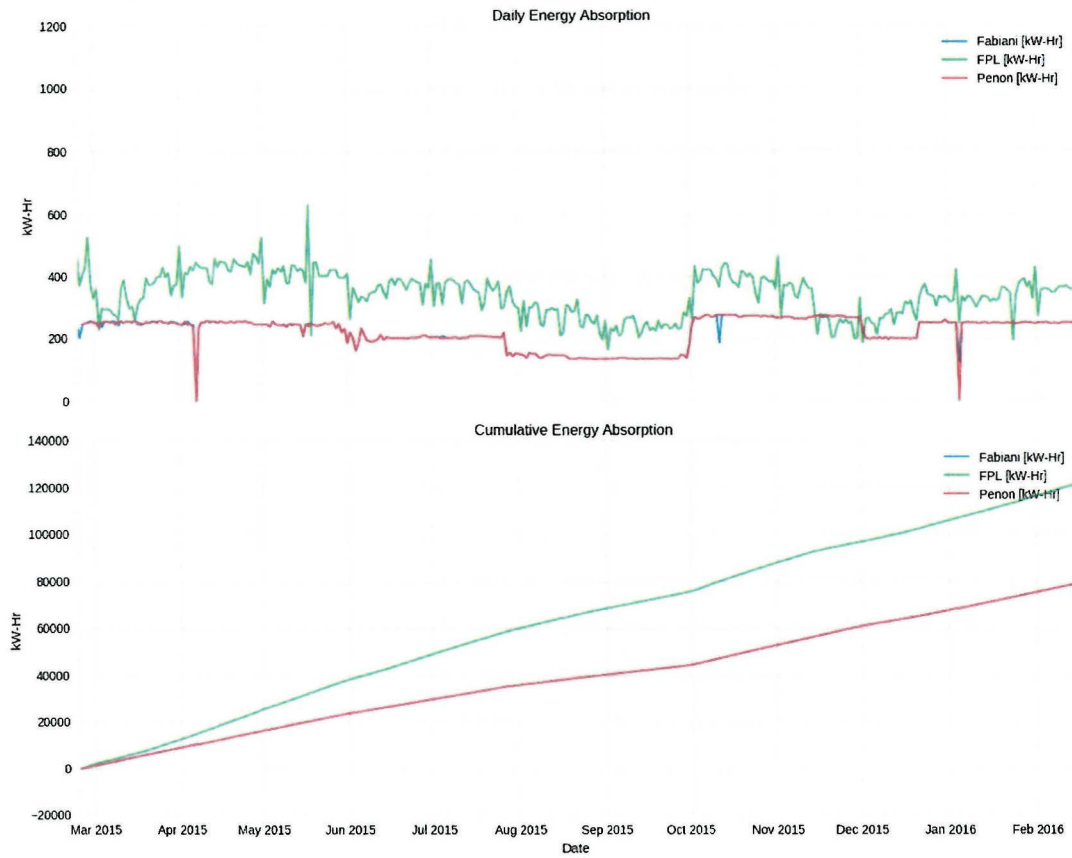


EXHIBIT B

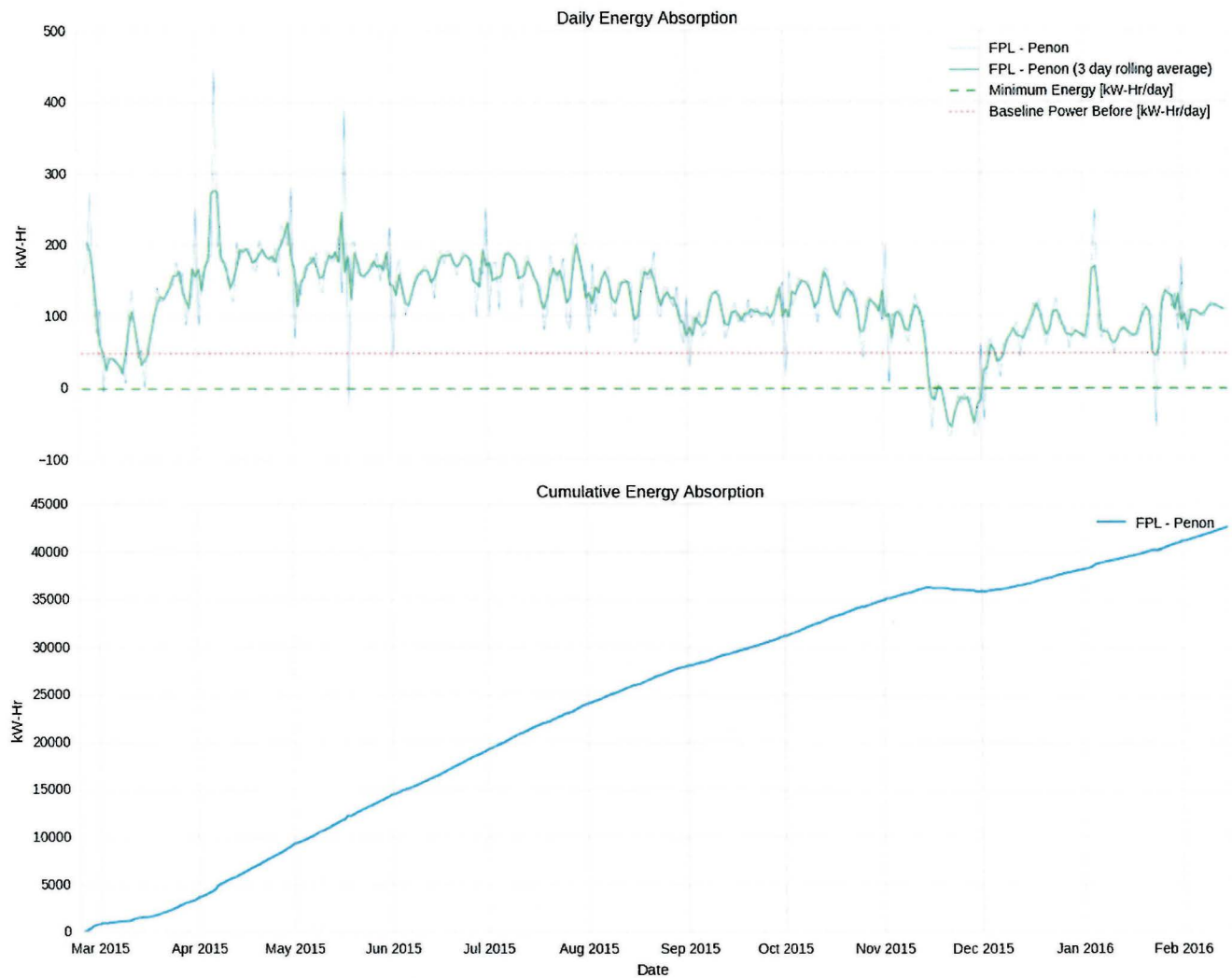


EXHIBIT C

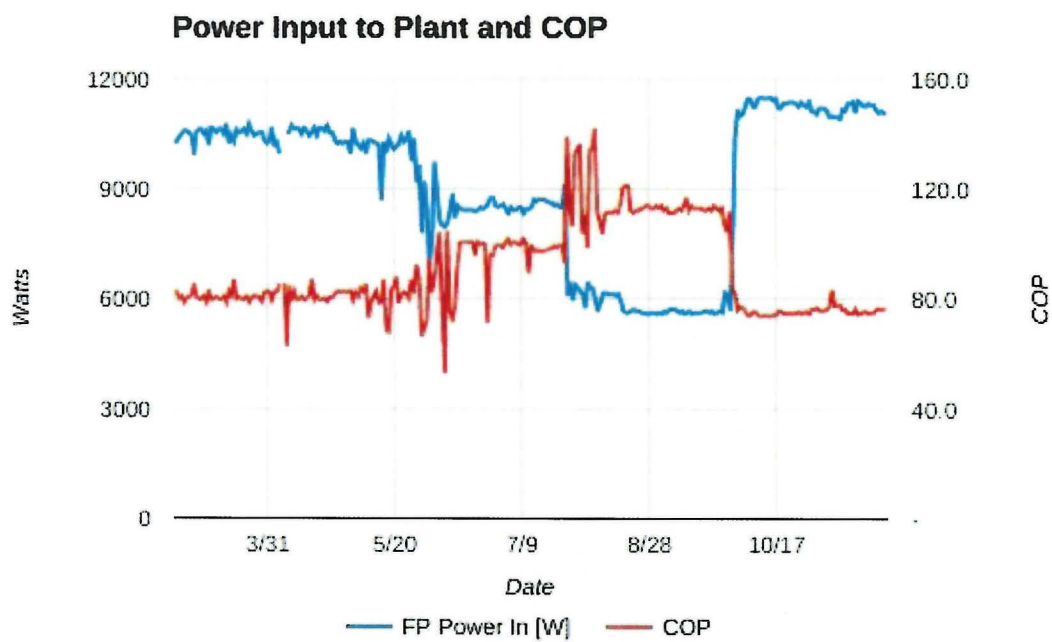


EXHIBIT 3



**Re: SERVICE OF COURT DOCUMENT: 1:16-CV-21199-CMA/O'Sullivan
(Rossi et al. v. Darden et al.)**

Erika Handelson/JonesDay to: John W. Annesser

01/27/2017 02:27 PM

3-9811

Cc: "Brian W. Chaiken", "Bernard Bell", Christina Mastrucci, Christopher
M Lomax, Christopher R Pace, "Fernando Aran", "Francisco Leon",
Michael Maugans, "D. Porpoise Evans", Pilar Villa, "Paul Turner",

John,

This will confirm our conversation today that we will meet and confer early next week to reach a mutually agreeable date for the inspection to occur and on any substantive objections you may have.

Thanks,
Erika

Erika S. Handelson
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ehandelson@jonesday.com

Erika Handelson

Good Afternoon, Attached please find Defendant...

01/27/2017 12:19:13 PM

From: Erika Handelson/JonesDay
To: "John W. Annesser" <jannesser@pbyalaw.com>, "Brian W. Chaiken" <bchaiken@pbyalaw.com>, "Paul Turner" <pturner@pbyalaw.com>, "D. Porpoise Evans" <pevans@pbyalaw.com>, "Samantha A. Gillett" <sgillett@pbyalaw.com>, "Rodolfo Nunez" <rnunez@acg-law.com>, "Francisco Leon" <fleon@acg-law.com>, "Fernando Aran" <faran@acg-law.com>
Cc: "Bernard Bell" <bellb@millerfriel.com>, Christopher R Pace/JonesDay@JONESDAY, Christopher M Lomax/JonesDay@JONESDAY, Christina Mastrucci/JonesDay@JONESDAY, Michael Maugans/JonesDay@JONESDAY, Pilar Villa/JonesDay@JONESDAY
Date: 01/27/2017 12:19 PM
Subject: SERVICE OF COURT DOCUMENT: 1:16-CV-21199-CMA/O'Sullivan (Rossi et al. v. Darden et al.)

Good Afternoon,

Attached please find Defendants' Amended Request Pursuant to Fed. R. Civ. P. 34 to Permit Entry Upon Designated Land for Purpose of Inspection.

Thank you,

Erika S. Handelson
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NAI_1502415587_1_Amended Rule 34 Request to Permit Entry.PDF

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=====

**UNITED STATES DISTRICT COURT
SOUTHERN DISTRICT OF FLORIDA**

ANDREA ROSSI and LEONARDO
CORPORATION,

Plaintiffs,

v.

THOMAS DARDEN; JOHN T. VAUGHN,
INDUSTRIAL HEAT, LLC; IPH
INTERNATIONAL B.V.; and
CHEROKEE INVESTMENT PARTNERS,
LLC,

Defendants.

CASE NO. 1:16-cv-21199-CMA

INDUSTRIAL HEAT, LLC and IPH
INTERNATIONAL B.V.,

Counter-Plaintiffs,

v.

ANDREA ROSSI and LEONARDO
CORPORATION,

Counter-Defendants,

and

J.M. PRODUCTS, INC.; HENRY
JOHNSON; FABIO PENON; UNITED
STATES QUANTUM LEAP, LLC;
FULVIO FABIANI; and JAMES BASS,

Third-Party Defendants.

**DEFENDANTS' AMENDED REQUEST PURSUANT TO FED. R. CIV. P. 34
TO PERMIT ENTRY UPON DESIGNATED LAND FOR PURPOSE OF INSPECTION**

Defendants INDUSTRIAL HEAT, LLC (“Industrial Heat”) and IPH INTERNATIONAL B.V. (“IPH”) (collectively, “Defendants”), pursuant to Federal Rule of Civil Procedure 34, hereby request that Plaintiffs, Andrea Rossi and Leonardo Corporation, and Third-Party Defendant J.M. Products, Inc., permit entry upon the premises located at 7861 NW 46th Street, Doral, FL 33166 (the “Premises”), including all portions of the interior of the Premises and containers therein, for the purpose of inspecting, measuring, surveying, photographing, testing, or sampling (i) the E-Cat device which is the subject of this action, including all materials, equipment and machinery used in connection therewith, (ii) the operations of J.M. Products, Inc., including all materials, equipment and machinery used in connection therewith, and (iii) the remainder of the Premises. Defendants request entry into the Premises for these purposes on February 21, 2017 at 9:30 a.m.

Dated: January 27, 2017.

Respectfully submitted,

/s/ Christopher R.J. Pace

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Christopher M. Lomax
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Florida Bar No. 56220
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Erika S. Handelson
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Tel: 305-714-9700
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Attorneys for Defendants

CERTIFICATE OF SERVICE

I HEREBY CERTIFY that a true and correct copy of the foregoing was served by e-mail on counsel of record this 27th day of January, 2017.

/s/ Erika S. Handelson

Erika S. Handelson

SERVICE LIST

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Rodolfo Nuñez
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Counsel for United States Quantum Leap, LLC and Fulvio Fabiani

EXHIBIT 4



To:
Cc:
Bcc:
Subject:

From: Christopher M Lomax/JonesDay
To: Christopher Perre <CPerre@pbyalaw.com>
Cc: "Angie M. Cancino" <ACancino@pbyalaw.com>, "Brian W. Chaiken" <bchaiken@pbyalaw.com>, Bernard Bell <bellb@millerfriel.com>, Christopher R Pace <crpace@jonesday.com>, Erika Handelson <ehandelson@jonesday.com>, "John W. Annesser" <jannesser@pbyalaw.com>, "D. Porpoise Evans" <pevans@pbyalaw.com>, "Samantha A. Gillett" <sgillett@pbyalaw.com>
Date: 02/21/2017 12:46 AM
Subject: RE: Follow-Up Call

Chris,

We served our initial notice on 1/20/17. We amended that notice simply to move the inspection back one day so that it would not fall on a federal holiday. We communicated with John about the inspection several times in the interim. It seemed the only issue that remained was whether the inspection would involve invasive testing. Yesterday (Monday) we learned that plaintiffs object to defendants inspecting certain portions of the JMP side of the facility. We also learned yesterday of plaintiffs' objection to the inspection date. Our understanding was that we were negotiating the terms of the inspection with eye toward completing it on Feb. 21.

As to the scope of the inspection, our understanding is that plaintiffs will not agree, under any set of circumstances, to an inspection of any portion of the container on the JMP side of the facility. As I noted during our call this afternoon, this is an interesting position given the fact that JMP has not objected to our request to inspect the JMP side of the facility. Please confirm that the entire Doral facility is controlled by Rossi and Leonardo and, as a result, Rossi and Leonardo are the proper party to object to inspection of the JMP side of the facility. Also, please let us know when Rossi/Leonardo took control of the entire facility. It is also our understanding that plaintiffs intend to exclude defendants entirely from a particular room on the JMP side of the facility. As reflected in prior email communications, our position is that we are entitled to inspect the entire JMP side of the facility and whatever alleged trade secrets are in plain site can be covered. Our understanding is that you refuse to make such an accommodation. As you know, our clients were told that JMP was a confidential subsidiary of Johnson Matthey and that it was engaged in a real manufacturing process at the Doral facility. We have alleged in our counterclaims that this representation, among other representations, was not true. Accordingly, the JMP side of the facility is squarely at issue in this litigation and defendants are entitled to a reasonable inspection that is inclusive of that side of the facility.

Finally, as to Penon's deposition, our position is that defendants are entitled to a reasonable opportunity to examine Penon. Penon is attending his deposition in the D.R. voluntarily, at plaintiffs' request. Although Penon is traveling to D.R. at plaintiffs' request and intends to answer your questions, you claim to have no control over Penon and cannot do anything to ensure that he will participate in an examination by defendants. You asked that we provide a basis for plaintiffs' authority to secure cooperation from Penon. We would suggest that you use the same authority that was used to convince Penon to travel to D.R. for examination by plaintiffs. If this is not achievable, we will live with whatever the court believes is a fair resolution of this issue.

Happy to discuss this further.

Thanks,

Chris

Christopher Lomax
Associate
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Office +1.305.714.9719
clomax@jonesday.com

Christopher Perre   Good Evening Chris, We have a few follow-up q...   02/20/2017 08:56:48 PM

From: Christopher Perre <CPerre@pbyalaw.com>
To: 'Christopher M Lomax' <clomax@jonesday.com>, Bernard Bell <bellb@millerfriel.com>, Christopher R Pace <crjpace@jonesday.com>
Cc: "Brian W. Chaiken" <bchaiken@pbyalaw.com>, Erika Handelson <ehandelson@jonesday.com>, "John W. Annesser" <jannesser@pbyalaw.com>, "Samantha A. Gillett" <sgillett@pbyalaw.com>, "D. Porpoise Evans" <pevans@pbyalaw.com>, "Angie M. Cancino" <ACancino@pbyalaw.com>
Date: 02/20/2017 08:56 PM
Subject: RE: Follow-Up Call

Good Evening Chris,

We have a few follow-up questions with respect the issues that you intend to raise tomorrow.

With respect to the first issue, it appears that Defendants have only now attempted to reschedule the inspection and that, in any event, Defendants have attempted to do so when neither counsel for Plaintiffs nor Plaintiffs are available to attend the inspection. In addition, Defendants appear to be taking the position that they are entitled to conduct the inspection before the deadline for Plaintiffs to respond to the request, under Rule 34(b)(2)(A), has expired. What is the basis of requiring Plaintiffs to prematurely respond to the inspection request and to show the premises before the 30 days have passed? What of Plaintiffs' offer to conduct the inspection at a time when Plaintiffs' counsel and Plaintiffs are available?

With respect to the second issue, we remain unclear – as we were during our call with you this afternoon – as to what exactly Defendants' issues are with the reasonable limitations that Plaintiffs would seek to impose on the inspection. During our call this afternoon, you indicated that you would more clearly explain the issues via email. We have yet to receive such correspondence. As such, the parties cannot be said to have met and conferred regarding your issues in advance of any hearing.

With respect to the third issue, what exactly are Defendants asking that Plaintiffs do in an effort to "ensure that Fabio Penon is available for examination" by Defendants? If Defendants maintain that Plaintiffs should engage in some affirmative act, please provide the basis upon which Defendants believe Plaintiffs have any such authority.

Please let us know your positions so that we may properly meet and confer in advance of any hearing, and so that we may represent to the Court that we did so adequately.

Sincerely,



Christopher T. Perre, Esq.
283 Catalonia Avenue, Suite 200
Coral Gables, Florida 33134
T: 305-370-3291 | F: 305-377-0781

To ensure compliance with requirements imposed by the IRS, we inform you that any U.S. tax advice contained in this communication (including any attachments) is not intended or written to be used, and cannot be used, for the purpose of (i) avoiding penalties under the Internal Revenue Code, or (ii) promoting, marketing or recommending to another party any matters addressed herein.

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From: Christopher M Lomax [mailto:clomax@jonesday.com]
Sent: Monday, February 20, 2017 7:31 PM
To: D. Porpoise Evans <pevans@pbyalaw.com>
Cc: Brian W. Chaiken <bchaiken@pbyalaw.com>; Bernard Bell <bellb@millerfriel.com>; Christopher Perre <CPerre@pbyalaw.com>; Christopher R Pace <crpace@jonesday.com>; Erika Handelson <ehandelson@jonesday.com>; John W. Annesser <jannesser@pbyalaw.com>; Samantha A. Gillett <sgillett@pbyalaw.com>
Subject: RE: Follow-Up Call

Porpoise,

We intend to raise the following issues during a telephonic hearing before Judge O'Sullivan tomorrow:

1. Plaintiffs' attempts to reschedule the inspection of the Doral facility; Just attempted to reschedule. We have agreed to reschedule after the deposition schedule when all parties are available. Rossi not available. Our response to your request is not yet due. We are entitled to 30 days to respond and state our objections.
2. The limitations plaintiffs seek to place on the scope of defendants' inspection of the Doral facility (as explained by John to me by phone today); and What did John explain? We are unable to discern the issues you are referring to. In our conversation this afternoon, you indicated that you would provide, via email, the issues to which you are referring.

3. Plaintiffs' unwillingness to ensure that Fabio Penon is available for examination by defendants during his deposition on 2.22.17, as well as the logistics of Fabio Penon's deposition. What exactly are you attempting to achieve? Requesting that we agree to keep Penon present during the deposition? Have you

We tried to get the 21st date for a hearing, but you told us you could not attend and pushed the hearing to the 23rd.

We will call Judge O'Sullivan's chambers first thing tomorrow morning to find out if/when he is available.

Thanks,

Chris

Christopher Lomax

Associate

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Miami, FL 33131

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clomax@jonesday.com

From: "D. Porpoise Evans" <pevans@pbyalaw.com>

To: 'Christopher M Lomax' <clomax@jonesday.com>, Christopher Perre <CPerre@pbyalaw.com>

Cc: Christopher R Pace <crpace@jonesday.com>, Erika Handelson <ehandelson@jonesday.com>, Bernard Bell <bellb@millerfriel.com>, "Samantha A. Gillett" <sgillett@pbyalaw.com>, "Brian W. Chaiken" <bchaiken@pbyalaw.com>, "John W. Annesser" <jannesser@pbyalaw.com>

Date: 02/20/2017 06:44 PM

Subject: RE: Follow-Up Call

Tomorrow before 11 or between 3 and 4. But do please put pen to paper. I do not want to waste Judge O'Sullivan's time with a hearing that we have not fully discussed, and the issues you raised this afternoon were not clear at all.

Best,

Porpoise

D. Porpoise Evans, Esq. | Partner

Perlman, Bajandas, Yevoli & Albright, P.L.
283 Catalonia Ave., Suite 200 | Coral Gables, FL 33134
T 305.377.0086 | F 305.377.0781
[Email](#) | [Bio](#) | [LinkedIn](#) | [vcard](#) | [SuperLawyers](#)

From: Christopher M Lomax [<mailto:clomax@jonesday.com>]
Sent: Monday, February 20, 2017 6:39 PM
To: Christopher Perre <CPerre@pbyalaw.com>
Cc: D. Porpoise Evans <pevans@pbyalaw.com>; Christopher R Pace <cripace@jonesday.com>; Erika Handelson <ehandelson@jonesday.com>; Bernard Bell <bellb@millerfriel.com>
Subject: RE: Follow-Up Call

Hi Chris,

Thanks for your email. I will send you another email this evening outlining the issues we intend to raise with the judge during the telephonic hearing tomorrow. We probably won't need to have another call, but I can be available anytime after 10:00AM.

Are there any times that do not work for you for the hearing tomorrow?

This e-mail (including any attachments) may contain information that is private, confidential, or protected by attorney-client or other privilege. If you received this e-mail in error, please delete it from your system without copying it and notify sender by reply e-mail, so that our records can be corrected.

----- Message from "Christopher Perre" <CPerre@pbyalaw.com> on Mon, 20 Feb 2017 23:29:06 GMT -----

From: "Christopher Perre" <CPerre@pbyalaw.com>
To: "Christopher M Lomax"
CC: "D. Porpoise Evans" , "Christopher Perre"
Subject: Follow-Up Call

Hi Chris,

We received your voicemail about a follow-up issue that you may wish to bring before the Court. We were unable to call you back this evening, but we can give you a call in the morning. Is there a time that works for you?

Best,
Chris

P | B | Y | & | A
FORT LAUDERDALE | MIAMI

Christopher T. Perre, Esq.
283 Catalonia Avenue, Suite 200

Coral Gables, Florida 33134
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To ensure compliance with requirements imposed by the IRS, we inform you that any U.S. tax advice contained in this communication (including any attachments) is not intended or written to be used, and cannot be used, for the purpose of (i) avoiding penalties under the Internal Revenue Code, or (ii) promoting, marketing or recommending to another party any matters addressed herein.

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EXHIBIT 5

**UNITED STATES DISTRICT COURT
FOR THE SOUTHERN DISTRICT OF FLORIDA
MIAMI DIVISION**

ANDREA ROSSI, et al.,

Plaintiffs,

v.

THOMAS DARDEN, et al.,

Defendants.

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No. 16-cv-21199-CMA (JJO)

DECLARATION OF RICK A. SMITH

I, Rick A. Smith, P.E., in accordance with 28 U.S.C. § 1746, declare as follows:

1. I am the principal of Applied Thermal Engineering, Inc., located at 7400 Brown Road, Ostrander, OH 43061.
2. I have been retained by counsel for Defendants in the above-captioned litigation to provide my opinions concerning the reported validation of certain low energy nuclear reactor ("LENR") technology referred to as the "E-Cat."
3. In my initial report, I explained that prior to completing my report, I had not yet been able to inspect the E-Cat site in Florida, located at 7861 NW 46th Street, Doral, FL 33166-5470 ("Doral Facility"). I included this fact because in my opinion, inspecting the Doral Facility would be helpful in formulating my opinions.
4. I was prepared to complete an inspection of the Doral Facility starting on the morning of February 21, 2017, but learned that day that if an inspection were to occur, it would have to occur at night after the completion of a deposition in this case. An inspection

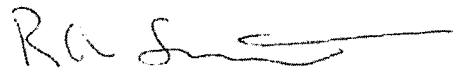
beginning that night would have been insufficient due to time constraints and limited lighting at the Doral Facility.

5. I was able to inspect the Doral Facility on March 2, 2017. The inspection began around 9:00 AM and was completed around 4:00 PM. Joseph Murray, counsel for Plaintiffs, and counsel for Defendants were also present during the inspection.
6. During the inspection, Mr. Murray and I took measurements and photographs of the Doral Facility, including the second floor mezzanine that purportedly housed a heat exchanger during the operation of the E-Cat Plant. Mr. Murray and I were not permitted to inspect the black box on the J.M. Products side of the Doral Facility.
7. My observations during the inspection shed further light on the facts underlying the opinions and conclusions in my initial report. For example, I confirmed that there was no physical evidence supporting the existence of a heat exchanger on the second floor of the Doral Facility. There was no lighting, other than the windows, no electrical power (save two small junction boxes and some small conduit), no holes or patches where conduit and power boxes would have been mounted, no holes or patches where piping would have been supported, no hole patches in the floor or the drywall wall – in short, nothing. The only access to the second floor is a rickety wooden stairs. Moreover, the door to the second floor is about 22-1/2” wide by about 79” high. It would be extremely difficult to get equipment, piping, conduit, duct work, and the other items for such an installation up the narrow, rickety stairs and through that narrow door into the second floor. The other alternative would have been to remove one of the window assemblies and rig the equipment from the west parking lot up into the second floor.

8. Additionally, during the inspection, Mr. Murray discovered a small Grundfos circulating pump under the stairs to the mezzanine. A photograph produced by J.M. Products shows that this Grundfos pump was installed on the outlet of the serpentine coil inside the black box during the operation of the E-Cat. The previously produced photograph did not reveal that it was a Grundfos pump. The site inspection allowed me to determine this fact and use it to better understand the impact of this pump on the E-Cat Plant's operation.
9. Observing the general physical configuration of the E-Cat, as not revealed in photographs or otherwise, was important to my analysis.
10. As a result, I prepared a supplemental report that expands upon the opinions and conclusions in my original report based upon information obtained during my inspection of the Doral Facility.

I declare under penalty of perjury that the foregoing is true and correct.

Executed this 3rd day of April, 2017.

A handwritten signature in black ink, appearing to read "Rick A. Smith", with a long horizontal line extending to the right.

Rick A. Smith

EXHIBIT 6

HIGHLY CONFIDENTIAL- ATTORNEYS' EYES ONLY

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UNITED STATES DISTRICT COURT
SOUTHERN DISTRICT OF FLORIDA
MIAMI DIVISION
CASE NO. 1:16-cv-21199-CMA
ANDREA ROSSI, et al.,
Plaintiffs,
v.
THOMAS DARDEN, et al.,
Defendants.
- - - - -x
INDUSTRIAL HEAT, LLC, et al.,
Counter-Plaintiffs,
v.
ANDREA ROSSI, et al.,
Counter-Defendants.
and
J.M. PRODUCTS, et al.,
Third-Party Defendants.
- - - - -x
600 Brickell Avenue, Suite 3300
Miami, Florida
Friday, February 10, 2017
10:11 a.m. - 7:25 p.m.
HIGHLY CONFIDENTIAL TRANSCRIPT
ATTORNEYS' EYES ONLY
VIDEO DEPOSITION OF ANDREA ROSSI
Taken before Janet Baldauf, Registered
Professional Reporter and Notary Public in and for
the State of Florida at Large, pursuant to Notice of
Taking Deposition filed in the above cause.

HIGHLY CONFIDENTIAL- ATTORNEYS' EYES ONLY

Page 234 1 that? 2 MR. PACE: Yes. I'm trying to understand. 3 THE WITNESS: You know, these picture are, 4 first of all -- 5 MR. ANNESSER: Just answer his question if 6 you understand it. I'm going to object to the 7 form because I'm not sure I understand the 8 question. 9 THE WITNESS: The place where the steam 10 became water is not -- is not illustrated by these 11 photographs, Attorney. 12 BY MR. PACE: 13 Q. But it did occur somewhere within the 14 container? 15 MR. LEON DE LA BARRA: Object to form. 16 THE WITNESS: Can you repeat the question. 17 BY MR. PACE: 18 Q. But the conversion of steam to water 19 occurred in the container? 20 MR. ANNESSER: Object to form. 21 MR. LEON DE LA BARRA: Object to the form. 22 THE WITNESS: No. 23 BY MR. PACE: 24 Q. Where did it occur, outside the container 25 then?	Page 236 1 their names? 2 A. No, I don't remember. We are talking of two 3 years ago, and they were just guys. In that area, if 4 you go there, they have the truck. It's people that 5 has a truck that is a small workshop. They have 6 everything there. You call them, and they are able to 7 do anything. They are able to do whatever you need. 8 Q. Who removed it? 9 A. Sorry. 10 Q. Who removed this heat exchanger that you 11 built? 12 A. It has been built by pipes -- 13 Q. No. I'm sorry. My question was who removed 14 it? 15 MR. LEON DE LA BARRA: Object to form. 16 THE WITNESS: I removed it with the help of 17 contractors. 18 BY MR. PACE: 19 Q. Because it doesn't exist any longer at the 20 Doral plant? 21 A. No because I have used the pieces of it to 22 do other things because now it was completely useless. 23 Q. Well, it didn't exist at the Doral location 24 in February of 2016, did it? 25 MR. ANNESSER: Object to the form.
Page 235 1 A. Yes. 2 Q. Where outside the container? 3 A. In a proper heat exchanger that was placed 4 not inside the container. 5 Q. Where was the heat exchanger? 6 A. The heat exchanger was in a proper room that 7 is not indicated in this photographs. The steam 8 through a pipe is gone in a heat exchanger that is not 9 here. 10 Q. This heat exchanger, who installed that? 11 A. I did. 12 Q. Who helped you install it? 13 A. Contractors. 14 Q. Which contractors? 15 A. Well, I use very much flying contractors 16 that in that industrial park everyday come to know if 17 you need something. I use it to many of them. The 18 heat exchanger that I have put down has been made by me 19 with their help. 20 Q. Okay. 21 A. So -- in -- sorry. 22 Q. I'm sorry. I interrupted you that time. 23 Please finish your answer. 24 A. I had finished. 25 Q. Do you know their names? Do you know any of	Page 237 1 THE WITNESS: Can you -- I did not 2 understand the question. 3 BY MR. PACE: 4 Q. Sure. You remember seeing me at the Doral 5 warehouse in December 16 of 2016? 6 A. I remember. 7 Q. The heat exchanger you are talking about now 8 had been removed by then, correct? 9 MR. ANNESSER: Object to form. 10 MR. LEON DE LA BARRA: Join. 11 THE WITNESS: I don't understand the 12 English. This heat exchanger has been removed 13 after the end of the test. 14 BY MR. PACE: 15 Q. Okay. So it was sometime after 16 February 2016? 17 A. If this was the question, this is the 18 answer. Sorry. 19 Q. I'm still a little lost and then we'll take 20 a quick break here because we have to move on to some 21 other subjects before we end, but you said in Exhibit 22 17 -- 23 A. Yes. 24 Q. -- what comes into there, that top pipe, 25 what we labeled as pipe number one is steam, correct?

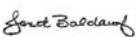
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Page 238 1 A. I am very sorry. I did not understand the 2 question. 3 Q. Sure. Let's go through this again. In 4 Exhibit 17 -- 5 A. Yes. 6 Q. -- the top pipe in that picture. 7 A. The top pipe, number one, yes. 8 Q. What you call number one. 9 A. Yes. 10 Q. You said what came in there was steam? 11 A. Came in where was steam? Was full of steam. 12 Q. What came in this pipe was steam? 13 A. Yes, yes. It was full of steam. 14 Q. So somewhere the steam had to exit -- your 15 testimony now is that somewhere the steam had to exit 16 this container and go to -- and the heat at least from 17 the steam had to exit the container and be dissipated 18 or sent out of the warehouse; is that correct? 19 A. No. 20 Q. Okay. How would the steam be eliminated 21 from -- 22 A. With a heat exchanger. 23 Q. Let me. If steam came into the container -- 24 A. The steam enters in the container, goes in 25 these four pipes. In this phase we were using only	Page 240 1 observation of this photography while the photograph in 2 number 16 shows us the right end of the container. 3 Q. Uh-huh. 4 A. But attention, between the 17 and the 16, 5 there is a piece of plant that has not been 6 photographed, you understand. 7 Q. I understand. 8 A. In that area there was the bypass. 9 Q. Okay. And I think we actually -- that's not 10 for this picture -- I've got pictures down the road, 11 but I just want to ask this before we take a break. 12 A. No. The number 18, you have to put the 13 number 18 to follow the logic at the left -- 14 MR. ANNESSER: Dr. Rossi, there is no 15 question. 16 THE WITNESS: You are right and I am stupid. 17 I am very, very stupid. I continue to make the 18 same mistake, and I don't know why. 19 MR. PACE: Dr. Rossi, I'm just going to stop 20 you so that we can get to this and take a quick 21 break. Let me just do this. Exhibit 18. 22 (Thereupon, Photograph was marked for 23 identification as Defendant's Exhibit 18.) 24 THE WITNESS: Okay. 25 BY MR. PACE:
Page 239 1 four pipes. In some other phases we use also the other 2 pipes. In this moment we were at the end of the job. 3 We were -- we had in operation only the four pipes. So 4 the steam -- then the steam exited from the container 5 inside a pipe, inside a system of pipe, and run through 6 the place where the heat exchanger was. The heat 7 exchanger exchanged heat between air and steam and cool 8 and the steam. 9 Q. Is it the other side -- then if I'm looking 10 at Exhibit 17, is where the heat -- is where the steam 11 is exiting this container somewhere on the other side 12 of those pipes? 13 A. You -- you -- you can see because this 14 photography does not take the area where there was the 15 bypass. 16 Q. There was a bypass? 17 A. Yes, sir. 18 Q. Where would that -- 19 A. Between the number 17 and the number 16, you 20 have a hole. So the number 16 is not a continuation of 21 the 17 because if I look at the 17 and I look at the 22 16, I have -- first I have to put the 17, and then I 23 have to put the 16 because, as you can see, the 17 has 24 the left side that is the end -- the left end of the 25 container -- looking at the container from the point of	Page 241 1 Q. When we look at Exhibit 17, we can see in 2 the far left side tubing. 3 A. Exactly. There -- 4 Q. Exhibit 18 -- let me do this. 5 A. Sorry. 6 Q. Exhibit 18 is, in fact, the tubing that we 7 see on the far left in Exhibit 17? 8 A. You are correct. 9 Q. So that was the point you were just making. 10 A. Yes. 11 Q. This tubing is for inserting water, correct? 12 A. No. 13 Q. Okay. So what is it for inserting? 14 A. Nothing. 15 Q. Nothing. So these tubes -- who put these 16 tubes in? 17 A. When you say tubes, you mean these hoses? 18 Q. Yes, sir. 19 A. Because if you say tube, I think to the 20 steam. 21 Q. Correct. I'm sorry. Let me use the phrase 22 you are using. Hoses. 23 A. The hoses are emergency hoses connected with 24 the hydraulic, the hydraulic center of the factory in 25 case of overheating. We never use them in all the year

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Page 290	Page 292
1 steam from the -- 2 A. Which one, Counselor? 3 Q. Actually, all three show the same pipe, 4 correct? 5 A. No because -- 6 Q. They are different angles? 7 A. -- here is also another one. 8 Q. Let me do it -- I appreciate that. In fact, 9 same thing on number 25 if you look at the bottom. In 10 24, 25 and 26 -- 11 A. 24, 25, and 26 they have the common 12 denominator that is the steam pipe. 13 Q. And that's the silver encased piping? 14 A. It is correct. 15 Q. And that was designed to carry the steam 16 from the plant over to the JM Products container? 17 A. Yes. 18 THE VIDEOGRAPHER: We are at 7 minutes, sir. 19 BY MR. PACE: 20 Q. And this pipe has been -- I'm sorry? 21 A. It's okay. 22 Q. This piping has now been taken down at the 23 Doral warehouse, correct? 24 A. Yes. 25 Q. Who took it down?	1 RE : ROSSI v DARDEN DEPO OF: ANDREA ROSSI 2 TAKEN : 2-23-17 3 4 EXCEPT FOR ANY CORRECTIONS MADE ON THE ERRATA SHEET BY 5 ME, I CERTIFY THIS IS A TRUE AND ACCURATE TRANSCRIPT. 6 FURTHER DEPONENT SAYETH NOT. 7 ANDREA ROSSI 8 9 10 STATE OF FLORIDA)) SS: 11 COUNTY OF) 12 13 Sworn and subscribed to before me this 14 day of 2017. 15 PERSONALLY KNOWN OR I.D. 16 17 18 Notary Public in and for the State of Florida at Large. 19 20 21 My commission expires: 22 23 24 25
Page 291 1 A. I did. 2 Q. When? 3 A. After the test, after the sealing of the 4 test. 5 Q. Do you know -- was it immediately after, if 6 you know? 7 A. I don't remember, but I -- 8 Q. Who assisted? 9 A. Sorry. 10 Q. Did anyone assist you in taking down the 11 piping? 12 A. Can you repeat the question. 13 Q. Yes. It's kind of the last question. Did 14 anyone assist you in taking down the piping? 15 A. Yes. 16 Q. Who? 17 A. Contractors. 18 Q. Do you know their names? 19 A. No. 20 MR. PACE: I think I've run out of time. 21 THE VIDEOGRAPHER: Here marks the end of 22 videotape number eight and the deposition. We are 23 going off the record at 7:25 p.m. 24 (Thereupon, the taking of the deposition was concluded at 7:25 p.m. Signature and 25 formalities were not waived.)	Page 293 1 ERRATA SHEET 2 RE : ROSSI v DARDEN DEPO OF: ANDREA ROSSI 3 TAKEN : 2-23-17 4 DO NOT WRITE ON TRANSCRIPT, ENTER ANY CHANGES HERE 5 Page # Line # Change Reason 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 State of Florida) County of) 22 Under penalties of perjury, I declare that I have 23 read by deposition transcript, and it is true and correct subject to any changes in form or 24 substance entered here. 25 Date ANDREA ROSSI

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Page 294 1 CERTIFICATE OF OATH OF WITNESS 2 3 STATE OF FLORIDA 4 SS: 5 COUNTY OF MIAMI-DADE 6 7 I, JANET BALDAUF, Registered Professional 8 Reporter, Florida Professional Reporter and Notary 9 Public in and for the State of Florida at Large, 10 certify that the witness, ANDREA ROSSI, personally 11 appeared before me on 2-23-17 and was duly sworn by 12 me. 13 WITNESS my hand and official seal this 14 23rd day of February 2017. 15 16  17 _____ 18 JANET BALDAUF, RPR, FPR 19 Notary Public 20 State of Florida at Large 21 Notary # FF208072 22 My Commission Expires: 3-31-2019 23 24 25	Page 296 1 VERITEXT LEGAL SOLUTIONS 2 One Biscayne Tower, Suite 2250 3 Two South Biscayne Boulevard 4 Miami, Florida 33131 5 (305) 376-8800 6 _____, 2017 7 8 ANDREA ROSSI 9 c/o JOHN W. ANNESSER, ESQUIRE 10 Perlman Bajandas Yevoli & Albright, P.L. 11 283 Catalonia Avenue, Suite 200 12 Coral Gables, Florida 33134 13 14 RE : ROSSI v DARDEN 15 DEPO OF: ANDREA ROSSI 16 TAKEN : 2-23-17 17 READ & SIGN BY: Days 18 Attn: ANDREA ROSSI: 19 20 This letter is to advise you that the transcript 21 of the deposition listed above is completed and 22 is available for reading and signing. 23 24 PLEASE CALL THE ABOVE NUMBER TO MAKE AN APPOINTMENT to 25 come to the Veritext office closest to you to read and sign the transcript. Our office hours are from 8:30 a.m. to 4:30 p.m., Monday through Friday. IN THE EVENT OTHER ARRANGEMENTS ARE MADE, please send us a list of any and all corrections, signed and notarized, noting page and line numbers and the reason for such changes, so we can furnish all counsel with a copy of same. If the reading and signing has not been completed prior to the referenced date, we shall conclude that you have waived the reading and signing of the deposition transcript. Your prompt attention to this matter is appreciated. Sincerely, JANET BALDAUF, RPR, FPR cc: Counsel of Record
Page 295 1 REPORTER'S DEPOSITION CERTIFICATE 2 3 I, JANET BALDAUF, Registered Professional 4 Reporter and Florida Professional Reporter, certify 5 that I was authorized to and did stenographically 6 report the deposition of ANDREA ROSSI, the witness 7 herein on 2-23-17; that a review of the transcript 8 was requested; that the foregoing pages numbered 9 from 1 to 296 inclusive is a true and complete 10 record of my stenographic notes of the deposition by 11 said witness; and that this computer-assisted 12 transcript was prepared under my supervision. 13 I further certify that I am not a 14 relative, employee, attorney or counsel of any of 15 the parties, nor am I a relative or employee of any 16 of the parties' attorney or counsel connected with 17 the action. 18 DATED this 23rd day of February 2017. 19 20  21 _____ 22 JANET BALDAUF 23 Florida Professional Reporter 24 Registered Professional Reporter 25	Page 297 1 VERITEXT LEGAL SOLUTIONS 2 One Biscayne Tower, Suite 2250 3 Two South Biscayne Boulevard 4 Miami, Florida 33131 5 (305) 376-8800 6 _____, 2017 7 CHRISTOPHER R.J. PACE, ESQUIRE 8 Jones Day 9 600 Brickell Avenue, Suite 3300 10 Miami, Florida 33131 11 12 RE : ROSSI v DARDEN 13 DEPO OF: ANDREA ROSSI 14 TAKEN : 2-23-17 15 READ & SIGN BY: 30 Days 16 17 Dear Counsel: 18 19 The original transcript of the deposition listed 20 above is enclosed for your file. The witness 21 did not waive reading and signing and has been 22 sent a letter notifying them to come in and read 23 and sign their deposition transcript. 24 The witness will be provided a copy of their 25 deposition transcript for reading in our office should they come in to review the transcript, and we will forward to you any corrections made by the witness at that time, along with an original signature page which should be attached to the original transcript which is in your possession. Sincerely, JANET BALDAUF, RPR, FPR

VERITEXT LEGAL SOLUTIONS
COMPANY CERTIFICATE AND DISCLOSURE STATEMENT

Veritext Legal Solutions represents that the foregoing transcript is a true, correct and complete transcript of the colloquies, questions and answers as submitted by the court reporter. Veritext Legal Solutions further represents that the attached exhibits, if any, are true, correct and complete documents as submitted by the court reporter and/or attorneys in relation to this deposition and that the documents were processed in accordance with our litigation support and production standards.

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EXHIBIT 7

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UNITED STATES DISTRICT COURT
SOUTHERN DISTRICT OF FLORIDA
MIAMI DIVISION
CASE NO. 1:16-cv-21199-CMA

ANDREA ROSSI, et al.,

Plaintiffs,

v.

THOMAS DARDEN, et al.,

Defendants.
- - - - -x
INDUSTRIAL HEAT, LLC, et al.,

Counter-Plaintiffs,

v.

ANDREA ROSSI, et al.,

Counter-Defendants.

and

J.M. PRODUCTS, et al.,

Third-Party Defendants.
- - - - -x
600 Brickell Avenue, Suite 3300
Miami, Florida
Friday, February 24, 2016
10:17 a.m.- 7:56 p.m.

CONFIDENTIAL TRANSCRIPT
PORTIONS OF TRANSCRIPT HIGHLY CONFIDENTIAL
ATTORNEYS' EYES ONLY

VIDEO DEPOSITION OF LEONARDO CORPORATION
THROUGH ANDREA ROSSI
Taken before Edward Varkonyi, Registered
Merit Reporter and Notary Public for the State of
Florida at Large, pursuant to Notice of Taking
Deposition filed in the above cause.

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Page 262 1 A. No, through a bypass. Yes, through a 2 bypass that -- yes, in any case, yes, the steam 3 arrived -- this is the steam that run inside these 4 pipes arrived from the Leonardo -- Leonardo's plant, 5 yes, sir. 6 Q. So the cylinders you were just referring 7 to or the reactors, can we see where in the piping -- 8 just where in the piping they would be here? Can you 9 tell me which pipe they would be in? 10 A. All the insulated pipes that you can see. 11 Q. Okay. So there is reactors on four 12 levels of pipes that show up -- 13 MR. ANNESSER: Object to form. 14 MR. LEON DE LA BARRA: Join. 15 THE WITNESS: When this photos has been 16 taken, yes. 17 BY MR. PACE: 18 Q. Okay. In those reactors were containers, 19 they might have graphene in them or they might have 20 platinum sponge in them? 21 MR. ANNESSER: Object to form. 22 THE WITNESS: There was only -- there was 23 only a couple of them with the platinum sponge 24 and -- 25 BY MR. PACE:	Page 264 1 MR. LEON DE LA BARRA: Object to form. 2 THE WITNESS: Can you repeat the 3 question? 4 BY MR. PACE: 5 Q. Sure. You couldn't physically go in 6 there and remove the cylinders while what you have -- 7 you are saying is 103 or 100 degree Celsius steam 8 coming through those pipes, you can't reach in there 9 and take a cylinder out of it and then put it back 10 in, can you? 11 A. Yes. 12 Q. The steam -- so -- 13 A. No, the steam was bypassed. 14 Q. Bypassed how? 15 A. It was bypassed. We had a bypass. 16 Q. There was a bypass located up where the 17 steam was coming into the container? 18 A. Yes. The bypass was located in -- just 19 behind the wall there was a bypass. 20 Q. Behind -- if we look at Exhibit 12 -- 21 A. Yes. 22 Q. -- behind the gray wall? 23 A. Yes, behind this we had a bypass and the 24 bypass allowed the steam in part or in total to the 25 plant or all the steam out from the plant.
Page 263 1 Q. How many of them with graphene? 2 MR. ANNESSER: Object to form. 3 MR. LEON DE LA BARRA: Join in that 4 objection. 5 THE WITNESS: Around 30. 6 BY MR. PACE: 7 Q. And you removed -- you removed and 8 checked at least the platinum sponge containers but 9 for the cylinders that had the graphene in them, is 10 it the same situation, which is every so often you 11 had to pull them out of this tubing and check them? 12 A. Yes. 13 Q. All right. And to do that did anyone 14 ever assist you in checking the cylinders? 15 A. No. 16 Q. Was anyone ever in the container with you 17 when you checked the cylinders? 18 MR. ANNESSER: Object to form. 19 MR. LEON DE LA BARRA: Object to form. 20 THE WITNESS: No. 21 BY MR. PACE: 22 Q. How did you turn off the steam coming 23 over to J.M. Products so you could check the 24 cylinders? 25 MR. ANNESSER: Object to form.	Page 265 1 Q. So the steam would be bypassed, it would 2 either just be released into the warehouse or it 3 would be circled back into the -- 4 MR. LEON DE LA BARRA: Object to form. 5 MR. ANNESSER: Object to form. 6 THE WITNESS: No, it could not be 7 released in the warehouse. The steam was sent 8 to the heat exchanger that we had, that I 9 explained to you the last time when I -- in my 10 former deposition. 11 So we had a bypass there that could 12 either allow part or total -- on total the steam 13 because I did not know how much -- how much 14 steam it could be necessary in the various 15 phases so we had a bypass that -- 16 BY MR. PACE: 17 Q. Who? 18 A. Sorry. 19 Q. Who built the bypass? 20 A. We did it, because the bypass is made by 21 pipes with a butterfly. 22 Q. But who is we? 23 A. I, with the help of contractors. 24 Q. And are they the same contractors who 25 built the heat exchanger?

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Page 266 1 A. You know, there was not the same 2 contractors because sometime we had some contractor 3 that -- that we call it from outside, but in that 4 industrial area mainly in that period every day 5 arrived guys with trucks that were ambulant -- 6 ambulant workshops, you know, with welders, et 7 cetera. 8 And they knocked at the door saying you 9 need help, et cetera, et cetera and I use it many, 10 many times those guys because they are very well 11 skilled, very good and I -- and also the advantage is 12 they were not curious. They just wanted to work. So 13 under -- I myself, I work with them and we made this 14 piping system. I bought pipes and we made all the 15 connections. 16 Q. And pipes as well as fans, correct? You 17 had fans for your heat exchanger? 18 A. Yes. 19 Q. You had to have the heat exchangers 20 themselves, correct? 21 A. Yes. 22 Q. Who paid for that? 23 A. Leonardo Corporation. 24 Q. Leonardo Corporation? 25 A. Yes.	Page 268 1 BY MR. PACE: 2 Q. Office. Second story space? 3 A. Now it's becoming an office. Then was 4 a -- basically was a pretty big -- pretty big, I 5 would say workshop that we had in the second level. 6 Q. You said we had. We had being that 7 second level? 8 A. We is -- 9 Q. Is there no distinction really in this 10 context between Leonardo and J.M. Products -- 11 MR. LEON DE LA BARRA: Object to form. 12 BY MR. PACE: 13 Q. -- just space you worked? 14 MR. ANNESSER: Object to form. 15 THE WITNESS: No, no. When I say we is 16 because I worked with the contractors with, you 17 know, when I -- I was not alone there. So when 18 I say we, it's because it was -- there was not 19 only me. I was with contractors, et cetera. 20 And Jim Bass also sometimes for other 21 things, et cetera, et cetera. So I say we for 22 my -- it is my custom to say we and not I. 23 BY MR. PACE: 24 Q. And up in this second story your 25 testimony I think was that to get the heat out you --
Page 267 1 Q. Are there records reflecting those 2 purchases by Leonardo Corporation? 3 MR. ANNESSER: Object to the form. 4 THE WITNESS: I suppose so, yes. 5 BY MR. PACE: 6 Q. So there is records you assume that 7 reflect purchasing heat exchangers? 8 A. No, the heat exchangers are pipes. I 9 bought pipes. 10 Q. How about the fans, are there records 11 reflecting the fans? 12 A. Yes. 13 Q. Because those would have to be pretty big 14 fans that were done, correct? 15 A. I had two fans with a total capacity 16 of -- within the fan of the heat exchanger. 17 Q. The fans for the heat exchanger, those 18 would be pretty bag fans? 19 A. They had the capacity necessary to move 20 the air that had to be moved. 21 Q. And did you testify before that the way 22 of getting the heat out was through the second story 23 office? 24 A. No, it was not an office. 25 MR. ANNESSER: Object to form.	Page 269 1 you or somebody knocked out the window on the second 2 story? 3 A. Yes, the second floor we had big windows 4 and we had to remove it completely one. Now we have 5 reset everything because we're making offices there. 6 Q. So Leonardo paid for the piping -- 7 A. Yes. 8 Q. -- that was used for the heat exchanger? 9 Leonardo paid for the workers that did the work? 10 A. Yes. 11 MR. ANNESSER: Object to the form. 12 BY MR. PACE: 13 Q. Leonardo paid for the fans that were used 14 for the heat exchanger system? 15 MR. ANNESSER: Object to form. 16 THE WITNESS: Yes. 17 BY MR. PACE: 18 Q. And this heat exchanger, the bypass, I am 19 just trying to understand. We have both a bypass -- 20 I'm sorry. 21 Is it your testimony -- is the testimony 22 that the piping for this heat exchanger ran along the 23 side of the wall where the -- essentially this wall 24 here that we see in Exhibit 12, but just on the J.M. 25 Products side?

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Page 270 1 A. Yes. 2 Q. Did it go straight up and then straight 3 over to the -- 4 A. It's impossible -- 5 Q. -- loft? 6 A. -- to answer this way because there was a 7 design and the bypass was run along the -- if we look 8 at this wall from the side of Leonardo, if we look 9 from here on, this run through the right -- yeah. 10 Q. So if we're looking at Exhibit 10 now? 11 A. Yeah, this run along the -- this run down 12 and then along the right side of the plant of J.M., 13 with the transmissions to the bypass. To the bypass 14 that was on the flank and also -- and also there was 15 the frontal connection for the inlet of the steam. 16 Q. So by this picture that you have there 17 that is Exhibit 10, is this after the heat exchanger 18 was removed from the warehouse or before? 19 A. I cannot -- I cannot say from this 20 photos. It could be -- no, this photo has been made 21 before. 22 Q. Before the heat exchanger was put into 23 place? 24 A. No. 25 MR. ANNESSER: Object to the form.	Page 272 1 A. I did. 2 Q. When did you remove that piping? 3 A. After the end of the test. 4 Q. Where is that piping now? 5 A. We use it to make other things. I 6 recovered all the pieces that were not -- no more 7 necessary to make other things and the heat 8 exchanger -- all the pipes of the heat exchanger have 9 been recovered to make other things and that space 10 now is becoming offices. 11 Q. Let's see if I understand. You are 12 looking there at Exhibit 10, there is a pipe there in 13 Exhibit 10 that we see that is the pipe you are 14 saying was carrying the output of the E-Cats over to 15 the J.M. Products side of the Doral warehouse, 16 correct? 17 MR. ANNESSER: Object to the form. 18 BY MR. PACE: 19 Q. That's what we see there? 20 A. You should repeat speaking if possible a 21 little bit slower. 22 Q. Sure, certainly will. There in Exhibit 23 10 we see insulated pipe -- 24 A. Yeah. 25 Q. -- that is carrying the output of the
Page 271 1 THE WITNESS: No, this photo has been 2 made before it has been dismantled. This photo 3 has been made -- this photo has been made when 4 the heat exchanger was in operation. 5 BY MR. PACE: 6 Q. So the heat exchanger was in operation 7 when that photo was made. You recognize that photo 8 having been made when? 9 MR. ANNESSER: Object to form. 10 THE WITNESS: I don't know, you did it. 11 BY MR. PACE: 12 Q. How do you know the heat exchanger was in 13 place then? That's what I don't understand. 14 A. Because we had the plant in operation 15 because when the plant stopped to be in operation all 16 this piping has been removed. 17 Q. I understand. I will actually come to 18 that in just a second. Simply because the pipe is 19 there -- 20 A. I suspect that this photos have been made 21 the last day of the test. I suspect. 22 Q. You understand the last day of the test 23 the heat exchanger was still there? 24 A. Of course. 25 Q. Who removed that piping?	Page 273 1 E-Cat plant over to the J.M. Products side of the 2 Doral warehouse, correct? 3 A. Yes. 4 Q. That has now been -- you removed that 5 pipe after -- sometime after February 16 of 2016, 6 correct? 7 MR. ANNESSER: Object to form. 8 THE WITNESS: Correct. 9 BY MR. PACE: 10 Q. And you have repurposed that piping or 11 you now are using that piping for another purpose? 12 MR. ANNESSER: Object to the form. 13 THE WITNESS: It's correct. 14 BY MR. PACE: 15 Q. And you didn't maintain the pipe, you 16 didn't maintain the insulation, it's been put to 17 another use? 18 MR. ANNESSER: Object to form. 19 THE WITNESS: (Nods head.) 20 BY MR. PACE: 21 Q. The heat exchanger no longer exists at 22 the Doral location, correct? 23 A. Correct. 24 Q. The piping that was used for the heat 25 exchanger you have now put to another use, you didn't

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Page 310 1 do it. 2 BY MR. PACE: 3 Q. Okay. 4 A. Never happened that they told me to pay a 5 tax and I did not pay for it. Never happened. 6 You know, I can understand him because 7 when it comes to accounting to get bored is normal. 8 Q. Ten minutes left. I have a variety of 9 wrap-up questions. I may have asked you this before 10 but I am not sure I did, so I want to make sure I got 11 it clear. 12 I know you testified that the E-Cat 1000 13 were the big Frankies? 14 A. Yes. 15 Q. The E-Cat 100s are the smaller E-Cat 16 units? 17 MR. ANNESSER: Object to form. 18 THE WITNESS: You know, all this, there 19 is not a precise definition. Usually, yes, yes, 20 we say the 1000 was the big ones. I don't 21 remember to have defined 100 maybe. 22 Usually I defined E-Cats by the photo or 23 the smaller units, while the big ones were 24 either big Frankies. The correct denomination 25 should be 250 E-Cats, because it's the rating.	Page 312 1 Q. Okay. And then at times at least in 2 connection with some of the big Frankies you would do 3 that, you would regulate the amount of water or 4 electricity going into them. 5 But do I understand correctly that in 6 terms of the COP being created by one of the E-Cat 7 units, you never took any methods to regulate that, 8 to lower that or to increase it above, like you kind 9 of tried to get the best you could, the best COP you 10 could out of each unit all the time; is that 11 correct? 12 MR. ANNESSER: Object to form. 13 THE WITNESS: Yes. 14 BY MR. PACE: 15 Q. Okay. I am talking about the difference 16 between the power output. So you can regulate the 17 power output but you didn't regulate the COP? 18 A. COP is -- it's still a known harnessed 19 horse. A known harnessed horse. To harness. 20 MR. LEON DE LA BARRA: Harness. 21 BY MR. PACE: 22 Q. A hard to harness horse? 23 A. Yes. 24 Q. Wow. At the end of a deposition you 25 should try for much easier phrases like hello kitty.
Page 311 1 BY MR. PACE: 2 Q. That's how many kilowatts the big Frankie 3 can put out? 4 A. It's the rating. 5 MR. ANNESSER: Object to form, 6 mischaracterization. 7 BY MR. PACE: 8 Q. You testified earlier today that there is 9 an ability to regulate the power output of the big 10 Frankie by regulating the amount of electricity or 11 the amount of water that goes into the big Frankie. 12 But am I correct that there is no way -- 13 that you didn't have a way of -- let me rephrase 14 this. That you never attempted to regulate or modify 15 the COP of one of the big Frankies? 16 A. Can you just either split the question? 17 Q. Break apart? 18 A. Yes. 19 Q. I am trying to separate between power and 20 COP. You testified earlier today that the amount of 21 power that a big Frankie puts out or an E-Cat unit 22 puts out can be regulated by controlling the amount 23 of water that would go in there or the amount of 24 electricity, correct? 25 A. Yes.	Page 313 1 It's hard to regulate the COP of an E-Cat? 2 A. If not impossible. 3 Q. If not impossible? 4 A. In good and in bad. 5 Q. I think my only other questions are 6 during the course of the testing that was being done 7 in Doral, Florida, did you ever change the fuel or 8 charge in any of the E-Cat reactors? 9 A. I made tests. I did. 10 Q. You changed the fuel in some of the 11 reactors? 12 A. Not changed but made some test, some 13 injections. 14 Q. I'm not quite sure what that means. Does 15 that mean you took samples of it or did you make -- 16 A. No, the contrary. The contrary. I have 17 injected some materials to make tests, to make 18 experiments. 19 Q. You have extracted some of the fuel from 20 the E-Cat reactors to run other experiments? 21 MR. ANNESSER: Object to form. 22 THE WITNESS: No. 23 BY MR. PACE: 24 Q. I'm missing it. I'm sorry. 25 A. The contrary. I have injected. To

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Page 1

1
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UNITED STATES DISTRICT COURT
SOUTHERN DISTRICT OF FLORIDA
MIAMI DIVISION
CASE NO. 1:16-cv-21199-CMA

ANDREA ROSSI, et al.,

Plaintiffs,

v.

THOMAS DARDEN, et al.,

Defendants.
- - - - -x
INDUSTRIAL HEAT, LLC, et al.,

Counter-Plaintiffs,

v.

ANDREA ROSSI, et al.,

Counter-Defendants.

and

J.M. PRODUCTS, et al.,

Third-Party Defendants.
- - - - -x
600 Brickell Avenue, Suite 3300
Miami, Florida
Wednesday, March 1, 2017
10:14 a.m.- 5:46 p.m.

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PORTIONS OF TRANSCRIPT HIGHLY CONFIDENTIAL
ATTORNEYS' EYES ONLY

VIDEO DEPOSITION OF J.M. PRODUCTS, INC.
THROUGH ANDREA ROSSI
Taken before Edward Varkonyi, Registered
Merit Reporter and Notary Public for the State of
Florida at Large, pursuant to Notice of Taking
Deposition filed in the above cause.

EXHIBIT 8

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Page 114 1 instruct him not to answer. 2 BY MR. PACE: 3 Q. And Dr. Rossi, you are going to follow 4 that instruction? 5 A. Yes. 6 Q. I want to start off talking a little bit 7 about the heat exchanger we were discussing earlier 8 today. I want to start by just laying a little bit 9 of groundwork. 10 (The document referred to was thereupon 11 marked Deposition Exhibit 8 for Identification, a 12 copy of which is attached hereto.) 13 BY MR. PACE: 14 Q. I am handing you what is marked as 15 Deposition Exhibit 8. 16 Do you recognize Exhibit 8 as a picture 17 of the Doral warehouse taken from the Leonardo side 18 of that warehouse? 19 A. Yes. 20 Q. All right. Can you tell just by looking 21 at the picture any time period when it was taken? 22 A. After -- I can take that this has been 23 taken after the closing of the plants. 24 Q. After the closing. Now, you just said 25 plants. So let's just make sure we're defining that	Page 116 1 Q. And the J.M. Products plant is also in a 2 shipping container that is just wrapped in 3 insulation? 4 A. Yes, sir. 5 Q. So the black we see there is actually the 6 insulation? 7 A. Yes, sir. 8 Q. All right. And between the two is a -- 9 is a gray wall that looks like it's probably in the 10 range of, you know, six, seven feet high. Is there a 11 name you are comfortable referring to that wall? 12 A. Absolutely, okay. 13 Q. As contrasting the large walls that go up 14 to the roof in this warehouse, what can we call this 15 small wall? Can we call it a dividing wall? 16 A. Very good. 17 Q. Okay. So there is a dividing wall 18 between the Leonardo container and the J.M. Products 19 container? 20 A. It is correct. 21 Q. And you said that this picture was -- 22 what you can conclude from this picture in terms of 23 timing is it was taken after the operations of J.M. 24 Products had ended. 25 Why -- what about this picture shows that
Page 115 1 correctly or we're on the same page. Sorry, I 2 shouldn't say defining correctly. That we're on the 3 same page. 4 Plants means -- ones of those plants is 5 the -- is the E-Cat plant by Leonardo, correct? 6 A. Yes, it is correct. 7 Q. And this picture that we have as Exhibit 8 8, that's reflected in the small piece of the red 9 container that we can see on the right-hand side of 10 the picture? 11 A. Yes, it is correct. 12 Q. All right. And the other plant is the 13 J.M. Products plant and that we can see in this 14 picture is the -- the top of the black box that we 15 see on the right-hand side of the picture; is that 16 correct? 17 A. Yes, it is correct. 18 Q. All right. Between those two plants -- 19 I'm sorry, I may sometimes call them containers 20 instead of plants. Is that okay with you? 21 A. No problem. 22 Q. That's because both of these, the E-Cat 23 plant -- yeah, the E-Cat plant is in like a shipping 24 container; is that correct? 25 A. Yes, the red shipping container.	Page 117 1 to you? 2 A. Because there is not the steam pipe. 3 From this perspective we should necessarily see 4 between the red container that is in the right of 5 this photography and the black container that looms 6 up on the top of the dividing wall at the left of the 7 red ship container. We should see the pipe of the 8 steam that brought -- that conveyed the steam 9 produced in the red container that is the E-Cat, to 10 the black container that is the J.M. plant. Here is 11 not that pipe and obviously the plants were not in 12 operation. 13 Q. I am going to mark here as actually 14 Exhibit 9 and 10, because we're going to have one -- 15 I am going to start with 9, and 10 is going to be the 16 exact same version but I am going to let you draw on 17 10, which is why I am doing the difference, the 18 distinction. 19 (The document referred to was thereupon 20 marked Deposition Exhibit 9 for Identification, a 21 copy of which is attached hereto.) 22 (The document referred to was thereupon 23 marked Deposition Exhibit 10 for Identification, a 24 copy of which is attached hereto.) 25 BY MR. PACE:

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Page 118 1 Q. Handing you what's marked as Exhibit 9 2 and 10. Actually, give one each to everybody because 3 I've got a couple of extra in case any get messed 4 up. 5 One of these I am going to ask, the 6 Exhibit 9, that we not draw on and then Exhibit 10 I 7 am going to let you draw on. This is by no means to 8 scale. I am not trying to claim it's to scale. 9 A. Okay. 10 Q. What I have tried to do is kind of create 11 a simple diagram that has -- it's almost like an 12 overview of the Doral warehouse. 13 It doesn't have everything in it but it's 14 meant to show that there is a portion of the Doral 15 warehouse that is for J.M. Products, that's the 16 square that is the upper right corner of this diagram 17 and then there is the area where Leonardo was 18 operating, which is the bottom part of the Exhibit 19 9. 20 I tried to draw in the little hallway we 21 see in Exhibit 8 that takes you back to the bathroom 22 in the back and then I put a box in here to represent 23 the J.M. Products plant. 24 A. Okay. 25 Q. Again, not drawn to scale, but is that	Page 120 1 here as Exhibit 11 and 12. 2 (The document referred to was thereupon 3 marked Deposition Exhibit 11 for Identification, a 4 copy of which is attached hereto.) 5 (The document referred to was thereupon 6 marked Deposition Exhibit 12 for Identification, a 7 copy of which is attached hereto.) 8 BY MR. PACE: 9 Q. This is getting a little on the 10 interactive side. This is Exhibit 11. 11 A. Thank you. 12 Q. This is Exhibit 12. You have seen each 13 of these photographs before fairly recently? 14 A. Yes, I have seen these photographs 15 during my -- I think my first deposition or the 16 second. I don't remember exactly. One of the two. 17 Q. Right. It might even have been both. I 18 don't remember now either. 19 A. Yeah. 20 Q. These are pictures of the inside of what 21 you have identified as the J.M. Products plant or 22 container, correct? 23 A. Yes, it is correct. 24 Q. And if I understand it correctly, if we 25 put these pictures side by side, if you put Exhibit
Page 119 1 position wise roughly correct? 2 A. Yes, but I do not -- sorry, I miss the 3 difference between the Exhibit 9 and the Exhibit 10. 4 Q. Absolutely none. 5 A. They look absolutely the same. 6 Q. They are the exact same. 7 A. Okay. 8 Q. The reason I gave you both of them is I 9 want you then to put Exhibit 9 to the side because 10 that way we know if you draw on Exhibit 10, we will 11 be able to show the difference -- 12 A. I understand. 13 Q. -- here is what Dr. Rossi drew because 14 look at the difference between 9 and 10. So let's 15 take 9 away from you so that you don't have an 16 incentive to draw on 9. We will just put it under 17 the pile, but we're not taking it away. 18 A. Okay. 19 Q. I actually -- if we need additional ones 20 I actually have a few extra copies, we can create 21 additional exhibits. 22 I want to talk to you -- if you can keep 23 Exhibit 10 with you, I want to see if I can set 24 something up here. I am going to give you pictures 25 you have seen before in a second. I am going to mark	Page 121 1 11 to your left and Exhibit 12 to your right, that 2 kind of -- that's the way they would appear in the 3 container, correct? 4 If you came into the container from the 5 door we see in Exhibit 11, you would see these pipes 6 in Exhibit 11 closest to that door, and then as you 7 kept looking down or walking down the container, you 8 would then see the equipment that is shown in Exhibit 9 12? 10 A. No. 11 Q. Can you explain to me how I got that 12 wrong? 13 A. Here is a missing -- there is a gap. 14 Q. There is a gap between them? 15 A. Yes, between 11 and the 12 you should 16 need an 11-B because as you can really see, you can 17 easily see, they don't combine. 18 Q. Right. I'm sorry, I wasn't trying to say 19 that and you said that previously, so let me just do 20 this again. 21 Which is, if you came in the door that we 22 see on the left side of Exhibit 11 -- 23 A. Okay. That's the entrance, okay. 24 Q. The first thing you would see are these 25 pipes that are shown in Exhibit 11?

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Page 122 1 A. Yes, it is correct. 2 Q. Then you would see some additional space 3 and additional equipment in between the picture in 4 Exhibit 11 and the picture in Exhibit 12? 5 A. Correct. 6 Q. And then on the far side of the container 7 you would see the equipment we see in Exhibit 12? 8 A. Yes, it is correct. 9 Q. Okay. At the top of Exhibit 12 we see a 10 pipe that's got some blue and looks like silver tape 11 around it; is that correct? 12 A. You mean this? 13 Q. Yes, a tan colored pipe. 14 A. Yes, it is correct. 15 Q. That pipe is carrying the heated fluid 16 from the Leonardo plant over -- into the J.M. 17 Products plant, correct? 18 A. Correct. 19 Q. And that -- is that the same pipe as the 20 one we see on the top of Exhibit 11? Recognizing 21 there is a gap between them. 22 A. Yes, there is a gap between them and -- 23 yes. In any case, yes. 24 Q. Okay. And you're familiar with the 25 equipment that was in the J.M. Products container	Page 124 1 A. Yes, there is a bypass. 2 Q. There is a bypass, okay. 3 A. Yes. 4 Q. And then after the heated fluid goes into 5 the heat exchanger, it comes back as cooled fluid? 6 A. The cold fluid, yes. 7 Q. The cold fluid. And it comes into the 8 pipe that we see on Exhibit 12, which is the -- it 9 looks like it's a pipe wrapped in white insulation 10 with some tan tape on it? 11 A. Yes. 12 Q. Okay. And, I'm sorry, just to be clear, 13 it comes into this pipe somewhere on -- outside of 14 the image, but on the left-hand side of Exhibit 12? 15 A. Can you repeat? 16 Q. Yes. When the -- when the cold fluid 17 comes back into the container after it has gone 18 through the heat exchanger, it would come into the 19 pipe that is wrapped in white insulation with tan 20 tape somewhere on the left-hand side of Exhibit 12, 21 or what's not seen on the left-hand side of Exhibit 22 12? 23 A. Yes, it is -- yes, relatively cold. 24 Relatively respect the steam, because it was still 25 warm, but yes.
Page 123 1 from your work for J.M. Products, correct? 2 A. Yes. 3 Q. Okay. I'm just making sure that you're 4 knowledgeable about what we're looking at here. 5 A. I am. 6 Q. Okay. So looking at Exhibit 11, the way 7 this system operated, the heated fluid coming from 8 Leonardo -- coming from the E-Cat container would 9 flow into these pipes, the first four pipes that we 10 see here on Exhibit 11, the top four pipes we see on 11 Exhibit 11? 12 A. The insulated pipes, yes. 13 Q. And I believe your testimony was very 14 clear that that's steam that's coming through those 15 pipes, correct? 16 A. Yes, sir. 17 Q. And so it remains steam as it's going 18 through these four pipes? 19 A. Yes, sir. 20 Q. And then between Exhibit 11 and Exhibit 21 12 there is a -- we will get into more detail on it 22 but there is a mechanism in place to carry the heated 23 fluid out of the container -- out of the J.M. 24 Products container to a heat exchanger; is that 25 correct?	Page 125 1 Q. Then it would flow through this pipe 2 that's covered in white insulation and tan tape out 3 through the -- what we see here on the right-hand 4 side of Exhibit 12? 5 A. Uh-huh. 6 Q. And that would then flow back to the 7 Leonardo side of the Doral warehouse? 8 A. Yes. 9 Q. Okay. Just so I understand also, then I 10 want to talk about our diagram that's Exhibit 10. 11 Just so I understand, the heat -- the 12 bypass that you referenced, the bypass goes out 13 the -- how does the bypass carry the steam out from 14 the J.M. Products -- out from the J.M. Products 15 container? Is there a device that pushes the steam 16 out or does it just flow naturally? 17 A. I did not understand the question. 18 Q. It was not a very good question by me. 19 You testified that between Exhibit 11 and Exhibit 12 20 there is a -- there is a bypass and that takes the 21 steam over to the heat exchanger, correct? 22 A. Yes. 23 Q. All right. What does that bypass look 24 like? 25 A. A bypass is -- is a sort of a Y. So

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Page 138 1 was an experiment. And so I put the things in a way 2 that I could have wheels in my hands. 3 The famous violin, I wanted to play any 4 cord, any possible cord to have any possible tuning. 5 So I could -- I could modulate the amount of steam 6 that I was sending inside this. Why these pipes are 7 insulated while, for example, this area was designed 8 to cool down in some particular cases? 9 When I put insulating means I need heat. 10 So why I needed heat here? Because inside here I had 11 the reactors. I needed the heat here. How much 12 heat, I did not know. I did not know. So basically 13 I have made so that I could regulate. 14 Q. Can we be clear for the record, what you 15 were just talking about was Exhibit 11? 16 A. Yes. 17 Q. You are talking about the pipes we see in 18 Exhibit 11? 19 A. Yes, sir. 20 Q. Just doing it for the record. 21 A. This one. 22 Q. Understood. 23 A. So regulating this bypass, because the 24 bypass as I -- which this kind of bypass is called -- 25 in the jargon of this kind of technology it's called	Page 140 1 A. Yes. 2 Q. Then from there they would run against 3 the far -- run against the wall to what I am calling 4 the back of the warehouse? I don't know if you call 5 it the back or the front of the warehouse. The part 6 of the warehouse where the second story was? 7 A. Correct. 8 Q. Okay. 9 A. Sorry. 10 Q. Who purchased the butterfly bypasses? 11 A. No, we did it. We did it. 12 Q. You created it yourself? 13 A. Yes, because it is just -- please 14 remember that I have very big experience in making 15 this kind of stuff because I started when I was 22 16 years old to make incinerators with heat recovery, 17 manufacturing them in my factory. In fact, also 18 manufacturing using also my hands. 19 I had 20 years of experience in that 20 plant. A butterfly valve can be easily made with 21 very few money. It's just a pipe with a disk inside, 22 a shaft in the middle and outside a lever to maneuver 23 it counterclockwise or clockwise, and that is a 24 butterfly. 25 Q. I understand.
Page 139 1 a butterfly. Why butterfly? Because it is like a 2 wing. It is like a wing. 3 When you turn the wing in one sense it 4 closes the pipe. You turn it 90 degrees in the 5 other -- you turn it clockwise, for example, it 6 becomes open. You turn it counterclockwise, it 7 becomes closed. 8 Being a wing, it call it butterfly. So 9 we had a butterfly here and butterfly here, so that 10 we could modulate the steam. Why we foresaw a 11 powerful heat exchanger at the end? Because I did 12 not know how much heat I was going to consume, but I 13 knew that I had to produce one megawatt power per 14 hour for the performance test, so at that point I 15 made that system. And foreseeing that the excess 16 heat were going to be dumped in the -- dump heat in 17 our jargon means to cool down without work, just to 18 cool down. And this is it. 19 Q. And so the first bypass, what you have 20 labeled as BP-1 -- 21 A. Yeah. 22 Q. -- it would take the heated fluid from the 23 pipe over to the exact same -- over to the same 24 piping that is -- that is bypassed -- that bypass 2 25 led into?	Page 141 1 A. If you buy a butterfly you spend \$5,000. 2 If I make a butterfly for you it cost \$100. 3 Q. Understood. You may have been kind of 4 using the royal plural, but you said we made the 5 butterfly pass. 6 A. Yes. 7 Q. Did you make it or did you make it with 8 somebody else? 9 A. I needed the help of some contractor. 10 Q. Do you know the name of that contractor? 11 A. No, I don't remember because as I told 12 you in a former deposition of mine I don't remember 13 it's the first or the second, I used -- there was -- 14 there were always around contractors in that area. 15 Also because under my direction it's easy 16 because it's just a matter of cutting and welding, 17 so. 18 Q. Would you do any of the cutting and 19 welding? 20 A. No, I did not cutting and welding with my 21 hands specifically. I am able to but I did not. 22 Q. Right. I didn't think so. So the 23 contractor was the person who did the cutting and 24 welding. And the equipment used for the cutting and 25 welding, was that equipment that the contractor

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Page 142 1 brought with him or her? 2 A. The welder, yes, because we do not have a 3 welder. For the cutting we have -- we have the tools 4 necessary to cut. 5 Q. Aside from the bypass was there any -- 6 was there any diverter pump that was used in 7 connection with the heat exchanger? 8 Was there any pump in let's say in the 9 J.M. Products container to push the heated fluid out? 10 A. We had a recirculator. 11 Q. Yes, a recirculator. 12 A. Which is a pump. 13 Q. And who bought the recirculator? 14 A. I bought it. Leonardo bought it. 15 Q. If I concentrate hard I can actually 16 write okay with my left hand now. 17 Where did you buy the recirculator? 18 A. I don't remember. 19 Q. Did you save any purchase receipts from 20 buying the recirculator? 21 A. Can you repeat the question? 22 Q. Did you save any receipts from buying the 23 recirculator? 24 A. I don't take the accounting, so I am not 25 able to answer. I did not take the accounting but	Page 144 1 Q. Who created that design? 2 A. I did. 3 Q. Okay. And for that design you needed a 4 lot of pipe, correct? 5 MR. CHAIKEN: Object to form. 6 THE WITNESS: I don't know what you mean 7 by a lot. I needed about 100 and something 8 meters of pipe. 9 BY MR. PACE: 10 Q. Fair enough. I was going to say over 100 11 meter of pipe? 12 A. Over 100 meters of pipe. A lot -- 13 Q. Relative concept, it depends on who you 14 are, right? 15 A. 100 meters is very small respect, you 16 know. 17 Q. If you're building a skyscraper a hundred 18 meters is not very much. 19 A. Correct. Exactly. 20 Q. So the heat exchanger that you designed 21 and built involved over a hundred meters worth of 22 pipe. 23 From where did you buy that hundred 24 meters worth of pipe? 25 A. From Home Depot and from -- because there
Page 143 1 yes, I should have it. 2 Q. Okay. In fact, when you say you should 3 have it, your accountant should have it? 4 A. Yes. Yes. 5 Q. The heat exchanger on the J.M. Products 6 side, that was one that you designed? 7 A. Can you kindly repeat? 8 Q. Yes. The heat exchanger that you have 9 been drawing in these diagrams there on Exhibit 10, 10 and it doesn't show all the heat exchanger -- 11 A. Here I design nothing. 12 Q. That's what I was going to ask you. The 13 heat exchanger has pipes that carry -- that carry the 14 heated fluid from let's just say in the case of when 15 you are using bypass number 2, out of the J.M. 16 Products container -- 17 A. Yes. 18 Q. -- up to the second story -- 19 A. Yes. 20 Q. -- of the Doral warehouse -- 21 A. Yes. 22 Q. -- and then the cooled fluid -- 23 A. Yes. 24 Q. -- relatively speaking comes back? 25 A. Yes.	Page 145 1 were two different kinds of pipes. I bought them 2 from Home Depot and from a supplier I don't remember 3 the name of. A supplier of steel pipes. I don't 4 remember the name of him. 5 Was some -- it was a company in New 6 Jersey, if I were remember or something like that or 7 in Florida. I don't remember, sir, but for sure I 8 have accounting of that. 9 Q. And would that be accounting -- is that 10 J.M. -- were they bought -- was it bought by J.M. 11 Products or was it bought by Leonardo, the pipes? 12 A. As far as I recall they have bought by 13 Leonardo along the compensation agreement that 14 Leonardo had with J.M.,. But maybe, again, by 15 default it is Leonardo. 16 I don't remember particular situations 17 for which J.M. could have bought, but I think it was 18 Leonardo. 19 Q. Okay. And the -- 20 A. You know, when I prepared for this 21 deposition, attorney, I did not go to find for 22 distinction about this invoice, because for me it was 23 one bundle. 24 Q. You didn't look for a distinction between 25 J.M. Products and Leonardo?

37 (Pages 142 - 145)

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Page 150 1 Q. I'm sorry, Dr. Rossi, you had -- you took 2 a look at some notes to identify the model of the 3 fans that were used in the heat exchanger you have 4 been testifying about. What was the model? 5 A. No, the manufacturer is Multifan. 6 Q. I'm sorry? 7 A. M-U -- Multifan, M-U-L-T-I-F-A-N. 8 Q. Multifan? 9 A. Multifan. 10 Q. And I forget if I asked you this 11 already. Where did you buy the fans? 12 A. From Multifan. 13 Q. Directly, you bought it directly from -- 14 Multifan is the manufacturer? 15 A. Yes. 16 Q. And you bought them directly from the 17 manufacturer? 18 A. Yes. 19 Q. Is it safe to say you don't recall 20 whether you bought them on behalf of Leonardo or J.M. 21 Products? 22 A. Most likely Leonardo, but could be -- I 23 think Leonardo. 24 Q. And you believe that your -- your 25 accountant would have the records of the purchase of	Page 152 1 Q. How have the fans been modified? 2 A. Can you repeat? 3 Q. How have the fans been modified? 4 A. I deem this confidential information 5 because the modification of those fans reenters in 6 this new technology. 7 So if you are more specific and ask me 8 something. How have been modified is too generic to 9 answer. Because I should have to explain things that 10 I deem not information to give to my competitor 11 and -- but -- 12 Q. Were the fans modified by somebody on 13 behalf of J.M. Products or somebody on behalf of 14 Leonardo Corporation? 15 A. Leonardo Corporation. 16 Q. Who made -- who modified the fans? 17 A. I did. 18 Q. To modify the fans did you have to 19 disassemble them? 20 A. Yes. 21 Q. Do they still operate as fans? 22 A. Fan is a very generic -- anything that 23 moves a fluid -- anyway, yes. I would say yes. 24 Q. Are they still used to move air? 25 A. Yes.
Page 151 1 those fans? 2 A. Yes. 3 Q. And how many fans did you buy? 4 A. Two. 5 Q. Do you still have those fans? 6 A. They have been modified. They have been 7 modified because I had used them for another purpose 8 now. 9 Q. Without getting into the detail, can you 10 explain to me what the other purpose is of the fans? 11 MR. ARAN: Objection to the extent -- 12 BY MR. PACE: 13 Q. What's the purpose you are using the 14 fans? 15 A. Can you repeat? 16 Q. Sure. You just said that you still have 17 the fans but you are -- they have been modified 18 because you are using them for another purpose, 19 correct? 20 A. Yes. 21 Q. Are the fans being used in connection 22 with the container, the J.M. Products container? 23 A. Yes, but for a completely different 24 purpose because the kind of technology we have there 25 is a completely different thing.	Page 153 1 Q. Do they operate inside the container, the 2 J.M. Products container? 3 A. Yes. 4 MR. ARAN: Objection to form. 5 BY MR. PACE: 6 Q. This heat exchanger that you have been 7 testifying about, when was it put into place at the 8 Doral warehouse? 9 A. Kindly can you repeat? I was distracted. 10 Q. Okay. 11 A. I was thinking to something. Sorry, it's 12 my fault. 13 Q. I believe you have already testified that 14 this heat exchanger about which you are testifying 15 was removed sometime between mid February and very 16 early April of 2016, correct? 17 A. Correct. 18 Q. All right. When was it installed? 19 A. It has been installed before the 20 beginning of the test. 21 Q. If the test that you are describing was 22 in late February of 2015 -- 23 A. Correct. 24 Q. -- can you tell me was it installed by 25 January of 2015? Was it installed in mid --

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Page 154 1 A. I would say the end. Has been made at 2 the very end, so I would say half February. 3 Q. The middle of February 2015? 4 A. Yes, just -- we completed it just before 5 the start-up of the plant. Has been the last thing 6 we made. 7 Q. And when you say we made, it was you and 8 independent contractors, correct? 9 A. Yes. As I told you during I think my 10 first deposition, I never say I. I always say we. 11 It is also -- it is because I have been 12 told when I was a child never say I because it's a 13 concentric, et cetera. Always we because everything 14 is merit of everybody, so I have this attitude. I 15 tend to say always we. 16 Q. That's why I'm asking. When you say we, 17 I want to make sure that you are not referring to 18 just yourself, that there is somebody else involved. 19 A. Yes. 20 Q. So in this case to install the heat 21 exchanger how many people were involved? 22 A. I don't remember. Maybe one, two 23 because -- I don't remember exactly. 24 Q. How long did it take to install the heat 25 exchanger?	Page 156 1 this heat exchanger that you've described that we 2 have not addressed yet, which is the -- these pipes 3 that go up to the second floor are laid out in kind 4 of a serpentine pattern on the second floor, a back 5 and forth pattern? 6 A. Can you kindly rephrase? 7 Q. Yes. 8 A. Thank you. 9 Q. For the heat exchanger that goes up -- 10 the pipes that are on the second floor -- 11 A. Yes. 12 Q. -- those are laid in kind of a serpentine 13 pattern, correct, a back and forth pattern? 14 A. You know, the part of pipe that goes up 15 to the heat exchanger is just straight. 16 Q. Right. I am talking about the pipes that 17 are in the heat exchanger. 18 A. That was confusing. The pipe inside is a 19 serpentine, yes. 20 Q. And those serpentine pipes were -- your 21 testimony has been that those serpentine pipes were 22 contained within a wooden -- some kind of wooden 23 enclosure? 24 A. Yes, we made -- to make it very fast and 25 very cheap we made a wooden frame to sustain the
Page 155 1 A. 15 days. 2 Q. Okay. If it was completed before the 3 test -- before the end of February when the test you 4 have described began -- 5 A. Yes. 6 Q. -- you must have begun work on it by the 7 early part of February? 8 A. Maybe, yes. I believe makes sense. 9 Q. Okay. So 15 days for the installation, 10 approximately. 11 A. Yeah. 12 Q. How much were you paying the workers, if 13 you recall? 14 A. I don't remember. I absolutely don't 15 remember. 16 Q. Did you pay them -- 17 A. You know, usually they were paid by the 18 day cash because that's how things go there. And -- 19 so I have not recall of this. 20 Q. It sounds like you would be paying 21 several hundred dollars a day though to these workers 22 or are they less expensive than that? 23 A. Might be, yes. I would say yes. 24 Q. And there is -- there is an element of 25 this bypass -- I'm sorry. There is an element of	Page 157 1 serpentine and frame and the box even wooden, with a 2 particular technique that I learned in my past to 3 also to eliminate the acoustic energy and that's it. 4 Q. Who built the wooden box? 5 A. Carpenters. Carpenters that I got, 6 contractors. 7 Q. Same answer, which is these are people 8 who you don't have the names of any? 9 A. The same people. The same people. 10 Q. You don't know their names? 11 A. No, I don't. 12 Q. And you paid them in cash? 13 A. Yes. Mostly, not always. Some of them 14 has been -- has made -- because some contractor that 15 work with me in all the plant made invoice and I paid 16 by invoice. 17 Now I don't remember if the ones that 18 worked in the second floor, if among them there was 19 somebody. No, I don't think so. The ones that came 20 to work there were just people that were there around 21 with their trucks and I paid them cash. 22 Q. Okay. Where did you buy the wood for 23 this enclosure box? 24 A. There was -- there is a shop that's Home 25 Depot part and some wood also from -- from a wood

11
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Page 158 1 seller that is not far from our factory. I don't 2 remember the name of it. 3 Q. If you look at exhibit -- what we have 4 here marked as Exhibit 14 and these are photographs 5 that Dr. Wong took and submitted with his expert 6 report. 7 A. Okay, yes. 8 Q. Exhibit A-1 -- 9 A. Yes. 10 Q. -- is the second story of the Doral 11 warehouse, correct? 12 A. Yes, it is correct. 13 Q. This is a picture that was taken sometime 14 this past month of February 2017? 15 A. This photo has been taken by Dr. Wong 16 when he visited our plant. 17 Q. And that was in February of -- February 18 of this year, correct? 19 A. Yes. 20 Q. All right. The serpentine pipes would be 21 laid on the floor, this kind of concrete floor we see 22 here? 23 A. Yes. Yes, upon a frame of wood, yes. 24 Q. That was one of the things I was going to 25 ask. So the pipes were on top of a wood frame,	Page 160 1 box, not to allow the air to heat up too much. 2 Q. And the -- so the fans are drawing air 3 from outside -- 4 A. Yes. 5 Q. -- into the second story of the Doral 6 warehouse and then they are going over these pipes, 7 if I understand how the system works, because the 8 pipes are warm, that air is getting warmed up and it 9 has to be circulated back out of the second story? 10 A. Right. 11 Q. And it circulates back out of the second 12 story through the windows? 13 A. Yes. 14 Q. So if you look at Exhibit A-1, when we 15 look on -- we can see light coming through two 16 openings here. Are those both windows or am I 17 looking somehow at doors? 18 A. No, are both windows. 19 Q. Was the air being pushed out of both 20 those windows or just one? 21 A. No, just one. The one with the two guys 22 there because we were substituting the -- we were 23 making substitution of -- of the glasses there. The 24 second one has been the window that we used. 25 Q. Okay. So A-2, is that the -- is it your
Page 159 1 correct? 2 A. Yes, we have put kind of lumbers, upon 3 the lumbers the pipe, the steam pipes. 4 Q. And then -- 5 A. So the steam pipes were not in contact 6 with the floor. 7 Q. Understood. And then the wood would 8 also -- this was a box, so it would actually also 9 cover up the steam pipes, correct? 10 A. Yes, not in contact with them through the 11 frame because there had to be some distance between 12 the wood cover and pipes, and the steam pipes. 13 Q. So how tall was the box? 14 A. The tall was -- I get the dimensions. 15 The dimensions should be in the report. 16 Q. Actually, I don't have Wong's. You 17 provided the dimensions to Dr. Wong? 18 A. Yes, I provided the dimensions to 19 Dr. Wong and more or less you make about one meter of 20 it, more or less. One meter is three feet. 21 Q. And then the -- were the fans -- were the 22 fans inside the box? 23 A. The fans were outside the box blowing air 24 inside the box at a rate such that we had very 25 consistent exchange of air inside the box, inside the	Page 161 1 testimony that's the window that was used to push the 2 air out? 3 A. I think so, yes. 4 Q. Okay. And just so I understand -- 5 A. I think so. Sorry to interrupt. I think 6 so because, you know, I am not -- I don't remember 7 exactly looking out of that window, if this is the 8 panorama. 9 In any case, yes, I think so. Because 10 this window is equal to another -- there are three 11 windows basically. Yes, three windows there are and 12 we used for this purpose the central one. 13 Q. So just so I understand that too, if you 14 are walking into J.M. Products there is a window 15 right above the door for J.M. Products? 16 A. Sorry, I do not understand what you are 17 saying. 18 Q. Sure. When you walk into the J.M. 19 Products building, the side of the Doral warehouse, 20 there is a window above the door that you come in, 21 correct? 22 A. Correct. And that is -- yes, correct. 23 Q. And then there is two -- if you are 24 facing the building, to your left there is another 25 set of second story windows?

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EXHIBIT 9



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Date: 02/16/2017 05:28 PM
Subject: Supplemental Documents to Disclosure of Joe Murray

Good evening,

Attached please find supplemental documents in connection with the Expert Disclosure of Joe Murray. An email with additional images shall follow.



Flow Analysis 1.pdf Video Simulation 2-100kw-view-line-line-48 .mp4



Video Simulation 1-100kw-view-line-line-48.mp4

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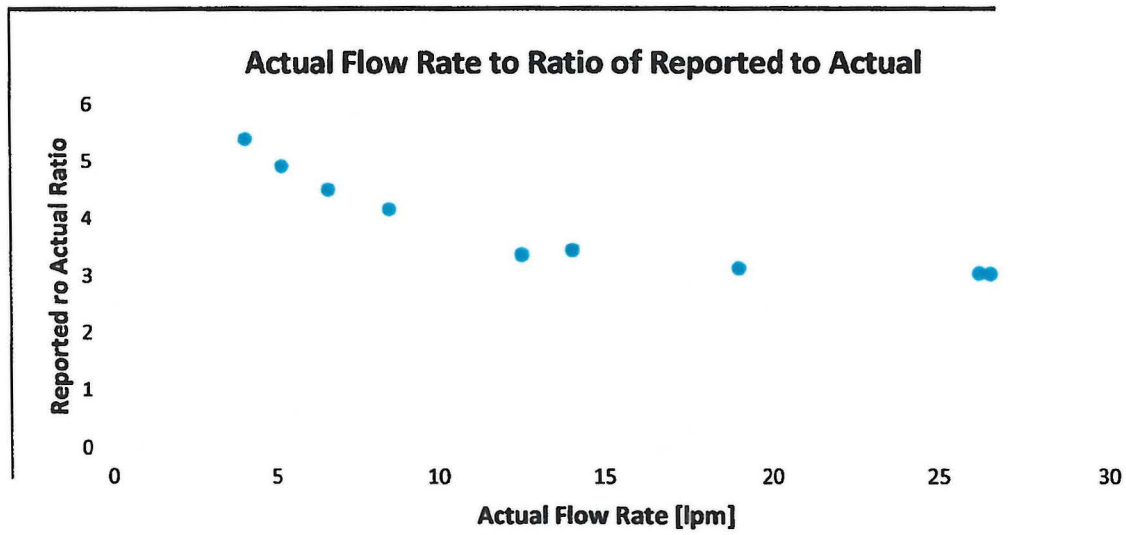
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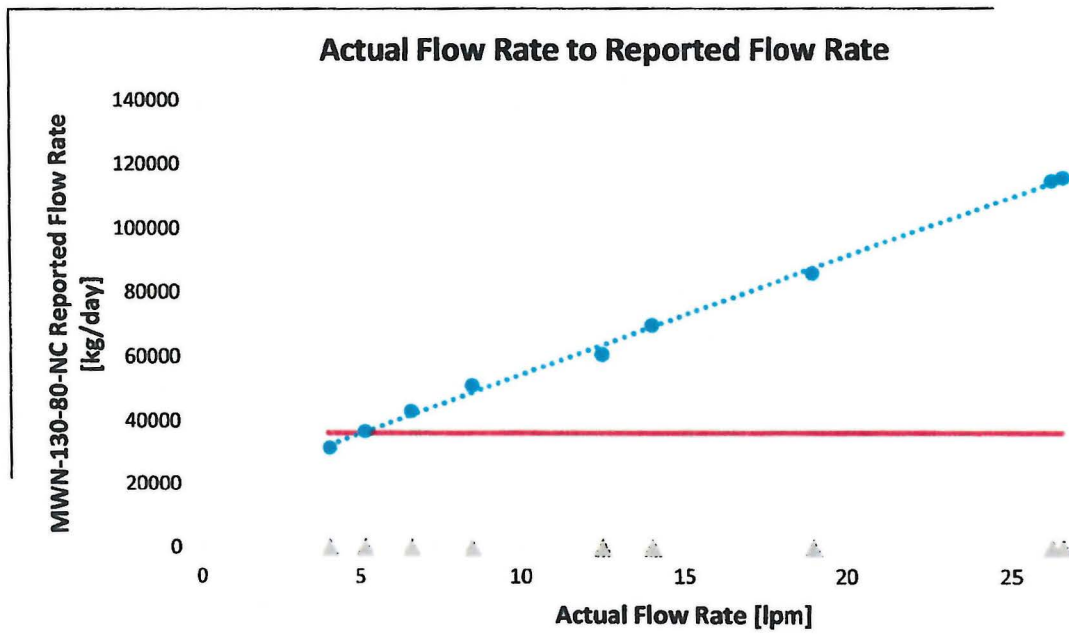
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GPI TM075 Flow Rate [lpm]	Test Duration [s]	MWN-130-80-NC Reported Flow Rate [lpm]	Penon Conversion [kg/day]
4.05	4074	21.8	31392
5.17	3606	25.4	36576
6.63	3599	29.8	42912
8.50	3594	35.3	50832
12.51	3593	42.0	60480
14.03	3604	48.2	69408
19.00	3600	59.4	85536
26.20	3600	79.4	114336
26.53	3549	80.1	115344

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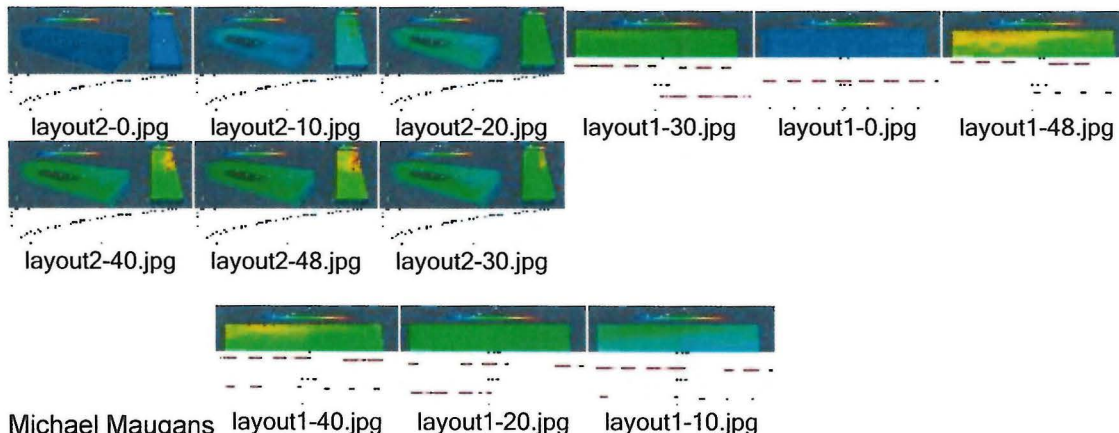




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Subject: Fw: Supplemental Documents to Disclosure of Joe Murray-Part 2

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Subject: Supplemental Documents to Disclosure of Joe Murray-Part 2

The second batch of thermal image documents are attached.



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EXHIBIT 10

UNITED STATES DISTRICT COURT
SOUTHERN DISTRICT OF FLORIDA

ANDREA ROSSI and LEONARDO
CORPORATION,

Plaintiffs,

v.

THOMAS DARDEN; JOHN T. VAUGHN,
INDUSTRIAL HEAT, LLC; IPH
INTERNATIONAL B.V.; and
CHEROKEE INVESTMENT PARTNERS,
LLC,

Defendants.

CASE NO. 1:16-cv-21199-CMA

**SUPPLEMENTAL EXPERT REPORT
OF RICK A. SMITH, P.E.**

INDUSTRIAL HEAT, LLC and IPH
INTERNATIONAL B.V.,

Counter-Plaintiffs,

v.

ANDREA ROSSI and LEONARDO
CORPORATION,

Counter-Defendants,

and

J.M. PRODUCTS, INC.; HENRY
JOHNSON; FABIO PENON; UNITED
STATES QUANTUM LEAP, LLC;
FULVIO FABIANI; and JAMES BASS,

Third-Party Defendants.

SUPPLEMENTAL EXPERT REPORT OF RICK A. SMITH, P.E.

Defendants Thomas Darden, John T. Vaughn, Industrial Heat, LLC (“IH”), IPH International, B.V. (“IPH”), and Cherokee Investment Partners, LLC (collectively, “Defendants”), pursuant to Fed. R. Civ. P. 26 (a)(2)(B), hereby submit this supplemental expert report of Rick A. Smith, P.E.:

I. INTRODUCTION

I, Rick A. Smith, P.E. principal of Applied Thermal Engineering, Inc., located at 7400 Brown Road, Ostrander, OH 43061, have been retained by counsel for Defendants in the above-captioned litigation to provide my opinions concerning the reported validation of certain low energy nuclear reactor (“LENR”) technology referred to as the “E-Cat.” Specifically, I have been asked to render my opinions on the following issues:

1. Whether the device tested by Mr. Penon in Doral, Florida, from February 2015 through February 2016 operated at a coefficient of performance of at least 10.85 for a period of 350 days (even if not consecutive) within any 400 day period prior to March 29, 2016.
2. Whether the device so tested in Doral consistently produced energy more than 2.6 times greater than the energy consumed by the device and whether the temperature of the steam produced by the device was consistently 100 degrees Celsius or greater.

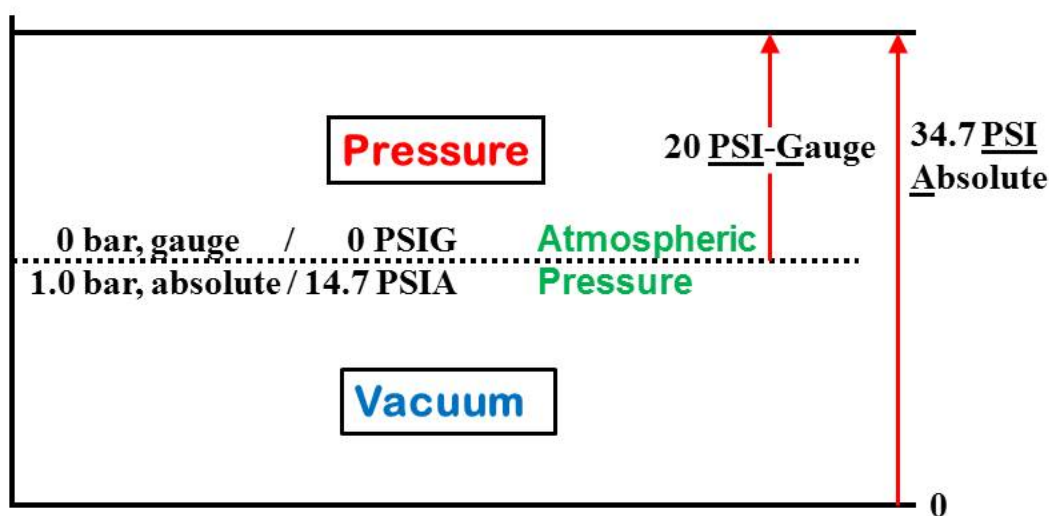
II. STATEMENT OF OPINIONS

Based upon information received by the author subsequent to his expert report, including his visit to the Doral site on 02 Mar 2017, he is supplementing his report as follows.

“Steam” flow from the E-cat to the Black Box

This analysis is based upon the assumption that steam was flowing from the E-Cat to the Black Box. As will be shown, the author unequivocally believes that this never happened. That is why steam is in quotation marks in various places. The outlet “steam” pressure reported by Mr. Penon was always 0.0 bar gauge, which equals 1.0 bar absolute, which equals 0.0 PSI Gauge, which equals 14.7 PSI Absolute (at sea level). Note: This author will use the English system as opposed to the metric system wherever possible. The chart below shows the relationship between these methods of pressure measurement.

Pressure and Vacuum



$$1.0 \text{ bar} = 1.0 \text{ atmosphere} = 14.7 \text{ PSI Absolute}$$

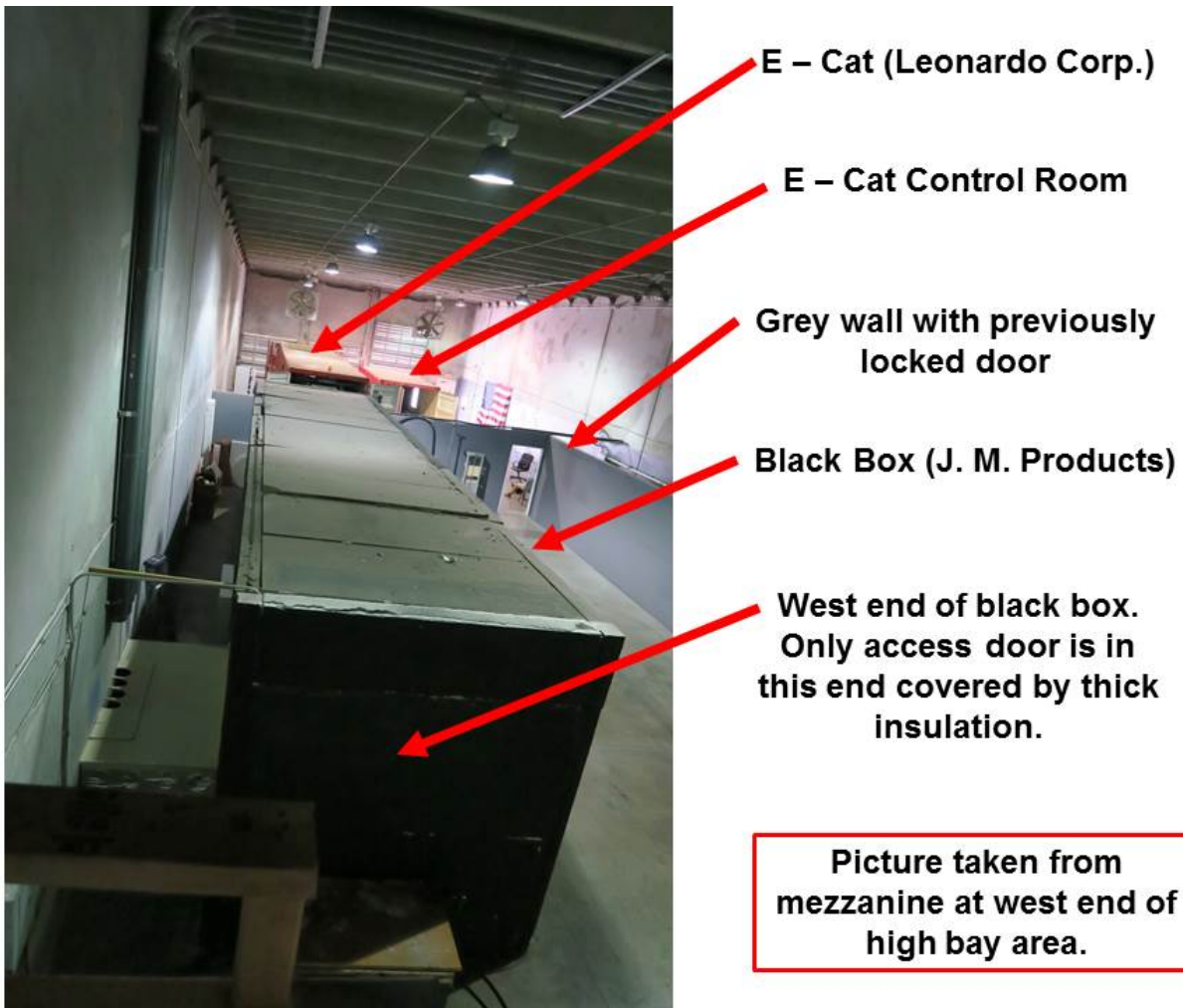
$$\text{bar, absolute} = \text{bar, gauge} + 1.0$$

$$\text{PSIA} = \text{PSIG} + 14.7$$

$$\text{bar, gauge} = \text{bar, absolute} - 1.0$$

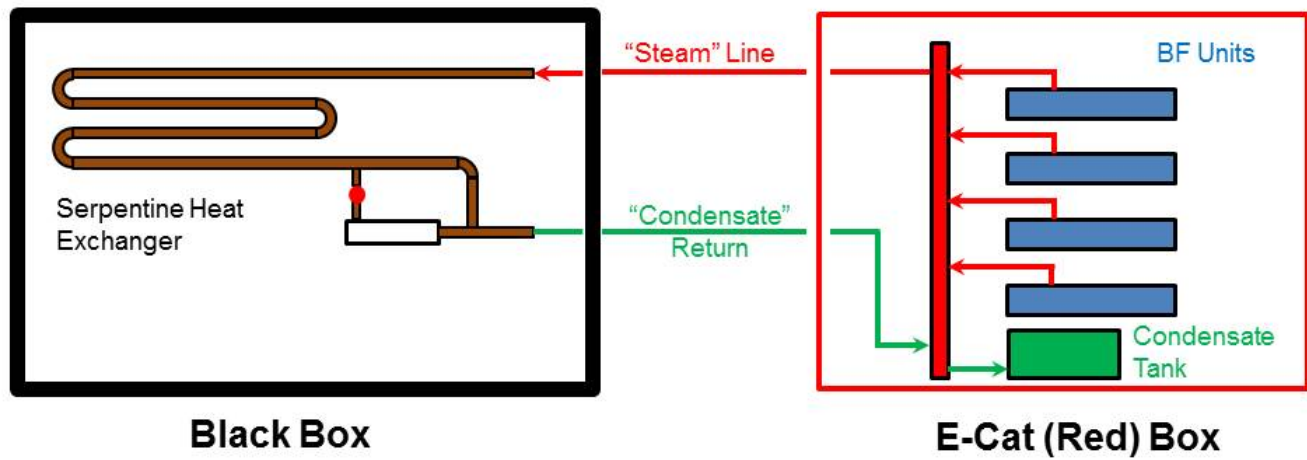
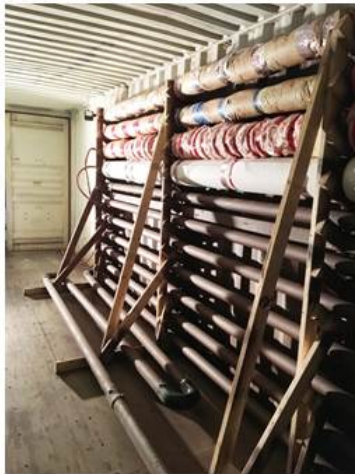
$$\text{PSIG} = \text{PSIA} - 14.7$$

Please recall that the E-Cat purportedly supplied steam to a company called JM Products, whose supposed manufacturing facilities were on the other side of a grey wall in the Doral facility and were not accessible to Industrial Heat personnel.



The black box is heavily insulated with only one access door on the west end. In order to get inside the black box, the insulation on the west end must be removed.

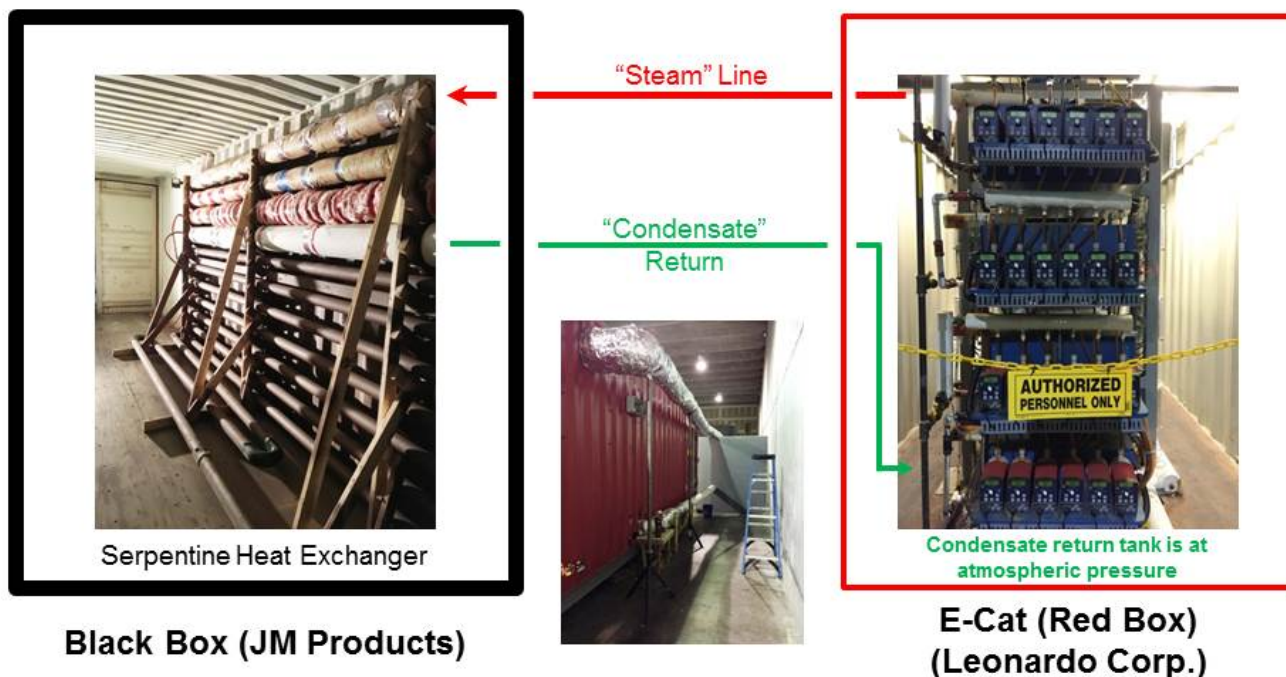
Below is a semi-schematic pictorial of the layout shown above.



The picture below shows that there must be a pressure difference between the E-cat and the black box for "steam" to flow from the E-cat to the black box and condensate to flow back from the black box to the E-cat.

“Steam” pressure in the serpentine heat exchanger must be lower than the “steam” pressure in the E-cat for steam to flow. There must be a vacuum in the serpentine exchanger for “steam” to flow.

“Steam” pressure leaving the E-cat is atmospheric, or 1 bar, absolute / 0 bar, gauge.



For any liquid or gas to flow, there MUST be a pressure difference. Fluid flow will always be from the higher pressure area to the lower pressure area. Recall that the “steam” from the E-cat was being generated at atmospheric pressure (0 barg, or 0 PSIG).

If “steam” was flowing from the E-Cat to the black box, there must have been a pressure difference for any flow to occur. It will be informative to estimate the theoretical steam pressure drop between the two boxes.

The highest daily energy output reported by Mr. Penon was 21,500,000 watt-hours (thermal) per day on 09 Apr 2015. The lowest output reported was 12,400,000 wh/d (thermal) on 31 May 2015. This will now be converted from daily megawatts – thermal to steam flow.

This author measured the internal diameter (ID) of small remaining section of the E-Cat outlet pipe at 4.5” ID. We will now determine what the steam flow velocities theoretically would have been at the highest and lowest reported outputs. This is a theoretical calculation only as a later explanation will show that there could be no steam flow under the steam conditions present during the validation period.

Mr. Bass, in his deposition, recalled that the steam line was 3” or 4”. If the steam line diameter was reduced down from the E-cat outlet to a smaller size, the theoretical steam velocity would go up, dramatically.

The continuity equation, which calculates the fluid flow through a pipe or a duct, is valid for both gases and liquids at sub-sonic velocities.

$\dot{M} = \rho \times V \times A$ is the continuity equation.

$V = \dot{M} / \rho \times A$ is the velocity equation

$\dot{M}$ is the mass flow rate

ρ is the density of the fluid

V is the flow velocity

A is the flow area of the pipe

Latent heat (the amount of heat it takes to convert a pound of water at 212° F to a pound of steam at 212° F) of steam at atmospheric pressure [0 bar, gauge (barg) or 0 Pounds per square inch, gauge (PSIG)] = 970.4 BTU per pound of steam (from Keenan and Keyes).

Density of steam at atmospheric pressure = 0.0373 lb. per cubic foot (from Keenan and Keyes).

Flow area of the 4.5" ID pipe is 15.9 square inches, or 0.110 square feet.

One watt = 3.413 Btu's Per Hour (BTUH).

$\dot{M} = \{[(21,500,000 \text{ wh/d}) \div (24 \text{ hrs. / day})] \times [3.413 \text{ BTU / w}]\} \div 970.4 \text{ BTU / lb.}$

$\dot{M} = 3151 \text{ lb. per hour of steam at atmospheric pressure}$

$V = 3151 \div (0.0373 \times 0.110) \div 60$

$V = 12,800 \text{ feet per minute (FPM) or 145 miles per hour}$

This is above the industry recommended maximum steam flow velocity of 6,000 FPM. The industry standard (Crane Companion, page 3-16) is from 4000 FPM to 6,000 FPM for low pressure steam.

At the lower reported output of 12,400,000 wh/d (thermal), the steam flow velocity would have been:

$V = 7380 \text{ FPM}$ This is also above industry standards.

The author assumed an equivalent length of pipe at 75 feet, based upon the site visit. Using the Babcock steam flow formula, the pressure drop was about 0.5 PSI. Using the Unwin formula, the pressure drop was about 0.7 PSI. This is not an excessive pressure drop, even at the high flow velocities calculated. If this were a conventional steam and heat exchanger system operating even at 10 – 15 PSI, there would be no problem. However, there is a major problem with the steam system as designed.

For any liquid or gas to flow, there MUST be a pressure difference. Fluid flow will always be from the higher pressure area to the lower pressure area. Recall that the alleged steam was being generated at atmospheric pressure (0 barg, or 0 PSIG). If the pressure drop from the E-Cat to the black box was 0.5 PSI, then the piping in the black box **must have been** in a vacuum. This is problem number one.

The condensate return line from the black box back to the E-Cat dumps into a tank in the middle of the E-Cat box. This tank is eventually vented to atmosphere. So, the pressure in the condensate return tank is atmospheric, or 0 barg. If the steam supply and the condensate return in the E-Cat are at atmospheric pressure, and the pressure in the serpentine coil in the black box is in a vacuum, there is absolutely no way that there will be any steam flow between the two boxes, regardless of pipe size. Problem number two.

Recall from the first report that if one boils water (212° F) to make sweet tea and leaves the hot tea sitting on the counter, what happens to it? Does it naturally get hotter or does it eventually cool down to room temperature? We all know that it cools to room temperature eventually, even though it may take a while. The converse is also true. If we take sweet tea from the refrigerator at 40° F, it will warm to room temperature eventually. The key and crucial concept of these examples is that there has to be a temperature difference to have heat transfer.

Fluid flow **requires** a pressure difference and heat transfer **requires** a temperature difference.

So, from a flow (pressure difference) standpoint, there can be no steam flow (other than a de minimus amount to warm the system), regardless of pipe size, from the E-cat to the black box.

Mr. Rossi may claim that there was a steam circulator in the system. If he makes that claim, then he should have no problem providing concrete proof of its existence and location. That may be a problem as the author has never heard of a steam circulator, and an internet search revealed no such device.

Mezzanine Heat Exchanger

Plaintiffs are now claiming that the heat rejection was not done in the black box, but by a heat exchanger located in the mezzanine at the west side of the facility. To date, there has been no evidence presented that such a heat exchanger existed. No photos, drawings, calculations, purchase orders, construction documents, etc. have been provided to the author. When Mr. Murray and the author inspected the Doral site on 02 Mar 2017, we found absolutely no physical evidence that there had been a heat exchanger in the mezzanine.

There was no lighting, other than the windows, no electrical power (save two small junction boxes and some small conduit), no holes or patches where conduit and power boxes would have been mounted, no holes or patches where piping would have been supported, no hole patches in the floor or the drywall wall – in short, nothing. The only access to the mezzanine is a rickety wooden stairs, which the attorneys made this author climb first (load test) before they would use it.

The door to the mezzanine is about 22-1/2” wide by about 79” high. It would be extremely difficult to get equipment, piping, conduit, duct work, and the other items for such an installation up the narrow, rickety stairs and through that narrow door into the mezzanine. The other alternative would have been to remove one of the window assemblies and rig the equipment from the west parking lot up into the mezzanine. The building owner may have records of this being done, or the rigging company surely would have purchase orders and invoices for that work.

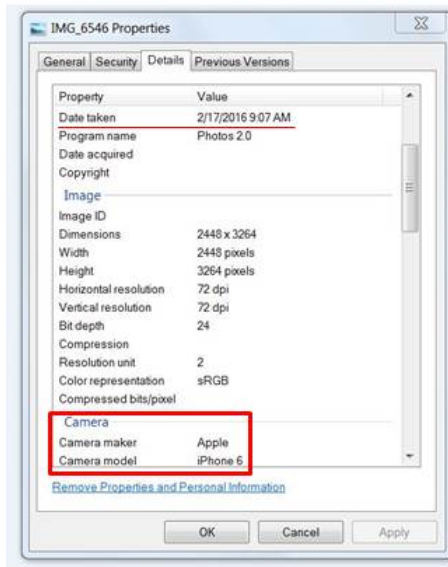
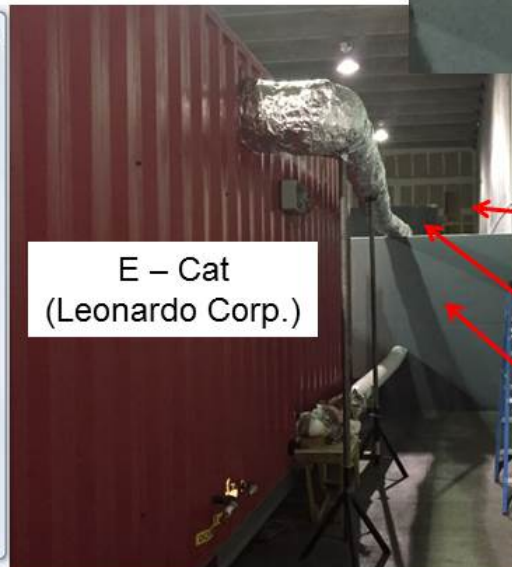
Plaintiffs are also now claiming that their heat exchanger vented through one of the windows on the west side of the mezzanine, facing the street (NW 79th Avenue). The picture below was taken by an investigator during October, 2015.



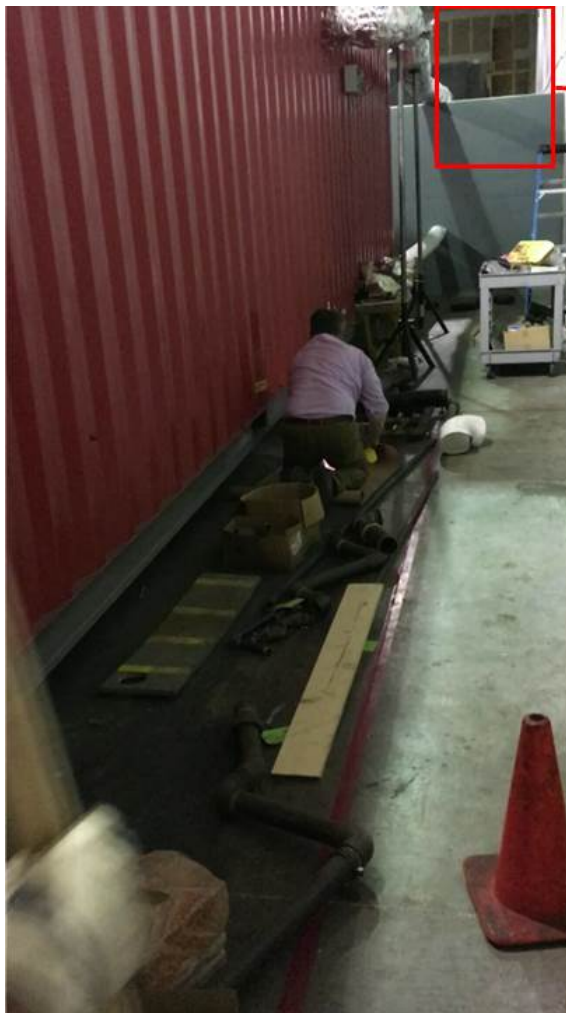
The pressure issues analyzed in the previous section would also apply to a heat exchanger in the mezzanine as there is a lot more pipe and several feet of elevation change.

Even assuming one could create a heat exchanger of the type claimed by Mr. Rossi, without any documentation reflecting such creation, there are additional reasons to conclude that no such heat exchanger was created. The author believes that Mr. Rossi has stated that the pipes (6" nominal) from the black box to the mezzanine heat exchanger went through the door to the mezzanine. Let's look.

No pipes visible near door



The above picture was taken the morning after the validation test was completed. If the pipes that were purportedly present for the test were subsequently removed by 9:00 a.m. (as reflected in the metadata for the photograph above) the day after the test was finished on 16 February 2016, this would qualify an extraordinarily rapid demolition project.



This is a video screen capture from IMG_1781 taken during one of Mr. Penon's site visits.

The above picture is a video screen capture from IMG_1781 taken during one of Mr. Penon's site visits. No pipes are visible in this view either.

The alleged fans for the heat exchanger would have moved about 30,000 cubic feet of air per minute (CFM). If all of the makeup air were coming through the door, it would be flowing through the door at about 27 MPH. The differential pressure on the drywall wall of the mezzanine would be considerable. Unless the dock doors were open, the building would be very negative, even with air back drafting through the two ceiling vents in the high bay area.

The fans would have a combined power of about 25 horsepower. This should show up on a close analysis of the FPL hourly data, compared with the E-cat electrical data.

If there were a heat exchanger and cooling fans in the mezzanine, there is absolutely no evidence of their existence.

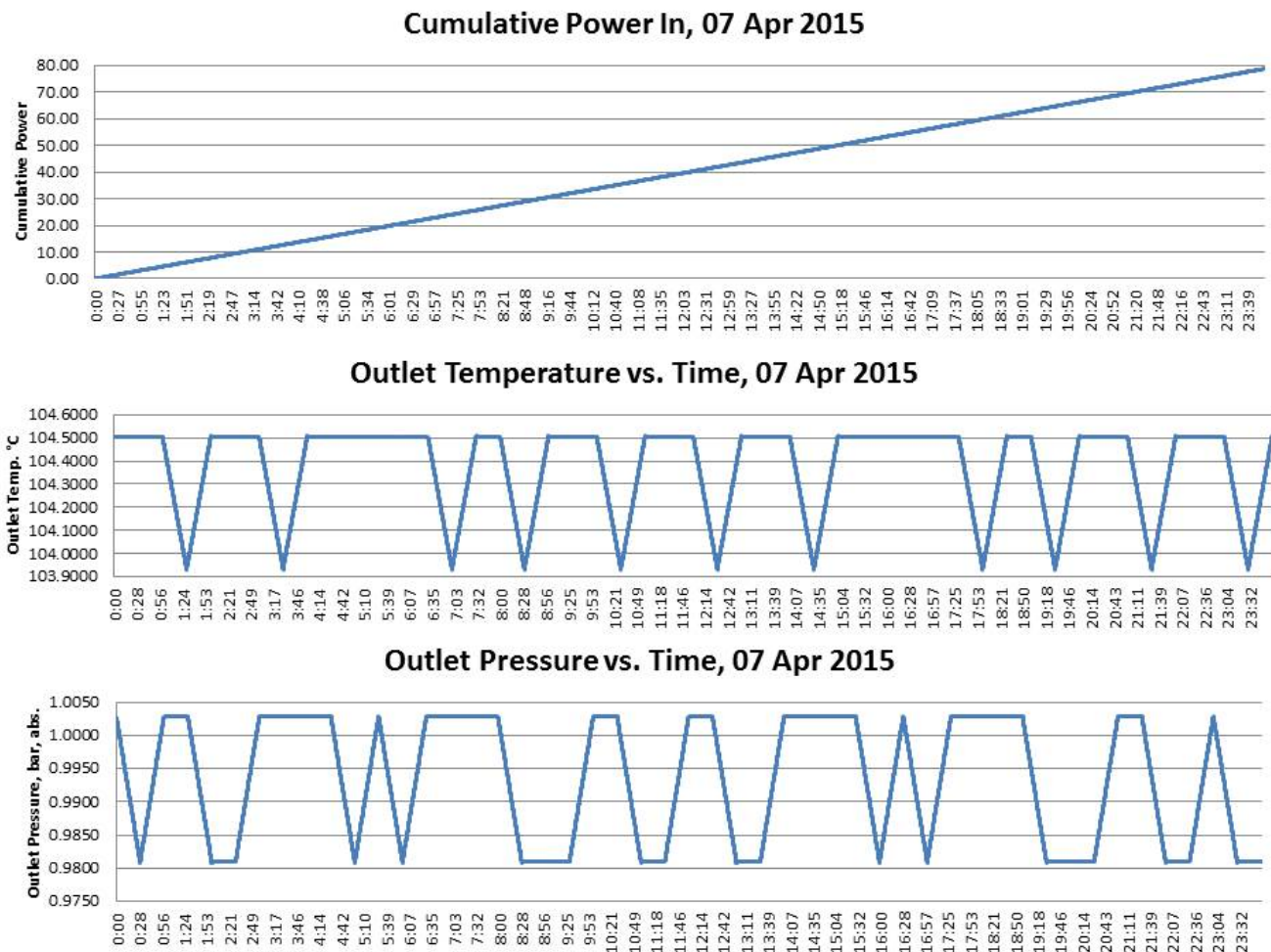
Data Anomalies

The author tried to analyze Mr. Fabiani's thermal data, but the size and format of his files makes this a massively time consuming endeavor. For that reason, the author will only examine a couple of days with power interruptions.

Mr. Fabiani's pressure and temperature data are reported to four decimal places. This would lead one to believe that the instrumentation used was capable of measuring pressure to 1/10,000 of a bar and temperature to 1/10,000 of a degree C. This is some serious research grade instrumentation.

What is not shown is also significant. Plaintiffs are claiming that measuring the water flow back into the E-cat is equivalent to measuring the output of the E-cat. That being the case, it would seem that the water meter output data should appear in Mr. Fabiani's data – but the author cannot find it.

On 07 Apr 2015, there was a day long power interruption. Here are graphs of Mr. Fabiani's power input, pressure output, and temperature output data for 07 Apr 2015.



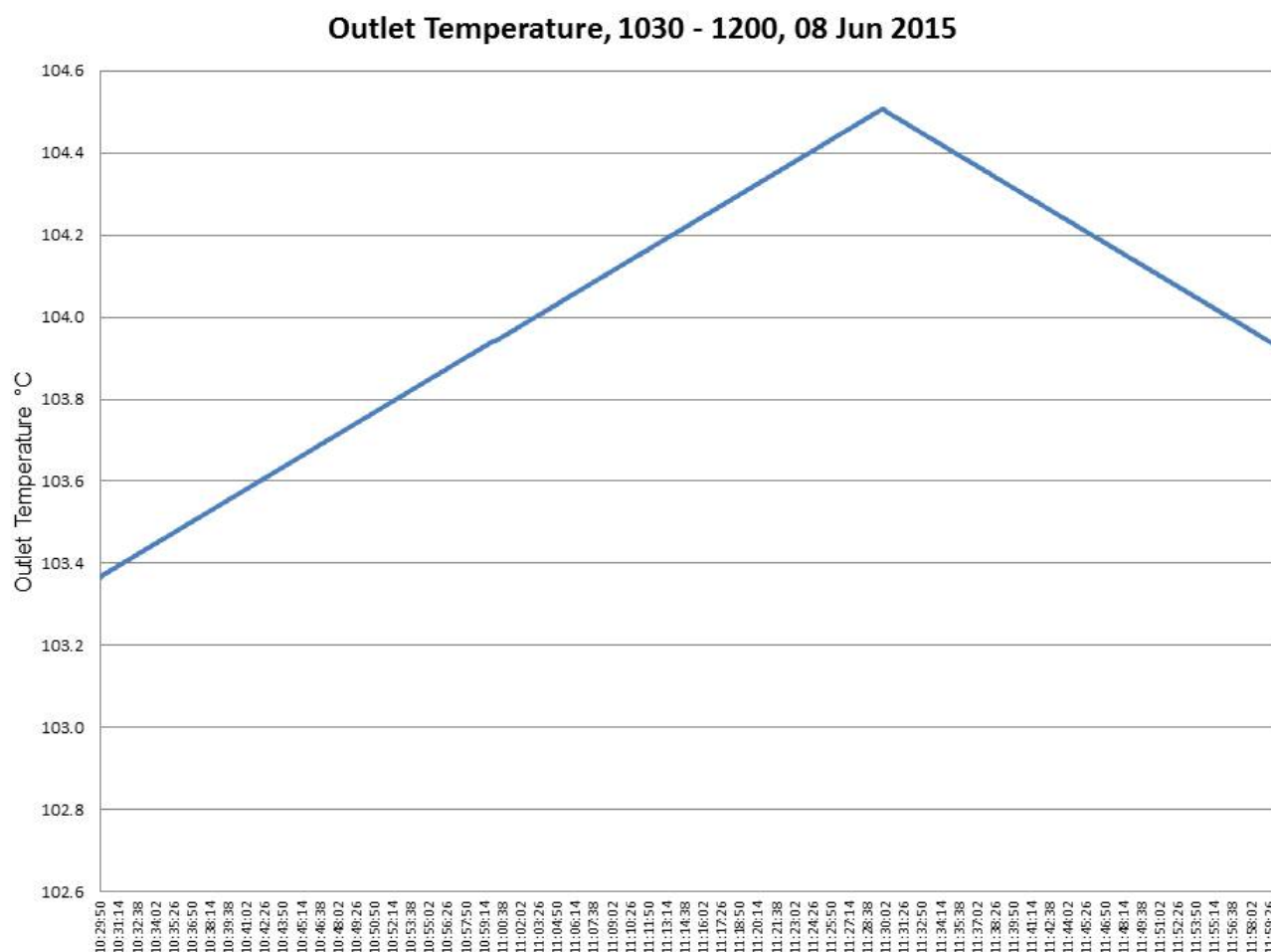
Since there was a power interruption that day, one would expect to see a graph of the power input as a flat line at zero. However, the power is slowly and steadily increasing all day in a very linear fashion.

One would expect the output temperature to slowly decrease as the day progressed. The charted temperature behavior does not reflect this. If plaintiffs claim that the E-cat reactors kept producing heat after the power was shut off, one would expect to see the temperature keep rising to some maximum and then start to decrease. The exhibited temperature behavior is strange to say the least.

The pressure behavior is equally strange. It increases in a linear fashion, stays constant for a while, decreases in a linear fashion, stays constant for a while, and then increases in a linear fashion again.

On 08 Jun 2015, there was a 90 minute power interruption.

Below is a graph of the output temperature during that time period.



One would expect to see the temperature remain somewhat steady for a short while after the power was shut off, and then start to decrease. Instead, the temperature increases (after a power shutdown) in a very linear fashion from 103.3657 at 10:29:50 to 104.5082 at 11:29:49 and then decreases in a linear fashion for the next half hour. It could be argued that thermal momentum is responsible for this phenomenon. If this were a hot water system [more on this later], this argument might have some plausibility. However, this is alleged to be a steam system. Steam systems have very little thermal momentum compared to hot water systems as water is about 1600 times as dense as steam at these low steam pressures.

It could be argued that the temperature rose because the E-cat reactors continue to produce heat after the power is removed. However, feedwater flow will cease, because the BF unit feed pumps have no power. With no feedwater flow, and continued heat output from the E-cat reactors, the water will continue to boil and the temperature and pressure in the system will continue to rise. The data show that the temperature did rise, so what about the pressure?

The pressure stayed at precisely 1.0028, with no variation (to the 1/10,000 of a bar) for all but the first four seconds of the power outage, in other words, for the next hour and a half. The laws of thermodynamics prohibit this because of the pressure / temperature relationship of boiling fluids – as the temperature rises, the pressure **must** also rise.

Comparing the temperature and pressure behavior of the system on two different days with power outages reveals quite different behavior.

A spreadsheet entitled, “MW1USA Electric data & Events.ods ENG”, is Mr. Fabiani’s twice daily rollup of the electrical data for the validation period. The Italian notes and labels have been translated into English, but the data have not been altered.

On 2. Dec 2015, Mr. Fabiani notes this, “power decrease to 700kw upon client's request”. However, Mr. Penon’s data indicates a produced energy value of 1,41E+07, which is engineering notation for 14,100,000 watts per day. Dividing this by 24 hours yields 587,500 watts or 587.5KW. There is a 112.5KW discrepancy between Mr. Fabiani’s data and Mr. Penon’s reported output. One could logically ask who is correct, and why the discrepancy.

On 22. Dec 2015, Mr. Fabiani notes this, “reactor 2 reboot and power generated taken back to 1MWh/h upon client's request”. Similarly, Mr. Penon reports a produced energy value of 2,03E+07, or 20,300,000 watts per day. Dividing by 24 yields 845,833 watts, or 845.3 KW. There is a 154.2KW discrepancy here.

Because of these incidents, and likely many others, all of the data in the Penon report must be viewed with extreme skepticism.

Feedwater Flow

The E-cat is comprised of two basic modules, the EC units are the small ones on the east side of the red E-cat box. The four BF units are on the west side of the E-cat. These are shown below.



BF Units on west side of red box



EC Units on east side of red box

The EC units were only used prior to the validation. They were shut down on 19. Feb 2015, according to Mr. Fabiani “6 individual modules groups off”, and were not used again. Only the four BF units were used for the majority of the validation period.

Each BF unit has six identical small pumps to feed water into the reactor / boiler section of each unit. A closeup of the six pumps for a single reactor is shown below. Also shown is the nameplate for one of the pumps.



Close up of the feed pumps for an individual BF unit.

Close up of the name plate of an individual feed pump. Dosierleistung is translated as dosing capacity or maximum flow.



Max. output is 32 liters per hour.

As the closeup show, each pump has a maximum capacity of 32 liters per hour. Dosierleistung is translated as dosing rate, or maximum flow. The maximum flow rate for all 24 feed pumps is:

$$\begin{aligned} \text{l/h} &= 24 \times 32 \text{ l/h} \\ &= 768 \text{ liters per hour} \end{aligned}$$

Since a liter of water nominally weighs a kilogram, the mass output is:

$$\begin{aligned} \text{kg/h} &= 768 \text{ l/h} \times 1 \text{ kg/l} \\ &= 768 \text{ kg/h} \end{aligned}$$

A kilogram of water coming into a boiler equals a kilogram of steam leaving a boiler. A kg of water is a kg of steam. The BF's cannot put out more steam than incoming water – no matter what the reactors may or may not have been doing. Therefore, the maximum steam output of all four BF units combined is 768 kilograms per hour. To determine the energy output, the steam flow is multiplied by the latent heat of vaporization. This is the amount of energy it takes to boil a kilogram of water at 100° C to a kilogram of steam at 100° C.

The latent heat of vaporization is 627.5 watt-hours/kg. The maximum total energy output of the four BF units is, in watts:

$$\begin{aligned} W &= 768 \text{ kg/h} \times 627.5 \text{ watt-hours/kg} \\ &= 481,920 \text{ Watts} \\ &\approx 482 \text{ KW thermal} \end{aligned}$$

The lowest daily produced energy number reported by Mr. Penon, was 1,24E+07 (12,400,00 wh/d) on 31 May 2015. This gives an hourly output of:

$$\begin{aligned} W &= 12,400,000 \div 24 \\ &= 516,667 \text{ W} \\ &\approx 517 \text{ KW thermal} \end{aligned}$$

The highest daily produced energy number reported by Mr. Penon, was 2,15E+07 (21,500,00 wh/d) on 08 Apr 2015. This gives an hourly output of:

$$\begin{aligned} W &= 21,500,00 \div 24 \\ &= 895,833 \text{ W} \\ &\approx 896 \text{ KW thermal} \end{aligned}$$

The most common produced energy number reported by Mr. Penon, was 2,03E+07 (20,300,00 wh/d) on 31 May 2015. This gives an hourly output of:

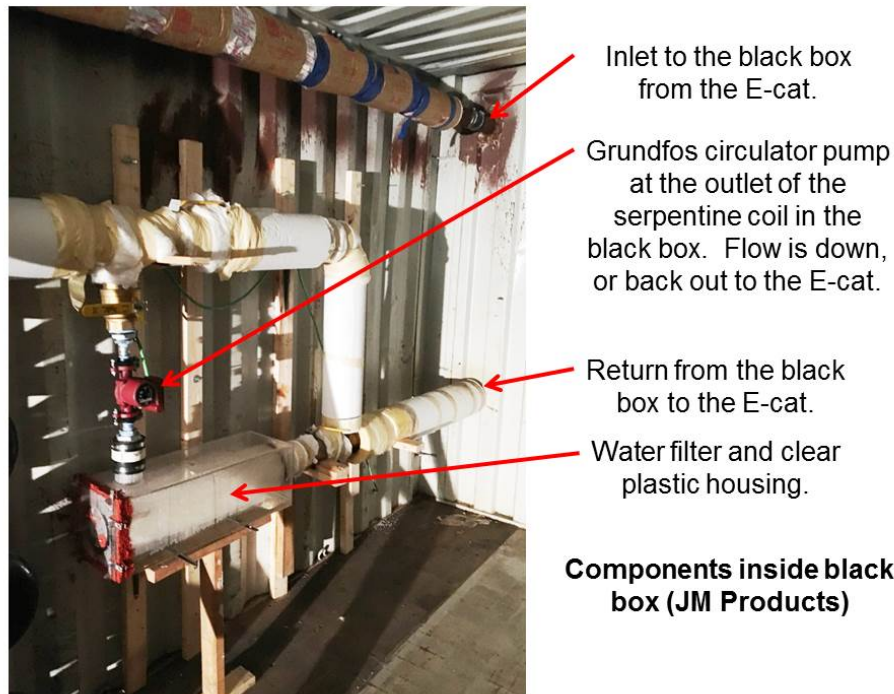
$$\begin{aligned} W &= 20,300,000 \div 24 \\ &= 845,833 \text{ W} \\ &\approx 846 \text{ KW thermal} \end{aligned}$$

Only the four BF units were running during the majority of the validation period. At times, some units were down for repair or maintenance. Their combined maximum steam output is 482 KW thermal. Despite this, Mr. Penon reported significantly higher produced energy numbers for the entire test.

It is the author's opinion that the produced energy numbers in Mr. Penon's report are incorrect and therefore, his entire report is invalid.

Mr. Rossi's claim that his reactor device produces more energy than it consumes is impossible enough. However, it is not physically possible for the boiler portion of his machine to create water and steam from nothing.

The picture below shows the Grundfos pump as it was installed on the outlet of the serpentine coil inside the black box (JM Products).



Shown below is the Grunfos brochure for this pump.

GRUNDFOS UPS15-58FC/FRC

UNIVERSAL PUMP SOLUTION

The New 3-Speed **"SUPER BRUTE"** Circulator

- Eliminates More Than a Dozen Competitive Models - Less Inventory
- 3 Speed Motor Technology - Reduces Noise & Power Consumption
- Unique "Removable" Integrated Check Valve - Minimal Flow Restriction
- Highest Performance & Torque of any Standard Wet Rotor Circulator
- Ideal for Zoning



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Advantages:

- Zone valve close off reliability can be significantly improved
- Prevents thermo-siphoning
- Allows for minimal system flow
- Provides flexibility in installations
- Eliminates the expense for an inline check valve

Technical Data:

Flow Range: 0 - 17 U.S. GPM
Head Range: 0 - 19 feet
Motor: 2 pole, Single Phase
Max. Fluid Temperature Closed System: 230°F (110°C)
Min. Fluid Temperature for UPS15: 14°F (2°C)

Minimum Pressure Temp Requirements:

Fluid Temp.	230°F (110°C)	180°F (82°C)	140°F (60°C)	100°F (38°C)
Inlet Pressure	15.0 psi	4.0 psi	3.3 psi	

Ambient Air Temp: 100°F (38°C) 130°F (55°C) 160°F (66°C) 190°F (77°C) 220°F (89°C)

Maximum Water Temp: 230°F (110°C) 200°F (93°C) 170°F (77°C) 140°F (60°C) 110°F (43°C)

Note: With Check Valve Max. Fluid Temperature 200°F

Product Data:

MODEL	AMPS	WATTS	CIRCULATOR
UPS15-58F 1/2"	75	88	10m/180V
1/2" 1/2"	66	80	
1/2" 1/2"	55	60	

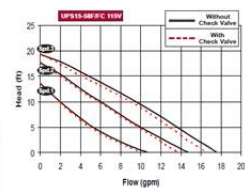
Shipping Connection Types and Sizes:

Flange: 22 1/2" Dia Bolt Holes
Weight (lbs.): 7 1/4

COMPETITIVE CROSS REFERENCE

B&G	TACO	SA ARMSTRONG	GRUNDFOS
B&G NBT-32	TACO 005	ASTRO30	UPS15-42F/FR
B&G NBT-99/1W	TACO 007		UPS15-42F/FR
	TACO 008		UPS15-42F/FR
	TACO 007 IFC		UPS15-42F/FR
	TACO 008 IFC		UPS15-42F/FR

UPS15-58FC 110W



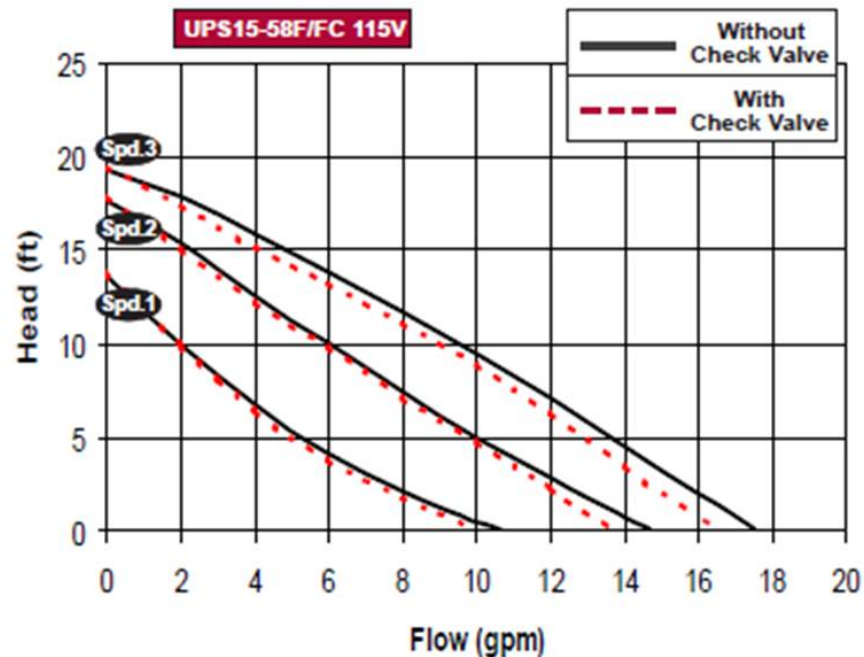
Materials of Construction:

Description	Material
Impeller, Bearing Plate, Bearing Retainers, Motor Can, Motor Chasing, Shaft Retainer	304 Stainless Steel
Stator Housing	Aluminum
Shaft, Upper & Lower Rotor Bearings	Aluminum Oxide Ceramic
Thrust Bearing	Marine Impregnated Carbon
Check Valve	ACETAL With 302 Stainless Steel Spring & Nitrile Rubber Seats
Pump Housing (Valve)	Cast Iron
O-Ring & Gaskets	EPDM (Ethylene Propylene Rubber)
Impeller	PEI Composite (100% Glass Filled)
Terminal Box	Noryl

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GRUNDFOS

Below is a close up of the flow data.

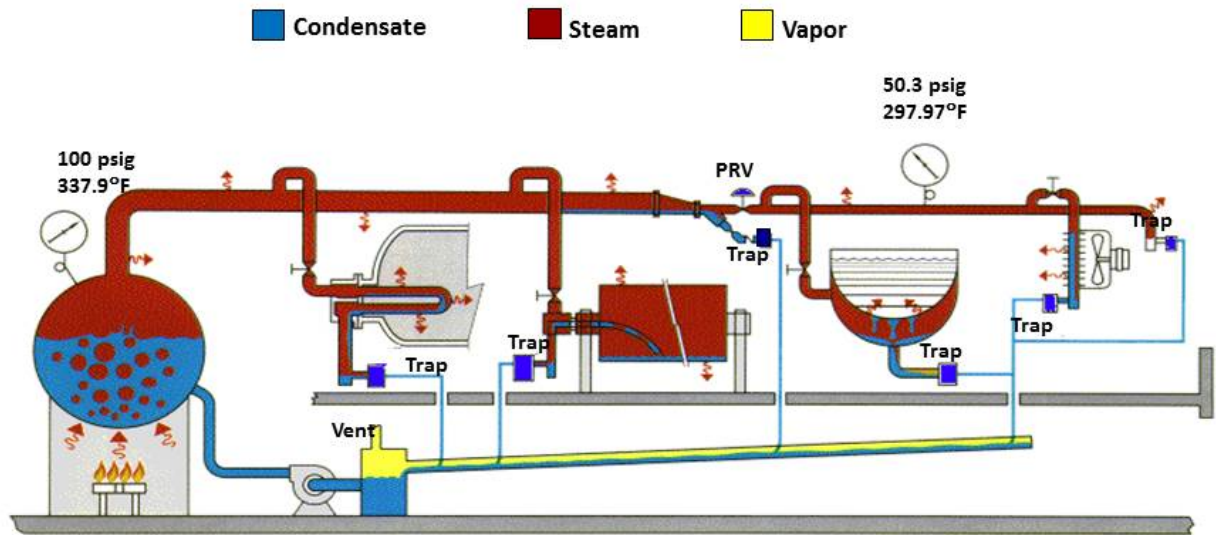


The pump flow rate in gallons per minute (GPM) is shown on the horizontal axis and the pump output pressure in feet of head is shown on the vertical axis. This little pump is capable of flowing 6 GPM (Mr. Penon's 32,400 kg/day) at any speed.

The earlier analysis in this report has shown that the E-cat is not capable of flowing steam to the black box. Because of this, the author has suspected that instead of a steam and condensate system, water was being heated in the E-cat and circulated through the piping to the black box and back.

Before this can be discussed, it is necessary for the reader to understand what a typical, conventional steam and condensate system looks like. The picture below is from Armstrong International and depicts a "normal" steam system, with a "typical" steam pressure. As previously mentioned, there is a pressure differential in this system, so that steam can flow properly from the boiler to the heat exchangers.

Conventional Steam System

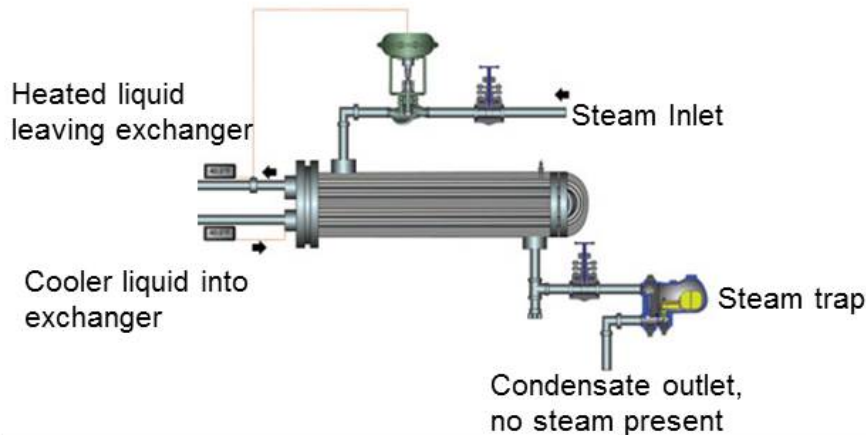


1. Each piece of steam using equipment has a steam trap.
2. The end of the steam line has a steam trap.
3. In each portion of the system, the steam “dead ends”, it does not flow through.
4. Steam does not flow through the steam trap, condensate does.

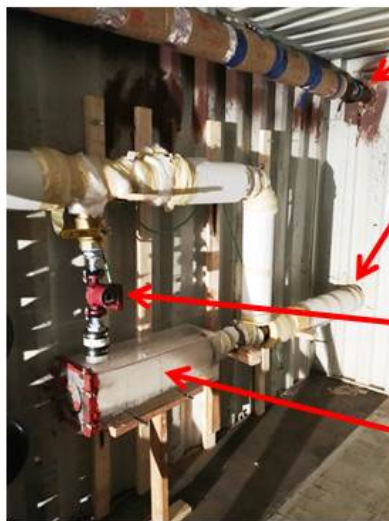
The above picture and the numbered notes give a good basic description of a “conventional” steam system. A crucial point to understand is that steam does not flow through the system and then loop back to the boiler. The steam main “dead ends” with a steam trap at its terminus. In each piece of heat exchange equipment, the steam flows through the exchanger, but its flow stops at the steam trap, which is installed at the outlet of each heat exchanger.

A steam trap is a device to “trap” steam inside a heat exchanger so that the steam can give off its heat and condense back into water (condensate). The steam flows into the exchanger, stops, gives off its heat to heat the product or process, and then condenses after it has given up its heat. The steam trap allows condensate to flow through it, but not steam, and is an absolutely essential piece of equipment for a heat exchanger.

It might be informative to compare a properly piped conventional steam heat exchanger and the serpentine heat exchanger which was in the black box of JM products.



**Properly piped
steam heat
exchanger**



**No steam
trap present**

**Serpentine heat
exchanger in
black box**

- With no steam trap present, “steam” can flow back to E-cat, there is nothing to keep it in the heat exchanger.
- Pumps of this type are never used at the outlet of heat exchangers.

In comparing the two, one can see that the black box heat exchanger does not have a steam trap, but it does have a liquid pump. There is no way to stop the alleged steam flow and trap the steam inside the heat exchanger while allowing the condensate to pass through.

The only reason for this unconventional piping arrangement is that hot water is circulating through the system, not steam and condensate. As has been shown previously, there can be no steam flow through this system because of both pressure difference and temperature difference issues.

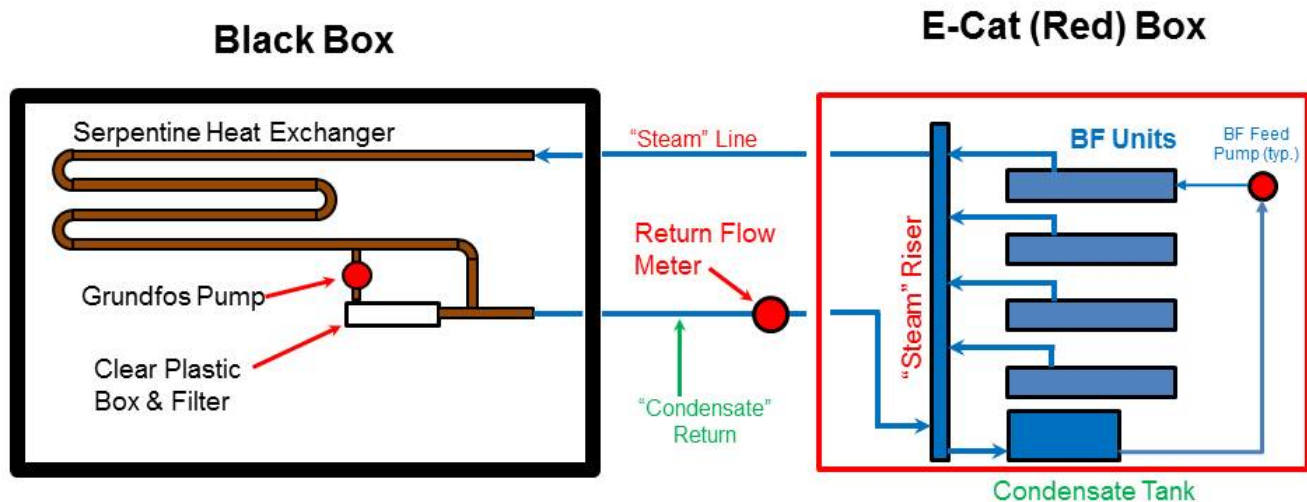
It is the author’s opinion that the water flow numbers found in Mr. Penon’s report were not generated by condensate returning from the black box. The alleged “steam” and condensate system was in reality a hot water flow circuit using the Grundfos pump to circulate the water through the piping and the water meter.

In fact, there were two water flow circuits. In the “Feedwater Flow” section above, the combined output of the E-cat feedwater pumps is 768 liters per hour, which is equal to 3.38 gallons per minute. This flow was through the BF feed pumps, through the BF units, to the “steam” line, down through the vertical riser, into the return tank, and back to the feed pumps.

The second circuit was from the E-cat “steam” riser, to the serpentine coil in the black box, through the Grundfos pump at the coil outlet, through the water meter (which was the basis for Mr. Penon’s “steam” output numbers), back to the steam riser, and back to the E-cat return tank.

Commingling of these two flow streams is obvious as the “steam” riser is common to both flow circuits.

These are shown below.



The piping system is flooded with water. There is no “steam”.



In short, the alleged “steam” system was, in reality, a hot water system disguised to look like a steam system.

E – Cat Steam Superheaters

In Mr. Penon’s report, he is reporting alleged steam temperatures that are slightly superheated. Superheated steam is steam that is heated above its saturation temperature. Please recall that when water and steam are in a boiler (which the E-cat is alleged to be), there is a very defined pressure temperature relationship. To quote from the author’s first report:

“Also, for any given fluid, the boiling temperature is dependent on the pressure the fluid is experiencing. Again, where liquid and vapor are in physical contact with each other, the temperature - pressure relationship for a given fluid is fixed and immutable. At a given pressure, the temperature of the fluid WILL be fixed by that relationship. And at that fixed temperature and pressure, there can be 100 % liquid, 100 % vapor, or any fraction in between. The horizontal red evaporation lines illustrate this concept.

Superheated steam (or any superheated vapor) is at a temperature above the saturation temperature for a given pressure. Obviously, the fluid is 100 % vapor, and there is no liquid present. Superheated steam is generated in a separate set of tubes which remove the steam from the liquid and then heat the steam to a temperature higher than the saturation temperature.”

In the current case, the “steam” pressure is 0 bar, gauge (atmospheric pressure). The saturation temperature of the steam leaving the BF units is 100° C. To reach the reported temperatures of 103° C to 105° C, some type of superheater needs to be installed in the “steam” outlet. In point of fact, all steam superheaters are pipes which take steam from the boiler drum and heat the steam externally to the boiler drum.

The construction of the BF units precludes the use of internal superheaters. All the heating elements of the BF units are submerged in water, which means that they can only generate saturated “steam”. Since there are no heating elements above the alleged water line, there can be no internal superheat. Are there external superheaters on the BF units?

This picture shows the BF units looking from east to west.

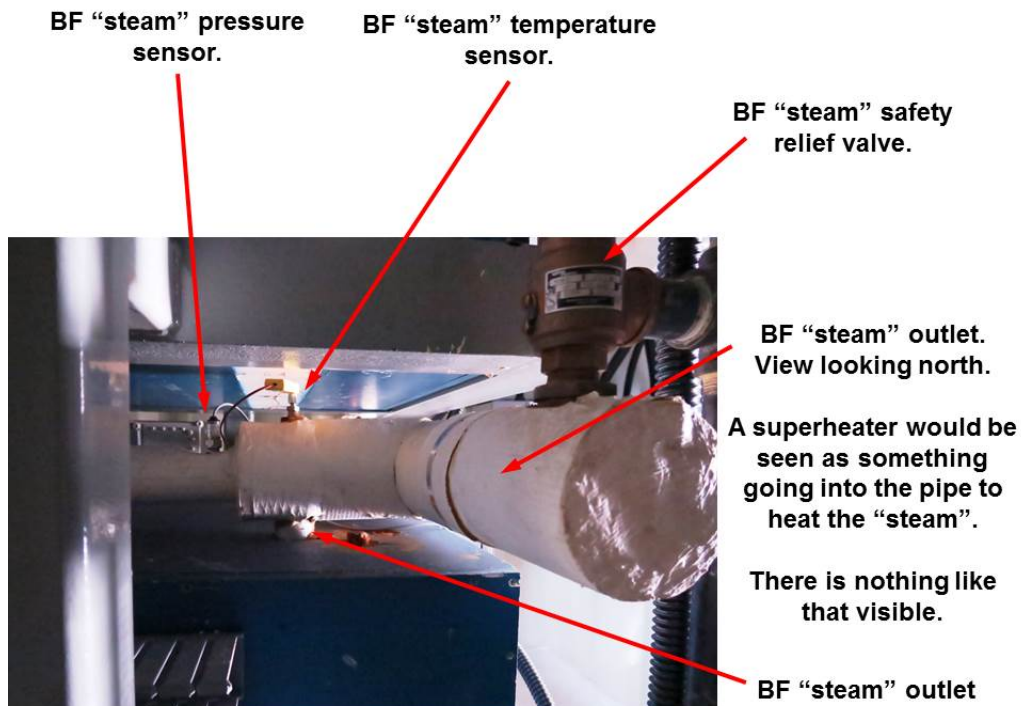


BF “steam” outlet. View looking west.

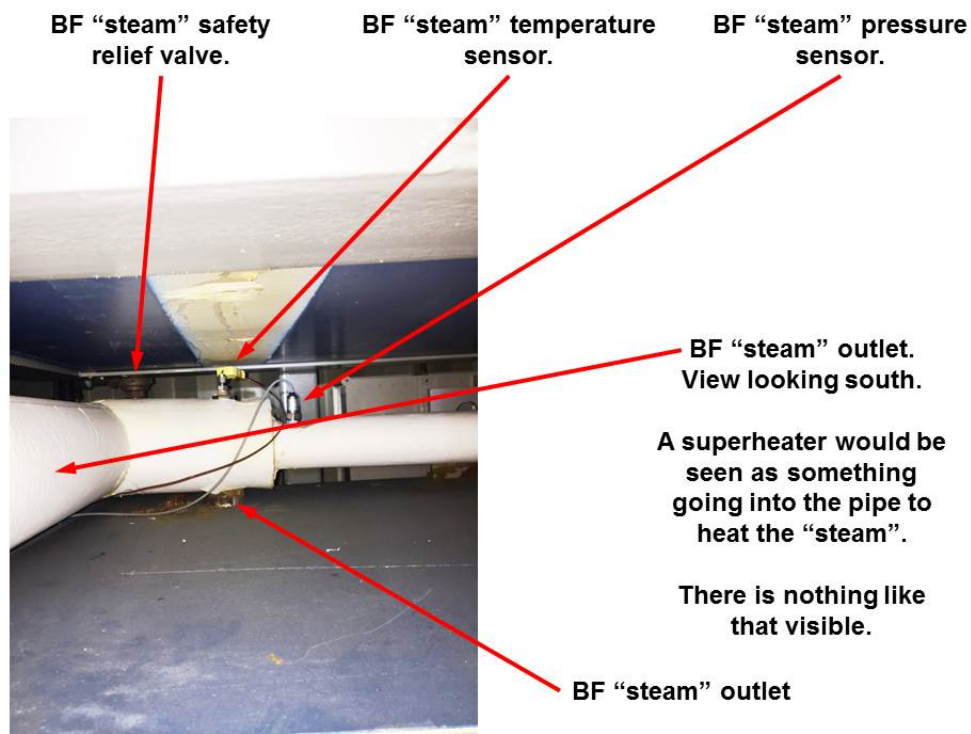
A superheater would be seen as something going into the pipe to heat the “steam”.

There is nothing like that visible.

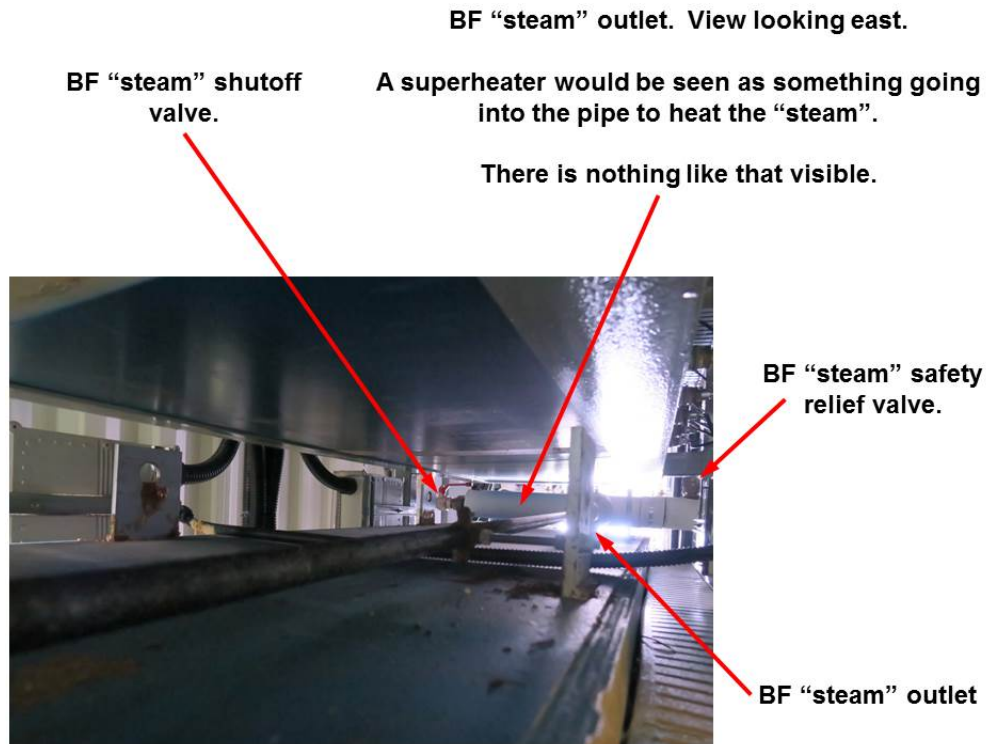
Looking from south to north.



Looking from north to south.



Looking from west to east.



As the photos of the BF units illustrate, there are no superheaters, thus there can be no superheated steam. Because of this, Mr. Penon’s reported steam temperature numbers are not valid, thus his whole report is invalid.

Conclusions

Based on the preceding and my more than forty years' experience as a professional engineer engaged in facility and utility engineering and operations, it is within a reasonable degree of engineering certainty that I conclude the following:

1. There was no steam flow from the E-cat to the black box, based on both a pressure difference analysis and a heat transfer (temperature difference) analysis. In fact steam flow (other than de minimus amounts to warm the piping) was impossible with the configuration at the time of the validation period. Thus, any steam flow numbers appearing in Mr. Penon's report are not valid, therefore the whole report is invalid.
2. If there were a heat exchanger and cooling fans in the mezzanine, there is absolutely no physical evidence of their existence.
3. Because of anomalies in the reported data which violate the laws of thermodynamics, and major discrepancies between Mr. Fabiani's data and Mr. Penon's data, the data reported by Mr. Penon must be viewed with extreme skepticism.
4. Only the four BF units were running during the majority of the validation period. At times, some units were down for repair or maintenance. Their combined maximum "steam" output is 482 KW thermal. Despite this, Mr. Penon reported significantly higher produced energy numbers for the entire test. It is the author's opinion that the produced energy numbers in Mr. Penon's report are incorrect and therefore, his entire report is invalid.
5. It is the author's opinion that the water flow numbers found in Mr. Penon's report were not generated by condensate returning from the black box. The alleged steam and condensate system was in reality a hot water flow circuit using the Grundfos pump to circulate the water through the piping and the water meter. Because of this, any "steam" flow numbers in the Penon report are fictitious and the whole report must be invalidated.
6. As the photos of the BF units illustrate, there are no superheaters, thus there can be no superheated steam. Because of this, Mr. Penon's reported steam temperature numbers are not valid, thus his whole report is invalid.

III. FACTS AND DATA CONSIDERED

In forming the opinions expressed in this report, I have relied on my education and experience as described in my curriculum vitae which was attached as Exhibit A in my previous report. In addition, I received and considered the documents and information identified in Exhibit B in my previous report, as well as data gathered during my visit to the Doral site on 02 Mar 017.

IV. EXHIBITS THAT SUMMARIZE OR SUPPORT OPINIONS

I have not prepared any exhibits to summarize or support my opinion, other than as incorporated in the text of Section II above. I reserve the right to prepare exhibits in connection with my anticipated testimony at trial, after the completion of discovery.

V. QUALIFICATIONS

A summary of my qualifications is provided in the CV attached as Exhibit A in my previous report, which includes a list of all publications I have authored in the previous 10 years.

VI. EXPERT WITNESS EXPERIENCE

Since January 2012, I have testified as an expert at trial or deposition in the following matters:

1. I provided my expert opinion in *Jerew v. Rhodes Heating*, Case No. 11-CV-0876, in the County Court for Marion County, Ohio, and testified at trial in December 2012.
2. I provided my expert opinion in *Akron Fairlawn Properties v. Edgell Plumbing*, Case No. 2012-09-5199, in the Court of Common Pleas for Summit County, Ohio, and testified at deposition and trial in October 2013.
3. I provided my expert opinion in *Richmond v. Sears Roebuck, et al.*, Case No. 12-CV- 010718, in the Court of Common Pleas for Franklin County, Ohio, and testified at deposition in December 2013.
4. I provided my expert opinion in *Young v. First Energy*, Case No. 2013-CI-0408, in the Court of Common Pleas for Coshocton County, Ohio, and testified at deposition in April 2015.

VII. COMPENSATION

I am being compensated for my work in these proceedings at a rate of \$275.00 per hour, except that my rate for deposition and trial testimony is \$375.00 per hour. My compensation is not dependent on the opinions rendered or the outcome of this proceeding.

By:



20 Mar 2017
Rick A. Smith

Respectfully submitted,

/s/ Christopher R.J. Pace

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CERTIFICATE OF SERVICE

I HEREBY CERTIFY that a true and correct copy of the foregoing was served by e-mail on counsel of record this 20th day of March, 2017.

/s/ Christopher Lomax

Christopher Lomax

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COMPOSITE EXHIBIT 11

02/17/2017 Joseph Alan Murray

Page 1

UNITED STATES DISTRICT COURT
SOUTHERN DISTRICT OF FLORIDA

ANDREA ROSSI and LEONARDO
CORPORATION,

Plaintiffs,

VS.

No. 1:16-cv-2119-CMA

THOMAS DARDEN; JOHN T. VAUGHN;
INDUSTRIAL HEAT, LLC; IPH
INTERNATIONAL B.V.; and
CHEROKEE INVESTMENT PARTNERS,
LLC,

Defendants.

INDUSTRIAL HEAT, LLC and IPH
INTERNATIONAL B.V.,

Counter-Plaintiffs,

vs.

ANDREA ROSSI and LEONARDO
CORPORATION,

Counter-Defendants,

and

J.M. PRODUCTS, INC.; HENRY
JOHNSON; FABIO PENON; UNITED
STATES QUANTUM LEAP, LLC;
FULVIO FABIANI; and JAMES
BASS,

Third-Party Defendants.

HIGHLY CONFIDENTIAL

Videotaped Deposition of JOSEPH ALAN MURRAY
(Taken by Plaintiff)
Raleigh, North Carolina
Friday, February 17, 2017

Reported in Stenotype by
Lauren M. McIntee, RPR
Transcript produced by computer-aided transcription

02/17/2017 Joseph Alan Murray

Pages 6..9

Page 6 1 start just a couple minutes early. Just put us on 2 mute if you would. 3 MR. NUÑEZ: Okay. No problem. 4 JOSEPH ALAN MURRAY, 5 having first been duly sworn, was examined 6 and did testify as follows: 7 EXAMINATION 8 BY MR. ANNESSER: 9 Q. Mr. Murray, my name is John Annesser. I 10 represent the Plaintiffs in this matter as you know. 11 Have you had your deposition taken before, sir? 12 A. I have had a deposition taken before, yes. 13 Q. Okay. When was that? 14 A. Between 1998 and 1999. 15 Q. Okay. I'm going to give you a quick 16 refresher for depositions. Our court reporter here is 17 going to take down everything we say. With that being 18 the case, I'm going to do my absolute best not to 19 interrupt you or talk over you in any manner. I would 20 ask you to do the same for me as it makes her job nearly 21 impossible. During the course of the deposition I'm 22 going to be asking you a series of questions, none of 23 which are intended to embarrass or harass you in any 24 manner. They are simply to get to the facts in the 25 matter of this case.	Page 7 1 If I ask you a question and you do not 2 understand it, please let me know that and I will try to 3 either restate it or rephrase it. If you do not ask me 4 or do not tell me that you don't understand, I'm going 5 to assume that you do understand. Is that fair? 6 A. Yes. 7 Q. Okay. At any time if you need a break, just 8 let me know and we'll try to get to, to a break at the 9 next available opportunity. Are you represented by 10 counsel today? 11 A. Yes. 12 Q. And who is your counsel? 13 A. Chris Lomax of Jones Day. 14 Q. Does he represent you individually, or does 15 he just represent the Defendants in this matter and you 16 believe yourself to be part of that group? 17 A. He represents the Defendants and, therefore, 18 me in some capacity as a witness. 19 Q. Okay. Are you current -- are you currently 20 employed -- 21 MR. LEÓN: Francisco Leon here. 22 MR. ANNESSER: Okay. Francisco, we've begun 23 already. 24 MR. LEÓN: Okay. 25 MR. ANNESSER: Thank you.
Page 8 1 BY MR. ANNESSER: 2 Q. Have you retained Mr. Lomax individually? 3 A. No. 4 Q. Are you currently employed by any of the 5 defendants in this case? 6 A. No. 7 Q. Okay. Can you please state your full name 8 for the record? 9 A. My name is Joseph Alan Murray. 10 Q. And what is your home address? 11 A. 2646 Saint Marys Street, Raleigh, North 12 Carolina 27609. 13 Q. Your business address or addresses? 14 A. I have a home office now at my home address. 15 And I also have an office that's under construction at 16 5107 Unicon Drive, Unit K in Wake Forest, North 17 Carolina. 18 Q. Are you currently employed? 19 A. I started a new business after Industrial 20 Heat shut down. 21 Q. Industrial Heat is shut down? 22 A. They ceased to have an engineering operation, 23 so they let all of the engineers go. 24 Q. What do you mean they ceased to have an 25 engineering operation?	Page 9 1 A. So we had a group of, I don't know, five or 2 six engineers that were working at the company. And as 3 effective the end of October, they gave all of the 4 engineers a severance package and released us, paying us 5 through the end of the year. And then subsequently we 6 had to agree to support their ongoing activities, 7 as-needed basis for pay if needed. 8 Q. Have you provided any services to Industrial 9 Heat after October 2016? 10 A. Yeah. Obligated to from October through 11 December, and I did I would say very little. And then 12 in January there were a few questions, and then this 13 month in preparation for the deposition there were a lot 14 more questions. 15 Q. Okay. What was the amount of your severance 16 package? 17 A. It was pay and benefits through the end of 18 the year, so for November and December. It did not 19 include any leave on the books. That was just 20 terminated. 21 Q. The question was how much. 22 A. How much money? 23 Q. Yes. 24 A. I, I don't know, two months worth of salary. 25 Q. What were you being paid at Industrial Heat?

02/17/2017 Joseph Alan Murray

Pages 14..17

Page 14 1 Q. Yeah. How much? 2 A. An hourly rate? 150 or \$175 an hour. 3 Q. What are you being paid, sir, for your 4 services that you're providing to Industrial Heat now? 5 A. \$175 an hour. 6 Q. Is your company, O Base Design, part of any 7 professional organizations? 8 A. No. 9 Q. Are you part of any professional 10 organizations? 11 A. Not presently. 12 Q. Have you been within the last three years? 13 A. Yes. 14 Q. Which organization? 15 A. I have been a member of ASME, a member of 16 SPIE, the Society of Photographic and, and Imaging 17 Engineering, and the American Physical Society. 18 Q. What is ASME? 19 A. American Society For Mechanical Engineers. 20 Q. Why are you no longer a member of that? 21 A. Just because I, I changed addresses and never 22 renewed at my new address. 23 Q. Okay. What about the society for -- I'm 24 sorry, SPIE? 25 A. Yeah. The, I, I am no longer doing imaging	Page 15 1 systems. And so I used to go to conferences and 2 participate in a lot of those, but I'm not doing that 3 anymore. 4 Q. Okay. 5 A. So I no longer am a member. 6 Q. I'm sorry. The last one was? 7 A. The American Physical Society. 8 Q. Why are you no longer a member of that? 9 A. Just no longer participating in the 10 conferences and proceedings. 11 Q. Now, you said that you have testified before. 12 What type of case was that back in '98, '99? 13 A. There was a dispute between a, a company that 14 manufactured, that built a software compiler technology 15 and a company who licensed their technology. And I had 16 written a proposal for the U.S. Army to actually use the 17 same technology, and we licensed that technology from 18 the supplier. And they were suing each other, the other 19 two companies, and I was asked my opinion about the 20 maturity of the technology and the usefulness of the 21 technology. 22 Q. So you gave opinion testimony in that case? 23 A. Yes. 24 Q. Were you offered as an expert witness in that 25 case?
Page 16 1 A. I don't know. It's been so long ago. 2 Q. Do you recall the name of the case? 3 A. No. But I, I could probably find it. 4 Q. Okay. Do you know where the case was 5 pending, what court? 6 A. Probably in Cleveland I would guess. I lived 7 in Washington, D.C., at that time, but I'm not sure. 8 Q. Do you know if it was a federal or a state 9 case? 10 A. I do not. 11 Q. Do you know who the attorneys were in that 12 case? 13 A. I do not. 14 Q. What was the name of the company that you had 15 provided testimony for? 16 A. I don't even recall. They were a small 17 company. I, I know the engineer's name that ran the 18 company, but I would have to look at, back at my notes. 19 Q. Other than that, have you ever provided 20 deposition or trial testimony? 21 A. No. 22 Q. Sir, can you tell me starting with high 23 school, well, let me just start there. Where did you go 24 to high school? 25 A. I went to high school at Swartz Creek High	Page 17 1 School in Swartz Creek, Michigan. 2 Q. Did you have any area of study there, or was 3 it just general academia? 4 A. It was college prep and technical studies, so 5 I studied drafting and design. 6 Q. Did you pursue a degree after high school? 7 A. Yes, I did. 8 Q. And what degree did you pursue? 9 A. I went to Michigan State University and 10 received a degree in mass -- in mechanical engineering, 11 a bachelors of science in mechanical engineering. 12 Q. Any specialty area or just generally 13 mechanical engineering? 14 A. I spent most of my specialization in heat 15 transfer, fluid mechanics, turbulence, and 16 thermodynamics. 17 Q. Did you get a, does your degree reflect your 18 studies in heat transfer and fluid mechanics? 19 A. No. 20 Q. Those were just courses that you took? 21 A. Actually did, I was, I took courses in that 22 area, and then I worked in a research laboratory at the 23 university. 24 Q. Okay. How long did you attend Michigan 25 State?

02/17/2017 Joseph Alan Murray

Pages 22..25

Page 22 1 Q. Okay. What courses? 2 A. As an undergraduate I was required to take 3 two thermodynamic courses, which were fundamentally 4 focussed on power plant design and steam systems. I 5 also took two heat transfer courses that were 6 requirements, and a lot of that was on heat, heat 7 exchange for steam and other types of systems. And I 8 took two fluid mechanics courses as an undergraduate. 9 In my masters program I took a conductive 10 heat transfer graduate study class, which included a lot 11 of study of conductive heat transfer in both steam and 12 gas systems. I took a gas dynamics course in graduate 13 school. The gas dynamics were focussed on turbine and 14 gas dynamics. I also as an undergraduate took a class 15 on gas and steam turbine design. 16 And then subsequent to my masters, in my PhD 17 program I took classes on viscous flow, which also 18 incorporated aspects of turbulent flow in these types of 19 systems. And I took a viscous flow class in, in my -- 20 all of my graduate work was effectively focussed on 21 fluid mechanics, heat transfer, and turbulent flows. 22 Q. Now, the three courses that you took, 23 thermodynamics, heat transfer, and fluid measurements in 24 undergrad, those were required courses? 25 A. It was heat transfer, two classes in heat	Page 23 1 transfer; two classes in thermodynamics; and two classes 2 in, in fluid mechanics. 3 Q. Yes, sir. 4 A. Thermodynamics. 5 Q. I believe you said that those were required 6 courses? 7 A. Yes, yeah. Required. 8 Q. And so everyone who got a mechanical 9 engineering degree took those courses? 10 A. Absolutely. 11 Q. Okay. What about your masters? I believe 12 you said conductive heat transfer and gas dynamics. 13 Were those required courses? 14 A. No. I also took a viscous flow course in my 15 masters program as well. 16 Q. And in a hundred words or less, what is 17 viscous flow? 18 A. Viscous flow is the flow of liquids in either 19 internal flow or external flow systems in looking at the 20 actual structure of the flow and the losses in the 21 flows, in 100 words or less. 22 Q. In your undergrad or masters program, did you 23 receive any honors, prizes, fellowships, or otherwise? 24 A. Yes. 25 Q. And what were those?
Page 24 1 A. I graduated with honors as an undergraduate. 2 In my graduate program I had an NSF fellow for one of my 3 research years through my advisor, and then in my -- 4 Q. What is an NSF? I'm sorry. 5 A. National Science Foundation fellow. So my 6 advisor received a Young Investigator grant. I think 7 now it's called a Young Investigator. Back then I don't 8 know what it was called, but. And with that, he was 9 given funding, research funding to have an NSF fellow 10 work for him, and I received that for one year in my 11 masters. And then my first year in my PhD program I 12 received funding under a NASA fellowship, the same type 13 of thing through my advisor. 14 Q. Okay. So the advisor was awarded the grant 15 money, and you were selected as the fellow to, to -- 16 A. To do the research. 17 Q. Okay. Post masters degree did you pursue any 18 additional degrees? 19 A. Yes. 20 Q. What degrees? 21 A. PhD in mechanical engineering. 22 Q. Were you awarded that degree? 23 A. No, I was not. 24 Q. Why not? 25 A. We were living in Washington, D.C., and my	Page 25 1 son was born, and I had to get a job that paid enough 2 money to pay for my family. So I left my PhD program 3 after I was advanced to candidacy and was completing my 4 thesis. The company I went to work with agreed to give 5 me half time to complete my thesis work and defend my 6 thesis, but it just never happened. They became too 7 emersed in the work and never was able to complete my 8 dissertation. 9 Q. Okay. What was your thesis on? 10 A. My thesis was on sub-grid scale physics for 11 large eddy simulations, the relationship to energy 12 cascades, and dynamic modeling of the sub-grid scales. 13 Q. And in laymen's terms that means what? 14 A. So there are, in general there are three 15 general forms of large scale simulations for turbulent 16 flows and for heat transfer. One is a Reynolds-averaged 17 technique, which is what's commonly used for things that 18 you might see on the news or the weather. The second 19 technique is called a direct numerical simulation. 20 Since then I should note there's another whole emergent 21 technology, but I won't get into that. 22 Direct numerical simulation, the problems are 23 that, the problem with the direct numerical simulation 24 is that you can only do very, very trivial, small 25 problems because of the computational resources it

02/17/2017 Joseph Alan Murray

Pages 26..29

Page 26 1 takes. It's a Fourier transform of the Navier-Stokes 2 equation. The solvers are extraordinary. So in the 3 1960s it was proposed that if you took a step kind of 4 halfway between the two extremes and you solved the 5 Navier -- 6 Q. Too much. 7 A. Too much information? 8 Q. You're, you're actually confusing me more 9 than when I began that question. 10 A. Yeah. 11 Q. So let me retract that for a moment. 12 A. Okay. 13 Q. During your time, whether in your undergrad, 14 your masters, or your PhD program, did you ever teach 15 courses? 16 A. Yes. 17 Q. What courses did you teach as an instructor? 18 A. I was, I taught a laboratory on fluid 19 mechanics measurement in my masters program as a 20 teaching assistant. And I taught a laboratory on, it 21 was compressible flow. So it was a supersonic flow, 22 basically running the supersonic wind tunnel. 23 Q. Wind tunnel you said? 24 A. Yeah, wind tunnel. 25 Q. Have you prepared or presented any	Page 27 1 professional seminars? 2 A. Excuse me. Meaning presentations? 3 Q. Presentations to other people in your field. 4 A. Yes. Yes. 5 Q. And how many of those have you prepared and 6 presented? 7 A. I have presented at ASME conferences in the 8 '80s. I presented at the Division of Fluid Mechanics 9 annual meetings at the American Physical Society in the 10 '80s. I don't remember the exact year. I remember one 11 was in Atlanta and one was in San Diego, and one of them 12 I remember distinctly because it was disproving the 13 fundamental tenants of my thesis, so. 14 Q. I'm confused, sir. You, you said that -- 15 A. '90s, I'm sorry. '90s, early '90s. It was 16 in my masters program when I did ASME presentations 17 related to the sonic anemometers. And, and then 18 Division of Fluid Mechanics meetings were in, let me 19 think, '94 and '95, about those, that time frame. Could 20 have been '96. 21 Q. Were there any publications affiliated with 22 those presentations? 23 A. Yeah. Actually, I think the, the actual 24 presentations are published through American Physical 25 Society for the Division of Fluid Mechanics, and the
Page 28 1 ASME I believe are also published. You can find them 2 online. 3 Q. Have you, do you -- I'm sorry. Do you have 4 any continuing education requirements? 5 A. No. 6 Q. Have you taken any continuing education 7 courses or otherwise -- 8 A. Yes. 9 Q. -- in your field? 10 When is the last time you took one? 11 A. November. 12 Q. And what was that course in? 13 A. I was, it, within the last year I took two 14 courses on a simulation technology called OpenFOAM. 15 It's a new emergent 3D-simulation technology used for 16 fluid mechanics and heat transfer, and I've been 17 actually attempting to use it for about six or seven 18 years. I tried to get my engineering team to use it 19 some years ago, but I never had the time or the 20 resources, so in the last year I've had training twice 21 on that. 22 Q. Okay. So they were both on that? 23 A. Yes. 24 Q. How, okay. You said that was training. Was 25 it a continuing education course or just training on	Page 29 1 that software? 2 A. I don't know if I could differentiate between 3 the two. What, what do you mean? 4 Q. Were you, was it presented by the software 5 company? 6 A. Well, it was, there was -- yeah. Actually, 7 it was one of the developing companies that does it. 8 They offer training for these courses. 9 Q. How long were the courses? 10 A. The first one was three days. I'm sorry. 11 No. The, the first one was two days. The second one 12 was three days, and it also included one day for a, a 13 forum where people came from around the world and 14 presented their research on this tool. 15 Q. I'm sorry. What was the tool called again? 16 Open phone? 17 A. OpenFOAM. 18 Q. O-P-E-N? 19 A. FOAM, F-O-A-M. 20 Q. F-O-A-M? 21 A. Uh-huh. 22 Q. Is that a software that you can purchase? 23 A. It's actually freeware. You can download it. 24 Q. Sir, do you hold any licenses or 25 certifications?

02/17/2017 Joseph Alan Murray

Pages 30..33

Page 30 1 A. No. 2 Q. Do you have an engineering license? 3 A. No. 4 Q. Are you a professional engineer? 5 A. No. 6 Q. Have you ever applied to become a 7 professional engineer? 8 A. No. 9 Q. Have you ever applied for any other license 10 or certification? 11 A. No. 12 Q. Now, I'd like to walk through your employment 13 history prior to 0 Base Design. 14 A. Okay. 15 Q. I'm sorry. When did you begin working with 0 16 Base Design? 17 A. I formed the company I think the first week 18 of November 2016. 19 Q. Prior to that where were you employed? 20 A. Immediately prior to that I was employed by 21 Industrial Heat. 22 Q. What was your title there? 23 A. Vice President of Engineering. 24 Q. And when did you begin working as Vice 25 President of Engineering for Industrial Heat?	Page 31 1 A. About May of 2015. 2 Q. As an employee? 3 A. I began in May of 2015 as a, being paid as a 4 consultant because of my medical insurance, to carry my 5 medical insurance over to the end of the year from my 6 previous company. 7 Q. And I'm going to come back obviously to -- 8 A. Yeah. 9 Q. -- your time at Industrial Heat, but prior to 10 working for Industrial Heat, beginning in May 2015 where 11 were you employed? 12 A. I was employed by a company that I had 13 started in 2003. The name of the company was 3 Phoenix, 14 and we sold that company to a British publicly traded 15 company called Ultra Electronics in February of 2014, 16 and I was one of the co-founders and principal in that 17 company. 18 Q. How many co-founders were there? 19 A. There were five co-founders. 20 Q. What did that company do? 21 A. We built systems for the Department of 22 Defense. We built radar systems. We built A -- 23 engine -- let me see. We built radar systems. We built 24 sonar systems. We built imaging systems, a number of 25 different imaging systems. We built test systems for
Page 32 1 torpedos, heavyweight torpedo, it was the Mark 710 2 system to test the torpedos. We did a lot of innovative 3 research contracts as well, SBIRs. 4 Q. Okay. What do you mean by you built systems 5 such as radar systems? Were you building radar towers? 6 Were you designing -- 7 A. No. 8 Q. -- the system? 9 A. So our role at 3 Phoenix was primarily, when 10 the Department of Defense had a challenging problem and 11 a, and a very limited amount of time to get it done, 12 they would often hire us to build the system. So they 13 would have a set of requirements; for example, we need a 14 certain range resolution or other technical 15 requirements. We would document those requirements. We 16 would design both a physical hardware and software 17 system to address those requirements. 18 We would build EDM, engineering development 19 model, prototypes of that system. We would test those 20 systems with our Department of Defense customers, and 21 then we would do low-rate initial production typically. 22 And that's typically when we would end. Some systems 23 have gone on since then to a full-rate production, but 24 we would typically end at low-rate initial production. 25 Q. Okay. Now, when you say you built these	Page 33 1 systems, is that for, are we talking about designing 2 them on paper and saying, hey, guys, this is how you 3 build your system, or is this actual physically 4 constructing -- 5 A. We did everything. 6 Q. -- the system? 7 A. Yeah. We, we, we developed the requirements. 8 We went through requirements reviews with our customers. 9 We turned those requirements into designs, and normally 10 we would go through what's called a preliminary design 11 review and then a, a final design review or critical 12 design review. It depends on the customer. After, 13 between the preliminary and the critical we begin to 14 develop prototype elements; in particular, risk 15 reduction areas where they might be high risk. We 16 develop either software to hardware or address that. 17 And then after critical design review is finished, we 18 would actually build the system, physical hardware and 19 software. 20 Q. What were your job duties at 3 Phoenix? 21 A. I was, as I said, I was a principal and 22 co-founder. And I wrote a lot of proposals. I designed 23 a lot of systems. I was a chief system architect. I 24 oversaw the analysis and validation of the system 25 against the requirements.

02/17/2017 Joseph Alan Murray

Pages 54..57

Page 54 1 THE VIDEOGRAPHER: We are off the record at 2 9:52 a.m. 3 (Recess taken 9:52 a.m. to 9:58 a.m.) 4 THE VIDEOGRAPHER: We are back on the record 5 at 9:58 a.m. 6 BY MR. ANNESSER: 7 Q. Sir, to continue our discussion on that 8 1-megawatt plant for the DOD that you had been 9 previously discussing. So if I understand it correctly, 10 as you said before, you were transferring heat from 11 these solid-state conductors and whatnot equipment to 12 liquid -- 13 A. Yes. 14 Q. -- correct? So you were going from a solid 15 state to a liquid state? 16 A. Uh-huh. 17 Q. What is the mathematical computation for 18 that? How do you determine how much heat is being 19 transferred? 20 A. I don't recall off the top of my head. 21 That's a complicated analysis. 22 Q. Okay. Do you happen to know what the 23 computation is to go from a gaseous state to a solid? 24 A. The heat transfer? 25 Q. Yes. From gas to a solid.	Page 55 1 A. Again, it depends upon the, the details of 2 the system, how you transfer the heat. So there are 3 three primary modes of heat transfer. There's radiative 4 heat transfer. There's conductive heat transfer, which 5 typically is solid to solid, and then there's convective 6 heat transfer. So if you were going from a, a solid to 7 a gas, the primary mode in lower temperature Delta Ts 8 would be convection heat transfer. And then depending 9 upon the temperature differential, you could get into 10 radiative, but it's, those are detailed analyses that 11 you have to look at on a, kind of a design-by-design 12 basis. 13 Q. Okay. And you don't know sitting here today 14 what, how you would go about doing that? 15 A. It depends on the system and the details of 16 that system. 17 Q. It's been a while since you've done that I 18 take it? 19 A. Well -- 20 Q. That was back in -- 21 A. Yeah. It depends on the system. I mean you 22 just have to look at each one of the systems and look at 23 the details specifically. 24 Q. When was the last time you did that type of 25 calculation?
Page 56 1 A. The heat transfer calculation? 2 Q. Yes. 3 A. I did some for Industrial Heat in the fall 4 for various types of systems. Actually, that, what year 5 is this? This is 2000 -- primarily we were looking at 6 different types of heat transfer for the various 7 investments between let's say the Fall of 2015 to the 8 Summer of 2016. 9 Q. And what were those heat transfers? Were 10 they from -- was that conductive heat transfer? 11 A. It depends. There were three primary areas 12 of investment that Industrial Heat had made. And my 13 job, being in charge of engineering, was to, was really 14 twofold. We were to validate and verify each one of the 15 investments and then, any of the investments that 16 merited reproduction, then we would do an independent 17 reproduction of that. 18 And so each one of the systems was very 19 different because there were electrolytic systems, there 20 were plasma-based systems, and then there were 21 solid-based systems. So every one of the systems had 22 nuanced differences, and each one of the inventors and 23 technologists, they all came up with all their own 24 schemes for calorimetry and measurement of that heat 25 transfer.	Page 57 1 Q. Of all the systems you tested in Industrial 2 Heat, were there any that you were able to validate and 3 verify? 4 A. No. 5 Q. Why not? 6 A. We went through, the process was we worked 7 with the inventors. So there were, as I said, I don't 8 remember if there were five or six different groups, 9 probably name them. What we did was we went to work 10 with each one of the investments, and we looked at all 11 of the data that they were willing to share with us. 12 Almost all of them were completely transparent and open. 13 We went to their labs. We worked with them. We 14 collected their data, and we looked at it. We analyzed 15 it. And in many cases the heat that they were 16 producing, the excess heat, the anomalous heat was very 17 small. They, they had amounts that were very small. 18 And so any small errors in their sensor systems or small 19 errors in their assumptions would mask that level. 20 So we went through and carefully analyzed 21 their data, and in a few cases we actually reproduced 22 their experiments. We had two groups that in the 23 validation verification phase we came up with what I 24 would describe as nebulous results. They weren't 25 positive, but we certainly just couldn't say here is a

02/17/2017 Joseph Alan Murray

Pages 58..61

Page 58 1 major problem that has to be overcome before we could 2 legitimately verify and validate it. And so in those 3 cases we worked very closely with the inventors and 4 organizations to help them do independent reproduction 5 in our lab. 6 Q. Okay. And those were successful 7 reproductions? 8 A. No. Ultimately, the reproductions, yeah, we 9 didn't find anything that had excess or anomalous heat. 10 Q. Okay. And what were those two? 11 A. What were those two? 12 Q. Yeah. 13 A. If -- 14 Q. You know, who were the inventors? 15 A. The first one was Dr. Mizuno in Japan. That 16 was a plasma-based system. And the second one, which 17 was very much at arms length, I did not have privy or 18 access to this one, was HMRI. It was a, it was only a 19 partial investment into it. And so I was kind of, me 20 and the rest of the engineering team were kept at arms 21 length. We weren't allowed to have access to all of 22 their data, so I just got summary reports and briefings 23 on some of the things they had done. 24 Q. I thought you were able to reproduce their 25 experiments in your lab.	Page 59 1 A. So, yeah. No, we, what we did was, based on 2 the limited knowledge we had of their system, we 3 reproduced an electrolytic cell that to the best of our 4 ability looked like what we had understood they were 5 doing. And we could not achieve the same results that 6 they were giving us at this kind of arms length. 7 Q. Okay. What about Dr. Mizuno? Were you able 8 to identically reproduce what he was doing? 9 A. No, we were not. So Dr. Mizuno had conducted 10 a, a series of these plasma-based technique tests in his 11 lab in, in Sapporo, Japan. And so myself and some of 12 the other engineers went to Sapporo and looked at his 13 test apparatus and, and looked at his data. He was very 14 forthright, shared all of his data, everything he had 15 with us. There were some challenges just because of his 16 physical environment. He had a very small lab. He 17 didn't have good control over the environmental 18 conditions in the lab. 19 And so we had some reservations, but he had 20 some results that were just anomalous. We couldn't 21 quite understand them. So what we did was we didn't 22 notice that during his testing he -- and I should note, 23 you know, he's a, he's a wonderful person, but I should 24 note that he was one person and an assistant. He didn't 25 have a lot of people to help him. So what we found was
Page 60 1 that in the middle of his experimentation or kind of 2 towards the tail end he had changed a piece of 3 equipment. And so that was a concern, because you never 4 want to see in the middle of a test somebody changing a 5 piece of equipment. You could introduce all kinds of 6 problems. 7 So what we did was we worked with him to go 8 back to his experiments, instrument them with a much 9 more robust instrumentation set, and then re, have him 10 reproduce the experiments exactly as he had before. And 11 once we re-instrumented the, the equipment and put a 12 little better controls in his lab on the environmental 13 conditions, we couldn't get the same result again. And 14 that was in his lab. 15 Still, the, the senior management at 16 Industrial Heat, they, their view was if any of these 17 technologies have even one percent probability of 18 success, they want us to go all the way to the end to 19 find if anything works, because they were very eager to, 20 to find something that was successful. And so, so at 21 that time we didn't see results. So what we did was we 22 set up an independent test of Dr. Mizuno's in our lab, 23 and we completely replicated his system and we followed 24 his recipe. We couldn't get it to work. 25 And so then Dr. Mizuno sent over a system	Page 61 1 that he had prepared for us and brought it to our 2 facility, and then he came over and he spent, I don't 3 know if it was a week or ten days, he spent some time in 4 our lab setting that up and going through his process 5 that he had defined to validate it. And we, and there 6 were some nuances. I mean between the translation 7 between Japanese and English, and there were some 8 nuances that he highlighted while he was there that were 9 subtle differences, but we did his exact procedure and 10 process on his reactor in our facility, and we still 11 were not able to do it. 12 So, so our concern, you know, our conclusion 13 was that the one set of data where he had changed some 14 instrumentation was indeterminate. We couldn't make 15 head or tails of it, but we were not able, in any of the 16 series of experiments, able to produce that result, so. 17 Q. Why was it necessary for him to come over and 18 do the experiment in North Carolina as opposed to just 19 relying on the one that you had built? 20 A. How do you mean? 21 Q. Well, you said you, you constructed it based 22 on his formula, his, his design and tested, and it did 23 not produce results. 24 A. Right. 25 Q. So why then did you have to have him come

02/17/2017 Joseph Alan Murray

Pages 62..65

Page 62 1 over and test it again? 2 A. Well, because Mr. Darden was, wanted us to 3 drive to the end, that if there was even one percent 4 chance that that one measurement he did was correct, 5 then let's get to the bottom of it. And there was a big 6 language barrier. So what we did was we had him, after 7 we were able using all of his information, able to 8 reproduce it or not able to reproduce it, what we had 9 him do was we had him to come over and use one of his 10 reactors in our facility to see if there was something, 11 some nuance difference that we just weren't getting, and 12 then try to reproduce it. But we were not able to get 13 it to work even with him there. 14 Q. Would you say that it is essential to work 15 with the inventor in order to make sure that you're 16 getting absolutely everything to attempt to replicate 17 these tests? 18 A. In my opinion, yes. I mean if, these are 19 very nuanced and subtle areas. And so if you don't have 20 access to, to these people, it's very difficult to 21 really understand all of the, the small nuance 22 differences. 23 Q. Did you ever try to reproduce or test an 24 E-Cat device designed by Dr. Rossi? 25 A. I did not.	Page 63 1 Q. So you've never tested an E-Cat device? 2 A. We created a device that was as close as 3 possible to the best of our ability without, without the 4 ability to communicate with Mr. Rossi. We, we did the 5 best we could. So we created some reactors that were 6 similar to some of the reactors that he had tested at 7 the Triangle Drive facility before I was part of 8 Industrial Heat, and we tested those systems. 9 Q. Okay. Now, you said a couple things there I 10 want to ask you about. You said with no communication 11 with Dr. Rossi? 12 A. Uh-huh. 13 Q. Why didn't you have communication with 14 Dr. Rossi? 15 A. Well, so when I came on board, so in June of 16 2000 -- let me get the year right -- 15, Industrial Heat 17 was, had just received their funding. I don't know if 18 it was in April or May. They had received funding, and 19 they were in negotiations for several other investments. 20 And so those were ongoing, and the lawyers, you know, 21 not to say anything bad about lawyers, but the lawyers 22 were doing their thing. And so they were taking a long 23 time to kind of get to the point where we could really 24 engage and work with the various groups. 25 So in June of 2015 Tom Darden and John
Page 64 1 Mazzarino asked me to look at in detail what Mr. Rossi 2 was doing. So I took all the information that, that 3 they could provide me, and it was insufficient 4 information incidentally. There were, there were no 5 red-line drawings of the plant. There were no details. 6 And on top of that, this is another kind of detail, Tom 7 Darden was the keeper of the trade secrets. Nobody else 8 knew anything about the details of the fuel technology. 9 So what we did was we focussed on the heat 10 transfer and the coefficient of performance as they had 11 been defined so that we could figure out if we could 12 replicate it. Because Tom and John insisted that if 13 there's even one percent chance he's right, they want to 14 move ahead and figure out how to do this. 15 So in 2000 -- June of 2015 I went through 16 everything I could find. And, and there were some 17 commissioning reports I think they were from Mr. Penon. 18 And I was going through those, and there were a lot of 19 typos and errors, and so that was concerning. And so I 20 developed a whole bunch of questions. Like, for 21 example, in the commission report they had the flow rate 22 in the system was 36,000 -- let me think of the unit -- 23 kilograms per day, day after day after day, which I 24 thought was suspicious, but in the body of the text he 25 had written 3,600.	Page 65 1 So I thought, oh, 3,600 would be a lot more 2 logical. It was kind of consistent with what everybody 3 was describing as the coefficient of performance, those 4 types of things. So I thought, okay, well, maybe 5 there's an error there. Maybe it's just a simple typo. 6 I mean somebody could have transposed a number. That's 7 not a big deal. Things happen. 8 So we went through all of that. And I was 9 looking at it. I just couldn't figure it out because I 10 couldn't figure out where, in a thermodynamic sense 11 where the various sensors were. Because you have to 12 have the pressure and the temperature and the volume or 13 mass flow rate of the condensate return, and you need 14 the pressure and the temperature and the volume or mass 15 flow rate of the steam to, to measure the system. 16 Q. I'm going to stop you for just a minute. 17 A. Okay. 18 Q. We will get into that. I'm going to give you 19 plenty of -- 20 A. Okay. 21 Q. -- opportunity to tell me about it. 22 A. Okay. 23 Q. But I want to go back to the testing that you 24 did. 25 A. Okay.

02/17/2017 Joseph Alan Murray

Pages 82..85

Page 82 1 medical benefits renew -- I use a HSA medical plan, and 2 they renew at the beginning of the year. And so when I 3 left Ultra I was in the middle of a, kind of a plan 4 year. And my daughter was sick. She needed some 5 surgery, and I didn't want to mess with the insurance. 6 So I just said, look, let me just consult until the end 7 of the year, and then we'll convert to an employee at 8 the end of the year when the medical plans turn over. 9 Q. Now, as a consultant were you given a title 10 within the company? 11 A. Because the intention was for me to 12 transition to a full-time employee, yeah. My title was 13 Vice President of Engineering. 14 Q. So you were Vice President of Engineering 15 from day one? 16 A. Kind of from the beginning, yeah. 17 Q. I'm going to show you a document, sir, that 18 we'll mark as Exhibit 2. 19 (Whereupon, Exhibit 2 was marked for 20 identification.) 21 Q. Have you seen this document before, sir? 22 A. One second. Let me see. Yes, I actually 23 think I prepared this document. 24 Q. Okay. Now looking, sir, the, the date on the 25 front of this document appears to be January 2016?	Page 83 1 A. Uh-huh. 2 Q. Okay. What I'd like you to turn to -- and 3 I'm sorry. This document is a document with a bates 4 number IH00053931. I'll ask you to turn to the sixth 5 page of the document with the bates number IH00053936. 6 A. Uh-huh. 7 Q. There is an organizational structure there? 8 A. Uh-huh. 9 Q. And it lists engineering, J Murray. Is that 10 you? 11 A. Yes. 12 Q. Okay. And it has categories in which I 13 believe you're responsible: Development, integration 14 and tests, data management, project management, modeling 15 and simulation? 16 A. Yes. 17 Q. Okay. What development did you do for the 18 company? 19 A. We developed data acquisition systems and 20 replication reactor systems. We developed calorimetry 21 systems. We developed a wide range of test assets. We 22 developed databases to archive and store all of the 23 information from every test that we did. I don't know. 24 Just broad range of development activities. 25 Q. Didn't those exist before?
Page 84 1 A. No, not to, not to my knowledge. 2 Q. Did they have any systems in place when you 3 joined them in May or June of 2015? 4 A. This, this was for the new facility. So 5 we -- I don't recall when they got the lease on the new 6 facility. I think it was about August or maybe 7 September of 2015. So what we were doing is setting up 8 this entire new organization in the new facility. And 9 so these systems, I -- not that I'm aware of. I don't 10 know what they really had at Triangle Drive. I know 11 they did, they were doing some electrolytic system 12 testing at Triangle Drive at that time. I had gone over 13 there one or two times, but I wasn't really too versed 14 in what they were doing. 15 Q. Okay. Integration and tests, what was that? 16 A. So integration and tests is actually taking 17 the development assets, bringing them together and 18 executing test programs using those. So the integration 19 is kind of a validation procedure for the infrastructure 20 that lives over top of, for example, a reactor or we had 21 chambers and other equipment. So we were integrating 22 all that equipment together, and then we were testing it 23 and validating it to make sure that it was operating as 24 we had specified in the development phase. 25 Q. So that wouldn't be the testing and	Page 85 1 evaluation of the underlying LENR technology? And by 2 LENR do you understand what I mean? 3 A. Yes, I do. 4 Q. Low energy nuclear reaction? 5 A. Uh-huh. It would be, in fact, a combination 6 of testing of the equipment and infrastructure necessary 7 to test those reactors as well as the test of those 8 reactors -- 9 Q. Yeah. 10 A. -- when it was appropriate and when we got to 11 that point. 12 Q. Data management? 13 A. So in my experience, many companies fail to 14 adequately archive and manage data. So what we were 15 doing is we put a very robust plan in place to store and 16 archive the data and metadata associated with tests so 17 we could reproduce it. 18 Q. Okay. Project management? 19 A. Over -- 20 Q. Is that anything other than the common term, 21 project management, overseeing all these projects? 22 A. It's project management. 23 Q. Modeling and simulation? 24 A. Right. So we, we attempted to model and 25 simulate as many of the systems as we could so we could

02/17/2017 Joseph Alan Murray

Pages 202..205

Page 202 1 A. No. They're available in the public. You 2 can find them online. 3 Q. Sir, anything in any of your publications 4 that you now want to change or revise? 5 A. Not that I'm aware of. It's been many, many 6 years. 7 THE VIDEOGRAPHER: Seven minutes. 8 Q. Do you know if your publications have ever 9 been cited? 10 A. You know, I had to prepare a CV for an Army 11 program just a few weeks ago, and I was going back 12 cataloging some of that, and I was surprised. There 13 were a number of citations on some of the early work 14 that I had done. Yes. 15 Q. Who cited it? 16 A. Other engineers in this space of fluid 17 mechanics and turbulence research. 18 Q. Who? 19 A. Oh, I don't know by name. There were 20 numerous citations. If you go to the citation index, it 21 will point you to all of the citations. 22 Q. What citation index? 23 A. If you go online, you can go to Google and 24 you can search for specific scholar articles. And then 25 when you go to the links, they will show you what the	Page 203 1 cross-reference citations are, how many people cite the 2 documents, and then it links to those documents. 3 Q. Okay. I'm, I'm looking for documents that 4 cite to you. How am I going to find those? 5 A. You can go to, search for my publications, 6 and then in that you can, it will show you what the 7 citations are. 8 Q. Okay. But you don't maintain copies of 9 those? 10 A. No. 11 Q. All right. 12 A. No. 13 Q. Are you familiar with any publications 14 expressing contrary views to your publications? 15 A. Not that I'm aware of. 16 Q. Has anyone requested the right to reprint 17 your publication? 18 A. Not that I'm aware of. 19 Q. Did you ever receive any compensation for 20 your publications? 21 A. No. 22 Q. Except perhaps the work you did at GM? 23 A. Yeah -- no. I, I mean my, I was an engineer. 24 I was being paid for my work at General Motors. I was 25 being paid as a researcher at the universities. You
Page 204 1 know, the publications are just a criteria that you need 2 to publish to be able to continue on in these spaces. 3 Q. Okay. Have you ever appeared as an expert in 4 any cases where you did not wind up testifying? 5 A. No. 6 Q. Have you ever offered expert opinions to, in 7 respect to any litigation before? 8 A. No. I don't know if the deposition that I 9 did back in the late '90s, I don't know if that would be 10 considered expert or not. I just simply don't know. 11 They were asking me about my opinions on these various 12 products. 13 Q. Okay. 14 A. So I don't, I don't know if that's expert or 15 not. 16 Q. Have you been retained as an expert in this 17 case? 18 A. Well, that's hard to say. I am, I was asked 19 to, to do this deposition and to support, and in my 20 severance package it indicates that I have to support 21 them at, at their request. So I would guess that that's 22 probably yes, but I don't really understand the 23 technical delineation of that. I am doing it. I'm 24 billing them for my time. 25 Q. Okay. Who contacted you to do this work?	Page 205 1 A. You did. 2 Q. I asked you to do this work? 3 A. No, no, no. You sent me a subpoena. 4 Q. Yes. That's for your deposition. 5 A. Right. 6 Q. I'm talking about the work that you're doing 7 on the case. 8 A. Oh, the work that I'm doing on the case has 9 strictly been to review and kind of understand what's 10 happening and provide, I provided some simulation work 11 about nine months ago, and the file formats were 12 corrupt. They couldn't read the file formats, so I 13 reran those and recreated the files for them. So I 14 would say it's just that work, and I'm being paid by 15 Industrial Heat as a consultant on an hourly basis. 16 Q. When did you send them the non-corrupt files? 17 A. I sent them files, I don't know, a week ago, 18 but it turns out that those files were also corrupt. 19 And so yesterday I went through and tried to figure out 20 why the -- it was a video encoder problem. So yesterday 21 I went through and re-created the, the files and tested 22 them yet again and then made sure that they could test 23 them and they could see them, and in addition to that I 24 took screen captures of it. 25 Q. Is there any reason why we would not have

02/17/2017 Joseph Alan Murray

Pages 246..249

Page 246 1 opinion you state, "Mr. Murray will describe" -- I'm 2 sorry. Your disclosure states, "Mr. Murray will 3 describe how the data generated by Fabio Penon and 4 Fulvio Fabiani pertaining to the power absorbed during 5 the testing of the E-Cat plant at the address of Doral 6 location, JMP" -- is that address of Doral location, was 7 that, why is that in all caps? 8 A. I don't know. 9 Q. Was that supposed to actually be the address 10 of the Doral location? 11 A. Potentially. 12 Q. Okay. But you didn't draft this. Okay. 13 -- "is at odds with the amount of power used 14 at the Doral location as demonstrated by Florida Power 15 and Light, FP&L records." 16 A. Uh-huh. 17 Q. What did you do to come to that conclusion? 18 A. We received the daily power or energy records 19 from Florida Power and Light via subpoena for periods of 20 time before the plant was installed, the period of time 21 when the plant was operating, and periods of time after 22 the plant was installed. And what we did was we, we 23 compared that daily energy level to the daily energy 24 levels that were provided by Fabio Penon and Fulvio 25 Fabiani.	Page 247 1 Q. How did you compare it? 2 A. We used a analytic tool to look at the data 3 and to plot it to make a comparison between them. 4 Q. What analytic tool did you use? 5 A. We used a series of tools called Python, 6 which is a programming language, with iPython -- it's 7 now called Jupiter Notebook, but it used to be called 8 iPython Notebook. We used NumPy, which is a numerical 9 tool kit; SciPy, which is a scientific library; and 10 something called Pandas, which is a data analytics tool 11 to be able to compare data. And we plotted that -- 12 Q. What -- 13 A. -- using Matplotlib to make comparisons 14 between the various data sets. 15 Q. So, so what exactly do these program do? 16 A. Well, you read the data in. You formulate it 17 so you can get an exact -- 18 Q. Hold on one second. How do you read the data 19 in? 20 A. So in that, there's a Pandas library that 21 allows you to read in a comma-separated file or an Excel 22 file, other types of files. We read that in and we then 23 com -- then we can directly compare date-matched times 24 and dates and plot the data. 25 Q. Okay. Let's talk about that for a moment.
Page 248 1 It reads Excel files. How did you get the data from the 2 Penon report into that system? 3 A. We typed it in by hand. 4 Q. Who did? 5 A. I typed in some of it. There was -- oh, did 6 you say Penon? 7 Q. Penon. 8 A. Penon. I typed it in. I had some, some of 9 the younger engineers type it in, and then we had a 10 separate person cross-check it to make sure it all 11 matched. 12 Q. Who was the younger engineer and who 13 cross-checked it? 14 A. So Jason Kemp was the person who 15 cross-checked it, and James Hartanto was the young 16 person who actually typed it in. 17 Q. Is Mr. Hartanto an engineer? 18 A. He is, he has a degree in I believe chemistry 19 and applied math. 20 Q. So the answer is no? 21 A. No. Yes. 22 Q. Okay. And James Kemp, is he an engineer? 23 A. Jason Kemp? 24 Q. I'm sorry, Jason. 25 A. No, he's not.	Page 249 1 Q. Okay. 2 A. They were doing just data transcription. 3 Q. Who do they work for? 4 A. At that time they worked for Industrial Heat. 5 Q. Who do they work for now? 6 A. I think Jason Kemp took a job with Pike 7 Electric, and I believe that James Hartanto is getting 8 ready to go to graduate school. 9 Q. Okay. Now, the FP&L data, how was that 10 in-put? 11 A. That data was received in a PDF file, and we 12 converted all of that data using an OCR reader to, to, 13 into a comma-separated file or Excel file. And then we 14 actually had Jason and James go back and cross-reference 15 and check it against the original documents. 16 Q. Do you know if there were any mistakes in 17 those? Typos? 18 A. I don't know. I mean they went through and 19 checked it and cross-checked it, and I went through and 20 sampled a check as well. 21 Q. How much sampling did you do? 22 A. I would say hundreds of points. I mean I 23 went through almost line by line to cross-check it, but 24 it becomes very bleary-eyed when you're doing that. So 25 then they did a every-single-line cross checking it to

02/17/2017 Joseph Alan Murray

Pages 250..253

Page 250 1 the data that was provided under subpoena. 2 Q. So all of the input was done by Industrial 3 Heat employees? 4 A. Yes. 5 Q. So you've got both of those in, and how did 6 you compare them using these programs? Was there a 7 complex analysis, or was it just plotting these out into 8 a graph? 9 A. So first, well, there was also a third piece 10 of data. That was the data provided by Fabio Penon. He 11 provided that, that data in, again in March/April time 12 frame he gave us files. I kind of described that 13 earlier. 14 Q. Mr. Penon did? 15 A. I'm sorry. Fulvio Fabiani provided us files. 16 And so we, we looked at that, that data. Fulvio 17 Fabiani's data actually had two measurements for each 18 day. He had a measurement at, I believe the numbers 19 were 10:30 a.m. and 10:30 p.m. Mr. Penon's data -- I 20 have to be careful, make sure these names are right -- 21 Mr. Penon's data was actually only once per day. It was 22 at I believe 10:30 p.m. each day. And the data from 23 Florida Power and Light was each day at midnight. 24 So what we did is we went back and we 25 cross-referenced it and made comparisons on a daily	Page 251 1 basis and made, to make sure that we were comparing 2 apples to apples. And then we plotted the data and took 3 the differences between the various data sets and 4 checked the integrity between Penon and Fabiani's data 5 and then checked the comparisons against Florida Power 6 and Light. 7 Q. Okay. So let's look at Exhibit A of 8 Exhibit 11, which you should have in front of you. 9 A. Okay. 10 Q. Is that, sir, the comparison that you did? 11 A. This is part of the comparison, yes. 12 Q. Okay. I only see two lines here, one green 13 and one red. 14 A. Underneath it you can see a few points where 15 Mr. Fabiani -- I'm sorry. We gotta look at the colors 16 here. It's hard to see at this scale. Mr. Fabiani's 17 data diverges from Mr. Penon's data. You can see right 18 about here, and you can see down here. So there were 19 very little divergence between Mr. Fabiani and 20 Mr. Penon's data. In fact, I would, I would argue they 21 were the same exact data. 22 Q. Okay. The same exact? 23 A. Except for these points where they diverge. 24 Because Mr. Fabiani's data, as I said, had two data 25 points per day where Mr. Penon's data only had one.
Page 252 1 Q. Okay. 2 A. And so they -- 3 Q. So that would be consistent with the data 4 points or the data being measured being accurate, 5 correct? 6 A. It would certainly be consistent with the 7 data being measured coming from the same device. 8 Q. Any reason to believe that either one of them 9 have manipulated the results? 10 A. No. 11 Q. Okay. So the green line is FP&L? 12 A. Yes. 13 Q. All right. 14 A. Florida Power and Light, yes. 15 Q. And for the vast majority of this, the green 16 line is higher than the red line? 17 A. That's correct. 18 Q. So the amount of power supplied by FP&L 19 substantially exceeds the amount of power that was 20 recorded going into this device? 21 A. Yes, yeah. 22 Q. Is that odd to you? 23 A. No. You would imagine that a facility like 24 this, the actual reactor system would absorb some power, 25 but you would imagine that there are also some, some	Page 253 1 lights and the fan in the bathroom. There were a few 2 air conditioners around there. There was an office in 3 the front that I imagine would have heat and air 4 conditioning. So you would expect that Florida Power 5 and Light numbers would be higher than the numbers that 6 Mr. Penon and Mr. Fabiani measured. That would be a 7 reasonable expectation. 8 Q. Florida Power and Light's measurements, how 9 were those taken? 10 A. They were taken with a smart meter located on 11 the, on the building. 12 Q. What type of smart meter? 13 A. The smart meter that's approved by the State 14 of Florida. 15 Q. You know it's approved by the State of 16 Florida? 17 A. Yes. 18 Q. How? 19 A. I looked at the Florida Public Works 20 Commission website to find out if these things were 21 approved and how they were approved. And they indicate 22 that for investor-owned utilities, that they have 23 approval and then they give you a link to Florida Power 24 and Light, and in Florida Power and Light's data they 25 give the full description of how they implemented these

02/17/2017 Joseph Alan Murray

Pages 254..257

Page 254 1 programs and what the options are for the programs. 2 Q. When was the FP&L device last calibrated? 3 A. I have no idea. 4 Q. Do you know if it's been three years? 5 A. No idea. 6 Q. Four years? 7 A. I have, still have no idea. 8 Q. Okay. So you, you have absolutely no 9 information with respect to whether their data is 10 accurate or not? 11 A. What I know is that they provided it under 12 subpoena. They may or may not be accurate. 13 Q. Okay. So you don't have any reason to 14 believe that we should rely on those results as opposed 15 to the results of Mr. Penon or Mr. Fabiani; is that 16 correct? 17 A. I disagree with that. I, I would say that we 18 have to at least look at this and understand why, why 19 would it be this way. And so my view is that if, if a 20 company like Florida Power and Light provides data under 21 subpoena, there would be an expectation that they would 22 provide, would provide proper and accurate data, and 23 it's a reasonable way to check the facility. We did 24 this, I did this kind of anticipating that Florida Power 25 and Light would always be higher than the measurements	Page 255 1 that were made here. 2 Q. Okay. And, and the vast majority of the time 3 here they are? 4 A. Yes. 5 Q. With very few exceptions, in fact. And one 6 exception is between November and December 2015? 7 A. Yes. 8 Q. And during that period it, it appears that 9 the power usage drops by the FP&L measurements, right? 10 A. The FP&L measurement drops, yes, below the 11 measurements provided by Mr. Penon and Mr. Fabiani. 12 Q. Do you know why that would be? 13 A. I have no idea. 14 Q. Do you know if it's accurate? Do you know 15 if, perhaps, there is a problem with the device, the 16 measuring device? 17 A. I have no information other than the data 18 that was provided in the subpoena by Florida Power and 19 Light. 20 Q. Okay. So you have no reason to believe that 21 that information is more accurate than the measurements 22 taken by Penon and/or Fabiani, correct? 23 A. No, other than the fact that it's a Florida 24 utility, and they are regulated. I would think that -- 25 Q. Do regulated Florida utilities ever have
Page 256 1 device malfunctions? 2 A. Oh, absolutely. Absolutely. In fact, I 3 believe in this facility they actually replaced a smart 4 meter at some point earlier in the year. 5 Q. Why do you believe that? 6 A. Because the registration number of the meter 7 in the subpoenaed data changed. 8 Q. When was that? 9 A. I don't recall. It was earlier in the year. 10 I would say sometime maybe in the May or June time 11 frame. 12 Q. Okay. Do you know if it was hooked up 13 correctly when it was replaced? 14 A. I do, I do not. 15 Q. Okay. So what you've got here is just a 16 comparison side by side of the two number sets. Is 17 there anything scientific about that other than looking 18 at it? 19 A. It's, it's very alarming to see a drop. I 20 mean in general when you see this, you see a very, very 21 consistent amount of power being absorbed by the reactor 22 system. And when the reactor system has a major drop 23 like here in the, let's say between July and August you 24 see a drop off, which I think corresponds to the data 25 that says, hey, we had some, some reactors go offline,	Page 257 1 you see that drop. That makes sense. And then sometime 2 in October they brought all of the units back online and 3 the power goes up. 4 So all of the trends seem to be consistent 5 except for this period of time when, in about from 6 middle of November to the beginning of December where 7 you have a power level absorbed into the building lower 8 than the measured. So that would give -- to me, there 9 are three potential explanations. Number one, Florida 10 Power and Light could be wrong. Number two, the 11 measurements made by Fabiani and Penon could be wrong. 12 And number four or -- I'm sorry, number three, the data 13 could have been manipulated. On either part, on either 14 party. 15 Q. Do you have any evidence that the data has 16 been manipulated -- 17 A. No, I don't. 18 Q. -- by either one? 19 A. Not by Florida Power and Light or by Fabiani 20 or Penon. 21 Q. Okay. So you have no evidence of 22 manipulation. So what are you opining to specifically 23 here? 24 A. Specifically, in this period it was, it was 25 determined by Mr. Penon that the measurements, the

02/17/2017 Joseph Alan Murray

Pages 258..261

Page 258 1 absorption of power was accurate and reflected what was 2 happening in the reactors. But if, in fact, Florida 3 Power and Light indicates that their data is valid in 4 the data provided under subpoena, then it would be 5 impossible for them to absorb more power than Florida 6 Power and Light provided. 7 Q. Now, you keep saying data provided under 8 subpoena, as if that makes it more accurate. It's the 9 measuring equipment that makes it more accurate or not, 10 correct? 11 A. Sure. 12 Q. Not whether it was voluntarily provided or 13 under subpoena? 14 A. Uh-huh. 15 Q. Correct? 16 A. Yeah. My view is that if, if a, if a person 17 is providing data under subpoena, they're going to 18 probably provide the best possible data they have. We 19 also know that Florida Power and Light has hourly 20 measurements for this facility, and we have not received 21 that data. 22 Q. Okay. But you don't know whether it was 23 measured correctly or not at that point in time. All 24 you can tell based on this is that there is a 25 difference?	Page 259 1 A. Yeah. I don't know whether or not any of 2 these lines were measuring correctly at that time. 3 Q. Okay. So what I'm, what I'm trying to 4 determine, because you're, you're giving an opinion as 5 to this, is I can see this as well as you can. I can 6 see this graph. 7 A. Right. 8 Q. I can see the, the lines where they drop 9 below the Penon number and, which would indicate that if 10 the FP&L measurements was right, it was supplying less 11 power than the power going into the unit. Okay. But 12 other than that, is there anything scientific that we 13 had to apply, any methodology to apply to, to create 14 this graph? 15 A. This is just a summary graph. And I think 16 there's, might be another plot in this -- 17 Q. There is. And we'll -- 18 A. -- Exhibit B. 19 Q. And we'll get to that one. 20 A. Yeah, so there were a series of analyses that 21 I completed. And we looked at the baseline power of the 22 building, and that gets to, more to the opinion. This 23 is just the raw data comparison. And if the raw data 24 showed that there was no period, then I think we could 25 have said it's potentially a reasonable expectation.
Page 260 1 But this is a problem, and these areas down here are a 2 problem. What they're indicating is that nothing else 3 in the building is absorbing power, only the reactor, 4 and that's simply not realistic. 5 Q. And as you said, there's one of three 6 options. Either FP&L is wrong, Penon and Fabiani are 7 wrong, or there's manipulation on the data? 8 A. On, on the part of some party, yes. 9 Q. Okay. So basically one or the other is 10 incorrect, and then the third option is that it was 11 intentionally incorrect? 12 A. Right, by somebody. 13 Q. By somebody? 14 A. That's right. 15 Q. Okay. But you don't know which one is which? 16 A. No. 17 Q. Okay. So your opinion is simply that this is 18 an area of concern where it drops below and the other 19 areas where it drops below slightly are -- 20 A. In the context of this one plot, yes. 21 Q. Okay. Now, the measurements taken by FP&L 22 were taken at what time? 23 A. Midnight. 24 Q. Midnight. The measurements taken by Engineer 25 Penon were what time?	Page 261 1 A. Well, he was only in the facility I believe 2 four times. So I would imagine he only collected the 3 data. He didn't actually take the measurements. So 4 that's why I believe that Fabiani actually collected the 5 data in the logs and provided that to Mr. Penon. 6 Q. That's your belief? 7 A. It is my belief, yes. 8 Q. Okay. Do you know what data Mr. Penon 9 received directly? 10 A. How would Mr. Penon receive data directly? 11 Q. It's called the internet. 12 A. Really? No, I have no idea what data. I 13 would be interested to see. So he -- 14 Q. Do you know if he did? 15 A. I do not. 16 Q. Do you know if he had a computer on site? 17 A. I believe that there were computers on site 18 that were collecting data from, from the instruments, 19 yes. 20 Q. Okay. Do you know if one of those was 21 Mr. Penon's, or Dr. Penon's I should say? 22 A. I do not. 23 Q. Okay. Now, now you said that FP&L's data was 24 recorded at midnight? 25 A. Yes.

02/17/2017 Joseph Alan Murray

Pages 266..269

Page 266 1 Q. Well, let's, let's look specifically at, 2 let's see, May 20, 2015. 3 A. Okay. 4 Q. Okay. So between May 20, 2015, and June 20, 5 2015. 6 A. Uh-huh. 7 Q. Okay. There are at least one, two, three, 8 four, five, six, seven, eight days out of a 30-day 9 month, 31-day month? What is it? 31-day month. So 10 almost a third of the days there was no read during that 11 month, yet I don't see a single gap on your -- 12 A. Yeah, this, this -- 13 Q. -- line graph. 14 A. -- plot is actually connecting the points 15 rather than showing the, the data points. So as I said, 16 there were numerous different plots that I did to look 17 at the data, both from a joint probability density 18 function analysis techniques. I also looked at a wide 19 range of other techniques, so -- 20 Q. I'm sorry. 21 A. -- this one -- 22 Q. What was that technique? 23 A. That's a joint probability density function 24 analysis. 25 Q. What is that?	Page 267 1 A. So what you do is you create a distribution 2 of the two data sources so you can look at how those 3 measurements correlate, so you can look at the 4 distribution shape to find out if there's anomalous 5 structure in the distribution. 6 Q. Anomalous structure in the distribution? 7 A. Yes. 8 Q. We're, we're comparing presumptively two data 9 points on the same date to each other? 10 A. No. In a joint probability density function 11 what you're doing is you're actually creating a 12 distribution of all the days at the various power levels 13 and corresponding the power levels measured by, in this 14 case, Penon to the power levels measured by Florida 15 Power and Light. So we could look to see how these 16 distributions vary over time to see if there's 17 structural changes in it. 18 Q. I guess I'm not understanding. Structural 19 changes in the distributions of what? 20 A. Of the, the behavior between the two power 21 sources. So you do a, you're creating a, a distribution 22 of these power measurements. 23 Q. What, what do you mean by distribution of 24 these power measurements? 25 A. So a, if you take, if you create a histogram,
Page 268 1 so you look at all of the days that you had a particular 2 power level and you bend them and you contrast that 3 jointly with the two series, the two time series, then 4 you can create a, a distribution, a joint distribution 5 between two independent data sources. And then you can 6 create a probability density. So how probable is this? 7 What is the relationship between this? And two highly 8 correlated signals will have a very defined structure. 9 And when you contrast that with signals that are 10 unrelated, then they will have a completely different 11 structure. 12 So it's very difficult to see in a scale like 13 this where there are probably, I don't know, 300 and, I 14 don't know, however many days, 350 days or 360 days 15 worth of data. It's very difficult to see when you just 16 are connecting the points and you don't show the data 17 line. So this plot is, is just one example of the 18 analysis. 19 Q. Okay. Now, the, the plot below that says 20 cumulative energy absorption. What did that tell you? 21 A. Nothing. I mean it just shows the flat 22 points in the distribution. It was one of the things 23 that we analyzed along the way to see if there were 24 points where the cumulative energy were, were not 25 related, but it was just not --	Page 269 1 Q. Do they seem related to you here? 2 A. There are a couple of strange points where 3 one signal is steadily going up and the other signal is 4 flat, but it's very difficult to see in this. It would 5 be far better suited if it was plotted on a log scale so 6 you could exaggerate that and see that. 7 Q. Did you plot it on a log scale? 8 A. In other plots, yes. 9 Q. Is there a reason that this graph was 10 included in your expert disclosure then if it -- 11 A. It was just -- 12 Q. -- tells you nothing? 13 A. -- an, it was an example. So actually this 14 was plotted together in one function call, and so it was 15 just together when we saved the file or saved the image 16 out of the, the analysis. 17 Q. So you would agree with me, sir, that if 18 FP&L's data was incorrect and there had been an error in 19 the reading, your report would not accurately reflect 20 the relationship between the amount of energy supplied 21 by FP&L and that recorded by Engineer Penon and 22 Mr. Fabiani? 23 A. Could you repeat that? 24 Q. Sure. You would, you would agree with me 25 that if the FP&L data was incorrect, that would render

02/17/2017 Joseph Alan Murray

Pages 286..289

Page 286 1 basis. 2 Q. Okay. So the energy out is the numerator, 3 correct? 4 A. Yes. 5 Q. The energy in is the denominator? 6 A. Yes. 7 Q. Okay. So logically speaking, COP would 8 increase one of two ways, by the energy out increasing 9 relative to the energy in, correct? 10 A. Uh-huh. 11 Q. Or by the energy in decreasing, correct? 12 A. Uh-huh. If the energy out stayed constant. 13 Q. What if the energy out increased? 14 A. Well, then it would even increase more. 15 Q. Okay. So let's look at your graph. Your 16 concern over this is that, and you say there is no 17 logical reason why COP would increase when energy in 18 decreases? 19 A. Uh-huh. 20 Q. How do you come to that conclusion? 21 A. So what I was referring to is throughout the 22 entire test period there were numerous points that were 23 documented in various reports and along the way of 24 reactors going offline. Mr. Fulvio Fabiani provided us 25 with a log, actually in Italian that had to be	Page 287 1 translated to English, that showed this reactor went 2 offline and that reactor went offline, this Big Frankie 3 went offline, it was brought back on. It gives us 4 intervals of time. 5 And the thing that we saw was that when a 6 reactor went offline, the COP went up and the output 7 energy stayed the same, but we know from the physical 8 configuration that the pump system on the front end that 9 provides water to these systems is feeding the 10 individual reactors. So if you turned off a reactor -- 11 and you would expect a COP to be constant, but let's say 12 he had a COP of 100. When you turned off a reactor, you 13 would expect the COP to be constant, but the power 14 output would go down. 15 And this, and instead, what we saw was that 16 when a reactor was taken offline, the COP went up and 17 the output power stayed exactly the same, which in my 18 opinion is consistent with measurement error and 19 particularly the measurement error associated with the 20 flow meter. Because if the flow meter was flowing water 21 through it and it was inaccurately measuring just 22 because it was incorrectly sized or wasn't properly 23 implemented in this system, it may read the same exact 24 invalid number below the minimum. 25 And so it was indicative of, hey, this is an
Page 288 1 obvious problem. I, it is my opinion that any competent 2 engineers would have seen this and said wait a minute, 3 we have to understand this. 4 Q. Okay. Let me ask you a question. If you 5 have two devices, let's say we have two reactors. 6 A. Sure. 7 Q. Each operating at 50 percent capacity. 8 A. Okay. 9 Q. Okay. And they're each capable of producing 10 50, what, kilowatts? Does that make sense? Kilowatts? 11 A. 250, but okay. 12 Q. Okay. Let's say it's 250. 13 A. Okay. 14 Q. Each, right? 15 A. Uh-huh. 16 Q. Okay. So that means when they're operating 17 together at 50 percent capacity each, they're putting 18 out a total of 250 kilowatts, correct? 19 A. Okay. I buy that. 20 Q. Now, and they're receiving energy in to 21 operate? 22 A. So input. 23 Q. Yeah. 24 A. Yeah, the heating energy, yes. 25 Q. Okay. The heating energy to those two units.	Page 289 1 A. Uh-huh. 2 Q. If one of those goes offline and you increase 3 the energy to the remaining unit, okay, that means not 4 necessarily an excess of what -- I mean you could double 5 the energy to that second unit and still at the same be 6 at the same energy input, correct? 7 A. Last week when I was sitting in on 8 Mr. Rossi's deposition, he specifically stated that they 9 did not have the means to control the energy input when 10 reactors went offline, which is consistent with what I 11 understood. So the scenario you're describing is 12 inconsistent with the testimony that I, I listened to 13 last week. 14 Q. I'm sorry. You believe he said that he could 15 not, he could not control the energy input to the units? 16 A. Yeah. He could not, he could not control the 17 COP by increasing the energy to a unit. That's what I, 18 that's what I believe I heard last week. And 19 furthermore, that when we looked at this, the question 20 was how would you control the heating elements in each 21 one of the individual units? Because as was evident and 22 when we visited the plant, numerous of the actual 23 elements were pulled out and taken offline. They were 24 covered up with hose, little hose covers like garden 25 hose covers.

02/17/2017 Joseph Alan Murray

Pages 290..293

Page 290 1 Q. Off the Big Frankies? 2 A. Yes, yes. Many of the actual reactors were 3 completely disabled when we were there on February 16th 4 and 17th. I, I took pictures of it. I was kind of 5 surprised to see that all of them were not functional. 6 And so what we saw was a lot of failures. And so what 7 would happen is if, if you were in a condition when at 8 several points during the test -- in fact, in the 9 October time frame I think Mr. Penon came back to the 10 site and he identified all of the reactors that were 11 turned off and disabled. He indicated that by a zero 12 amperage input to them when he was measuring the system. 13 And so when you look at that, what you would 14 be doing is you would be overdriving certain heater 15 elements, but you didn't have the ability to increase 16 the water flow because some of those pumps were routed 17 to Big Frankie 1, some were routed to Big Frankie 2, 18 some to 3 and some to 4. So it would have required a 19 complete reconfiguration of the water flow system. So 20 in my opinion -- 21 Q. How were the pumps controlled? 22 A. How were the pumps controlled? They looked, 23 looked to be manually controlled on the front panel. 24 Q. Okay. So, so if you have one system go down, 25 somebody could go and manually --	Page 291 1 A. So we looked at that -- 2 Q. -- turn off the pumps, right? 3 A. So we looked at that and we took pictures of 4 the pump configuration when the plant was still 5 operational on the 16th, and what we saw was that the 6 pumps were in a fixed, almost maximal rate. And, in 7 fact, we also saw that some of the pumps had sediment 8 and, and biofouling in some of the lines, indicating 9 that there's no flow in those. So those pumps were 10 disabled. 11 And so it's, it's very unusual. You would 12 expect a system like this to maintain a constant 13 coefficient of performance nominally, in particular 14 considering that the system was originally supposed to 15 operate I believe it was 64 reactors in the Big Frankie 16 coupled with 51 of the smaller reactors. And at the 17 onset of the test all 51 of the other reactors were 18 disabled, and by the time we got there many of the Big 19 Frankie reactors were disabled. And furthermore, we 20 know from the data that Mr. Penon provided, numerous of 21 the Big Frankie reactors were disabled in that October 22 time period when he was there. 23 Q. Okay. Now, taking this one at a time. If 24 all of the reactors within the E-Cat unit were 25 operational at their maximum capacity, how much energy
Page 292 1 would be put out by that machine? 2 A. I have no idea. 3 Q. Okay. So you really can't testify that any 4 particular reduction makes it impossible that the amount 5 of energy reported by Dr. Penon could not have been 6 achieved? 7 A. What I can say as, as an engineer is that 8 taken, taking all of these factors together, the flow 9 rate, the pressure measurements, the, the adding of 10 water, the inability to see what's on the other side of 11 the plant, the lack of defining the state for the output 12 steam as well as the input steam, taking them on the 13 whole, it seems highly unlikely. In fact, in my opinion 14 I would say it cannot happen. 15 Q. What cannot happen? The amount of power -- 16 A. Yeah. 17 Q. -- the input? 18 A. The amount of power going up proportionally 19 when they turn off more and more reactors cannot happen. 20 Q. The amount of power went up or the COP? 21 A. Well -- 22 Q. Please -- 23 A. Let's be careful. Let's be careful. So if 24 you look at the formula for the COP, and let's say in 25 terms of energy. We'll take it on a, energy on a daily	Page 293 1 average. What happened was the amount of output energy 2 was effectively not, I shouldn't say constant, it varied 3 some, but the input energy to the system actually went 4 down. So we actually see a reduction in the input 5 energy. So this disproportion means the output energy 6 was constant and the input went down and, therefore, the 7 COP went up. So if I put in less power, how could that 8 happen? It's just completely illogical. 9 Q. Okay. How long, this reaction that's used on 10 the device -- first of all, do you have any background, 11 education, or work experience with LENR technologies? 12 A. Not before I went to Industrial Heat. 13 Q. Okay. And any experience with nuclear 14 reactors prior to that? 15 A. No. 16 Q. Okay. So are you familiar with nuclear 17 reactors? 18 A. Yes, I am. 19 Q. Do you feel competent to testify as to them? 20 A. No, no. 21 Q. Okay. 22 A. I'm not into the full operation of a nuclear 23 reactor, no. 24 Q. Now, when the reaction is started in the 25 E-Cat and you remove the power source, the input power,

02/17/2017 Joseph Alan Murray

Pages 302..305

Page 302 1 provided, analyze it, and to look at the, the time 2 history of the energy absorption provided by Mr. Penon 3 and Mr. Fabiani. 4 Q. And if I take the time, could I, could I go 5 through and make those comparisons and come to the same 6 conclusion? 7 A. I don't know if you could. That's me 8 projecting onto you. I'm not sure. You told me before 9 you only, you slept through math -- all your science 10 classes, so I would have to say no. 11 Q. I said I slept through one of them. 12 A. Oh, all right. For the record, it was one. 13 MR. ANNESSER: Okay. We need to change the 14 tape. 15 THE WITNESS: Okay. I need to run to the 16 restroom. 17 THE VIDEOGRAPHER: We're off the record at 18 3:55 p.m. 19 (Recess taken 3:55 p.m. to 4:03 p.m.) 20 THE VIDEOGRAPHER: We are back on the record 21 at 4:03 p.m. 22 BY MR. ANNESSER: 23 Q. Sir, I think previously you had testified 24 with respect to Mr. Dewey Weaver that you had hundreds 25 of e-mails with him.	Page 303 1 A. From him. 2 Q. Or from him. Okay. Were they hundreds of 3 e-mails regarding the E-Cat for the most part? 4 A. No. No, he, as I described earlier, Dewey 5 was kind of like a business development outreach guy 6 looking for people that were doing research and 7 technology development in this area, trying to build 8 relationships for the, you know, what they described as 9 the portfolio. And so he was always sharing lots and 10 lots of information about different people that he had 11 met and what they were doing and what people were 12 interested in and things of that sort. 13 Q. Okay. Now, getting to the next opinion that 14 you have in your report regarding heat simulations. You 15 say, "Mr. Murray's simulation demonstrates how the heat 16 would typically build over time to achieve a steady 17 state temperature. See thermal simulations." What, 18 what is thermal simulations? Is that a publication? 19 A. No. It's the results of thermal simulations 20 that I have run. And so I, I did a series of OpenFOAM 21 3D simulations of buoyancy-driven flow inside of the 22 building. So when we were there, one of the, on, on 23 February 16th and 17th, 2016, one of the things I 24 noticed was it was not as hot in the facility as I was 25 kind of expecting. When we got there, and I checked
Page 304 1 back in the record of the final report, it looked like 2 the days leading up to the end when they turned off the 3 system, it was, it was operating at near full capacity. 4 And so from that standpoint I also observed 5 that there was a skylight and then there was a vent, but 6 when we were there that day or those days the vent was 7 never running. And so I was a little perplexed and 8 tried to figure out how hot should it be in that. So we 9 put together some buoyancy-driven flow simulations of 10 the building based on the estimates for where the wall 11 was and how big was the, the, the box on the other side. 12 And we made the assumption that some amount of heat, 13 various levels of heat had to be dissipated through that 14 box. 15 And so we did a 3D simulation using OpenFOAM, 16 a steady-state buoyancy-driven flow simulation so that 17 we could try to assess, you know, how hot should it have 18 been, just to kind of do a sanity check, make sure 19 things made sense. 20 Q. And your opinion was that the room would have 21 been heated to a temperature unsuited for a human 22 working environment? 23 A. Yes. 24 Q. What temperature? 25 A. We did it for 100-kilowatt dissipation. We	Page 305 1 did it for 500-kilowatt dissipation, 750, 250, and 800. 2 The 100-kilowatt dissipation reached a steady-state 3 temperature in the building -- I drew a -- 4 Q. Okay. 5 A. I'm sorry. 6 Q. I'm going to stop you for a moment. 7 A. Okay. 8 Q. Let's just go to the 800. 9 A. Yeah. I don't have the data. I, I haven't 10 looked at the 800 data since last August, because it was 11 extraordinarily hot. I, the data I focussed on was the 12 100-kilowatt dissipation in the building. 13 Q. Is that the data that you had provided to 14 Industrial Heat back when you made it? 15 A. The 100? Yeah. I provided 100, 250, 500, 16 750, and 800, various different simulations. 17 Q. Do you know why that has never been provided 18 to us? 19 A. Well, those, those simulations, they, for 20 some reason, I don't know why, but when I converted the 21 video simulations, they were corrupted. 22 Q. But I think you testified that that was when 23 you sent it to counsel, but -- 24 A. Yeah. 25 Q. -- that Industrial Heat had it previously?

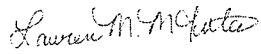
02/17/2017 Joseph Alan Murray

Pages 326..329

Page 326 1 Q. Okay. But what are those equations 2 specifically? Do you know? 3 A. I can't recite them off the top of my head. 4 Q. Okay. Do you know what they are? 5 A. Yeah, they're the -- 6 Q. If -- 7 A. -- well, heat transfer, the -- 8 Q. Okay. 9 A. Yeah. 10 Q. This simulator, if I were to go to open, open 11 flow -- 12 A. OpenFOAM. 13 Q. -- OpenFOAM, sorry, and put in all of the 14 requested data for this, could I run a simulation? 15 A. I don't think you have the competency to do 16 that. 17 Q. I would not -- 18 A. And nothing personal. 19 Q. -- be insulted. 20 A. Right. So not, nothing personal. I don't 21 believe that -- I mean you have to have some 22 expertise -- 23 Q. Why? 24 A. -- and that's why -- 25 Q. What, what does it take that I don't have?	Page 327 1 A. A lot of understanding of the heat transfer 2 and the fluid mechanics and -- 3 Q. What about? What about? I mean give me 4 specifics, not just about the heat transfer. 5 A. You have to have an understanding of all the 6 boundary conditions that you would define, the materials 7 that you would define, how you would -- a major part of 8 this is how you decompose the system into a series of 9 grids so that you can solve it. And you would have to 10 have an understanding of how the tools work. You would 11 have to have a computing system that was adequately 12 large to run the simulations. 13 For example, the 100-kilowatt simulation that 14 I've been running, that actually has taken almost three 15 weeks on a pretty powerful computer. So there's, 16 there's a lot that goes into it, and that's why I 17 actually, I have been doing simulations of this sort for 18 many, many years. And, and actually we have outsourced 19 when, in my previous company we outsourced it to other 20 companies that did this. And when I left my company, I 21 was very interested in looking at OpenFOAM because of 22 the power of this tool. And it's open source. So I 23 actually went and had training on open -- on using this 24 tool in contrast to other tools that we have used in the 25 past.
Page 328 1 Q. And so it, it applies these equations that 2 you can't tell me today what they are? 3 A. Yeah. They're the, they're the diffusive 4 heat transfer equations. Do you, you want me to write 5 out the calculus? 6 Q. Do, do you know it? 7 A. No, not off the top of my head. 8 Q. Okay. 9 A. And so. 10 Q. Did you rely, in preparing the data to put 11 into this simulator, did you rely upon any written 12 literature, publications, or otherwise? 13 A. Yeah. I, I relied on all of my training 14 throughout my masters and PhD programs in convective 15 heat transfer, fluid mechanics, turbulence simulations. 16 Most of my graduate work was actually in those areas, 17 and then I used and then I employed this tool. As I 18 said before, my, my research in my PhD program was on 19 large eddy simulations, which is a family of simulations 20 that can be done in this tool. And so, and 21 that's actually how -- 22 Q. Large eddy deals with fluid, correct, not 23 air? 24 A. -- it's -- what's that? 25 Q. Large eddies refer to fluid?	Page 329 1 A. No. A large eddy simulation -- 2 Q. Sure. 3 A. -- is a, it's a course grid scale full 4 simulation of the Navier-Stokes equations, and it can 5 incorporate the heat transfer equations for, on a course 6 grid. And what you do in large eddy is you solve at a 7 large grid, and you model at a smaller grid. So that 8 was my research. You said we were going to get back to 9 it, but that was my research in my PhD program. 10 And so a large eddy simulation is not, it, it 11 can be used for lots of different things. You can use 12 it for fluids. You can use this for gas. You can use 13 it for plasmas. You can do lots of different things. 14 In this case, we were doing it for air, the most simple 15 case. 16 Q. With respect to the flow meters, sir -- 17 A. Yes. 18 Q. -- did you test what the reading on the flow 19 meter would be if the amount of water passed through it 20 and the amount being, the amount that Penon reported 21 went through? 22 A. Uh-huh. 23 Q. You did? 24 A. I'm sorry. Say that again. I'm sorry. 25 Q. Did at any time you test these flow meters

02/17/2017 Joseph Alan Murray

Pages 370..373

Page 370	Page 371
1 MR. LOMAX: And Defendants are going to 2 designate Mr. Murray's testimony at this time as 3 highly confidential due to a lot of the information 4 that was provided here today. 5 (DEPOSITION CONCLUDED AT 5:20 P.M.) 6 (SIGNATURE RESERVED) 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25	1 STATE OF NORTH CAROLINA 2 COUNTY OF WAKE: 3 4 REPORTER'S CERTIFICATE 5 I, LAUREN McINTEE, RPR, a Notary Public in 6 and for the State of North Carolina, do hereby certify 7 that there came before me on Friday, the 17th day of 8 February, 2017, the person hereinbefore named, who was 9 by me duly sworn to testify to the truth and nothing but 10 the truth of his knowledge concerning the matters in 11 controversy in this cause; that the witness was 12 thereupon examined under oath, the examination reduced 13 to typewriting under my direction, and the deposition is 14 a true record of the testimony given by the witness. 15 I further certify that I am neither attorney 16 or counsel for, nor related to or employed by, any 17 attorney or counsel employed by the parties hereto or 18 financially interested in the action. 19 IN WITNESS WHEREOF, I have hereto set my 20 hand, this the 20th day of February, 2017. 21 22  23 LAUREN McINTEE, RPR, Notary Public 24 Notary Number: 201616600044 25
1 WITNESS'S CERTIFICATE 2 3 I, JOSEPH ALAN MURRAY, do hereby certify 4 that I have read and understand the foregoing 5 transcript and believe it to be a true, accurate, and 6 complete transcript of my testimony, subject to 7 the attached list of changes, if any. 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25	1 CaseWorks, Inc. 2 811 Ninth Street, Suite 260 (Page 1 of 2) 3 Durham, North Carolina 27705 4 E R R A T A S H E E T 5 Re: Andrea Rossi, et al. vs. Thomas Darden, et al. 6 Deposition of: JOSEPH ALAN MURRAY 7 Please read this transcript with care, and if 8 you find any corrections or changes you wish made, list 9 them by page and line number below. DO NOT WRITE IN 10 THE TRANSCRIPT ITSELF. Return the 11 Certificate and Errata Sheet to this office after 12 it is signed. We would appreciate your prompt 13 attention to this matter. 14 To assist you in making any such corrections, 15 please use the form below. If supplemental or 16 additional pages are necessary, please furnish same and 17 attach them to the errata sheet. 18 Page ____ Line ____ should 19 read: _____ 20 Page ____ Line ____ should 21 read: _____ 22 Page ____ Line ____ should 23 read: _____ 24 Page ____ Line ____ should 25 read: _____

From: Tom Darden <tdarden@industrialheat.co>
Sent: Tuesday, December 01, 2015 1:15 PM
To: Joseph Murray
Subject: Re: Plant status

Thanks. See you in AM.

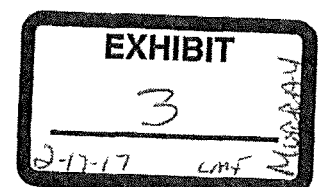
From: Joseph Murray
Sent: Tuesday, December 1, 2015 12:49 PM
To: Tom Darden
Subject: Re: Plant status

TBD is starting up now. He will have the system calibrating. Not sure where he landed on the dual laser system. We have the first reactor installed and are buzzing out the lines on the controller. We hope to have the controller set up and heating the reactor this afternoon. We should have at least TBD Legacy Rossi system in calibration and our system alive.

Joe.

On Tue, Dec 1, 2015 at 11:35 AM, Tom Darden <tdarden@industrialheat.co> wrote:
BTW, how are things looking for tomorrow's meeting? Will anything be running, eg TBD's project?

--
Joe Murray
Industrial Heat
p: 919.670.2771
c: jmurray@industrialheat.co



From: Fulvio Fabiani <fulviofabiani@mail.com>
Sent: Monday, April 25, 2016 1:01 PM
To: Joseph Murray
Subject: Re: Follow Up

sorry Joe,

but I am very upset about the behavior of both parties.

Rossi is very disappointed with me because he thinks that I'm an IH spy and IH did not pay the last invoice to me, taking me around saying (words of JT) that the check has been shipped (over 20 days ago).

These two behaviors are really bad and not reflecting the honesty with which I worked for Rossi and IH.

My data are frozen inside a certificated server,

and I will not make any use of such information except for defence myself from Rossi and IH accusations against me.

Anyway I'm ready for a beer with you, because you are the only one in my same situation (between the hammer & anvil), txt me.

Now back to my search for new customers.

Have a good day.

Fulvio

Sent: Wednesday, April 20, 2016 at 11:42 AM
From: "Joseph Murray" <jmurray@industrialheat.co>
To: "Fulvio Fabiani" <fulviofabiani@mail.com>, "JT Vaughn" <jvaughn@industrialheat.co>
Subject: Re: Follow Up

Fulvio,

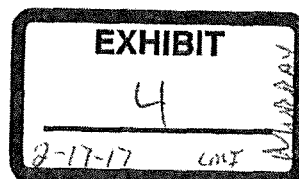
Any updates on the raw data and the final report. We are approaching a month past due. Should we talk today? Should we arrange a face to face meeting to sort this out?

Thanks,

Joe.

On Thursday, April 14, 2016, Joseph Murray <jmurray@industrialheat.co> wrote:
Fulvio,

I still have not received the final report and raw data - that you indicated would be sent at the end of March, and then again more that a week ago. I wanted to make sure you did not have any issues preparing the files for transmission.



Please advise.

B/R,

Joe.

On Thu, Apr 7, 2016 at 3:39 PM, Joseph Murray <jmurray@industrialheat.co> wrote:
Fulvio,

Any updates on the report and raw data?

Thanks,

Joe.

On Wed, Apr 6, 2016 at 2:10 PM, Joseph Murray <jmurray@industrialheat.co> wrote:
Fulvio,

Great I am looking forward to the raw data files. I could really use the unofficial flow meter records when you find them. Also, please send a copy of your full report.

Best regards,

Joe.

On Wed, Apr 6, 2016 at 1:43 PM, Fulvio Fabiani <fulviofabiani@mail.com> wrote:
Hello Joseph,

I received the written consent from JT to transmit to you the RAW DATA of entire year (thermal and electrical) of which you has already received from me the xls summary for the analyzes.

Just be ready to certified transmission, I will look to send it to you.

About the unofficial data of flowmeter, Im sorry to announce that, until now, I did not find my notes about that instrument.

If I had to find this data, I will warn promptly.

Have nice day.

M.Eng. Fulvio Fabiani
C.E.O. if USQL LLC
+1(919)8127863

Sent: Tuesday, April 05, 2016 at 9:21 PM
From: "Fulvio Fabiani" <fulvio.fabiani@mail.com>
To: "Joseph Murray" <jmurray@industrialheat.co>
Subject: Re: Follow Up

Hello Joseph,

For continue some discussion about my work for IH i need writed autorization from Tom or JT.

Have nice day.

Fulvio

Sent using the mail.com mail app

On 4/1/16 at 12:51, Joseph Murray wrote:

> Fulvio,
>
> I hope this message finds you well. A few weeks back I requested a copy of
> the original raw data as well as the unofficial data you recorded that
> included the flow meter logs. JT indicated that you were in Canada but
> would get back with me. Could you please pass along that information.
>
> In addition I think your final report was to be completed by 3/31/16. Can
> you send that along with all of the supporting data?
>
> Thanks and hope all is well.
>
> B/R,
>
> Joe.
>
>
> On Tue, Mar 22, 2016 at 5:52 PM, Joseph Murray <jmurray@industrialheat.co>
> wrote:
>
> > Fulvio,
> >
> > I hope this message finds you well. I have gone through the data that you
> > provided and it was very helpful. I think it clarifies many things that
> > were ambiguous with the other data sets that we were provided by Penon.
> >
> > Did you have any success in finding the other log data that you were going
> > to look for on the other computer? We were interested in your informal
> > measurements from the flow meter.
> >
> > Also, is it possible for you to send me a raw data files with the data
> > sampled at the raw rate? This would be most helpful.
> >
> > Best regards,
> >
> > Joe.
> >
> > --
> > Joe Murray
> > Industrial Heat
> > p: 919.670.2771
> > e: jmurray@industrialheat.co
> >
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> > --
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Joe Murray
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p: 919.670.2771
e: jmurray@industrialheat.co

From: JT Vaughn <jvaughn@industrialheat.co>
Sent: Monday, July 13, 2015 9:12 AM
To: Joe Murray
Subject: Fwd: Andrea Rossi

Alright, he'll start getting worked up now...should be a fun trip.

----- Forwarded message -----

From: JT Vaughn <jvaughn@industrialheat.co>
Date: Mon, Jul 13, 2015 at 9:10 AM
Subject: Re: Andrea Rossi
To: "con333@libero.it" <con333@libero.it>
Cc: Trista Balmer <tbalmer@industrialheat.co>

Thanks, Andrea. We'll try to get this processed.

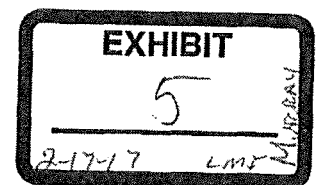
Also, I would like to introduce you to one of our new team members, Joe Murray. He and I have booked a flight down on Tuesday afternoon and will depart Wednesday afternoon. I hope we can come see you at the plant on Tuesday afternoon, then we'll go get cleaned up at the hotel and plan to do dinner with you on Tuesday evening, and then spend some time at the plant on Wednesday morning through lunch or so--does that work? I am looking forward to seeing you, Barry and Fulvio and also introduce you guys to Joe.

Separately, concerning the provisional applications--rather than mailing to the shop, could you please mail the receipts and a copy of the applications to me at 111 E. Hargett St., Suite 300, Raleigh, NC 27601? Alternatively, you can scan and email if you like--feel free to encrypt the email and/or attachments (we use Virtru for this purpose, but not sure if it works with your email).

Best,
JT

On Mon, Jul 13, 2015 at 8:48 AM, con333@libero.it <con333@libero.it> wrote:
Dear Tista, JT:
Please find attached the invoice # 29-2015.
Warmest Regards,
Andrea

--
JT Vaughn
Industrial Heat
jvaughn@industrialheat.co



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--

JF Vaughn
Industrial Heat
jvaughn@industrialheat.co

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DATE: 18-JUL-2015

SUBJECT: Summary of the Swansboro Meeting

ATTENDEES: Joseph Murray (JAM)
T Barker Dameron (TBD)
Barry West (BW)

This document is protected by Attorney Client Privilege

In an effort to better understand the configuration of the Leonardo Inc. (LI) trial that is presently being conducted in Doral, Florida a meeting was conducted between the attendees listed above. This meeting was initiated subsequent to LI indicating that JAM would not be permitted to enter the Doral Plant on a planned visit scheduled for 14 and 15 July 2015. Industrial Heat, LLC (IH) has a contractual interest in understanding the operations of the Doral Plant of LI. LI has represented that since February of 2015 the plant has been operational and consistently produces about 0.8 Megawatts (MW) of steam. This steam has been delivered to an independent organization that is co-located in this facility by way of an arrangement between LI and JM Products Inc. JM Products Inc. requests invoices from IH on a monthly basis for the purchase of the steam. These requests invoices indicate the amount of steam JM Products Inc. has received during the period but does not have any indication of how they are measuring the steam received. The invoices are requested by Mr. Henry W. Johnson with the subtitle "Advanced Derivatives Of Johnson Matthew Platinum Sponges". Note that JM Products Inc. has also been known to operate under the name JM Chemicals Inc. and JM Chemical Products Inc. all of which are suggested to be United Kingdom based companies. Note that Johnson Matthew Platinum Sponges should not be confused with Johnson Matthey Platinum Sponges. Johnson Matthey is a preeminent specialty chemical and renewable technology provider based in the United Kingdom.

The data reviewed in support of the proposed July 14 introduction and plant tour included background contract documents, requests for invoice from Mr. Henry W. Johnson, President of JM Products Inc., and reports from LI's consultant and advisor Dr. Fabio Penon¹.

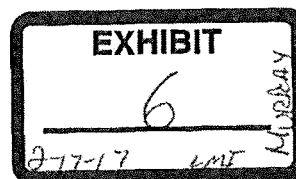
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¹ The initial report from Dr. Penon with the title "E-CAT MW1 ENERGY PLANT IN MIAMI PLANT START UP" dated 4/30/2015 indicates in section 4 "Data Analysis" that the effective flowed water into the system is 3600 kg / day. However, all calculations presented in the "Daily valuation of the energy multiple - February 2015, March 2015, April 2015, and May 2015" use a value of 36,000 kg / day. A discrepancy of 10x between the the report value of 3600 kg / day and the value used in the calculations of 36,000 kg / day results in a COP increase of 10x. This is an extraordinarily large error that must be addressed.

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Page 1 of 4

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IH-00120182



In an attempt to understand the Doral Plant configuration and operation a meeting was arranged between the attendees on 18-July-2015. TBD, BW, and JAM discussed BW's ongoing role in support of IH at the Doral Plant. It was the intent that BW provide as much information regarding the As-Built configuration, operation of, and issues associated with the Doral Plant. The following items highlight topics that were discussed at the meeting:

1. **Plant Sensors:** The Plant does not have an operational steam flow meter. The only indication of the amount of water made available for generation of steam is an estimate of the amount of time water is pumped into the E-CAT heater tank from the feed water tank aperiodically. Per this discussion there is no mass or volume flow rate sensor on the condensate return line, nor on the piping between the feed water tank and E-CAT heater tank, nor is there a steam flow meter on the steam side of the device.
2. **Plant Sensors:** It was indicated that the pressure on the output steam line that is routed to the steam customer is continuously zero (0) pressure (gage). For steam to flow requires a pressure differential between the source and sink locations. Therefore, to overcome the pressure loss associated with the piping between the 2 locations and the need for steam to flow requires that the sink device (heat exchanger) must be operating in a vacuum state (in this context a vacuum state is a pressure below atmospheric pressure). Details on the design and configuration of the steam customer is required.
3. **Plant Sensors:** It was indicated that there was a steam flow sensor installed in the system by Dr. Penon. This sensor was located in the steam line between the source and sink but the device "burned out" at some point and therefore no data on mass or volume flow is readily available.
4. **Plant Sensors:** BW indicated that the power meter, model PCE830, used to monitor the 480 3 Phase input power reads 73 A on each of the 3-480 VAC phases.
5. **Operations:** The Plant does not include the ability to continuously monitor or automatically control the water level in the E-CAT heater tank. From time to time an operator must enable the level indicator on the E-CAT heater tank. When this task is executed the operator determines if additional water is needed in the tank. If the tank needs water the operator will turn on the pumps to move water from the feedwater tank to the E-CAT heater tank. The time that the the pumps are run is measured and an estimate of how much water was pushed into the E-CAT heater tank is estimated. The interval for checking the water in the E-CAT heater tank was not clearly known. Further, the need to fill the tank when there is no operator on site was not addressed.
6. **Operations:** BW indicated that the power configuration is unsafe. He indicated that he hoped "nobody every came to inspect the place". He stated that there is power floating all over in the system configuration and touching the wrong piece of equipment would

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Page 2 of 4

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IH-00120183

INDUSTRIAL HEAT

result in shocking an individual. This is a safety hazard and should be immediately investigated. Further, this may actually suggest why there have been extensive equipment failures. Floating a system like this can result in complicated and unanticipated current leaks at dangerous levels. The safety concerns centered on the failure of the heater units shorting to ground.

7. **Operations:** The physical configuration of the Plant was discussed. BW indicated that some or all of the non "Big Franky" units are disabled (by removing their wiring) from the control system; All of these units are not operational in the system. Within the four (4) operating "Big Franky" units each one contains 16 E-CAT heaters. The intention was that 1 MW of steam would be produced by operating 4 "Big Franky" and the other E-CAT devices. Within a "Big Franky" unit only 15 E-CAT heaters were to be operational and the other unit a spare (in the event of a failure).
8. **Operations:** The Plant is presently running exclusively with "Big Franky" units. All of the other E-CAT devices are disabled. Furthermore, BW indicated that on average only about 8 - 9 E-CAT heaters are operational in each of the "Big Franky" units due to continuing failures of units. BW was responsible for removing power inputs to the failed E-CAT heaters in the "Big Franky" units. In summary, only approximately 28 - 36 E-CAT heaters distributed across the 4 "Big Franky" units are operational.
9. **Operations:** BW indicated that the waveforms feeding power into the system are manipulated and adjusted often. In general the phase relationship are manipulated. In general the duty cycle is nominally 10 seconds of power applied followed by 30 seconds of power removed.
10. **Operations:** BW indicated that it is clear that when standing near the E-CAT heater tank that the water in the tank is boiling vigorously.
11. **Operations:** BW indicated that on a regular basis additional distilled water is brought to the Plant. This water is added to the system from time to time.
12. **Personnel:** BW indicated that there is a person, Renaldo, living in the space rented by JM Products, Inc. This person is often engaged to allow BW and Mr. Fulvio Fabiani gain access to their work area. In addition to Renaldo, the JM Products, Inc. personnel include "Jim". Jim is in the space from time to time. He generally drives an vehicle that appears as an unmarked government vehicle. BW has been told that the customer who is buying the steam via JM Products, Inc. is from the United States Department of Defense. The suggestion is that the secrecy associated with the purchaser of the steam is related to the nature of the customer.
13. **Personnel:** BW reports to the Plant and works regular hours on a 4 week on 1 week off schedule. BW generally reports to the Plant in the AM at approximately the same time as Mr. Fabiani. BW and Mr. Fabiani are colleagues and spend extensive time together in the office and have from time to time spent time outside of the office in recreational activities. At one point Mr. Fabiani indicated to BW that he would cause him physical

INDUSTRIAL HEAT

harm if BW interfered with the Plant. The nature and motivation for this threat should be better understood.

14. **Personnel:** BW noted that Dr. Rossi and Dr. Penon have heated arguments in Italian when he is present at the facility. The details and nature of the arguments is unknown.

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Page 4 of 4

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IH-00120185

From: fabiopenon@iol.it
Sent: Tuesday, February 23, 2016 9:58 AM
To: jmurray@industrialheat.co
Cc: tdarden@industrialheat.co; ar.123@mail.com
Subject: E-Cat reports
Attachments: attachment-1.pdf; attachment-2.pdf; attachment-3.pdf; attachment-4.pdf; attachment-5.pdf; attachment-6.pdf; attachment-7.pdf; attachment-8.pdf; attachment-9.pdf; attachment-10.pdf; attachment-11.pdf; attachment-12.pdf; attachment-13.pdf; attachment-14.pdf; attachment-15.pdf; attachment-16.pdf; attachment-17.pdf; attachment-18.pdf; attachment-19.pdf

Dear Mr. Murray,

following your request, please find attached all the reports on E-Cat MW1 Energy Plant
Reports have already been sent to Mr. Darden and Mr Rossi:

E-Cat MW1 Energy Plant in Miami: test plan, by e-mail dated 02/10/2015

E-Cat MW1 Energy Plant in Miami: plant start up, by e-mail dated 05/28/2015

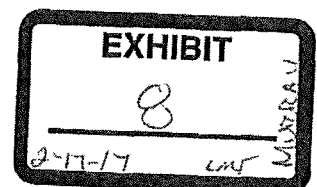
E-Cat MW1 Energy Plant in Miami: first step, by e-mail dated 05/28/2015

E-Cat MW1 Energy Plant in Miami: second step, by e-mail dated 10/22/2015

E-Cat MW1 Energy Plant in Miami: second step - from 05/01/2015 to 11/30/2015, by e-mail dated 01/12/2016

Sincerely

Dr. Eng. Fabio Penon



Ing. Fabio Penon

Plant start up

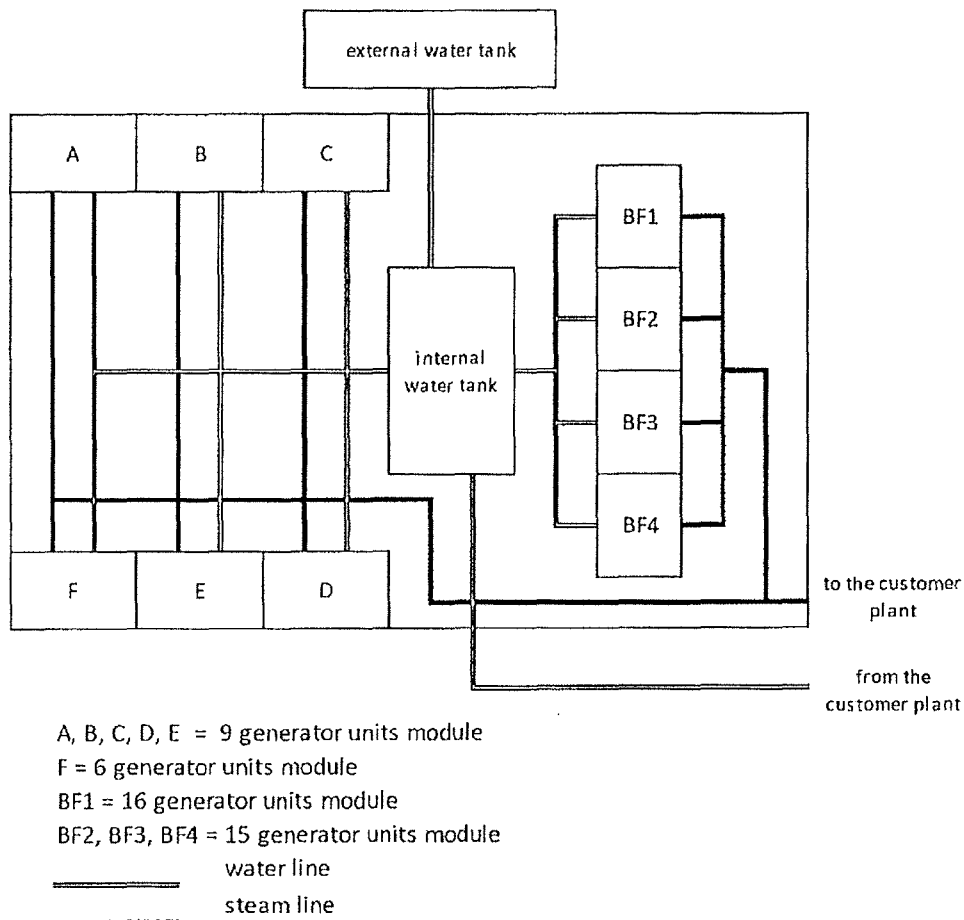
E-CAT MW1 ENERGY PLANT IN MIAMI PLANT START UP

The ERV visited the MW1 – USA plant at Doral on February 16 -18, 2015
He verified the compliance of the plant configuration and of the measuring chains with reference documentation.
During his visit, the ERV was assisted by ing. F. Fabiani and by doc. A. Rossi.

1. Plant configuration and measuring instruments positioning

The thermohydraulic diagram of the plant is represented in figure 1.
The plant is composed of 112 units of energy generation, grouped in modules: 111 units are operational during the tests, one unit is used as spare part.
In figure 1 the configuration of every module is reported

Figure 1: Thermohydraulic diagram of the plant



Ing. Fabio Penon

Plant start up

The cooling water is conveyed by pumps in the units E-Cat, where it is heated to vaporize. The steam is conveyed in a unique pipe of the steam line, which conveys it outside of the shelter.

The steam is then passed through the customer's installation, where it cools up to its condensation.

The water is so recycled to the internal tank in a closed loop. The water is distilled water.

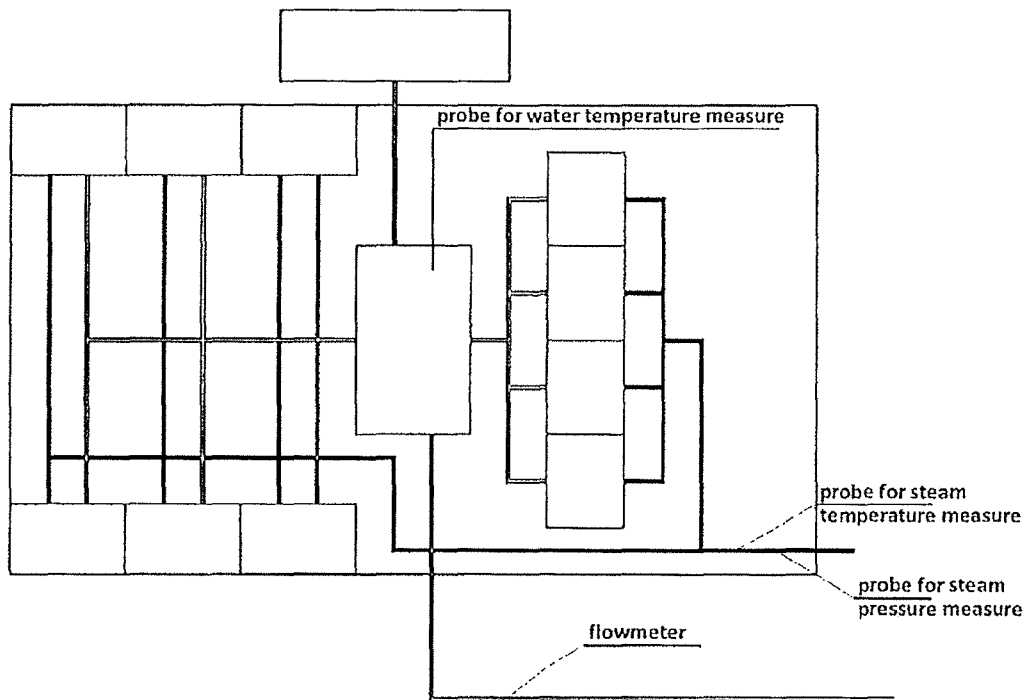
The internal tank is connected with the external one.

By this way it is possible to refill refrigerant leaks during operation.

The amount of water refilled is recorded

Figure 2 shows where the instrumentation to measure thermohydraulic characteristics is positioned in the thermohydraulic circuit

Figure 2: Position of the thermohydraulic measuring instrumentation



Identification of thermohydraulic measuring instrumentation

- Flowmeter, APATOR, type MWN 130-80 NC, type n. 15305714, test report n. 01/2015, issue date 01/15/2015
- Thermocouple for water temperature measure, OMEGA, type n HSTC-TT-TI-24S-1M, id. n. T4, certificate n. M16758, issue date 02713/2015

Ing. Fabio Penon

Plant start up

- Digital Thermometer and Probe for steam temperature measure, OMEGA, type n. HH806AU, HTSC-TT-TI-24S-1M-SMPW-M and TC-T-NPT-U-72-SMP, s.n. 140124 (HH806AU), certificate number M16760, issue date 02/13/2015
- Probe for steam temperature measure , OMEGA, T Probe, Type TC-T-NPT-U-72, type n. T3, certificate number M16759, issue date 02/13/2015
- Digital manometer, KELLER, type LEO1, type n. 43407, certificate n. RTV-MA-0141-15, issue date 03/16/2015

Annexe 1 shows wiring diagram and where the instrumentation to measure electrical characteristics is positioned in the electrical circuit

Identification electrical measuring instrumentation

- Power analyzer, PCE, type PCE-830, type n. 12080171, clamp model 6801, type n. 12020682, 12020677, 12020676, certificate n. 0518/15, issue date 01/28/2015.
- Power analyzer, PCE, type PCE-830-2, type n. 15040068, clamp model 6802, type n. 15060298, 15060299, 15060300, certificate n. 3934/15, issue date 04/20/2015.

2. Start up procedure

- Every power generation unit is filled with distilled water, coming from inner tank, until the water level is the desired.
- The internal tank is filled with distilled water coming from external tank, until the water level in the inner tank is equal to the initial one.
- The hydraulic circuit is closed to see if there are leaks in the E-Cat plant or in the customer's one.
- All the leaked water is refilled with water coming from external tank, until the water level in the inner tank is equal to the initial one.
- When the level of the water in the inner tank has stabilized, the hydraulic circuit is closed. The heating resistors are switched on.
- Power supply is increased by 5% every 10 minutes till the desired power level
- The water in the circuit heats up to the temperature of vaporization.
- When vaporization process is finished and all the water is transformed into superheated steam, after about 2 hours, the power is reduced up to that required for the stability of this situation (stability level)
- After 24 hours, a power supply cycle is started: ten minutes power supply at stability level, ten minutes no power supply

3. Data recording

The measuring systems collect the following data every ten seconds: power supply (Kw), water temperature in the inner tank (°C), steam temperature (°C) and steam pressure (bar) in the pipe going to customer plant.
All data are recorded in a data logger
Only the mass of water (m³), flowed through the plant, is recorded manually once in a day.

In the logbook the E-Cat each addition of distilled water from external tank to an internal tank is registered.

Ing. Fabio Penon

Plant start up

4. Data analysis

The analysis of the data on February 24th shows that steam pressure has been about 0,0 bar.

The minimum steam temperature has been 103,6 °C, i.e. the steam has been always superheated steam.

The maximum water temperature has been 69,1 °C

The effective flowed water has been 3600 kg/d, the reduced flowed water 3240 kg/d.

The supplied energy has been 247000 wh/d

The energy produced by E-Cat plant is given by the sum of the heat of heating of water, heat of vaporization of water and heat of superheating the steam.

$$E_p = E_R + E_v + E_s$$

In order to be conservative:

- it is not taken into account the heating energy of water and the heating energy of steam
- the temperature of the incoming water is always considered to be equal to the maximum value of the same, measured during the entire test day

It is possible small leaks of water to the inside of the shelter and are measurement uncertainties are present.

To take this into account the total mass of water transited during the test period is reduced by 10%.

Consequently

$$E_p = E_v = \lambda \times M_w$$

where

M_w = total mass of water, flowed through the system in one day, reduced by 10%.

λ = (latent energy of vaporization) = 627,5 Wh/kg at 0. bar

The absorbed energy (E_A) supplied from the public grid

In order to be conservative:

- all the supplied energy is supposed be absorbed by the 111 reactors

In reality a part of this energy feeds the pump, which conveys the water from the tank external to the reactors This energy doesn't feed the reactors

$$\text{Energy multiple (February 24, 2015)} = \frac{\text{energy produced (} E_p \text{)}}{\text{energy absorbed (} E_A \text{)}} = 82,3$$

5. Annexes

Annexe 1: Wiring diagram

Abano Terme, 2015/04/30

POIESIS srl
Dr Eng. Fabio Penon
(Nuclear Engineer)

DAILY VALUATION OF THE ENERGY MULTIPLE - FEBRUARY 2015										
		average power supply (Kw)	supplied energy wh/d	tank water T max (°C)	effective flowed water(Kg/d)	reduced flowed water (kg/d)	steam T min (°C)	steam pressure	produced energy (wh)	COP
02/23 22:30	02/24 22:30	10,29	247000	69,1	36000	32400	103,6	0.0	2,03E+07	82,3
02/24 22:30	02/25 22:30	10,29	247000	68,6	36000	32400	104,5	0.0	2,03E+07	82,3
02/25 22:30	02/26 22:30	10,42	255000	68,6	36000	32400	103,6	0.0	2,03E+07	79,7
02/26 22:30	02/27 22:30	10,5	252000	68,6	36000	32400	104,5	0.0	2,03E+07	80,7
02/27 22:30	02/28 22:30	10,59	259000	69,1	36000	32400	104,5	0.0	2,03E+07	78,5

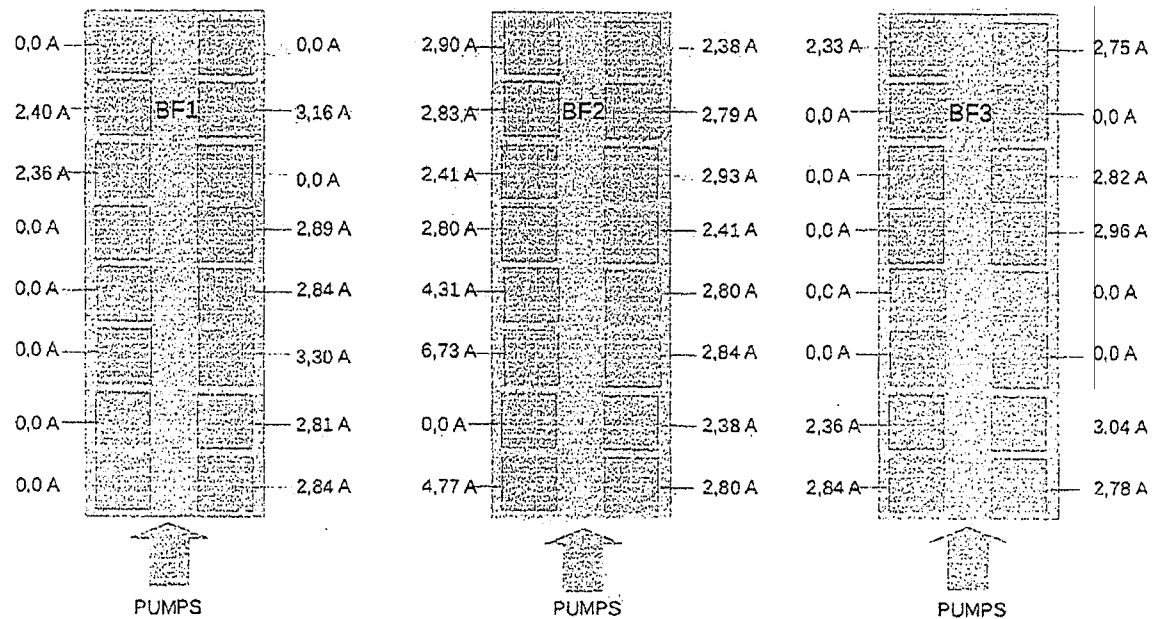
Annex 7: DAILY VALUATION OF THE ENERGY MULTIPLE - NOVEMBER 2015										
		average power supply (w)	supplied energy wh/d	tank water T max (°C)	effective flowed water(Kg/d)	reduced flowed water (kg/d)	steam T min (°C)	steam pressure	produced energy (wh)	COP
10/31 22:30	11/01 22:30	11125.0	267000	71.1	36000	32400	104,4	0.0	2,03E+07	76,1
11/01 22:30	11/02 22:30	11125.0	267000	71.1	36000	32400	104,4	0.0	2,03E+07	76,1
11/02 22:30	11/03 22:30	11041.7	265000	71.1	36000	32400	104,4	0.0	2,03E+07	76,7
11/03 22:30	11/04 22:30	11208.3	269000	71.1	36000	32400	104,4	0.0	2,03E+07	75,6
11/04 22:30	11/05 22:30	11208.3	269000	71.1	36000	32400	104,3	0.0	2,03E+07	75,6
11/05 22:30	11/06 22:30	11208.3	269000	71.1	36000	32400	104,1	0.0	2,03E+07	75,6
11/06 22:30	11/07 22:30	11125.0	267000	71.1	36000	32400	104,4	0.0	2,03E+07	76,1
11/07 22:30	11/08 22:30	10958.3	263000	71.1	36000	32400	104,4	0.0	2,03E+07	77,3
11/08 22:30	11/09 22:30	11000.0	264000	71.1	39000	35100	104,4	0.0	2,20E+07	83,4
11/09 22:30	11/10 22:30	10958.3	263000	71.1	36000	32400	104,4	0.0	2,03E+07	77,3
11/10 22:30	11/11 22:30	10958.3	263000	71.1	36000	32400	104,4	0.0	2,03E+07	77,3
11/11 22:30	11/12 22:30	10916.7	262000	71.1	36000	32400	104,4	0.0	2,03E+07	77,6
11/12 22:30	11/13 22:30	11166.7	268000	71.1	36000	32400	104,4	0.0	2,03E+07	75,9
11/13 22:30	11/14 22:30	11125.0	267000	71.1	36000	32400	103,7	0.0	2,03E+07	76,1
11/14 22:30	11/15 22:30	11333.3	272000	71.1	36000	32400	104,4	0.0	2,03E+07	74,7
11/15 22:30	11/16 22:30	11333.3	272000	71.1	36000	32400	104,1	0.0	2,03E+07	74,7
11/16 22:30	11/17 22:30	11375.0	273000	71.1	36000	32400	103,6	0.0	2,03E+07	74,5

Annex 7: DAILY VALUATION OF THE ENERGY MULTIPLE - NOVEMBER 2015										
		average power supply (w)	supplied energy wh/d	tank water T max (°C)	effective flowed water(Kg/d)	reduced flowed water (kg/d)	steam T min (°C)	steam pressure	produced energy (wh)	COP
11/17 22:30	11/18 22:30	11083,3	266000	71,1	36000	32400	103,6	0.0	2,03E+07	76,4
11/18 22:30	11/19 22:30	11404,2	273700	71,1	36000	32400	103,6	0.0	2,03E+07	74,3
11/19 22:30	11/20 22:30	11358,3	272600	71,1	36000	32400	103,7	0.0	2,03E+07	74,6
11/20 22:30	11/21 22:30	11266,7	270400	71,1	36000	32400	103,9	0.0	2,03E+07	75,2
11/21 22:30	11/22 22:30	11262,5	270300	71,1	36000	32400	103,6	0.0	2,03E+07	75,2
11/22 22:30	11/23 22:30	11333,3	272000	71,1	36000	32400	103,6	0.0	2,03E+07	74,7
11/23 22:30	11/24 22:30	11291,7	271000	71,1	36000	32400	103,5	0.0	2,03E+07	75,0
11/24 22:30	11/25 22:30	11291,7	271000	71,1	36000	32400	103,5	0.0	2,03E+07	75,0
11/25 22:30	11/26 22:30	11166,7	268000	71,4	36000	32400	103,7	0.0	2,03E+07	75,9
11/26 22:30	11/27 22:30	11083,3	266000	71,4	36000	32400	103,9	0.0	2,03E+07	76,4
11/27 22:30	11/28 22:30	11125,0	267000	71,1	36000	32400	103,9	0.0	2,03E+07	76,1
11/28 22:30	11/29 22:30	11083,3	266000	71,1	36000	32400	103,9	0.0	2,03E+07	76,4
11/29 22:30	11/30 22:30	11083,3	266000	71,1	36000	32400	104,5	0.0	2,03E+07	76,4

MW1-USA ELECTRICAL MESUREMENT in reactors BF1,BF2,BF3

Clamp: MASTECH S.N.: MBEI 053309

Date: 10/13/2015 time: 11:00AM



STAFF present at measurements:

Dr. Ing. Fabio Penon (ERV).....

M.Eng. Fulvio Fabiani (Designer).....

Barry West (Chief Electrical Maintenance).....

Ing. Fabio Penon

Plant start up

E-CAT MW1 ENERGY PLANT IN MIAMI ENERGY MULTIPLE VALUATION: FIRST STEP

The ERV visited the MW1 – USA plant at Doral on May 18 - 20, 2015

He verified that the plant configuration and the measuring chains were not modified in relation with the ones controlled in february.

He verified also the consistency of the experimental data and calculated the energy multiple for every day, in which the plant was operating

During his visit, the ERV was assisted by ing. F. Fabiani and by doc. A. Rossi.

1. Plant configuration and measuring instruments positioning

No significant modification on the plant configuration and on the measuring chains positioning was revealed.

2. Data recording

The measuring systems collect the following data every ten seconds: power supply (Kw), water temperature in the inner tank (°C), steam temperature (°C) and steam pressure (bar) in the pipe going to customer plant.

All data are recorded in a data logger

Only the mass of water (m³), flowed through the plant, is recorded manually once in a day at 10.30 p.m.

In the logbook the E-Cat each addition of distilled water from external tank to an internal tank is registered.

3. Data analysis

The data analysis shows that steam pressure has been about 0,0 bar throughout the period from 02/24 to 05/20.

The minimum steam temperature has been about 103 – 104 °C during the same period, i.e. the steam has been always superheated steam.

The energy produced by E-Cat plant is given by the sum of the heat of heating of water, heat of vaporization of water and heat of superheating the steam.

$$E_p = E_R + E_v + E_s$$

In order to be conservative:

- it has not been taken into account the heating energy of water and the heating energy of steam

- the temperature of the incoming water has been always considered to be equal to the maximum value of the same, measured during the entire test day

There has been small leaks of water to the inside of the shelter and are present measurement uncertainties

Ing. Fabio Penon

Plant start up

To take this into account the total mass of water transited during the test period has been reduced by 10%.

Consequently

$$E_p = E_v = \lambda \times M_w$$

where

M_w = total mass of water, flowed through the system in one day, reduced by 10%.

λ = (latent energy of vaporization) = 627,5 Wh/kg at 0. bar

The absorbed energy (E_A) supplied from the public grid

In order to be conservative:

- all the supplied energy is supposed be absorbed by the 111 reactors

In reality a part of this energy feeds the pump, which conveys the water from the tank external to the reactors This energy doesn't feed the reactors

$$\text{Energy multiple} = \frac{\text{energy produced (} E_p \text{)}}{\text{energy absorbed (} E_A \text{)}}$$

Throughout the period from 02/24 to 05/19 the energy multiple value has been always above 62.

During the month of February it has been fluctuating between 78 and 82, average value 80,7

During the month of March it has been fluctuating between 78 and 87, average value 80,6

During the month of April it has been fluctuating between 62 and 87, average value 80,7

In the period May 1 to 19 it has been fluctuating between 67 and 87, average value 79,9

4. Annexes

Annexe 1: Daily valuation of the energy multiple – February 2015

Annexe 2: Daily valuation of the energy multiple – March 2015

Annexe 3: Daily valuation of the energy multiple – April 2015

Annexe 4: Daily valuation of the energy multiple – May 2015

Abano Terme, 2015/05/25

POIESIS srl
Dr Eng. Fabio Penon
(Nuclear Engineer)

DAILY VALUATION OF THE ENERGY MULTIPLE - MARCH 2015										
		average power supply (Kw)	supplied energy wh/d	tank water T max (°C)	effective flowed water(Kg/d)	reduced flowed water (kg/d)	steam T min (°C)	steam pressure	produced energy (wh)	COP
02/28 22:30	03/01 22:30	10,59	254000	69,7	36000	32400	104,5	0.0	2,03E+07	80,0
04/01 22:30	04/02 22:30	10,46	251000	69,1	36000	32400	104,5	0.0	2,03E+07	81,0
03/02 22:30	03/03 22:30	9,92	238000	69,7	36000	32400	104,5	0.0	2,03E+07	85,4
03/03 22:30	03/04 22:30	10,56	253000	69,7	36000	32400	104,5	0.0	2,03E+07	80,4
03/04 22:30	03/05 22:30	10,83	255000	69,1	36000	32400	104,5	0.0	2,03E+07	79,7
03/05 22:30	03/06 22:30	10,63	255000	69,1	36000	32400	103,9	0.0	2,03E+07	79,7
03/06 22:30	03/07 22:30	10,5	252000	68,6	36000	32400	103,9	0.0	2,03E+07	80,7
03/07 22:30	03/08 22:30	10,59	259000	69,1	36000	32400	103,9	0.0	2,03E+07	78,5
03/08 22:30	03/09 22:30	10,21	245000	69,1	36000	32400	103,9	0.0	2,03E+07	83,0
03/09 22:30	03/10 22:30	10,67	256000	69,1	36000	32400	104,5	0.0	2,03E+07	79,4
03/10 22:30	03/11 22:30	10,63	255000	69,7	36000	32400	104,5	0.0	2,03E+07	79,7
03/11 22:30	03/12 22:30	10,54	253000	69,7	36000	32400	104,5	0.0	2,03E+07	80,4
03/12 22:30	03/13 22:30	10,63	255000	69,7	36000	32400	104,5	0.0	2,03E+07	79,7
03/13 22:30	03/14 22:30	10,63	255000	69,7	36000	32400	103,9	0.0	2,03E+07	79,7
03/14 22:30	03/15 22:30	10,5	252000	69,1	36000	32400	103,9	0.0	2,03E+07	80,7
03/15 22:30	03/16 22:30	10,79	259000	69,1	36000	32400	103,9	0.0	2,03E+07	78,5
03/16 22:30	03/17 22:30	10,25	246000	68,6	36000	32400	103,9	0.0	2,03E+07	82,6

DAILY VALUATION OF THE ENERGY MULTIPLE - MARCH 2015										
		average power supply (Kw)	supplied energy wh/d	tank water T max (°C)	effective flowed water(Kg/d)	reduced flowed water (kg/d)	steam T min (°C)	steam pressure	produced energy (wh)	COP
03/17 22:30	03/18 22:30	10,46	251000	68,6	36000	32400	103,9	0.0	2,03E+07	81,0
03/18 22:30	03/19 22:30	10,29	247000	68,6	38000	34200	103,9	0.0	2,15E+07	86,9
03/19 22:30	03/20 22:30	10,63	255000	68,6	36000	32400	103,9	0.0	2,03E+07	79,7
03/20 22:30	03/21 22:30	10,54	253000	68,6	36000	32400	103,9	0.0	2,03E+07	80,4
03/21 22:30	03/22 22:30	10,58	255000	68,6	36000	32400	103,9	0.0	2,03E+07	79,7
03/22 22:30	03/23 22:30	10,63	255000	68,6	36000	32400	103,9	0.0	2,03E+07	79,7
03/23 22:30	03/24 22:30	10,5	252000	69,1	36000	32400	103,9	0.0	2,03E+07	80,7
03/24 22:30	03/25 22:30	10,79	259000	69,1	36000	32400	103,9	0.0	2,03E+07	78,5
03/25 22:30	03/26 22:30	10,59	254000	68,6	36000	32400	103,9	0.0	2,03E+07	80,0
03/26 22:30	03/27 22:30	10,46	251000	66,9	36000	32400	103,9	0.0	2,03E+07	81,0
03/27 22:30	03/28 22:30	10,5	252000	66,9	36000	32400	103,9	0.0	2,03E+07	80,7
03/28 22:30	03/29 22:30	10,54	253000	68,6	36000	32400	104,5	0.0	2,03E+07	80,4
03/29 22:30	03/30 22:30	10,55	258000	69,1	36000	32400	103,9	0.0	2,03E+07	78,8
03/30 22:30	03/31 22:30	10,34	248000	68,6	36000	32400	103,9	0.0	2,03E+07	82,0

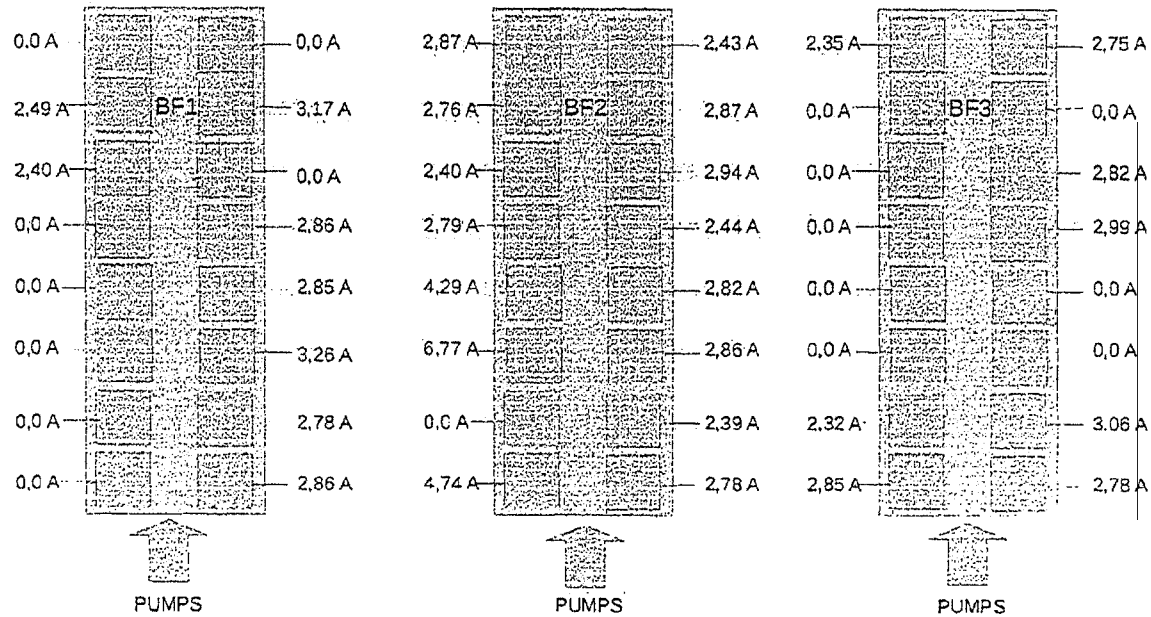
Annexe 6: DAILY VALUATION OF THE ENERGY MULTIPLE - OCTOBER 2015										
		average power supply (w)	supplied energy wh/d	tank water T max (°C)	effective flowed water(Kg/d)	reduced flowed water (kg/d)	steam T min (°C)	steam pressure	produced energy (wh)	COP
09/30 22:30	10/01 22:30	7625,0	183000	70,7	27000	24300	103,5	0.0	1,52E+07	83,3
10/01 22:30	10/02 22:30	10333.3	248000	70,7	36000	32400	104,4	0.0	2,03E+07	82.0
10/02 22:30	10/03 22:30	11166,7	268000	71.1	36000	32400	104,4	0.0	2,03E+07	75,9
10/03 22:30	10/04 22:30	11030,0	264000	70,7	36000	32400	104,2	0.0	2,03E+07	77,0
10/04 22:30	10/05 22:30	11041,7	265000	71,1	36000	32400	104,4	0.0	2,03E+07	76,7
10/05 22:30	10/06 22:30	11250,0	270000	70,7	36000	32400	104,2	0.0	2,03E+07	75,3
10/06 22:30	10/07 22:30	11458,3	275000	70,3	36000	32400	104	0.0	2,03E+07	73,9
10/07 22:30	10/08 22:30	11458,3	275000	70	36000	32400	103,9	0.0	2,03E+07	73,9
10/08 22:30	10/09 22:30	11250,0	270000	70	36000	32400	103,9	0.0	2,03E+07	75,3
10/09 22:30	10/10 22:30	11250,0	270000	70	36000	32400	103,9	0.0	2,03E+07	75,3
10/10 22:30	10/11 22:30	11458,3	275000	70,3	36000	32400	103,9	0.0	2,03E+07	73,9
10/11 22:30	10/12 22:30	11590,0	276000	70	36000	32400	103,9	0.0	2,03E+07	73,7
10/12 22:30	10/13 22:30	11474,2	275380	70,3	36000	32400	104	0.0	2,03E+07	73,8
10/13 22:30	10/14 22:30	11470,8	275300	70	36000	32400	104,4	0.0	2,03E+07	73,9
10/14 22:30	10/15 22:30	11483,3	275600	70,3	36000	32400	104,4	0.0	2,03E+07	73,6
10/15 22:30	10/16 22:30	11493,8	275850	70,3	36000	32400	104,4	0.0	2,03E+07	73,7
10/16 22:30	10/17 22:30	11416,7	274000	70,3	36000	32400	104,3	0.0	2,03E+07	74.2

Annexe 6: DAILY VALUATION OF THE ENERGY MULTIPLE - OCTOBER 2015										
		average power supply (w)	supplied energy wh/d	tank water T max (°C)	effective flowed water(Kg/c)	reduced flowed water (kg/d)	steam T min (°C)	steam pressure	produced energy (wh)	COP
10/17 22:30	10/18 22:30	11458,3	275000	70,3	36000	32400	104,4	0.0	2,03E+07	73,9
10/18 22:30	10/19 22:30	11208,3	269000	70,7	36000	32400	104,2	0.0	2,03E+07	75,6
10/19 22:30	10/20 22:30	11208,3	269000	70,3	36000	32400	104	0.0	2,03E+07	75,6
10/20 22:30	10/21 22:30	11333,3	272000	70,3	36000	32400	104	0.0	2,03E+07	74,7
10/21 22:30	10/22 22:30	11333,3	272000	70,3	36000	32400	104	0.0	2,03E+07	74,7
10/22 22:30	10/23 22:30	11375,0	273000	70,3	36000	32400	104,3	0.0	2,03E+07	74,5
10/23 22:30	10/24 22:30	11375,0	273000	70,3	36000	32400	104,3	0.0	2,03E+07	74,5
10/24 22:30	10/25 22:30	11375,0	273000	70,7	36000	32400	104,4	0.0	2,03E+07	74,5
10/25 22:30	10/26 22:30	11333,3	272000	70,7	36000	32400	103,9	0.0	2,03E+07	74,7
10/26 22:30	10/27 22:30	11250,0	270000	71,1	36000	32400	104	0.0	2,03E+07	75,3
10/27 22:30	10/28 22:30	11375,0	273000	71,1	36000	32400	104,3	0.0	2,03E+07	74,5
10/28 22:30	10/29 22:30	11291,7	271000	71,1	36000	32400	104,4	0.0	2,03E+07	75,0
10/29 22:30	10/30 22:30	11250,0	270000	71,1	36000	32400	104,2	0.0	2,03E+07	75,3
10/30 22:30	10/31 22:30	11375,0	273000	70,7	36000	32400	104,4	0.0	2,03E+07	74,5

MW1-USA ELECTRICAL MESUREMENT in reactors BF1,BF2,BF3

Clamp: MASTECH S.N.: MBEI 053309

Date: 10/14/2015 time: 10:20AM



STAFF present at measurements:

Dr. Ing. Fabio Penon (ERV)

M.Eng. Fulvio Fabiani (Designer)

Barry West (Chief Electrical Maintenance)

IH-00011110

CONFIDENTIAL

DAILY VALUATION OF THE ENERGY MULTIPLE - APRIL 2015										
		average power supply (Kw)	supplied energy wh/d	tank water T max (°C)	effective flowed water(Kg/d)	reduced flowed water (kg/d)	steam T min (°C)	steam pressure	produced energy (wh)	COP
03/31 22:30	04/01 22:30	10,25	246000	69,1	36000	32400	103,9	0.0	2,03E+07	82,6
04/01 22:30	04/02 22:30	10,29	247000	69,1	36000	32400	103,9	0.0	2,03E+07	82,3
04/02 22:30	04/03 22:30	10,67	256000	68,6	36000	32400	103,9	0.0	2,03E+07	79,4
04/03 22:30	04/04 22:30	10,21	247000	68	36000	32400	103,9	0.0	2,03E+07	82,3
04/04 22:30	04/05 22:30	10,29	247000	68,6	36000	32400	103,9	0.0	2,03E+07	82,3
04/05 22:30	04/06 22:30	9,96	239000	69,1	36000	32400	103,9	0.0	2,03E+07	85,1
04/06 22:30	04/07 22:30	not measured	not measured	not measured	not measured	not measured	not measured	not measured	not measured	not measured
04/07 22:30	04/08 22:30	9,92	238000	69,1	36000	32400	103,9	0.0	2,03E+07	85,4
04/08 22:30	04/09 22:30	10,54	253000	69,1	28000	25200	103,9	0.0	1,58E+07	62,5
04/09 22:30	04/10 22:30	10,55	253000	69,1	38000	34200	103,9	0.0	2,15E+07	84,8
04/10 22:30	04/11 22:30	10,75	258000	69,1	36000	32400	103,9	0.0	2,03E+07	78,8
04/11 22:30	04/12 22:30	10,64	253000	68,6	37000	33300	103,9	0.0	2,09E+07	82,6
04/12 22:30	04/13 22:30	10,67	256000	68,6	36000	32400	103,9	0.0	2,03E+07	79,4
04/13 22:30	04/14 22:30	10,64	255000	69,1	36000	32400	103,9	0.0	2,03E+07	79,7
04/14 22:30	04/15 22:30	10,5	252000	68,6	36000	32400	103,9	0.0	2,03E+07	80,7
04/15 22:30	04/16 22:30	10,67	256000	69,1	36000	32400	103,9	0.0	2,03E+07	79,4
04/16 22:30	04/17 22:30	10,59	254000	68,6	36000	32400	103,9	0.0	2,03E+07	80,0

DAILY VALUATION OF THE ENERGY MULTIPLE - APRIL 2015										
		average power supply (Kw)	supplied energy wh/d	tank water T max (°C)	effective flowed water(Kg/d)	reduced flowed water (kg/d)	steam T min (°C)	steam pressure	produced energy (wh)	COP
04/17 22:30	04/18 22:30	10,46	251000	69,1	36000	32400	103,9	0,0	2,03E+07	81,0
04/18 22:30	04/19 22:30	10,54	253000	68,6	39000	35100	103,9	0,0	2,20E+07	87,1
04/19 22:30	04/20 22:30	10,67	256000	69,1	36000	32400	103,9	0,0	2,03E+07	79,4
04/20 22:30	04/21 22:30	10,46	251000	69,7	36000	32400	103,9	0,0	2,03E+07	81,0
04/21 22:30	04/22 22:30	10,67	256000	69,1	36000	32400	103,9	0,0	2,03E+07	79,4
04/22 22:30	04/23 22:30	10,67	256000	69,1	36000	32400	103,9	0,0	2,03E+07	79,4
04/23 22:30	04/24 22:30	10,59	254000	69,1	36000	32400	103,9	0,0	2,03E+07	80,0
04/24 22:30	04/25 22:30	10,75	258000	69,1	36000	32400	103,9	0,0	2,03E+07	78,8
04/25 22:30	04/26 22:30	10,54	253000	68,6	36000	32400	103,9	0,0	2,03E+07	80,4
04/26 22:30	04/27 22:30	10,55	253000	68,6	36000	32400	103,9	0,0	2,03E+07	80,4
04/27 22:30	04/28 22:30	10,34	248000	69,1	36000	32400	103,9	0,0	2,03E+07	82,0
04/28 22:30	04/29 22:30	10,25	246000	69,1	36000	32400	103,9	0,0	2,03E+07	82,6
04/29 22:30	04/30 22:30	10,29	247000	69,7	36000	32400	103,9	0,0	2,03E+07	82,3

Annexe 5: DAILY VALUATION OF THE ENERGY MULTIPLE - SEPTEMBER 2015										
		average power supply (w)	supplied energy wh/d	tank water T max (°C)	effective flow water(Kg/d)	reduced flow water (kg/d)	steam T min (°C)	steam pressure	produced energy (wh)	COP
08/31 22:30	09/01 22:30	5583,3	134000	56,4	27000	24300	103,5	0.0	1,52E+07	113,8
09/01 22:30	09/02 22:30	5625,0	135000	58	27000	24300	103,5	0.0	1,52E+07	113,0
09/02 22:30	09/03 22:30	5583,3	134000	58	27000	24300	103,5	0.0	1,52E+07	113,8
09/03 22:30	09/04 22:30	5666,7	136000	58	27000	24300	103,8	0.0	1,52E+07	112,1
09/04 22:30	09/05 22:30	5625,0	135000	58	27000	24300	103,8	0.0	1,52E+07	113,0
09/05 22:30	09/06 22:30	5708,3	137000	58	27000	24300	103,8	0.0	1,52E+07	111,3
09/06 22:30	09/07 22:30	5708,3	137000	58	27000	24300	104,2	0.0	1,52E+07	111,3
09/07 22:30	09/08 22:30	5708,3	137000	58	27000	24300	104,2	0.0	1,52E+07	111,3
09/08 22:30	09/09 22:30	5666,7	136000	58	27000	24300	104,2	0.0	1,52E+07	112,1
09/09 22:30	09/10 22:30	5625,0	135000	58	27000	24300	104,2	0.0	1,52E+07	113,0
09/10 22:30	09/11 22:30	5666,7	136000	58	27000	24300	104,2	0.0	1,52E+07	112,1
09/11 22:30	09/12 22:30	5583,3	134000	58	27000	24300	104,2	0.0	1,52E+07	113,8
09/12 22:30	09/13 22:30	5625,0	135000	58	28000	25200	104,2	0.0	1,58E+07	117,1
09/13 22:30	09/14 22:30	5666,7	136000	58	27000	24300	104,2	0.0	1,52E+07	112,1
09/14 22:30	09/15 22:30	5583,3	134000	58	27000	24300	103,8	0.0	1,52E+07	113,8
09/15 22:30	09/16 22:30	5625,0	135000	58	27000	24300	104,2	0.0	1,52E+07	113,0
09/16 22:30	09/17 22:30	5625,0	135000	58	27000	24300	104,2	0.0	1,52E+07	113,0

Annexe 5: DAILY VALUATION OF THE ENERGY MULTIPLE - SEPTEMBER 2015										
		average power supply (w)	supplied energy wh/d	lank water T max (°C)	effective flowed water(Kg/d)	reduced flowed water (kg/d)	steam T min (°C)	steam pressure	produced energy (wh)	COP
09/17 22:30	09/18 22:30	5625,0	135000	58	27000	24300	104,2	0.0	1,52E+07	113,0
09/18 22:30	09/19 22:30	5625,0	135000	58	27000	24300	104,2	0.0	1,52E+07	113,0
09/19 22:30	09/20 22:30	5666,7	136000	58	27000	24300	104,2	0.0	1,52E+07	112,1
09/20 22:30	09/21 22:30	5666,7	136000	58	27000	24300	104,2	0.0	1,52E+07	112,1
09/21 22:30	09/22 22:30	5625,0	135000	58	27000	24300	104,2	0.0	1,52E+07	113,0
09/22 22:30	09/23 22:30	5666,7	136000	58	27000	24300	104,2	0.0	1,52E+07	112,1
09/23 22:30	09/24 22:30	5583,3	134000	58	27000	24300	104,2	0.0	1,52E+07	113,8
09/24 22:30	09/25 22:30	5625,0	135000	58	27000	24300	104,2	0.0	1,52E+07	113,0
09/25 22:30	09/26 22:30	5666,7	136000	58	27000	24300	104,2	0.0	1,52E+07	112,1
09/26 22:30	09/27 22:30	5625,0	135000	58	27000	24300	104,2	0.0	1,52E+07	113,0
09/27 22:30	09/28 22:30	6166,7	148000	58	28000	25200	104,2	0.0	1,58E+07	106,8
09/28 22:30	09/29 22:30	6104,2	146500	58	27000	24300	104,2	0.0	1,52E+07	104,1
09/29 22:30	09/30 22:30	5607,5	136500	58	27000	24300	104,2	0.0	1,52E+07	111,7

Annexe 4: DAILY VALUATION OF THE ENERGY MULTIPLE - AUGUST 2015										
		average power supply (w)	supplied energy wh/d	tank water T max (°C)	effective flowed water(Kg/d)	reduced flowed water (kg/d)	steam T min (°C)	steam pressure	produced energy (wh)	COP
07/31 22:30	08/01 22:30	6291,7	151000	76,8	36000	32400	103	0.0	2,03E+07	134,6
08/01 22:30	08/02 22:30	6208,3	149000	68,6	36000	32400	103,9	0.0	2,03E+07	136,4
08/02 22:30	08/03 22:30	6125,0	147000	68,6	27000	24300	103,5	0.0	1,52E+07	103,7
08/03 22:30	08/04 22:30	5750,0	138000	68,6	27000	24300	103,5	0.0	1,52E+07	110,5
08/04 22:30	08/05 22:30	6458,3	155000	69,1	27000	24300	103,9	0.0	1,52E+07	98,4
08/05 22:30	08/06 22:30	6291,7	151000	70,3	36000	32400	103,9	0.0	2,03E+07	134,6
08/06 22:30	08/07 22:30	6291,7	151000	70,3	36000	32400	103,9	0.0	2,03E+07	134,6
08/07 22:30	08/08 22:30	5958,3	143000	70,8	36000	32400	103,5	0.0	2,03E+07	142,2
08/08 22:30	08/09 22:30	5708,3	137000	70,3	27000	24300	103,5	0.0	1,52E+07	111,3
08/09 22:30	08/10 22:30	5875,0	141000	69,7	27000	24300	103,5	0.0	1,52E+07	108,1
08/10 22:30	08/11 22:30	6125,0	147000	70,3	27000	24300	103,5	0.0	1,52E+07	103,7
08/11 22:30	08/12 22:30	6166,7	148000	69,7	29000	26100	103,5	0.0	1,64E+07	110,7
08/12 22:30	08/13 22:30	6125,0	147000	69,1	29000	26100	103,9	0.0	1,64E+07	111,4
08/13 22:30	08/14 22:30	6125,0	147000	69,7	29000	26100	103,9	0.0	1,64E+07	111,4
08/14 22:30	08/15 22:30	6125,0	147000	69,7	29000	26100	103,9	0.0	1,64E+07	111,4
08/15 22:30	08/16 22:30	6083,3	146000	69,7	29000	26100	103,5	0.0	1,64E+07	112,2
08/16 22:30	08/17 22:30	6125,0	147000	69,7	29000	26100	103,5	0.0	1,64E+07	111,4

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Annexe 4: DAILY VALUATION OF THE ENERGY MULTIPLE - AUGUST 2015										
		average power supply (w)	supplied energy wh/d	tank water T max (°C)	effective flowed water(Kg/d)	reduced flowed water (kg/d)	steam T min (°C)	steam pressure	produced energy (wh)	COP
08/17 22:30	08/18 22:30	5958,3	143000	69,7	29000	26100	103,5	0.0	1,64E+07	114,5
08/18 22:30	08/19 22:30	5666,7	136000	66,7	29000	26100	103,5	0.0	1,64E+07	120,4
08/19 22:30	08/20 22:30	5625,0	135000	65,9	29000	26100	103	0.0	1,64E+07	121,3
08/20 22:30	08/21 22:30	5625,0	135000	62	29000	26100	103,9	0.0	1,64E+07	121,3
08/21 22:30	08/22 22:30	5666,7	136000	60,9	27000	24300	103,9	0.0	1,52E+07	112,1
08/22 22:30	08/23 22:30	5708,3	137000	65,9	27000	24300	103,9	0.0	1,52E+07	111,3
08/23 22:30	08/24 22:30	5666,7	136000	65,9	27000	24300	103,9	0.0	1,52E+07	112,1
08/24 22:30	08/25 22:30	5666,7	136000	60,9	27000	24300	103,5	0.0	1,52E+07	112,1
08/25 22:30	08/26 22:30	5625,0	135000	60,2	27000	24300	103,5	0.0	1,52E+07	113,0
08/26 22:30	08/27 22:30	5625,0	135000	59,8	27000	24300	103,9	0.0	1,52E+07	113,0
08/27 22:30	08/28 22:30	5583,3	134000	59,0	27000	24300	103,9	0.0	1,52E+07	113,8
08/28 22:30	08/29 22:30	5583,3	134000	56,8	27000	24300	103,5	0.0	1,52E+07	113,8
08/29 22:30	08/30 22:30	5625,0	135000	62,8	27000	24300	103,5	0.0	1,52E+07	113,0
08/30 22:30	08/31 22:30	5625,0	135000	58,5	27000	24300	103,9	0.0	1,52E+07	113,0

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IH-00011116

Ing. Fabio Penon

Second step

E-CAT MW1 ENERGY PLANT IN MIAMI ENERGY MULTIPLE VALUATION: SECOND STEP

The ERV visited the MW1 – USA plant at Doral on October 12 - 14, 2015.
The visit was without notice, in accordance with the e-mail dated 02/20/2015
He verified that the plant configuration and the measuring chains were not modified in relation with the ones controlled in february and in may
He verified also the consistency of the experimental data and made a first approximation calculation of the energy multiple during his visit.
He checked the current absorption in the reactors BF1, BF2 and BF3.
During his visit, the ERV was assisted by M. Eng. F. Fabiani (IH), Eng. B. West (IH) and by doc. A. Rossi (LC).

1. Plant configuration and measuring instruments positioning

No significant modification on the plant configuration and on the measuring chains positioning was revealed.

2. Data recording

The measuring systems collect the following data every ten seconds: power supply (Kw), water temperature in the inner tank (°C), steam temperature (°C) and steam pressure (bar) in the pipe going to customer plant.

All data are recorded in a data logger

Only the mass of water (m³), flowed through the plant, is recorded manually once in a day at 10.30 p.m.

In the logbook the E-Cat each addition of distilled water from external tank to an internal tank is registered.

On 10/13/2015 and 10/14/2015 a control of absorption of instantaneous current in the reactors BF1, BF1 and BF3 has been performed manually

3. Data analysis

The data analysis shows that steam pressure has been about 0,0 bar throughout the period 10/12 – 10/14.

The steam temperature, manually checked, has been about 103 – 104 °C during the same period, i.e. the steam has been always superheated steam.

The water temperature, manually checked, has been between 60 – 80 °C during the same period.

The energy produced by E-Cat plant is given by the sum of the heat of heating of water, heat of vaporization of water and heat of superheating the steam.

$$E_p = E_R + E_v + E_s$$

Ing. Fabio Penon

Second step

Assuming the same conservative criteria for the calculations made in the past, i.e.

- it has not been taken into account the heating energy of water and the heating energy of steam
- the temperature of the incoming water has been always considered to be equal to the maximum value of the same, measured during the entire test day
- the total mass of water transited during the test period has been reduced by 10%, to take into account the small leaks of water to the inside of the shelter and the measurement uncertainties

the energy produced by the E-Cat plant is:

$$E_p = E_v = \lambda \times M_w$$

where

M_w = total mass of water, flowed through the system in one day, reduced by 10%.

λ = (latent energy of vaporization) = 627,5 Wh/kg at 0. bar

In order to be conservative all the absorbed energy (E_A) has supposed be absorbed by the 111 reactors

In reality a part of this energy feeds the pump, which conveys the water from the tank external to the reactors This energy doesn't feed the reactors

$$\text{Energy multiple} = \frac{\text{energy produced (} E_p \text{)}}{\text{energy absorbed (} E_A \text{)}}$$

The energy multiple value has been always about 74.

4. Annexes

Annexe 1: MW1-USA Electrical measurement in reactors BF1, BF2, BF3. 10/13/2015

Annexe 2: MW1-USA Electrical measurement in reactors BF1, BF2, BF3. 10/14/2015

Abano Terme, 10/19/2015

POIESIS srl
M. Eng. Fabio Penon
(Nuclear Engineer)

Annexe 3: DAILY VALUATION OF THE ENERGY MULTIPLE - JULY 2015										
		average power supply (w)	supplied energy wh/d	tank water T max (°C)	effective flowed water(Kg/d)	reduced flowed water (kg/d)	steam T min (°C)	steam pressure	produced energy (wh)	COP
06/30 22:30	07/01 22:30	8500,0	204000	75,3	36000	32400	103,9	0.0	2,03E+07	99,7
07/01 22:30	07/02 22:30	8541,7	205000	69,1	36000	32400	103,9	0.0	2,03E+07	99,2
07/02 22:30	07/03 22:30	8583,3	206000	71,4	36000	32400	103,9	0.0	2,03E+07	98,7
07/03 22:30	07/04 22:30	8458,3	203000	73,7	36000	32400	103,9	0.0	2,03E+07	100,2
07/04 22:30	07/05 22:30	8333,3	200000	75,3	36000	32400	104,4	0.0	2,03E+07	101,7
07/05 22:30	07/06 22:30	8500,0	204000	70,3	36000	32400	103,3	0.0	2,03E+07	99,7
07/06 22:30	07/07 22:30	8416,7	202000	70,3	36000	32400	103,3	0.0	2,03E+07	100,6
07/07 22:30	07/08 22:30	8416,7	202000	70,3	36000	32400	102,8	0.0	2,03E+07	100,6
07/08 22:30	07/09 22:30	8500,0	204000	70,3	36000	32400	103,9	0.0	2,03E+07	99,7
07/09 22:30	07/10 22:30	8500,0	204000	73,1	36000	32400	103,9	0.0	2,03E+07	99,7
07/10 22:30	07/11 22:30	8333,3	200000	75,3	36000	32400	103,9	0.0	2,03E+07	101,7
07/11 22:30	07/12 22:30	8458,3	203000	71,4	36000	32400	104,4	0.0	2,03E+07	100,2
07/12 22:30	07/13 22:30	8458,3	203000	70,8	32000	28800	104,3	0.0	1,81E+07	89,0
07/13 22:30	07/14 22:30	8500,0	204000	75,3	36000	32400	103,9	0.0	2,03E+07	99,7
07/14 22:30	07/15 22:30	8708,3	209000	75,3	36000	32400	103,9	0.0	2,03E+07	97,3
07/15 22:30	07/16 22:30	8666,7	208000	70,3	36000	32400	103,5	0.0	2,03E+07	97,7
07/16 22:30	07/17 22:30	8708,3	209000	67,43	36000	32400	103,5	0.0	2,03E+07	97,3

Annexe 3: DAILY VALUATION OF THE ENERGY MULTIPLE - JULY 2015										
		average power supply (w)	supplied energy wtu/d	tank water T max (°C)	effective flowed water(Kg/d)	reduced flowed water (kg/d)	steam I min (°C)	steam pressure	produced energy (wh)	COP
07/17 22:30	07/18 22:30	8708,3	209000	69,7	36000	32400	103,9	0.0	2,03E+07	97,3
07/18 22:30	07/19 22:30	8708,3	209000	75,3	36000	32400	103,5	0.0	2,03E+07	97,3
07/19 22:30	07/20 22:30	8666,7	208000	73,7	36000	32400	103,9	0.0	2,03E+07	97,7
07/20 22:30	07/21 22:30	8625,0	207000	69,7	36000	32400	103,9	0.0	2,03E+07	98,2
07/21 22:30	07/22 22:30	8625,0	207000	81,5	36000	32400	103,9	0.0	2,03E+07	98,2
07/22 22:30	07/23 22:30	8541,7	205000	78,4	36000	32400	103,5	0.0	2,03E+07	99,2
07/23 22:30	07/24 22:30	8583,3	206000	78,4	36000	32400	103,9	0.0	2,03E+07	98,7
07/24 22:30	07/25 22:30	8500,0	204000	76,8	36000	32400	103,9	0.0	2,03E+07	99,7
07/25 22:30	07/26 22:30	8500,0	204000	78,4	36000	32400	103,5	0.0	2,03E+07	99,7
07/26 22:30	07/27 22:30	9125,0	219000	78,4	36000	32400	103,5	0.0	2,03E+07	92,8
07/27 22:30	07/28 22:30	6083,3	146000	81,5	36000	32400	103,9	0.0	2,03E+07	139,3
07/28 22:30	07/29 22:30	6458,3	155000	75,3	31000	27900	103,5	0.0	1,75E+07	113,0
07/29 22:30	07/30 22:30	5950,3	143000	83,1	27000	24300	103,5	0.0	1,52E+07	106,6
07/30 22:30	07/31 22:30	6375,0	153000	80	36000	32400	103,9	0.0	2,03E+07	132,9

Ing. Fabio Penon

**E-CAT MW1 ENERGY PLANT IN MIAMI
ENERGY MULTIPLE VALUATION
FROM 05/01/2015 TO 11/30/2015**

The ERV visited the MW1 – USA plant at Doral on October 12 - 14, 2015.
The results have been already presented in the document 'E-Cat MW1 Energy Plant in Miami. Energy multiple valuation, second step', dated 10/19/2015
This report presents the 'energy multiple' value, calculated during the period 05/01/2015 – 11/30/2015

The Energy Multiple values have been calculated, assuming the same conservative criteria for the calculations made in the past, i.e.

- it has not been taken into account the heating energy of water and the heating energy of steam
- the temperature of the incoming water has been always considered to be equal to the maximum value of the same, measured during the entire test day
- the temperature of the outgoing steam has been always considered to be equal to the minimum value of the same, measured during the entire test day
- the total mass of water transited during the test period has been reduced by 10%, to take into account the small leaks of water to the inside of the shelter and the measurement uncertainties

The energy produced by the E-Cat plant is:

$$E_p = E_v = \lambda \times M_w$$

where

M_w = total mass of water, flowed through the system in one day, reduced by 10%.

λ = (latent energy of vaporization) = 627,5 Wh/kg at 0. bar

In order to be conservative all the absorbed energy (E_A) has supposed be absorbed by the 111 reactors

In reality a part of this energy feeds the pump, which conveys the water from the tank external to the reactors This energy doesn't feed the reactors

$$\text{Energy multiple} = \frac{\text{energy produced (} E_p \text{)}}{\text{energy absorbed (} E_A \text{)}}$$

Annexes

- Annexe 1: Daily valuation of the energy multiple – May 2015
- Annexe 2: Daily valuation of the energy multiple – June 2015
- Annexe 3: Daily valuation of the energy multiple – July 2015
- Annexe 4: Daily valuation of the energy multiple – August 2015
- Annexe 5: Daily valuation of the energy multiple – September 2015
- Annexe 6: Daily valuation of the energy multiple – October 2015
- Annexe 7: Daily valuation of the energy multiple – November 2015

Abano Terme, 07/01/2016

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Annexe 2: DAILY VALUATION OF THE ENERGY MULTIPLE - JUNE 2015										
		average power supply (Kw)	supplied energy wh/d	tank water T max (°C)	effective flowed water(Kg/d)	reduced flowed water (kg/d)	steam T min (°C)	steam pressure	produced energy (wh)	COP
05/31 22:30	05/01 22:30	7791,7	187000	69,1	22000	19800	104,5	0.0	1,24E+07	66,4
06/01 22:30	06/02 22:30	9208,3	221000	71,4	27000	24300	104,5	0.0	1,52E+07	69,0
06/02 22:30	06/03 22:30	8458,3	203000	69,7	26000	23400	104,5	0.0	1,47E+07	72,3
06/03 22:30	06/04 22:30	6750,0	162000	71,4	27000	24300	104,5	0.0	1,52E+07	94,1
06/04 22:30	06/05 22:30	7750,0	186000	70,3	27000	24300	103,9	0.0	1,52E+07	82,0
06/05 22:30	06/06 22:30	9750,0	234000	70,3	36000	32400	104,5	0.0	2,03E+07	86,9
06/06 22:30	06/07 22:30	8916,7	214000	70,3	36000	32400	104,5	0.0	2,03E+07	95,0
06/07 22:30	06/08 22:30	8125,0	195000	70,8	36000	32400	103,4	0.0	2,03E+07	104,3
06/08 22:30	06/09 22:30	8000,0	192000	70,3	27000	24300	103,4	0.0	1,52E+07	79,4
06/09 22:30	06/10 22:30	7958,3	191000	70,3	18000	16200	103,9	0.0	1,02E+07	53,2
06/10 22:30	06/11 22:30	8083,3	194000	69,1	36000	32400	103,4	0.0	2,03E+07	104,8
06/11 22:30	06/12 22:30	8375,0	201000	70,3	27000	24300	103,9	0.0	1,52E+07	75,9
06/12 22:30	06/13 22:30	8875,0	213000	69,7	27000	24300	104,5	0.0	1,52E+07	71,6
06/13 22:30	06/14 22:30	8208,3	197000	71,4	27000	24300	103,9	0.0	1,52E+07	77,4
06/14 22:30	06/15 22:30	8541,7	205000	69,7	33000	29700	103,9	0.0	1,86E+07	90,9
06/15 22:30	06/16 22:30	8458,3	203000	70,3	36000	32400	103,9	0.0	2,03E+07	100,2
06/16 22:30	06/17 22:30	8416,7	202000	70,3	36000	32400	103,9	0.0	2,03E+07	100,6

Annexe 2: DAILY VALUATION OF THE ENERGY MULTIPLE - JUNE 2015										
		average power supply (Kw)	supplied energy wh/d	tank water T max (°C)	effective flowed water(Kg/c)	reduced flowed water (kg/d)	steam T min (°C)	steam pressure	produced energy (wh)	COP
06/17 22:30	06/18 22:30	8416,7	202000	69,1	36000	32400	103,9	0.0	2,03E+07	100,6
06/18 22:30	06/19 22:30	8416,7	202000	69,1	36000	32400	103,9	0.0	2,03E+07	100,6
06/19 22:30	06/20 22:30	8416,7	202000	68,6	36000	32400	103,9	0.0	2,03E+07	100,6
06/20 22:30	06/21 22:30	8416,7	202000	69,1	36000	32400	103,9	0.0	2,03E+07	100,6
06/21 22:30	06/22 22:30	8375,0	201000	68,5	34000	30600	103,9	0.0	1,92E+07	95,5
06/22 22:30	06/23 22:30	8416,7	202000	69,1	36000	32400	103,9	0.0	2,03E+07	100,6
06/23 22:30	06/24 22:30	8500,0	204000	69,1	36000	32400	103,9	0.0	2,03E+07	99,7
06/24 22:30	06/25 22:30	8458,3	203000	69,2	36000	32400	104,5	0.0	2,03E+07	100,2
06/25 22:30	06/26 22:30	8560,0	204000	69,7	36000	32400	104,5	0.0	2,03E+07	99,7
06/26 22:30	06/27 22:30	8583,3	206000	70,2	26000	23400	104,5	0.0	1,47E+07	71,3
06/27 22:30	06/28 22:30	8750,0	210000	70,8	36000	32400	104,5	0.0	2,03E+07	96,8
06/28 22:30	06/29 22:30	8750,0	210000	68,5	36000	32400	104,5	0.0	2,03E+07	96,8
06/29 22:30	06/30 22:30	8541,7	205000	69,1	36000	32400	103,9	0.0	2,03E+07	99,2

DAILY VALUATION OF THE ENERGY MULTIPLE - MAY 2015										
		average power supply (Kw)	supplied energy wh/d	tank water T max (°C)	effective flow water(Kg/d)	reduced flow water (kg/d)	steam T min (°C)	steam pressure	produced energy (wh)	COP
04/30 22:30	05/01 22:30	10.25	246000	70,8	36000	32400	103,4	0.0	2,03E+07	82,6
05/01 22:30	05/02 22:30	10.29	247000	69,1	36000	32400	103,9	0.0	2,03E+07	82,3
05/02 22:30	05/03 22:30	10.29	247000	71,4	36000	32400	103,9	0.0	2,03E+07	82,3
05/03 22:30	05/04 22:30	9,96	239000	69,7	35000	31500	103,9	0.0	1,98E+07	82,7
05/04 22:30	05/05 22:30	10,67	256000	71,4	36000	32400	103,4	0.0	2,03E+07	79,4
05/05 22:30	05/06 22:30	10.29	247000	70,3	36000	32400	103,4	0.0	2,03E+07	82,3
05/06 22:30	05/07 22:30	10.21	245000	70,3	35000	31500	103,9	0.0	1,98E+07	80,7
05/07 22:30	05/08 22:30	10.12	243000	70,3	36000	32400	103,9	0.0	2,03E+07	83,7
05/08 22:30	05/09 22:30	10.25	246000	70,8	36000	32400	104,5	0.0	2,03E+07	82,6
05/09 22:30	05/10 22:30	9,96	239000	73,1	36000	32400	104,5	0.0	2,03E+07	85,1
05/10 22:30	05/11 22:30	10.33	248000	70,3	32000	28800	104,5	0.0	1,81E+07	72,9
05/11 22:30	05/12 22:30	10.33	244000	71,4	34000	30600	104,5	0.0	1,92E+07	78,7
05/12 22:30	05/13 22:30	10.29	245000	70,8	35000	31500	104,5	0.0	1,98E+07	80,7
05/13 22:30	05/14 22:30	10.25	246000	70,3	36000	32400	104,5	0.0	2,03E+07	82,6
05/14 22:30	05/15 22:30	10.21	245000	70,8	34000	30600	104,5	0.0	1,92E+07	78,4
05/15 22:30	05/16 22:30	8,67	208000	70,3	29000	26100	104,5	0.0	1,64E+07	78,7
05/16 22:30	05/17 22:30	10.28	247000	69,1	38000	34200	104,5	0.0	2,15E+07	86,9

DAILY VALUATION OF THE ENERGY MULTIPLE - MAY 2015										
		average power supply (Kw)	supplied energy wh/d	tank water T max (°C)	effective flowed water(Kg/d)	reduced flowed water (kg/d)	steam T min (°C)	steam pressure	prduced energy (wh)	COP
05/17 22:30	05/18 22:30	10	240000	70,3	29000	26100	104,5	0.0	1,64E+07	68,2
05/18 22:30	05/19 22:30	10,39	249600	70,8	30000	27000	104,5	0.0	1,89E+07	67,9

Annexe 1: DAILY VALUATION OF THE ENERGY MULTIPLE - MAY 2015										
		average power supply (Kw)	supplied energy wh/d	tank water T max (°C)	effective flowed water(Kg/d)	reduced flowed water (kg/d)	steam T min (°C)	steam pressure	produced energy (wh)	COP
04/30 22:30	05/01 22:30	10,25	246000	70,8	36000	32400	103,4	0.0	2,03E+07	82,6
05/01 22:30	05/02 22:30	10,29	247000	69,1	36000	32400	103,9	0.0	2,03E+07	82,3
05/02 22:30	05/03 22:30	10,29	247000	71,4	36000	32400	103,9	0.0	2,03E+07	82,3
05/03 22:30	05/04 22:30	9,96	239000	69,7	35000	31500	103,9	0.0	1,98E+07	82,7
05/04 22:30	05/05 22:30	10,67	256000	71,4	36000	32400	103,4	0.0	2,03E+07	79,4
05/05 22:30	05/06 22:30	10,29	247000	70,3	36000	32400	103,4	0.0	2,03E+07	82,3
05/06 22:30	05/07 22:30	10,21	245000	70,3	35000	31500	103,9	0.0	1,98E+07	80,7
05/07 22:30	05/08 22:30	10,12	243000	70,3	36000	32400	103,9	0.0	2,03E+07	83,7
05/08 22:30	05/09 22:30	10,25	246000	70,8	36000	32400	104,5	0.0	2,03E+07	82,6
05/09 22:30	05/10 22:30	9,96	239000	73,1	36000	32400	104,5	0.0	2,03E+07	85,1
05/10 22:30	05/11 22:30	10,33	248000	70,3	32000	28800	104,5	0.0	1,81E+07	72,9
05/11 22:30	05/12 22:30	10,33	244000	71,4	34000	30600	104,5	0.0	1,92E+07	78,7
05/12 22:30	05/13 22:30	10,29	245000	70,8	36000	31500	104,5	0.0	1,98E+07	80,7
05/13 22:30	05/14 22:30	10,25	246000	70,3	36000	32400	104,5	0.0	2,03E+07	82,6
05/14 22:30	05/15 22:30	10,21	245000	70,8	34000	30600	104,5	0.0	1,92E+07	78,4
05/15 22:30	05/16 22:30	8,67	208000	70,3	29000	26100	104,5	0.0	1,64E+07	78,7
05/16 22:30	05/17 22:30	10,28	247000	69,1	38000	34200	104,5	0.0	2,15E+07	86,9

Annexe 1: DAILY VALUATION OF THE ENERGY MULTIPLE - MAY 2015										
		average power supply (Kw)	supplied energy wh/d	lank water T max (°C)	effective flowed water(Kg/d)	reduced flowed water (kg/d)	steam T min (°C)	steam pressure	produced energy (wh)	COP
05/17 22:30	05/18 22:30	10	240000	70,3	29000	26100	104,5	0.0	1,64E+07	68,2
05/18 22:30	05/19 22:30	10,39	249600	70,8	30000	27000	104,5	0.0	1,69E+07	67,9
05/19 22:30	05/20 22:30	10,22	245100	70,3	36000	32400	104,5	0.0	2,03E+07	82,9
05/20 22:30	05/21 22:30	10,09	242100	69,7	36000	32400	105,1	0.0	2,03E+07	84,0
05/21 22:30	05/22 22:30	10,17	244000	81,5	38000	34200	105,1	0.0	2,15E+07	88,0
05/22 22:30	05/23 22:30	10,22	245200	78,4	34000	30600	104,5	0.0	1,92E+07	78,3
05/23 22:30	05/24 22:30	10,46	251000	78,4	36000	32400	104,5	0.0	2,03E+07	81,0
05/24 22:30	05/25 22:30	10,29	247000	76,8	36000	32400	104,5	0.0	2,03E+07	82,3
05/25 22:30	05/26 22:30	10,38	249000	78,4	36000	32400	104,5	0.0	2,03E+07	81,7
05/26 22:30	05/27 22:30	10,59	254000	80	36000	32400	104,5	0.0	2,03E+07	80,0
05/27 22:30	05/28 22:30	9,75	234000	81,5	36000	32400	104,5	0.0	2,03E+07	86,9
05/28 22:30	05/29 22:30	10,38	249000	80	36000	32400	104,5	0.0	2,03E+07	81,7
05/29 22:30	05/30 22:30	9,17	220000	83	36000	32400	104,5	0.0	2,03E+07	92,4
05/30 22:30	05/31 22:30	9,67	232000	80	36000	32400	104,5	0.0	2,03E+07	87,6

Ing. Fabio Penon

Tests plan

E-CAT MW1 ENERGY PLANT IN MIAMI TESTS PLAN

1. Plant description

The MW1-USA plant under test consists of 115 power generation units, grouped in modules. Only 111 units will be operational during the tests: Four units will be used as spare parts.

Every unit absorbs a power of about 1.1 kW – 2.5 kW

Each unit consists of a reaction chamber, where the nickel powder reacts with the hydrogen in the presence of a catalyst.

Electric heaters heat the reaction chamber and by this way trigger the reaction between nickel and hydrogen.

The power panel regulates the power supply of the electric heaters

The cooling water is contained in a tank, placed inside the plant, that receives the water from an external plant.

It is conveyed by pumps in the units E-Cat, where it is heated to vaporize. The steam is collected in one tube of the steam line, which conveys it to the outside of the shelter.

The steam is then passed through the customer's facility, where it cools up to its condensation.

The water is so recycled to the internal tank in a closed loop. The water is distilled water. The external tank is connected with the internal tank, by a water line and a floating valve, so that the level of water inside the internal tank is maintained constant. The water flows from the external tank into the internal tank by gravity.

The heating elements of the E-Cat units, the pumps for the water, the internal services to the shelter and the control panel are powered by the public grid

In the plant some measuring instruments are installed:

- flowmeter for measuring the flow rate of cooling water inlet into the shelter.

It is located along the line of return of the water, between the plant of the Customer and the 1 MW E-Cat

- temperature probe for measuring the cooling water temperature at the inlet of the shelter.

It is located in the internal water tank, containing cooling distilled water

- temperature probe for measuring steam temperature at the outlet of the shelter.

It is located along the steam pipe at the outside of the shelter

- pressure probe for measuring steam pressure at the outlet of the shelter.

It is located along the steam pipe at the outside of the shelter

- power analyzer for measuring the power supply.

It is located along the electric power line before the E-Cat

Ing. Fabio Penon

Tests plan

2. Test set up

2.1 List of components

- n. 60 Water pump (Prominent)
- n. 115 E-Cat units
- n. 1 Water pump
- n. 1 Internal Water tank (0.2 C.M.)
- n. 1 Auxiliary external water tank

2.2 Measurement instrumentation

- Flowmeter Test report n. 01/2015, dated 2015/01/15
- Power analyzer PCE 830 Calibration certificate n. 0518/15, dated 2015/01/28
- Probe for water temperature measurement HSTC - TT - TI - 24S.
- Probe for steam temperature measurement TU - T - NPT - U 72
- Probe for steam pressure measurement PX 309-100A5V
- Multifunction calibrator

The measurement chain of temperature a will be calibrated by the thermometer HSTC-TT-TI-24S-1M-SMPW-M

3. Calculation of the energy mutiple

6.1 Calculation of the energy produced (E_p)

The energy produced by 111 power generator units is given by the sum of the heat of heating of water, heat of vaporization of water and heat of superheating the steam.

$$E_p = E_R + E_v + E_s$$

$$E_R \text{ (energy of heating of water up to } 100^\circ\text{C)} = M_w \times C_{sw} \times (T_{ww} - T_{iw})$$

where

M_w = mass of water vaporized during the whole test, coming from tank

T_{iw} = inlet temperature of the water, coming from tank

C_{sw} = specific heat of water = 1,14 Wh/(kg $^\circ$ K)

T_{ww} = vaporization temperature of the water = 100 $^\circ$ C

$$E_v \text{ (energy of vaporization of water)} = \lambda \times M_w$$

λ = (latent energy of vaporization) = 627,5 Wh/kg

Ing. Fabio Penon

Tests plan

$$E_s (\text{heating energy of steam}) = M_s \times C_{ps} \times (T_{os} - T_{vw})$$

M_s = mass of steam produced during the whole test
 C_{ps} = specific heat of steam at constant pressure = 0,542 Wh/kg

T_{os} = outlet temperature of the steam
 T_{vw} = vaporization temperature of the water

The values refer to the atmospheric pressure

In order to be conservative:

- it will be not taken into account the heating energy of steam
  - the temperature of the incoming water will be always considered to be equal to the maximum value of the same measured during the entire test day
- It will be possible small leaks of water to the inside of the shelter and are present measurement uncertainties
To take this into account the total mass of water transited during the test period will be reduced by 10%..

3.2 Calculation of the energy absorbed (E_a)

The energy is supplied from the public grid

In order to be conservative:

- all the supplied energy is supposed be absorbed by the 111 reactors
- In reality a part of this energy feeds the pump, which conveys the water from the tank external to the reactors This energy doesn't feed the reactors

3.3 Calculation of the 'energy multiple'

$$\text{Energy multiple} = \frac{\text{energy produced (} E_p \text{)}}{\text{energy absorbed (} E_a \text{)}}$$

4. Test protocol

Before testing Leonardo Corporation will implement the system in accordance with reference documentation

The ERV will provide the measuring devices: probe for measuring water inlet temperature, probe to measure outlet steam temperature, probe to measure the outlet steam pressure, inlet water flowmeter, electrical power analyser

Leonardo Corporation will install measuring devices with reference documentation

Ing. Fabio Penon

Tests plan

Before the plant start up the ERV will verify the compliance of the plant configuration and of the measuring chains with reference documentation.

He will carry out a trial run

Leonardo Corporation will start the system

The ERV will then follow the system start-up to reach the operating conditions and at least the next 24 hours of operation

According to data collected after the first 24 hours of operation, he will make an initial assessment of the 'Energy Multiple' and he will prepare the report

During the test will be detected the electrical power supplied, the temperature of the inlet water, the temperature and the pressure of the outlet steam, the flow rate of inlet water.

At 00.00 of every day of the test, the measurement system will calculate the mass of water that has passed through the E-Cat and the total energy supplied to the E-Cat.

Every event that occurs from the start until the close of the tests, after 350 days of operation, will be recorded in the logbook by Leonardo Corporation.

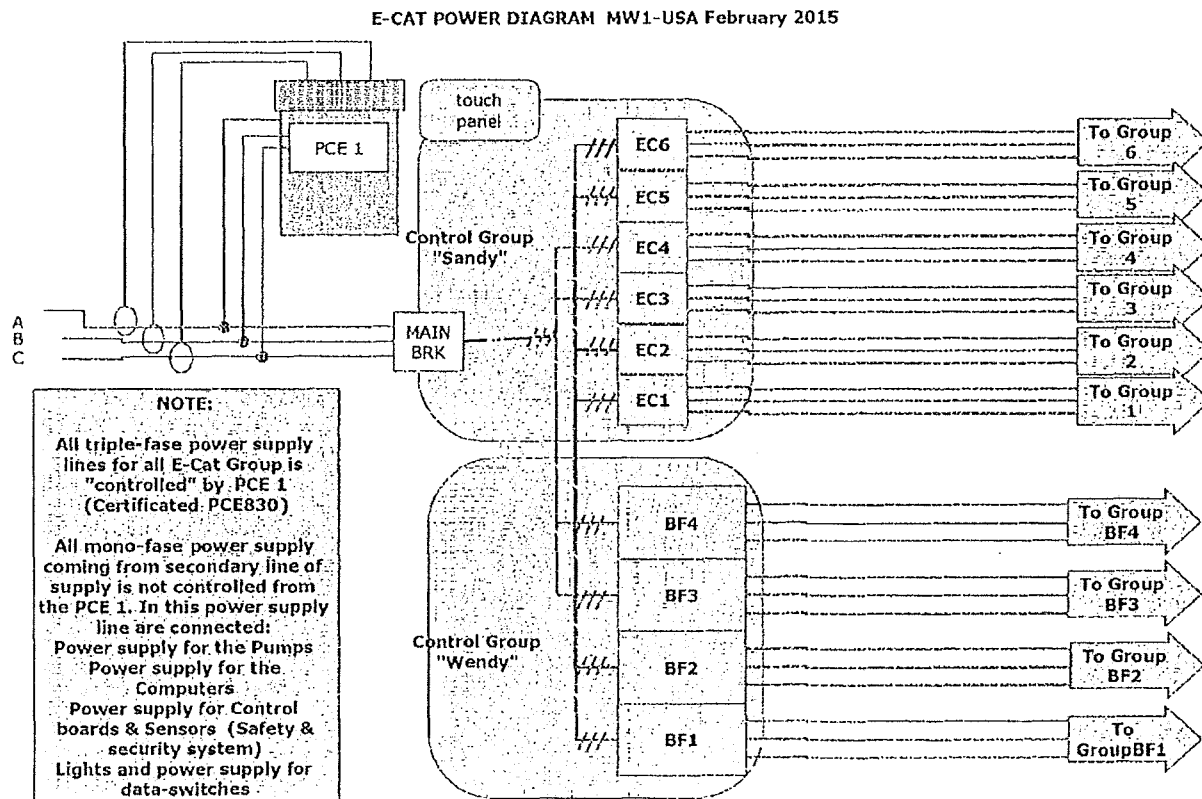
During the 350 days of operation, the ERV will visits to the plant with a frequency approximately four months in order to verify the configuration of the system and the measuring chains and make evaluations of Multiple Energy

At the end of the 350 days of operation the ERV will follow the shutdown of the plant

At the conclusion of the test the ERV will produce a final report, showing the results

Abano Terme, 2015/02/09

POIESIS srl
Fabio Penon M.E.



From: McLaughlin, Brian <BMcLaughlin@apcoworldwide.com>
Sent: Tuesday, March 29, 2016 7:34 PM
To: Joseph Murray
Cc: Tom Darden; JT Vaughn
Subject: Re: From Rossi's email list...Fwd: Fw: report fyi

52pm + 60

Thanks Joe. Tom mentioned you wrote an analysis. Could you share that?

Sent from my iPhone

On Mar 29, 2016, at 6:46 PM, Joseph Murray <jmurray@industrialheat.co> wrote:

Yes, and it is completely bogus.

Joe.

On Tuesday, March 29, 2016, McLaughlin, Brian <BMcLaughlin@apcoworldwide.com> wrote:
Thanks Dewey.

Do we actually have the report?

Sent from my iPhone

On Mar 29, 2016, at 6:23 PM, dewey.weaver <dewey.weaver@deeprv.com> wrote:

This just forwarded from Dennis Cravens who is on R's mailing list.

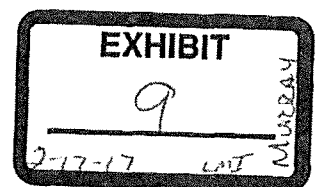
We're going to need a counter-punch soon.
- Dewey

On Tuesday, March 29, 2016 6:21 PM, Dennis <dennis@tularosa.net> wrote:

Andrea Rossi
March 29, 2016 at 1:44 PM

DEAR READERS:

WE HAVE RECEIVED RIGHT NOW THE ERV'S REPORT WHICH HAS BEEN DELIVERED TO INDUSTRIAL HEAT AND TO MYSELF. While I cannot release the report publicly at this time, I can state that I am *very pleased with the results*. I hope that Industrial Heat and I will be able to release the report publicly in the near future.
May God help us for the hard work waiting for us all.



Warm Regards,
Dr Andrea Rossi,
CEO of Leonardo Corporation

CONFIDENTIALITY

This email may contain material that is confidential, privileged or/ or work product for the sole use of the intended recipient. Any review, reliance or distribution by others or forwarding without express permission is strictly prohibited. If you are not the intended recipient, please contact the sender and delete all copies.

--

Joe Murray
Industrial Heat
p: 919.670.2771
e: jmurray@industrialheat.co

From: dewey.weaver <dewey.weaver@deeprv.com>
Sent: Wednesday, July 22, 2015 9:13 AM
To: Joe Murray
Cc: Paul Morris
Subject: Re: Re: Re: Fwd: ECAT Heat Energy - News from Andrea Rossi / Ecat.com

Agreed - There is a high probability that R is going to screw up his deal. TD is the right guy for that job and that gives R his best chance. TD may try and change the status quo and lower the pressure on R with a more simplified / lower profile plan b. (single reactor 100W challenge or something like that).

- Dewey

----- On Wed, 22 Jul 2015 09:10:13 -0400 **Joe Murray**<jmurray@industrialheat.co> wrote -----
Dewey,

This is a very encouraging note. Leo Corp does muddy the waters. I hope that can be brought into a viable path soon.

B/R,

Joe.

On Wed, Jul 22, 2015 at 9:03 AM, dewey.weaver <dewey.weaver@deeprv.com> wrote:
FYI on important news from Srini / India.

- Dewey

===== Forwarded message =====

From : Srini Srinivasan<chino37@gmail.com>
To : "dewey.weaver" <dewey.weaver@deeprv.com>, Tom Darden <tdarden@industrialheat.co>, JT Vaughn <jvaughn@industrialheat.co>
Date : Wed, 22 Jul 2015 08:55:27 -0400
Subject : Re: Re: Fwd: ECAT Heat Energy - News from Andrea Rossi / Ecat.com

===== Forwarded message =====

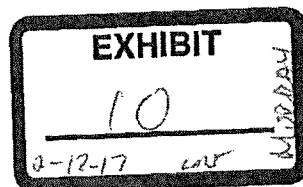
22nd July 2015

Dear Dewey,

The meeting with the Sr. VP in charge of Advanced Research along with two of his junior VPs in charge of different departments at the Mahindra Research Valley campus went off very well this morning. I am happy to report that Mahindras have decided to get involved in LENR. This is the culmination of two years of correspondence and discussions with them by me!

To begin with they will collaborate and fund the recently started research program at IIT Madras. One of their younger employees (a Mechanical Engineer) will register for a Ph.D under Prof. Ramaprabhu and start some experimental studies. Already a young lady research scholar has started a Thesis problem study at IIT M.

It is a fortuitous coincidence that Dr.Pawan Goenka, the President of the Automotive and farm Sector Division of the Mahindras is presently the Chairman of the Board of Governors of IIT Madras. So it makes it very easy for him to convince the Director of IITM to encourage this effort. In any case he is going to fund this research program!



I have told the Mahindras about Tom, IH and your interest in the Mahindras. I propose to send them more links to stuff available in the open domain.

I am happy to note that testing work at your new facilities has commenced. But for rapid progress you perhaps need more such parallel groups to carry out rigorous tests. I have a feeling that involving the Mahindas even in the testing phase may be mutually beneficial. They have about 1500 to 2000 people at the MRV facilities. Very modern equipment; world class as it became operational only in the last couple years.

I do realize that for this to happen delicate negotiations and signing of agreements etc need to take place prior to that. Ofcourse you are the judge to decide at what stage you would like to talk to them and get them involved.

Meanwhile I shall keep them updated on the progress of the field.

Best regards to all.

Srini

Dr.M.Srinivasan
(Formerly Associate Director,
Physics Group, BARC, Mumbai)
chino37@gmail.com

On Wed, Jul 22, 2015 at 7:48 AM, dewey.weaver <dewey.weaver@deepv.com> wrote:
Srini - I hope that you are doing well and as always, thank you for all that you continue to do to educate the world regarding the benefits of sustained LENR research. Confidentially we are continuing in our efforts to develop several reactors within our existing R&D network. I can report slow but steady progress.

As we explained during your visit to Raleigh, we are moving into a verification and engineering phase that we believe will be fruitful. We are very interested in working with Mahindra Research once we are internally satisfied that we have something useful to share.

In addition, we are aware of Rossi's test progress and his heat offer. We believe that a considerable amount of testing and research is needed before an onsite system will be ready for even prototyping with an outside customer.

We hope that your meeting goes well tomorrow. Please let us know if there is anything that we can do to assist you moving forward.

Thank you and let us know if there is anything that we can do to assist you in the interim. We trust that the Mahindra meeting will go well.

All the best,
Dewey
919-812-3441

----- On Sat, 18 Jul 2015 07:29:12 -0400 **Srini Srinivasan** <chino37@gmail.com> wrote -----
18th July 2015

Dear Dewey,

Thank you so much for your response.

We are confused about the role of Learnado Corporation. Would they be manufacturing and marketing independent of and in addition to IH?

We keep hearing from Rossi's blogs as reported in e-catworld about his outsourcing plans, namely that Learnado Corporation has identified various parties to manufacture components.

I am going to be meeting the VP in charge of Research at Mahindra Research Valley on Wed 22nd July. I have been repeatedly trying to get them involved in LENR Research; atleast they start funding research in Academic Institutions like the IITs.

I am trying to form a clearer picture of the time line of LENR technology in India.

Meanwhile we shall await your feedback.

Thanks once again.

Srini

Dr.M.Srinivasan
(Formerly Associate Director,
Physics Group, BARC, Mumbai)
chino37@gmail.com

On Sat, Jul 18, 2015 at 4:44 PM, dewey.weaver <dewey.weaver@deepiv.com> wrote:
Srini - thank you for the note. As previously stated, Rossi operates his own planet. Unofficially and confidentially, we are not confident that he is ready to be making such offers. I'm going to discuss with IH next week and will follow-up with a more informative response.

Mahindra discussion is also next week - everyone has been traveling.

Hope that everything is well with you.

Best,
Dewey
919-812-3441

---- On Fri, 17 Jul 2015 18:11:44 -0400 **Srini Srinivasan** <chino37@gmail.com> wrote ----

18th July 2015

Dr.M.Srinivasan
chino37@gmail.com

Dear Dewey,

If an Indian company is interested in a heat source is it worth encouraging them to pursue this? Do you have any info on how serious is this offer!

Where does IH come into this business?

Srini

----- Forwarded message -----

From: <noreply@lenr-forum.com>

Date: Fri, Jul 17, 2015 at 7:57 PM

Subject: ECAT Heat Energy - News from Andrea Rossi / Ecat.com

To: chino37@gmail.com

Leonardo Corporation now offers ECAT Heat Energy as a separate product solution. The ECAT plants are owned and operated by Leonardo Corporation while installed in the customers facilities or at a location in the vicinity of the customers facilities depending on local needs and infrastructure.

The ECAT Heat Energy is delivered by steam at 100-120 Celsius and extracted through the customers local heat exchangers. Return temperatures can be in any range between 5-95 Celsius.

Leonardo Corporation initially look for customers with 24/7 facility operation due to ECAT plants preferred continuous operation.

Please contact for quotes

<http://www.lenr-forum.com/forum/index.php/Thread/1847-ECAT-Heat-Energy-News-from-Andrea-Rossi-Ecat-com/>

--

LENR Forum

<https://www.lenr-forum.com/forum>

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Joseph A. Murray

Industrial Heat, LLC

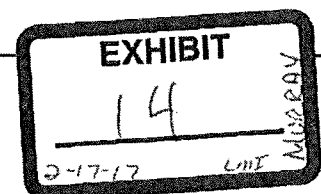
(C) 919-606-5330

(E) jmurray@industrialheat.co

From: Joseph Murray <jmurray@industrialheat.co>
Sent: Saturday, May 07, 2016 5:35 PM
To: Tom Darden
Cc: dewey.weaver; Christopher R Pace; JT Vaughn; Kight, April; McLaughlin; Watkins; Christopher M Lomax
Subject: Re: Flow meter testing

Redacted - Privilege

1



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IH-00120283

and we are lucky he did not burn down the whole building. In my opinion there is no possible way, even in theory, that the BF systems as they were built could support a large amount of heat.

Redacted - Privilege

On Sat, May 7, 2016 at 1:58 PM, Tom Darden <tdarden@industrialheat.co> wrote:

Redacted - Privilege

From: dewey.weaver

Sent: Saturday, May 7, 2016 9:27 AM

To: Joseph Murray

Cc: Christopher R Pace; JT Vaughn; Kight, April; McLaughlin; Watkins; Tom Darden; Christopher M Lomax

Subject: Re: Flow meter testing

Redacted - Privilege

----- On Thu, 05 May 2016 18:13:03 -0400 Joseph Murray <jmurray@industrialheat.co> wrote -----

All:

Attached are 3 500kW simulation video's. I have others simulations complete that I need to make video's out of. It should have been very hot in the building. At 500kW in that building you would have buoyancy driven tornadoes in the building.

B/R,

Joe.

On Wed, May 4, 2016 at 6:25 PM, Joseph Murray <jmurray@industrialheat.co> wrote:
All:

The flow meter testing is ongoing. It is very obvious that the meter will report the numbers that Rossi has validated as correct with Penon with only a trickle of water running through it. However, I really need to know what the run length of the pipe is and the drop to be able to make a valid comparison. When can we get into the facility?

Thanks,

Joe.

--

Joe Murray
Industrial Heat
p: [919.670.2771](tel:919.670.2771)
e: jmurray@industrialheat.co

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--

Joe Murray
Industrial Heat
p: [919.670.2771](tel:919.670.2771)
e: jmurray@industrialheat.co

EXHIBIT 12

**UNITED STATES DISTRICT COURT
SOUTHERN DISTRICT OF FLORIDA**

Civil Case Number: 1:16-cv-21199-CMA

ANDREA ROSSI, et al	)
	)
Plaintiffs,	)
	)
v.	)
	)
THOMAS DARDEN, et al	)
	)
Defendants.	)
	/

PLAINTIFFS' INITIAL DISCLOSURES

The Plaintiffs, ANDREA ROSSI, an individual, and LEONARDO CORPORATION, a Florida corporation, by and through the undersigned counsel, pursuant to Rule 26(a)(1), Federal Rule of Civil Procedure, hereby serve their Initial Disclosures, and state:

I. PERSONS LIKELY TO HAVE DISCOVERABLE INFORMATION

1. Andrea Rossi c/o John W. Annesser, Esq. The Silver Law Group, P.A. P.O. Box 710 Islamorada, FL 33036 (305) 664-3363
2. Leonardo Corporation c/o John W. Annesser, Esq. The Silver Law Group, P.A. P.O. Box 710 Islamorada, FL 33036 (305) 664-3363
3. Thomas Darden c/o Christopher Pace, Esq. Jones Day

	600 Brickell Ave. Suite 3300 Miami, Florida 33131 (305) 714-9700
4.	John T. Vaughn c/o Christopher Pace, Esq. Jones Day 600 Brickell Ave. Suite 3300 Miami, Florida 33131 (305) 714-9700
5.	John Mazzarino 111 East Hargett Street Raleigh, North Carolina 27601 (919) 743-2500
6.	Industrial Heat, LLC c/o Christopher Pace, Esq. Jones Day 600 Brickell Ave. Suite 3300 Miami, Florida 33131 (305) 714-9700
7.	IPH International, B.V. c/o Christopher Pace, Esq. Jones Day 600 Brickell Ave. Suite 3300 Miami, Florida 33131 (305) 714-9700
8.	IPHBV Holding, LTD. 1 Finsbury Circus, London EC2M 7SH83 United Kingdom
9.	Thomas Barker Dameron 111 East Hargett Street Raleigh, North Carolina 27601 (919) 743-2500
10.	Joe Murray 111 East Hargett Street Raleigh, North Carolina 27601 (919) 743-2500
11.	Fulvio Fabiani fulviofabiani@mail.com

12. Fabio Penon <i>POIESIS s.r.l.</i> via Sette Fratelli Cervi 1 35031 Abano Terme (PD) Italy tel. 39 49 811 111
13. Barry West 111 East Hargett Street Raleigh, North Carolina 27601 (919) 743-2500
14. Cherokee Investment Partners, LLC c/o Christopher Pace, Esq. Jones Day 600 Brickell Ave. Suite 3300 Miami, Florida 33131 (305) 714-9700
15. AmpEnergo, Inc. c/o William F. Blake, Jr. CO. L.P.A. 4110 Sunset Blvd. Steubenville, Ohio 43952
16. Joseph Pike, Sr. Address Unknown
17. Joseph Pike, Jr. Address Unknown
18. IH Holdings International, LTD. 1 Finsbury Circus, London EC2M 7SH83 United Kingdom
19. Woodford Patient Capital Trust & Woodford Equity Income Fund PO BOX 3733 Royal Wootton Bassett Swindon SN4 4BG United Kingdom

II. DOCUMENTS IN PLAINTIFFS' POSSESSION*

- (a) License Agreement and Amendments thereto
- (b) E-mails between Plaintiffs & Defendants
- (c) E-mails between Plaintiffs and Defendants' Representatives
- (d) Reports of ERV Fabio Penon

- (e) E-Cat 1MW Plant
- (f) Photographs taken at conclusion of Test
- (g) E-mails with non-party IH Affiliates
- (h) Contract with AmpEnergo, Inc.
- (i) Term Sheet for operation of E-Cat at JM Products facility
- (j) Patent Applications and related documents for patents applied for by IH
- (k) Plaintiffs' patent applications and related documents

* The aforementioned documents are in the possession of the Plaintiffs and/or Plaintiffs' attorney with the exception of the E-Cat Plant which is located at the Testing Facility which is known to Defendants.

III. COMPUTATION OF DAMAGES:

Damage Category:	Damage Amount
Compensatory Damages	\$89,000,000.00 plus interest
Special Damages including Reliance, Expectancy, and Lost Profit/Opportunity Damages	Total Valuation of this category of damages is currently unknown, but continues to accrue. Such damages are expected to be in excess of \$25,000,000.00.

Respectfully submitted,

THE SILVER LAW GROUP, P.A.
Counsel for Plaintiffs
P.O. Box 710
Islamorada, FL 33036
(305) 664-3363 Telephone
(305) 664-3365 Fax
jannesser@silverlawgroup.com
psilver@silverlawgroup.com
linda@silverlawgroup.com
service@silverlawgroup.com

By: 
John W. Annesser, Esq.
Fla. Bar No. 98233
Patricia M. Silver, Esq.
Fla. Bar No. 198919

CERTIFICATE OF SERVICE

I HEREBY CERTIFY that on this 1st day of August, 2016, a true and correct copy of the foregoing was served via electronic mail to the following:

Christopher R.J. Pace, Esq.
Christopher M. Lomax, Esq.
JONES DAY
Attorneys for Defendants
crjpace@jonesday.com
clomax@jonesday.com


John W. Annesser, Esq.

**UNITED STATES DISTRICT COURT
SOUTHERN DISTRICT OF FLORIDA**

ANDREA ROSSI and LEONARDO
CORPORATION,

Plaintiffs,

v.

THOMAS DARDEN; JOHN T. VAUGHN;
INDUSTRIAL HEAT, LLC; IPH INTER-
NATIONAL B.V.; and CHEROKEE
INVESTMENT PARTNERS, LLC,

Defendants.

CASE NO. 1:16-cv-21199-CMA

DEFENDANTS' INITIAL DISCLOSURES

Pursuant to Federal Rule of Civil Procedure 26(a)(1), Defendants THOMAS DARDEN, JOHN T. VAUGHN, INDUSTRIAL HEAT, LLC (“Industrial Heat”), IPH INTERNATIONAL B.V. (“IPH”), and CHEROKEE INVESTMENT PARTNERS, LLC (“Cherokee”) (collectively, “Defendants”) make the following initial disclosures in connection with the above-captioned lawsuit filed by Plaintiffs.

PRELIMINARY STATEMENT

These initial disclosures are based upon information reasonably available and currently known to Defendants. Defendants are presently identifying and locating witnesses and documents as part of their ongoing investigation to fulfill their Rule 26(a)(1) disclosure obligations. If applicable, Defendants will further supplement these initial disclosures at an appropriate time and reserve the right to do so.

Defendants do not represent that these initial disclosures identify every witness, document, tangible thing, or piece of electronically stored information (“ESI”) relevant to

their claims or defenses in this action and provide this information without any concession, agreement, or admission, and without waiver of any ultimate determination of the relevance or admissibility of any particular information or document, and without waiver of any protection from disclosure afforded by the attorney–client privilege, the joint defense privilege, the common interest privilege, the work product doctrine, and/or any other applicable privilege or doctrine protecting such information or document from disclosure (collectively referred to as a “privilege”). Defendants reserve the right to require that any production by Defendants be made pursuant to an agreed-upon protective order entered by the Court. Defendants further reserve the right to call any witness and present any exhibit or item at trial not listed herein.

I. INDIVIDUALS LIKELY TO HAVE DISCOVERABLE INFORMATION THAT DEFENDANTS MAY USE TO SUPPORT THEIR CLAIMS AND/OR DEFENSES (UNLESS SOLELY FOR IMPEACHMENT).

Based upon the information reasonably available and currently known to Defendants, the following individuals are likely to have discoverable information that Defendants may use to support their claims and/or defenses (unless solely for impeachment). Individuals identified by Plaintiffs in their initial disclosures may also have discoverable information that Defendants may use.

In making their initial disclosures, Defendants do not waive their rights to object, pursuant to applicable Federal and Local Rules, to the deposition testimony of any of the individuals listed herein. In addition, Defendants expect to have testifying expert witnesses at trial. Expert witnesses will be disclosed in the future in accordance with Federal Rule of Civil Procedure 26(a)(2)(C) and the pretrial schedule set forth in the Court’s Order Setting Trial and Pre-Trial Schedule. *See* [D.E. 23].

Defendants do not authorize Plaintiffs or their counsel/representatives to communicate with employees or former employees of any Defendant, individuals who have entered confidentiality agreements with any Defendant, or individuals who may have privileged information, or authorize any communications otherwise prohibited by any applicable rule of professional conduct, law, statute, or regulation.

Where an individual is named below, the entries are in the following format: "Name (Title): Subject." Defendants reserve the right to expand at any time the subject description provided for any individual listed herein.

A. The following individuals may have knowledge with respect to the allegations set forth in Plaintiffs' complaint. All are either Defendants or employees of a Defendant. They may be reached through Defendants' counsel of record and should not be contacted directly by Plaintiffs or their counsel/representatives.

1. Thomas Darden (President of Industrial Heat and CEO of Cherokee): The License Agreement between Andrea Rossi ("Rossi"), Leonardo Corporation ("Leonardo"), Industrial Heat, IPH, and AmpEnerg, Inc. ("AEG") (the "License Agreement"), the First Amendment to the License Agreement ("First Amendment"), the Assignment and Assumption Agreement between Industrial Heat and IPH ("Assignment and Assumption Agreement"), the proposed Second Amendment to the License Agreement ("Proposed Second Amendment"), and the Term Sheet ("Term Sheet") among Industrial Heat, Leonardo, and J.M. Products, Inc. ("JMP"); development, operation, testing and patent prosecution related to the "Energy Catalyzer" ("E-Cat") technology, including the testing conducted by Rossi and Leonardo in Florida.
2. John Mazzarino (Managing Principal of Cherokee): The License Agreement, the First Amendment, the Proposed Second Amendment, and the Assignment and Assumption Agreement.
3. John T. Vaughn (Vice President of Industrial Heat and Manager at Cherokee): The License Agreement, the First Amendment, the Proposed Second Amendment, the Assignment and Assumption Agreement, and the Term Sheet; development, operation, testing, and patent prosecution related to the E-Cat technology, including the testing conducted by Rossi and Leonardo in Florida.

4. Joseph Murray (Engineer at Industrial Heat): Evaluation, testing, and patent prosecution related to the E-Cat technology, including the testing conducted by Rossi and Leonardo in Florida.
5. Thomas Barker Dameron (Inventor and Engineer at Industrial Heat): Development, operation, testing, and patent prosecution related to the E-Cat technology, including the testing conducted by Rossi and Leonardo in Florida.
6. Wendy Carter (Controller at Industrial Heat and Cherokee): Payments and/or reimbursements relating to the E-Cat technology, including payments and/or reimbursements to Leonardo, Rossi, Fulvio Fabiani ("Fabiani"), and Fabio Penon ("Penon") related to the E-Cat technology.
7. Trista Balmer (Accountant with Cherokee): Payments and/or reimbursements relating to the E-Cat technology, including payments and/or reimbursements to Leonardo, Rossi, Fabiani, and Penon related to the E-Cat technology.

B. The following individuals are or were independent contractors with Industrial Heat who performed tasks relating to the development, operation, and/or testing of the E-Cat technology:

1. Barry West (Electrician)
1001 Byrd Drive
Clayton, NC 27527
2. David Perry (General Contractor)
Post Office Box 1154
Morehead City, NC 28557
3. Fulvio Fabiani
1331 Lincoln Road, Unit 401
Miami Beach, FL 33139
4. AmpEnergo, Inc.
4110 Sunset Blvd.
Steubenville, Ohio 43952

C. Other individuals, including third party witnesses and employees (or former employees) of Industrial Heat, IPH, or Cherokee, may also have discoverable information that Defendants may use to support their claims and/or defenses, and

Defendants reserve the right to supplement these disclosures accordingly as and when appropriate.

II. DESCRIPTION BY CATEGORY OF DOCUMENTS THAT DEFENDANTS HAVE IN THEIR POSSESSION, CUSTODY, OR CONTROL AND MAY USE TO SUPPORT THEIR CLAIMS AND/OR DEFENSES.

Based on the information reasonably available to Defendants, Defendants may rely on the following categories of documents (including electronic documents or other electronically stored information), to the extent non-privileged, that Defendants have in their possession, custody, or control to support their claims and/or defenses:

1. License Agreement.
2. First Amendment.
3. Proposed Second Amendment.
4. Assignment and Assumption Agreement.
5. Term Sheet.
6. Patent applications, provisional patent applications, and PCT applications relating to the E-Cat technology.
7. Documents relating to the License Agreement, the First Amendment, the Proposed Second Amendment, and the Term Sheet, including, but not limited to, communications between Defendants and AEG relating to the License Agreement, the First Amendment, the Proposed Second Amendment, and the E-Cat technology.
8. Documents relating to the assignment of the License Agreement from Industrial Heat to IPH.
9. Documents relating to the development and operation of the E-Cat unit and testing of the E-Cat technology, including, but not limited to:
  - a. Documents reflecting testing and analysis of the E-Cat technology by Rossi/Leonardo.
  - b. Documents reflecting testing and analysis of the E-Cat technology by any Defendant.

- c. Documents reflecting testing and analysis of the E-Cat technology by third parties.
- 10. Documents relating to the development, operation, and testing of the six-cylinder unit referenced in the Proposed Second Amendment.
- 11. Documents reflecting or relating to Defendants' communications with Rossi/Leonardo, Fabiani, Penon, and JMP relating to the E-Cat technology, the License Agreement, the First Amendment, the Proposed Second Amendment, or the Term Sheet.
- 12. Publicly available statements made by Rossi and/or Leonardo relating to the E-Cat technology, the License Agreement, the First Amendment, the Proposed Second Amendment, or the Term Sheet.
- 13. Documents relating to payments and/or reimbursements made in relation to the E-Cat technology, including payments to Leonardo, Rossi, Fabiani, and Penon.

III. COMPUTATION OF EACH CATEGORY OF CLAIMED DAMAGES BY THE DISCLOSING PARTY.

Defendants are not claiming any damages in the Complaint and are therefore not required to disclose any damage computations pursuant to Rule 26(a)(1)(A)(iii).

IV. INSURANCE AGREEMENTS UNDER WHICH AN INSURANCE BUSINESS MAY BE LIABLE TO SATISFY ALL OR PART OF A POSSIBLE JUDGMENT.

Defendants will produce any applicable insurance policies pursuant to an agreed-upon protective order entered in this case.

Dated: August 2, 2016.

Respectfully submitted,

/s/ Christopher R.J. Pace

Christopher R.J. Pace
cpace@jonesday.com
Florida Bar No. 721166
Christopher M. Lomax
clomax@jonesday.com
Florida Bar No. 56220
Christina T. Mastrucci
cmastrucci@jonesday.com
Florida Bar No. 113013
JONES DAY
600 Brickell Avenue
Brickell World Plaza
Suite 3300
Miami, FL 33131
Tel: 305-714-9700
Fax: 305-714-9799

Attorneys for Defendants

CERTIFICATE OF SERVICE

I HEREBY CERTIFY that a true and correct copy of the foregoing was served by e-mail on counsel of record this 2nd day of August, 2016.

/s/ Christopher M. Lomax

Christopher M. Lomax

**UNITED STATES DISTRICT COURT
SOUTHERN DISTRICT OF FLORIDA
MIAMI DIVISION**

ANDREA ROSSI, et al.,

CASE NO. 1:16-cv-21199-CMA

Plaintiff,

v.

THOMAS DARDEN, et al.

Defendants.

INDUSTRIAL HEAT, LLC, and IPH
INTERNATIONAL B.V.,

Counter-Plaintiffs,

v.

ANDREA ROSSI and LEONARDO
CORPORATION,

Counter-Defendants,

and

J.M. PRODUCTS, INC., HENRY JOHNSON,
FABIO PENON, UNITED STATES
QUANTUM LEAP, LLC, FULVIO FABIANI,
and JAMES A. BASS,

Third-Party Defendants.

THIRD-PARTY DEFENDANTS' INITIAL DISCLOSURES

Pursuant to Rule 26(a)(1) of the Federal Rules of Civil Procedure, Third-Party Defendants, J.M. Products, Inc. ("JMP"), Henry Johnson ("Johnson"), and James A. Bass ("Bass") (collectively, the "Third-Party Defendants"), by and through their undersigned counsel, hereby submit their initial disclosures. These initial disclosures are based on the information

reasonably available to Third-Party Defendants at this time, and are made without waiving any objections as to relevance, materiality or admissibility of evidence in the action. Third-Party Defendants reserve the right to revise, correct, supplement or clarify the disclosures at any time, consistent with Rule 26(e) of the Federal Rules of Civil Procedure.

A. Individuals Likely to Have Discoverable Information. The following individuals are likely to have discoverable information that Third-Party Defendants may use to support their claims and/or defenses in this action:

1. Thomas Darden
Industrial Heat, LLC
President
c/o Christopher Pace, Esq.
Jones Day
600 Brickell Ave, Suite 3300
Miami, FL 33131
(305) 714-9700

Knowledge regarding the License Agreement, the First Amendment to the License Agreement, the Assignment and Assumption Agreement, and the Term Sheet; and the matters pertaining to the referenced documents.

2. John T. Vaughn
Industrial Heat, LLC
Vice President
c/o Christopher Pace, Esq.
Jones Day
600 Brickell Ave, Suite 3300
Miami, FL 33131
(305) 714-9700

Knowledge regarding the License Agreement, the First Amendment to the License Agreement, the Assignment and Assumption Agreement, and the Term Sheet; and the matters pertaining to the referenced documents.

3. Joseph Murray
Industrial Heat, LLC
Vice President of Engineering
c/o Christopher Pace, Esq.
Jones Day
600 Brickell Ave, Suite 3300

Miami, FL 33131
(305) 714-9700

Knowledge regarding the evaluation, operation, maintenance, and testing of the E-Cat Plant. Knowledge regarding the circumstances under which he visited the Doral Facility and interacted with JMP's employees.

4. Barry West
1001 Byrd Drive
Clayton, NC 27527

Knowledge regarding the operation and/or testing of the E-Cat Plant and/or E-Cat technology.

5. Andrea Rossi
c/o John W. Annesser, Esq.
Perlman, Bajandas, Yevoli & Albright, p.l.
283 Catalonia Ave, Suite 200
Coral Gables, FL 33134
(305) 377-0086

Knowledge regarding the evaluation, operation, maintenance, and testing of the E-Cat Plant.

6. Fulvio Fabiani
c/o Rodolfo Nuñez, Esq.
Rodolfo Nuñez, P.A.
255 University Drive
Coral Gables, FL 33143
(305) 443-2440

Knowledge regarding the operation and/or testing of the E-Cat Plant and/or E-Cat technology.

7. Fabio Penon
POIESIS s.r.l.
via Sette Fratelli Cervi 1
35031 Abano Terme (PD)
Italy
Tel. 39 49 811 111

Knowledge regarding the operation and/or testing of the E-Cat Plant and/or E-Cat technology.

8. Henry Johnson
J.M. Products, Inc.

President
c/o Fernando Arán, Esq.
Aran Correa & Guarch, P.A.
255 University Drive
Coral Gables, FL 33143
(305) 665-3400

Knowledge regarding the Term Sheet and matters relating to same.

9. James A. Bass
J.M. Products, Inc.
Engineer
c/o Fernando Arán, Esq.
Aran Correa & Guarch, P.A.
255 University Drive
Coral Gables, FL 33143
(305) 665-3400

Knowledge regarding the Term Sheet and matters relating to same.

In addition, Third-Party Defendants anticipate that other, unknown individuals may have discoverable information that Third-Party Defendants may use to support their claims or defenses. Third-Party Defendants incorporate by reference any other individuals disclosed by other parties in this matter and reserve the right to supplement this disclosure pursuant to Federal Rule of Civil Procedure 26(e).

Third-Party Defendants also reserve the right to obtain discovery in support of their claims or defenses from any witness identified in any other party's Rule 26(a)(1) disclosure.

B. Documents Relevant to Third-Party Defendants' Claims or Defenses. Third-Party Defendants submit the following description of documents, electronically stored information or tangible things in their personal possession, custody or control that they may use to support their claims or defenses, by category:

1. License Agreement
2. First Amendment
3. Proposed Second Amendment
4. Assignment and Assumption Agreement
5. Term Sheet
6. Documents relating to the License Agreement, First Amendment, the Proposed Second Amendment, and the Term Sheet.

7. Documents reflecting or relating to communications between Counter-Plaintiffs, Counter-Defendants, and/or any third-party defendants.

C. Computation of Damages. At this time, Third-Party Defendants are not seeking any damages in this action. Third-Party Defendants, however, reserve their right to assert cross-claims and/or seek damages from other defendants or non-parties as the facts of the case develop and the case proceeds.

D. Insurance Agreements. Third-Party Defendants will produce any applicable insurance agreements in accordance with the Agreed Protective Order [**ECF No. 65**].

Respectfully submitted this 11th day of November, 2016.

Arán Correa & Guarch, P.A.
Counsel for JMP, Johnson, and Bass
255 University Drive
Coral Gables, Florida 33134
Telephone: (305) 665-3400
Telefax: (305) 665-2250

By: /s/ Francisco J. León de la Barra
Francisco J. León de la Barra, Esq.
Florida Bar No.: 105327
Fernando S. Arán, Esq.
Florida Bar No.: 349712

CERTIFICATE OF SERVICE

I HEREBY CERTIFY that on November 11, 2016, a true and correct copy of the foregoing document was served on all counsel of record via electronic mail to the following:

/s/ Francisco J. León de la Barra
Francisco J. León de la Barra

EXHIBIT 13

CONFIDENTIAL

Page 1

IN THE UNITED STATES DISTRICT COURT
SOUTHERN DISTRICT OF FLORIDA

ANDREA ROSSI AND
LEONARDO CORPORATION,

Plaintiffs,

vs.

THOMAS DARDEN, ET AL.,

Defendants.

CONFIDENTIAL VIDEOTAPED DEPOSITION OF
RICK A. SMITH, P.E.

February 27, 2017
8:51 a.m.
VERITEXT LEGAL COURT REPORTING
41 South High Street
Suite 210
Columbus, OH 43215

Reported by: Tracy J. Schell

CONFIDENTIAL

Page 186 1 Penon test plan? 2 A. I don't recall. 3 Q. An hour? 4 A. I just said I don't recall. 5 Q. Can you tell me roughly, was it more than ten 6 hours? 7 A. Less than ten hours. 8 Q. Less than ten hours. 9 Had you been asked prior to this litigation 10 to review the test plan, could you have done so? 11 A. Oh, sure. Yes. Yes. 12 Q. And you -- it's your belief that you would 13 have looked at the same plan and said this isn't 14 sufficient, something has to change? 15 A. More than likely, yes. 16 Q. Did you review the Lugano test reports? Do 17 you know what I'm talking about there? 18 A. I looked at them. I did not study them in 19 depth. 20 Q. Okay. Are you aware that a test was 21 performed in Lugano by a number of Swedish and/or 22 Italian professors? 23 A. I'm vaguely aware, yes. 24 Q. Okay. Are you opining at all as to the 25 validity of the Lugano test reports?	Page 188 1 A. If it is -- if it's substantially similar to 2 the U.S. test, my opinion will be pretty much the same. 3 Q. Do you know if it is or isn't? 4 A. I'll have to look and study it line by line. 5 I haven't dug into that. I haven't drilled down into 6 it that deeply. 7 Q. You don't plan on testifying, do you, sir, 8 that the validation test performed in Ferrara, Italy 9 was improper, do you? 10 A. Again, I haven't -- I've looked at it. I've 11 not studied it in depth. I can't answer your question 12 right now. 13 Q. Okay. But sitting here today, that's not an 14 opinion that you've formed? 15 A. Not right now, no. 16 Q. Now, in your report, specifically the third 17 report on page 10, you state that you have not -- that 18 you have seen no documentation of the machine itself, 19 is that correct, regarding the E-Cat? 20 A. Correct. 21 Q. Have you seen any as of this date? 22 A. Other than the -- you know, I mentioned that 23 picture I saw on the Internet that I couldn't find. 24 And, again, I'm -- I'm talking the machine proper, not 25 necessarily Dr. Penon's report. So with that caveat,
Page 187 1 A. No. The Lugano test did not -- it did not 2 play into my opinions, sir. 3 Q. Okay. Are you aware of what test plan was 4 used in Lugano? 5 A. No. 6 Q. What about the validation test that was 7 performed as part of this, as part of the parties' 8 contract? 9 MR. LOMAX: Objection to the form of the 10 question. 11 Q. Are you familiar with what I'm talking about? 12 A. Now, are you talking -- are you Lugano or 13 back to U.S.? 14 Q. I'm asking about a validation test. Are you 15 aware that a test was performed in -- in Italy, in 16 Ferrara, Italy called the validation test? 17 A. I am aware, yes, sir. 18 Q. Okay. Did you review the test protocol used 19 for that test? 20 A. I'm not sure I reviewed it prior to my 21 report. I know I reviewed it afterward. 22 Q. Are you -- 23 A. I'm pretty sure. 24 Q. Are you opining as to the sufficiency of that 25 test?	Page 189 1 no, I have not seen documentation of the machine 2 itself. 3 Q. Okay. So are you opining as to the operation 4 of the machine itself, or just simply Dr. Penon's 5 report? 6 A. Both. 7 Q. Even though you've seen no test plan of the 8 machine -- or, I'm sorry, no documentation of the 9 machine? 10 A. Correct, because I'm a boiler expert, I 11 understand boilers. The machine in question is a 12 boiler, so I can make -- and I understand 13 thermodynamics, so, yes, I can opine. 14 Q. As to whether the E-Cat works? 15 MR. LOMAX: Objection to the form of the 16 question. 17 A. Could you be more specific on "works"? 18 Q. Are you opining as to whether the E-Cat is 19 capable of generating 1 megawatt worth of power? 20 A. I am opining on that, yes, sir. 21 Q. Even though you have not seen any 22 documentation on the machine itself? 23 A. The documentation on the machine may be 24 fraudulent. The other information I've seen and the 25 analysis I've done leads me to believe that it does not

VERITEXT LEGAL SOLUTIONS
COMPANY CERTIFICATE AND DISCLOSURE STATEMENT

Veritext Legal Solutions represents that the foregoing transcript is a true, correct and complete transcript of the colloquies, questions and answers as submitted by the court reporter. Veritext Legal Solutions further represents that the attached exhibits, if any, are true, correct and complete documents as submitted by the court reporter and/or attorneys in relation to this deposition and that the documents were processed in accordance with our litigation support and production standards.

Veritext Legal Solutions is committed to maintaining the confidentiality of client and witness information, in accordance with the regulations promulgated under the Health Insurance Portability and Accountability Act (HIPAA), as amended with respect to protected health information and the Gramm-Leach-Bliley Act, as amended, with respect to Personally Identifiable Information (PII). Physical transcripts and exhibits are managed under strict facility and personnel access controls. Electronic files of documents are stored in encrypted form and are transmitted in an encrypted fashion to authenticated parties who are permitted to access the material. Our data is hosted in a Tier 4 SSAE 16 certified facility.

Veritext Legal Solutions complies with all federal and State regulations with respect to the provision of court reporting services, and maintains its neutrality and independence regardless of relationship or the financial outcome of any litigation. Veritext requires adherence to the foregoing professional and ethical standards from all of its subcontractors in their independent contractor agreements.

Inquiries about Veritext Legal Solutions' confidentiality and security policies and practices should be directed to Veritext's Client Services Associates indicated on the cover of this document or at www.veritext.com.

EXHIBIT 14

1 UNITED STATES DISTRICT COURT
2 SOUTHERN DISTRICT OF FLORIDA

3 CASE NO. 1:16-cv-21199-CMA/O'SULLIVAN
4

5 ANDREA ROSSI, ET AL.,

6 Plaintiffs,

7 vs.

8 THOMAS DARDEN, ET AL.,

9 Defendants.
10 _____/

11 Casa de Campo
12 Resort & Villas
13 La Romana, D.R.
14 Wednesday, February 22, 2017
15 9:06 a.m. - 7:42 p.m.

16
17
18
19
20
21 VIDEOTAPED DEPOSITION OF FABIO PENON

22 Taken on behalf of the Plaintiffs before
23 Diana Santos, Shorthand Reporter and Notary Public
24 in and for the State of Florida at Large, pursuant
25 to Notice of Taking Deposition filed in the above
cause.

Page 162 1 Q If you go for me two paragraphs down do 2 you see the one starting with "following my 3 request"? Do you see that paragraph? 4 A Uh-huh. 5 Q Am I understanding this correctly, that 6 you had discussed with Dr. Rossi and Dr. Rossi had 7 agreed to include a condensed steam collector at the 8 bottom of the -- at the bottom of the steam pipe? 9 MR. ANNESSER: Object to the form. 10 THE WITNESS: Okay. 11 BY MR. PACE: 12 Q Do you recall having that conversation 13 with Dr. Rossi? 14 A In this very moment I don't remember, but 15 I think having written that... 16 Q You would not have written that in the 17 e-mail, if the conversation didn't occur; is that 18 correct? 19 THE INTERPRETER: Correct. Exactly what 20 he was saying. 21 MR. ANNESSER: Object to the form. 22 BY MR. PACE: 23 Q If we could just ask him the question. 24 A He must apply. He has to apply. 25 Q I understand. I am just -- if you wrote	Page 164 1 steam -- the water present, if any. 2 MR. PACE: Understood. 3 BY MR. PACE: 4 Q If I can, we only have a couple of more 5 minutes in this tape, but let me see if I can ask 6 this: If you can turn to the prior page, page 27. 7 Right above your typed name do you see -- 8 A On the top of the page? 9 Q No, it is more towards the bottom. Do you 10 see a paragraph that starts with "If we move away 11 from the exit point"? 12 THE INTERPRETER: Yes. 13 BY MR. PACE: 14 Q "If we move away from the exit point it is 15 possible the formation of small amounts of water 16 which will be collected in the collector." Am I 17 understanding correctly, that's the same condensed 18 steam collector that you -- that we were just 19 talking about on the prior page? 20 MR. ANNESSER: Object to the form. 21 THE WITNESS: Yes. 22 BY MR. PACE: 23 Q Are you aware of whether there was any 24 steam collect -- any such condensed steam collector 25 actually installed at the plant in Doral?
Page 163 1 in the e-mail that you had made a request to 2 Dr. Rossi and Dr. Rossi had agreed with your request 3 to apply a condensed steam collector, you believe 4 your e-mail is accurate? 5 A I did the request and Rossi accepted to 6 apply. 7 Q The next paragraph says "during the visit 8 I will check the amount of the water present". Is 9 that a reference to the condensed steam collector? 10 A Can you quote again which sentence? 11 Q Yes. Dr. Penon, the very next paragraph 12 says "During my visit I will check the amount of the 13 water present." Do you see that paragraph? That's 14 a reference to checking the amount of water in the 15 condensed steam collector; correct? 16 A The demand is if I verify the 17 installation, right, the question is? 18 Q No. My question is because it has visits 19 as plural, I'm understanding this to say that -- are 20 you saying that during your visits -- your later 21 visits to the Doral warehouse you would check the 22 amount of water in the condensed steam collector? 23 MR. ANNESSER: Object to the form. 24 THE WITNESS: Yes. During my visits, 25 during my visits I intended to verify the	Page 165 1 A Another collector? 2 Q Any collector? Was there a steam -- was 3 there a condensed steam collector on the exit pipe 4 from the E-Cat heading over to the customer side? 5 A In this moment I don't remember. 6 Q All right. 7 MR. PACE: Let's take a break, because 8 he's got to change the tape and I think you 9 have to hop to a phone call because it is 10 exactly 6:00 o'clock. 11 MR. LUKACS: It is 5:00 o'clock in Miami 12 right now. 13 MR. PACE: Oh, 6 o'clock. I'm sorry. I'm 14 sorry. 15 THE VIDEOGRAPHER: Going off the record. 16 The same is 6 o'clock p.m. 17 (Thereupon, a recess was taken from 6:00 18 p.m. - 6:05 p.m., after which the following 19 proceedings were had:) 20 THE VIDEOGRAPHER: All right. We are now 21 back on the record. The time is 6:05. Media 22 number six. 23 BY MR. PACE: 24 Q Dr. Penon, if I can keep you on the same 25 page that we were looking at for number -- we were

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EXHIBIT 15

CONFIDENTIAL

Page 1

1 UNITED STATES DISTRICT COURT
2 SOUTHERN DISTRICT OF FLORIDA
3 CASE NO. 1:16-cv-21199-CMA/O'Sullivan
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5

6 ANDREA ROSSI and LEONARDO)
CORPORATION,)
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Plaintiffs,

v.

THOMAS DARDEN; JOHN T.

VAUGHN; INDUSTRIAL HEAT,

LLC; IPH INTERNATIONAL,

B.V. and CHEROKEE

INVESTMENT PARTNERS, LLC,

Defendants.

C O N F I D E N T I A L

Video Deposition of THOMAS BARKER DAMERON, III

(Taken by the Plaintiffs)

Raleigh, North Carolina

Thursday, December 1, 2016

Reported by: Marisa Munoz-Vourakis -
RMR, CRR and Notary Public

Veritext Legal Solutions

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Page 198 1 Q. Sir, looking at Exhibit 12, Mr. Penon 2 submitted a report that the operation of the plant had 3 begun, and that report was as of -- that was the first 4 report on May 28, 2015. 5 A. Okay. Got you. 6 Q. Did you review that report? 7 A. I did see that report, yes. 8 Q. In writing to any person. 9 Did you tell them that you thought that the 10 results of that report were incorrect? 11 A. Not that I recall. 12 Q. Did you see any other reports from Engineer 13 Penon regarding the operation of the E-CAT plant in 14 Doral, Florida, between February 2015 and February 15 2016? 16 A. My recollection is I saw this report. I 17 may have seen another report sometime between this 18 report and the end of the test, but I think I've seen 19 one at the end of the test. 20 Q. And with those reports, did you ever send 21 an email to anybody, whether it be Engineer Penon, 22 Dr. Rossi, Mr. Vaughn, Mr. Darden, indicating that you 23 disagreed with those reports? 24 A. Not that I recall. 25 Q. Sir, did you ever prepare a design	Page 200 1 was not there, and I have heard from Barry West it was 2 rearranged, consciously rearranged. 3 Q. What do you mean by consciously rearranged? 4 A. Andrea changed the design -- layout of it 5 and put it in a different way. 6 Q. And what was the difference? 7 A. It didn't have a steam header in it. It 8 didn't have the steam traps in it. It didn't have the 9 drains in it. 10 MR. ANNESSER: Sorry, gentlemen, I 11 can't hear. Gentlemen, please. 12 Q. So you said it did not have a steam header, 13 correct? 14 A. Did not have -- 15 Q. I want to go through these again. I want 16 to go through one by one to make sure I understand. 17 A. The steam header that was made to go on the 18 unit was not on the unit. 19 Q. What is the steam header? 20 A. Steam header is a piece of pipe that comes 21 out, has taps in it for pressure and temperature, 22 thermal wells for temperature. It had a place to 23 put -- it had a drip leg in it where you could get 24 condensate out, a place for a trap to drain that. It 25 had a place to install two steam meters. It had a way
Page 199 1 schematic for the layout of the plant and how it should 2 be at the Doral facility, in your opinion? 3 A. Yes. 4 Q. Did you ever share that with Dr. Rossi? 5 A. I thought that I did. I don't guarantee 6 it. 7 Q. If it's not in the emails that are 8 produced, is it fair to state that it was not shared 9 with Dr. Rossi? 10 A. No, because it may have been shown to him 11 in a hand sketch. 12 Q. When would you have shown that to him? 13 MR. PACE: Objection to the form of 14 the question. 15 A. That would be very near the time it was 16 shipped, as that would have been when that was being 17 laid out. 18 Q. Isn't it true, sir, that Dr. Rossi was in 19 fact in Miami prior to it being shipped? 20 A. He was back and forth at various times. 21 Q. Do you know whether the layout of the plant 22 was done in line with your design schematic? 23 A. I think it was not. 24 Q. How so? 25 A. When I went down there and looked at it, it	Page 201 1 to connect it back together again and connect to the 2 pipe going to the JM Products. 3 Q. And, sir, what was there in place of this 4 steam header? 5 A. A line came out of the one megawatt unit 6 and turned and went straight to the JM Products. 7 Q. Were there any temperature devices there, 8 temperature gauges? 9 A. I don't -- there may be, I don't recall. 10 Q. Pressure gauges? 11 A. I don't think there were any pressure 12 gauges there. There was a pressure gauge inside the 13 unit. 14 Q. And when you were there on February 24, 15 2015, did you pull Andrea Rossi aside and say hey, this 16 isn't what we planned? 17 A. No, I did not. 18 Q. When you returned, did you tell Mr. Vaughn 19 or Mr. Darden that -- 20 A. Most likely, yes. 21 Q. Did you ever tell Mr. Penon? 22 A. No. 23 Q. And you don't know sitting here today 24 whether Mr. Darden or Mr. Vaughn ever told Dr. Rossi or 25 Engineer Penon --

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