

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

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; and
FULVIO FABIANI,

Third-Party Defendants.

ANSWER AND ADDITIONAL DEFENSES

For their Answer and Additional Defenses to the complaint (“Complaint”) of Plaintiffs Andrea Rossi (“Rossi”) and Leonardo Corporation (“Leonardo”) (collectively, “Plaintiffs”), Defendants Thomas Darden (“Darden”), John T. Vaughn (“Vaughn”), Industrial Heat, LLC (“Industrial Heat”), IPH International, B.V. (“IPH”), and Cherokee Investment Partners, LLC (“Cherokee”) (collectively, “Defendants”) state the following:

NATURE OF ACTION

1. Defendants deny that the energy catalyzer (“E-Cat”) technology “generates a low energy nuclear reaction resulting in an exothermic release of energy” along the lines claimed by Plaintiffs – which is that a reactor using the E-Cat technology produces more than 50 times the energy it consumes. Compl. ¶ 71. Such claims are not scientifically verifiable or reproducible. See e.g., U.S. Patent and Trademark Office (“USPTO”), “Non-Final Rejection,” dated January 11, 2016 as to Patent App. No. 12/736,193 (attached hereto as Exhibit 1); discussions of third party testing *infra*. In addition, the procedures and mechanisms which Plaintiffs have used in their experiments and testing of the E-Cat technology are flawed and unreliable in many respects. See e.g. *id.*; response to Paragraph 72 *infra*. Lastly, the E-Cat technology has never been independently validated by a scientifically reliable methodology to produce the energy levels Plaintiffs now claim, and has failed to produce any commercially viable product. Indeed, using the E-Cat technology Plaintiffs directly provided them, Industrial Heat and IPH have been unable to produce any measurable excess energy. Defendants deny the remaining allegations in Paragraph 1.

2. Defendants deny the allegations in Paragraph 2.

3. Defendants deny the allegations in Paragraph 3.

4. Defendants deny the allegations in Paragraph 4.

5. Defendants deny the allegations in Paragraph 5.

6. Defendants lack sufficient knowledge or information to admit or deny the allegations in Paragraph 6 as to Plaintiffs' reasons for bringing this action, and therefore deny them. To the extent that Paragraph 6 alleges that Industrial Heat and IPH have infringed upon Plaintiffs' intellectual property, Defendants deny that allegation.

PLAINTIFFS' ALLEGATIONS AS TO THE PARTIES

7. Defendants admit the allegations in Paragraph 7.

8. Defendants admit the allegations in Paragraph 8. Defendants also admit that there was a separate corporation named Leonardo Corporation that was incorporated in New Hampshire. Defendants lack sufficient knowledge or information to admit or deny the remaining allegations in Footnote 2 appended to Paragraph 8, and on that basis deny those remaining allegations. For purposes herein, Defendants use "Leonardo," as Plaintiffs use "Leonardo" in the Complaint, as encompassing both the Florida corporation named Leonardo Corporation and the New Hampshire corporation named Leonardo Corporation. Defendants note, however, that during the time period relevant to the Complaint, the two companies existed as separate corporations, and the Leonardo Corporation that was a party to the License Agreement entered into on October 26, 2012 (the "License Agreement") was the New Hampshire corporation.

9. Defendants admit the allegations in Paragraph 9.

10. Defendants deny that Vaughn is a Manager at Cherokee. Defendants admit the remaining allegations in Paragraph 10.

11. Defendants admit that Industrial Heat is a Delaware limited liability company. Defendants deny that the address listed in Paragraph 11 is the address of Industrial Heat's principal place of business.

12. Defendants admit that IPH is a *Besloten vennootschap*, a Dutch private limited liability company. Defendants deny that the address listed in Paragraph 12 is the address of IPH's principal place of business.

13. Defendants admit the allegations in Paragraph 13.

PLAINTIFFS' ALLEGATIONS AS TO JURISDICTION AND VENUE

14. Paragraph 14 states legal conclusions to which no response is required. Defendants admit that this Court had subject matter jurisdiction at the time Plaintiffs filed the Complaint under 28 U.S.C. §§ 1331, 1332, and 1338(a).

15. Paragraph 15 states legal conclusions to which no response is required.

16. Paragraph 16 states legal conclusions to which no response is required. Defendants admit that diversity exists under 28 U.S.C. § 1332 because this case is between citizens of different States and in which citizens or subjects of a foreign state are additional parties.

17. Paragraph 17 states legal conclusions to which no response is required. Defendants admit that Industrial Heat entered into a contract with a specific forum selection/choice of law provision. Defendants deny the remaining allegations in Paragraph 17.

18. Paragraph 18 states legal conclusions to which no response is required. To the extent any response is required, Defendants deny the allegations in Paragraph 18.

19. Paragraph 19 states legal conclusions to which no response is required. To the extent any response is required, Defendants deny the allegations in Paragraph 19.

20. In light of the Court's dismissal of Count VIII of the Complaint (*see* [D.E. 24]), no response from Defendants is required to Paragraph 20. In addition, Paragraph 20 states legal conclusions to which no response is required. To the extent any response is required regarding Plaintiffs' allegations of patent infringement, Industrial Heat and IPH deny those allegations.

21. Defendants deny the allegations in Paragraph 21.

22. Defendants deny the allegations in Paragraph 22.

23. Defendants deny the allegations in Paragraph 23.

24. Paragraph 24 states legal conclusions to which no response is required. To the extent any response is required, Defendants deny the allegations in Paragraph 24.

25. Paragraph 25 states legal conclusions to which no response is required. Defendants admit that Leonardo's principal place of business is in this District. Defendants further admit that a substantial part of the events giving rise to the claims alleged in the Complaint occurred in this District. Defendants deny the remaining allegations in Paragraph 25.

PLAINTIFFS' ALLEGATIONS AS TO PATENTS AT ISSUE IN THIS SUIT

26. Defendants admit that Plaintiffs filed numerous patent applications, provisional patent applications, and PCT applications, and at least one trademark application. Defendants deny the remaining allegations in Paragraph 26.

27. Defendants deny that the document referenced in Paragraph 27 was a "European Patent"; the document referenced in Paragraph 27 is simply a patent application filed with the European Patent Office. Defendants admit that the European Patent Office published such application, which was Application No. EP 08873805.9 (the "European Patent Application"), on or about December 15, 2010 and that said application was entitled "Method and Apparatus for Carrying out Nickel and Hydrogen Exothermic Reaction." Defendants deny that the European

Patent Office “duly and legally published” the European Patent Application. Defendants further note that the European Patent Application parallels that U.S. patent application which was rejected by the USPTO as referenced in their response to Paragraph 1 *supra*; *see* Ex. 1.

28. Defendants admit that on or about April 6, 2011, the Italian Patent and Trademark Office (*Ufficio italiano brevetti e marchi*) issued Italian Patent No. 0001387256 (the “Italian Patent”) and that said patent was entitled “*Processo ed apparecchiatura per ottenere reazioni esotermiche, in particolare da nickel ed idrogeno.*” Defendants lack sufficient knowledge or information to admit or deny that the Italian Patent and Trademark Office “duly and legally issued” the Italian Patent.

29. Defendants admit that on August 25, 2015, the USPTO issued U.S. Patent No. 9,115,913 B1 entitled “Fluid Heater” (the “U.S. Patent”). Defendants also admit that a copy of the U.S. Patent is attached to the Complaint as Exhibit A. However, Defendants note that the U.S. Patent is not a patent for a catalyst that generates a low energy nuclear reaction or any other reaction resulting in an exothermic release of energy; such a catalyst is more appropriately described in Rossi’s U.S. Patent application that was rejected by the USPTO as referenced in Defendants’ response to Paragraph 1 *supra* (*see* Ex. 1). Defendants lack sufficient knowledge or information to admit or deny that the U.S. Patent was “duly and legally issued,” at least to the extent that such an allegation suggests that the patent is valid and enforceable. More recently, and subsequent to the issuance of the U.S. Patent, the International Searching Authority issued a written opinion in connection with a related Patent Cooperation Treaty (“PCT”) application determining that many claims in that PCT application lacked novelty or inventive step. *See* International Searching Authority, “Written Opinion,” dated October 19, 2015 as to PCT App. No. PCT/US2015/042353 (attached hereto as Exhibit 2).

30. In light of the Court's dismissal of Counts II and VIII of the Complaint (*see* [D.E. 24]), no response from Defendants is required to Paragraph 30. In addition, Paragraph 30 states legal conclusions to which no response is required. To the extent any response is required regarding Plaintiffs' allegations of patent infringement, Industrial Heat and IPH deny that they infringed the purported "European Patent," the "Italian Patent," or the "U.S. Patent."

PLAINTIFFS' FACTUAL BACKGROUND ALLEGATIONS

31. Defendants lack sufficient knowledge or information to admit or deny the allegations concerning the number of years Rossi has purportedly spent working, or the nature of the work Rossi has purportedly performed, on the E-Cat. Defendants deny that the E-Cat produces energy substantially in excess of the amount of energy input into the reaction at a cost substantially below that of more traditional energy sources; *see* Ex. 1.¹ Indeed, using the E-Cat technology Plaintiffs directly provided them, Industrial Heat and IPH have been unable to produce any measurable excess energy.

32. Defendants lack sufficient knowledge to admit or deny that the design and construction of the E-Cat device, as well as the process by which it operates, constitute the intellectual property of Plaintiffs; *see* response to Paragraph 1 *supra*. Defendants deny the remaining allegations in Paragraph 32.

33. Defendants admit that Plaintiffs have filed a broad array of IP-related applications, including the European Patent Application, the patent applications corresponding to the U.S. Patent and the Italian Patent, and numerous provisional patent applications and PCT applications. Defendants deny the remaining allegations in Paragraph 33.

34. Defendants deny the allegations in Paragraph 34.

¹ As alleged in the Complaint, Plaintiffs claim that an E-Cat unit produces more than 50 times the energy it consumes. Compl. ¶ 71.

35. Defendants deny the allegations in Paragraph 35.

36. Defendants deny the allegations in Paragraph 36.

37. Defendants admit that Vaughn met with Rossi in Zurich, Switzerland to discuss licensing of the E-Cat IP. For purposes of this Answer, Additional Defenses, Counterclaims, and Third-Party Claims, the “E-Cat IP” is defined as in the License Agreement, which states that the “E-Cat IP” consists of:

patents, designs, trade secrets, technology, know-how (including all the knowledge necessary to produce thermal energy by means of apparatuses derived from the technology), products and business plans and all other intellectual property related directly or indirectly to energy production and conversion technologies and to the development, manufacture and sale of products using such technologies, including the Energy Catalyzer (“E-Cat”) the catalyzer formula used to fuel the E-Cat, the “Hot-Cat” and the related energy production and conversion technologies.

License Agreement at page 1. The E-Cat IP also “include[s] all documents, manuals, technical data, formulae, and other items and materials necessary or useful to enable the [Industrial Heat or IPH] to (i) operate the 1 MW E-Cat Unit, (ii) make E-Cat Products, and (iii) exploit the E-Cat IP as contemplated by this Agreement.” *Id.* § 16.1. Defendants deny the remaining allegations in Paragraph 37, including to the extent they claim that Cherokee was interested in or willing to pay for a license of the E-Cat IP.

38. Defendants deny the allegations in Paragraph 38.

39. Defendants deny the allegations in Paragraph 39, including all subparts.

40. Defendants admit that Plaintiffs negotiated the terms of what would become the License Agreement. Defendants also admit that the License Agreement was executed on October 26, 2012 by Plaintiffs. Defendants further admit that Rossi traveled to Cherokee’s office in North Carolina to execute the License Agreement. Defendants deny the remaining

allegations in Paragraph 40, including any allegations that the License Agreement was “with Cherokee.” As the License Agreement states, it was with Industrial Heat.

41. Defendants deny the allegations in Paragraph 41.

42. Defendants lack sufficient knowledge or information to admit or deny the allegations as to Plaintiffs’ knowledge of the timing of the formation of Industrial Heat. Defendants admit that Industrial Heat was formed on or about October 24, 2012. Defendants deny the remaining allegations in Paragraph 42.

43. Defendants deny the allegations in Paragraph 43, including all subparts.

44. Defendants admit that an incomplete copy of the License Agreement is attached as Exhibit B to the Complaint. Defendants also admit that Plaintiffs entered into the License Agreement with Industrial Heat and AmpEnergo, Inc. (“AEG”) on October 26, 2012. Defendants state the License Agreement speaks for itself, and therefore deny any allegations in Paragraph 44 inconsistent therewith. Defendants deny the remaining allegations in Paragraph 44.

45. Defendants state that the License Agreement speaks for itself, and therefore deny any allegations in Paragraph 45 inconsistent therewith.

46. Defendants state that the License Agreement speaks for itself, and therefore deny any allegations in Paragraph 46, including all subparts, inconsistent therewith.

47. Defendants admit the allegations in Paragraph 47.

48. Defendants lack sufficient knowledge or information to admit or deny that Leonardo owned the facility referenced in Paragraph 48. Defendants admit the remaining allegations in Paragraph 48.

49. Defendants deny the allegations in Paragraph 49. As to Footnote 2 appended to Paragraph 49, Defendants state that the License Agreement speaks for itself, and therefore deny any allegations inconsistent therewith.

50. Defendants state that the First Amendment to the License Agreement, entered on April 29, 2013 (“First Amendment”), speaks for itself, and therefore deny any allegations in Paragraph 50 inconsistent therewith. Defendants admit that Plaintiffs executed the First Amendment on April 29, 2013. Defendants further admit that a copy of the First Amendment is attached to the Complaint as Exhibit C. Defendants deny the remaining allegations in Paragraph 50.

51. Defendants deny the allegations in Paragraph 51.

52. Defendants deny the allegations in Paragraph 52.

53. Defendants deny the allegations in Paragraph 53.

54. Defendants admit that Rossi and Leonardo consented to Industrial Heat’s assignment of the License Agreement to IPH. Defendants deny the remaining allegations in Paragraph 54.

55. Defendants state that the First Amendment speaks for itself, and therefore deny any allegations in Paragraph 55 inconsistent therewith.

56. Defendants admit that Plaintiffs selected Fabio Penon (“Penon”) as the Expert Responsible for Validation (“ERV”) in connection with the Validation test performed in Ferrara, Italy. Defendants state that the License Agreement and First Amendment speak for themselves, and therefore deny any allegations in Paragraph 56 inconsistent therewith. Defendants deny the remaining allegations in Paragraph 56.

57. Defendants admit that from April 30 to May 1, 2013, Penon conducted measurements in connection with the Validation test of certain E-Cat reactors operated by Plaintiffs. Defendants deny the remaining allegations in Paragraph 57. The Validation test did not follow the Validation protocol as set forth in the License Agreement and the First Amendment (the “Validation Protocol”). For example, the Validation Protocol required 30 E-Cat reactors to be operated as a unit (“Unit A”) for twenty-four consecutive hours. However, only 18 E-Cat reactors were operated as Unit A during the testing period. In addition, the Validation Protocol required the flow of heated fluid from the E-Cat reactors to be measured during the Validation test. However, these measurements were not taken during the Validation test. Furthermore, the Validation Protocol required that twenty-four consecutive hours of testing be done on Unit A. However, less than twenty-four consecutive hours of testing was done on Unit A. There are various other examples of the Validation Protocol not being followed during the Validation test.

58. Defendants admit that Penon produced a report following the testing of the E-Cat reactors which was done during the Validation test. Defendants further admit that Industrial Heat paid the second payment of \$10 million under the License Agreement and the First Amendment. Defendants state that this payment was made to an escrow agent and was subject to the requirement that Plaintiffs transfer “all the E-Cat IP” to Industrial Heat and IPH. *See* License Agreement § 3.2(b). Defendants deny the remaining allegations in Paragraph 58.

59. Defendants admit that in August 2013, the E-Cat Unit was delivered to Industrial Heat at its facility in North Carolina. The “E-Cat Unit” is defined in the License Agreement as the “Plant” and is sometimes referred to as the “1 MW E-Cat Unit” or the “1 MW Plant.” The specifications of the E-Cat Unit/Plant are contained in Exhibit C to the License Agreement.

Defendants lack sufficient knowledge or information to admit or deny that the E-Cat Unit was delivered from Ferrara, Italy. Defendants deny the remaining allegations in Paragraph 59.

60. Defendants deny the allegations in Paragraph 60.

61. Defendants deny the allegations in Paragraph 61.

62. Defendants admit that Industrial Heat and Rossi executed the proposed Second Amendment to the License Agreement (the “Proposed Second Amendment”), which is dated “October __, 2013.” However, the Proposed Second Amendment was not executed by Leonardo, IPH, or AEG. Defendants state that the Proposed Second Amendment speaks for itself, and therefore deny any allegations in Paragraph 62 inconsistent therewith. Defendants admit that a copy of the Proposed Second Amendment is attached to the Complaint as Exhibit D. Defendants deny that the Proposed Second Amendment was valid to amend the License Agreement. In any event, the Proposed Second Amendment addressed the testing of “a six cylinder Hot Cat unit” (the “Six Cylinder Unit”), not the E-Cat Unit that was the subject of the License Agreement and the First Amendment. The Six Cylinder Unit in the Proposed Second Amendment is separate and distinct from the E-Cat Unit or Plant as referenced in the License Agreement, the First Amendment, and the Complaint. Photographs accurately depicting the Six Cylinder Unit are attached hereto as Exhibit 3. The Six Cylinder Unit remains in North Carolina.

63. Defendants deny the allegations in Paragraph 63.

64. Defendants deny that the “test” referenced in Paragraph 64 – meaning the operation of the Plant in Doral, Florida in 2015 and early 2016 – was the “Guaranteed Performance” to be performed under the License Agreement. Defendants deny the allegations in Paragraph 64 as to Plaintiffs locating a customer in Miami, Florida who agreed to allow its facility to be used for a “Guaranteed Performance” test. The company Plaintiffs “located” for

the test referenced in Paragraph 64 was a company closely affiliated with Plaintiffs (J.M. Products, Inc.) that had no actual use for the steam produced by the Plant, and thus was not a “customer” for the steam power to be produced by the Plant. Defendants deny the remaining allegations in Paragraph 64.

65. Defendants deny the allegations in Paragraph 65.

66. Defendants deny that the test referenced in Paragraph 66 was the Guaranteed Performance to be performed under the License Agreement. Defendants lack sufficient knowledge or information to admit or deny that Penon performed a thorough inspection of or installed his monitoring equipment on the Plant on February 19, 2015. Defendants deny the remaining allegations in Paragraph 66.

67. Defendants admit that Industrial Heat and/or IPH engaged Barry West and Fulvio Fabiani (“Fabiani”) as independent contractors to assist Rossi in operation of the Plant in Florida and caused them to be paid for their services. Defendants deny the remaining in Paragraph 67.

68. Defendants deny the allegations in Paragraph 68.

69. In light of the Court’s dismissal of Counts II and VIII of the Complaint (*see* [D.E. 24]), no response from Defendants is required to Paragraph 69. To the extent any response is required, Defendants deny the allegations in Paragraph 69.

70. In light of the Court’s dismissal of Count VIII of the Complaint (*see* [D.E. 24]), no response from Defendants is required to Paragraph 70. To the extent that any response is required, Defendants admit that Industrial Heat raised substantial sums of money from numerous investors, including entities affiliated with the Woodford Funds. Defendants deny the remaining allegations in Paragraph 70.

71. Defendants admit that the E-Cat Unit was operated in Florida during a period in 2015 and 2016. As reflected in Rossi's internet blog postings at the time, that Unit was the Plant – *i.e.*, the 1 MW E-Cat – which is described in Exhibit C to the License Agreement. An excerpt from Rossi's blog posting, as reprinted on e-catworld.com, is attached as Exhibit 4. Defendants deny the remaining allegations in Paragraph 71. Furthermore, Defendants note that there were many flaws in how the purported Guaranteed Performance test referenced in Paragraph 71 was performed. Several, but by no means all, of those flaws were identified in a document provided to Penon on March 25, 2016. A copy of this document is attached hereto as Exhibit 5.

72. Defendants deny that the test referenced in Paragraph 72 was the Guaranteed Performance to be performed under the License Agreement. Defendants admit that on March 29, 2016, Penon sent his final report regarding the operation of the Plant to Darden and Rossi. Defendants state that this report speaks for itself, and therefore deny any allegations in Paragraph 72 inconsistent therewith. Defendants deny that the Plant satisfied all of the performance requirements imposed by the License Agreement; *see* Ex. 5. Defendants also deny Plaintiffs' allegations in Paragraph 72 regarding the amount of energy produced by the Plant during the testing period; *see* Ex. 1. Defendants deny the remaining allegations in Paragraph 72.

73. Defendants deny that the test referenced in Paragraph 73 was the Guaranteed Performance to be performed under the License Agreement. Defendants state that Penon's report speaks for itself, and therefore deny any allegations in Paragraph 73 inconsistent therewith. Defendants deny Plaintiffs' allegations in Paragraph 73 regarding the amount of energy produced by the Plant during the testing period; *see* Ex. 1. Defendants deny the remaining allegations in Paragraph 73.

74. Defendants admit that on March 29, 2016, Leonardo demanded payment of \$89 million, and that such demand has been refused and the payment has not been made. Defendants deny the remaining allegations in Paragraph 74.

75. Defendants deny the allegations in Paragraph 75.

COUNT I

76. In response to Paragraph 76, Industrial Heat and IPH repeat and reallege their responses to Paragraphs 1-75 above as if fully restated herein.

77. Industrial Heat and IPH state that the License Agreement speaks for itself, and therefore deny any allegations in Paragraph 77 inconsistent therewith. Industrial Heat and IPH further deny that the Proposed Second Amendment attached to the Complaint as Exhibit D was valid to amend the License Agreement.

78. Industrial Heat and IPH deny the allegations in Paragraph 78 to the extent that they are meant to allege that the Guaranteed Performance as defined by the License Agreement was successfully achieved. Industrial Heat and IPH state that the assignment from Industrial Heat to IPH speaks for itself, and therefore deny any allegations in Paragraph 78 inconsistent therewith.

79. Industrial Heat and IPH deny the allegations in Paragraph 79.

80. Industrial Heat and IPH admit that they have not paid \$89 million to Leonardo. Defendants deny the remaining allegations in Paragraph 80.

81. Industrial Heat and IPH lack sufficient knowledge or information to admit or deny the allegations in Paragraph 81.

COUNT II

82. In light of the Court's dismissal of Count II of the Complaint (*see* [D.E. 24]), no response from Defendants is required to Paragraph 82.

83. In light of the Court's dismissal of Count II of the Complaint (*see* [D.E. 24]), no response from Defendants is required to Paragraph 83.

84. In light of the Court's dismissal of Count II of the Complaint (*see* [D.E. 24]), no response from Defendants is required to Paragraph 84.

85. In light of the Court's dismissal of Count II of the Complaint (*see* [D.E. 24]), no response from Defendants is required to Paragraph 85.

86. In light of the Court's dismissal of Count II of the Complaint (*see* [D.E. 24]), no response from Defendants is required to Paragraph 86.

87. In light of the Court's dismissal of Count II of the Complaint (*see* [D.E. 24]), no response from Defendants is required to Paragraph 87.

COUNT III

88. In response to Paragraph 88, Industrial Heat and IPH repeat and reallege their responses to Paragraphs 1-2, 5, 7-16, 17(a-b), 17(d-f), 18-43, 48, 51, 57, 59, 61, 63-73, and 75 above as if fully restated herein.

89. Paragraph 89 states legal conclusions to which no response is required. To the extent any response is required, Industrial Heat and IPH deny the allegations in Paragraph 89. In fact, assuming the License Agreement is valid, the "exclusive license to use the E-Cat IP and related technology" irrevocably belonged to Industrial Heat and/or IPH after the \$10 million payment was made under the License Agreement, meaning Plaintiffs could not have conferred the "benefit" of that license on Industrial Heat or IPH subsequent to the \$10 million payment.

Alternatively, if somehow (for reasons unstated in the Complaint) the License Agreement were not valid, the “exclusive license to use the E-Cat IP and related technology” would never have been transferred to Industrial Heat or IPH in the first instance, meaning it could not have been a “benefit” that Plaintiffs conferred on Industrial Heat or IPH.

90. Paragraph 90 states legal conclusions to which no response is required. To the extent any response is required, Industrial Heat and IPH deny the allegations in Paragraph 90.

91. Paragraph 91 states legal conclusions to which no response is required. To the extent any response is required, Industrial Heat and IPH deny the allegations in Paragraph 91.

92. Paragraph 92 states legal conclusions to which no response is required. To the extent any response is required, Industrial Heat and IPH deny the allegations in Paragraph 92.

COUNT IV

93. In response to Paragraph 93, Defendants repeat and reallege their responses to Paragraphs 1-75 and 83-86 above as if fully restated herein.

94. Defendants deny the allegations in Paragraph 94.

95. Paragraph 95 states legal conclusions to which no response is required. To the extent any response is required, Defendants deny the allegations in Paragraph 95. Defendants state that significant portions of the E-Cat IP have been disclosed publicly. For example, Rossi has filed a number of publicly available patent applications, provisional patent applications, PCT applications, and applications in foreign countries disclosing the E-Cat IP. A non-exhaustive list of such applications is attached hereto as Exhibit 6. Furthermore, the E-Cat IP was disclosed to Industrial Heat and IPH pursuant to the License Agreement without any restriction on Industrial Heat or IPH’s further disclosure of such. In fact, the License Agreement permitted Industrial

Heat and IPH to sublicense the E-Cat IP to anyone they wanted on any terms they desired, without any confidentiality restrictions. *See* License Agreement §§ 1 & 16.4.

96. Paragraph 96 states legal conclusions to which no response is required. To the extent any response is required, Defendants deny the allegations in Paragraph 96. The E-Cat IP is defined in the License Agreement. *See* response to Paragraph 37 *supra*. Defendants state that the License Agreement speaks for itself, and therefore deny any allegations in Paragraph 96 inconsistent therewith.

97. Defendants deny the allegations in Paragraph 97.

98. The Court has rejected all but one of Plaintiffs' theories of misappropriation of trade secrets as alleged in Paragraph 98 (*see* [D.E. 24]); as a result, no response to such allegations is required. In addition, Paragraph 98 states legal conclusions to which no response is required. To the extent any response is required, Defendants deny the allegations in Paragraph 98, including all subparts.

99. The Court has rejected Plaintiffs' theory of misappropriation of trade secrets as alleged in Paragraph 99 (*see* [D.E. 24]); therefore, no response to Paragraph 99 is required. To the extent any response is required, Defendants deny the allegations in Paragraph 99.

100. Defendants deny the allegations in Paragraph 100.

101. The Court has rejected Plaintiffs' theory of a "confidential and fiduciary relationship" as alleged in Paragraph 101 and has dismissed Count VII (*see* [D.E. 24]); therefore, no response to Paragraph 101 is required. In addition, Paragraph 101 states legal conclusions to which no response is required. To the extent any response is required, Defendants deny the allegations in Paragraph 101. There are no provisions in the License Agreement requiring Industrial Heat or IPH to keep the E-Cat IP confidential. The only provision of the License

Agreement (Section 16.4) requiring a party to keep the E-Cat IP confidential applies to Plaintiffs and AEG alone.

102. Defendants deny the allegations in Paragraph 102.

103. The Court has rejected all but one of Plaintiffs' theories of misappropriation of trade secrets as alleged in Paragraph 103 (*see* [D.E. 24]); therefore, no response to such allegations is required. In addition, Paragraph 103 states legal conclusions to which no response is required. To the extent any response is required, Defendants deny the allegations in Paragraph 103, including all subparts.

104. Defendants deny the allegations in Paragraph 104. In fact, the License Agreement permitted Industrial Heat and IPH to sublicense the E-Cat IP to anyone they wanted on any terms they desired, without any confidentiality restrictions. *See* License Agreement §§ 1 & 16.4. In addition, Rossi has publicly disclosed significant portions of the E-Cat IP; *see* Ex. 6.

105. Paragraph 105 states a legal conclusion for which no response is required. To the extent any response is required, Defendants deny the allegations of Paragraph 105.

COUNT V

106. In light of the Court's dismissal of Count V of the Complaint (*see* [D.E. 24]), no response from Defendants is required to Paragraph 106.

107. In light of the Court's dismissal of Count V of the Complaint (*see* [D.E. 24]), no response from Defendants is required to Paragraph 107.

108. In light of the Court's dismissal of Count V of the Complaint (*see* [D.E. 24]), no response from Defendants is required to Paragraph 108.

109. In light of the Court's dismissal of Count V of the Complaint (*see* [D.E. 24]), no response from Defendants is required to Paragraph 109.

110. In light of the Court's dismissal of Count V of the Complaint (*see* [D.E. 24]), no response from Defendants is required to Paragraph 110.

COUNT VI

111. In response to Paragraph 111, Industrial Heat and IPH repeat and reallege their responses to Paragraphs 1-75, 83-86, 94-104, and 107-109 above as if fully restated herein.

112. Defendants deny the allegations in Paragraph 112, including all subparts.

113. Defendants deny the allegations in Paragraph 113, including all subparts.

114. Defendants deny the allegations in Paragraph 114.

115. Defendants deny the allegations in Paragraph 115, including all subparts.

116. Defendants deny the allegations in Paragraph 116.

117. Defendants deny the allegations in Paragraph 117.

COUNT VII

118. In light of the Court's dismissal of Count VII of the Complaint (*see* [D.E. 24]), no response from Defendants is required to Paragraph 118.

119. In light of the Court's dismissal of Count VII of the Complaint (*see* [D.E. 24]), no response from Defendants is required to Paragraph 119.

120. In light of the Court's dismissal of Count VII of the Complaint (*see* [D.E. 24]), no response from Defendants is required to Paragraph 120.

121. In light of the Court's dismissal of Count VII of the Complaint (*see* [D.E. 24]), no response from Defendants is required to Paragraph 121.

122. In light of the Court's dismissal of Count VII of the Complaint (*see* [D.E. 24]), no response from Defendants is required to Paragraph 122.

123. In light of the Court's dismissal of Count VII of the Complaint (*see* [D.E. 24]), no response from Defendants is required to Paragraph 123.

124. In light of the Court's dismissal of Count VII of the Complaint (*see* [D.E. 24]), no response from Defendants is required to Paragraph 124.

125. In light of the Court's dismissal of Count VII of the Complaint (*see* [D.E. 24]), no response from Defendants is required to Paragraph 125.

126. In light of the Court's dismissal of Count VII of the Complaint (*see* [D.E. 24]), no response from Defendants is required to Paragraph 126.

127. In light of the Court's dismissal of Count VII of the Complaint (*see* [D.E. 24]), no response from Defendants is required to Paragraph 127.

COUNT VIII

128. In light of the Court's dismissal of Count VIII of the Complaint (*see* [D.E. 24]), no response from Defendants is required to Paragraph 128.

129. In light of the Court's dismissal of Count VIII of the Complaint (*see* [D.E. 24]), no response from Defendants is required to Paragraph 129.

130. In light of the Court's dismissal of Count VIII of the Complaint (*see* [D.E. 24]), no response from Defendants is required to Paragraph 130.

131. In light of the Court's dismissal of Count VIII of the Complaint (*see* [D.E. 24]), no response from Defendants is required to Paragraph 131.

132. In light of the Court's dismissal of Count VIII of the Complaint (*see* [D.E. 24]), no response from Defendants is required to Paragraph 132.

133. In light of the Court's dismissal of Count VIII of the Complaint (*see* [D.E. 24]), no response from Defendants is required to Paragraph 133.

134. In light of the Court's dismissal of Count VIII of the Complaint (*see* [D.E. 24]), no response from Defendants is required to Paragraph 134.

135. In light of the Court's dismissal of Count VIII of the Complaint (*see* [D.E. 24]), no response from Defendants is required to Paragraph 135.

136. In light of the Court's dismissal of Count VIII of the Complaint (*see* [D.E. 24]), no response from Defendants is required to Paragraph 136.

137. In light of the Court's dismissal of Count VIII of the Complaint (*see* [D.E. 24]), no response from Defendants is required to Paragraph 137.

138. In light of the Court's dismissal of Count VIII of the Complaint (*see* [D.E. 24]), no response from Defendants is required to Paragraph 138.

139. In light of the Court's dismissal of Count VIII of the Complaint (*see* [D.E. 24]), no response from Defendants is required to Paragraph 139.

PLAINTIFFS' PRAYER FOR RELIEF

Defendants deny that Plaintiffs are entitled to any relief on the Complaint.

AFFIRMATIVE AND OTHER ADDITIONAL DEFENSES

Without conceding that they bear the burden of persuasion on any of the following defenses, Defendants assert the following separate affirmative and other additional defenses:

First Defense

1. Plaintiff Leonardo lacks standing to bring any claims against Defendants because the assignment of the License Agreement from Leonardo Corporation, Inc., a New Hampshire corporation, to Plaintiff Leonardo was invalid.

Second Defense

2. Plaintiffs have failed to state a claim upon which relief may be granted.

Third Defense

3. Plaintiffs' equitable claims are barred, in whole or in part, by the doctrines of estoppel, waiver, laches, and other applicable equitable doctrines.

Fourth Defense

4. Plaintiffs' equitable claims are barred, in whole or in part, by reason of Plaintiffs' unclean hands.

Fifth Defense

5. Plaintiffs' claims are barred, in whole or in part, as a result of Plaintiffs' antecedent breaches of contract.

Sixth Defense

6. Plaintiffs' claims are barred, in whole or in part, as a result of Plaintiffs' unlawful actions, including their conduct in violation of the Florida Deceptive and Unfair Trade Practices Act.

Seventh Defense

7. Plaintiffs' claims are barred, in whole or in part, as a result of Plaintiffs' fraudulent misrepresentations.

Eighth Defense

8. Plaintiffs' claims are barred, in whole or in part, because any injury that Plaintiffs may have suffered was proximately caused or contributed to by the acts or omissions of Plaintiffs and/or third parties other than Defendants.

Ninth Defense

9. Plaintiffs' fraud claim is barred because of the merger and integration provision in the License Agreement (Section 16.8) as well as the ratification provision in the First Amendment (Section 2).

Tenth Defense

10. Plaintiffs' non-contract claims are barred, in whole or in part, because Plaintiffs' alleged damages are too speculative.

Additional Defenses

Defendants do not knowingly or intentionally waive any applicable affirmative or other defenses not stated above, and reserve the right to assert and rely on such other applicable affirmative or other defenses as may later become available or apparent. Defendants further reserve the right to amend their answer and/or affirmative or other defenses accordingly and/or to delete defenses that they determine during the course of this litigation are not warranted or required.

COUNTERCLAIMS AND THIRD-PARTY CLAIMS

Industrial Heat and IPH (collectively "Counter-Plaintiffs") bring this action against Leonardo; Rossi; J.M. Products, Inc. ("JMP"); Henry Johnson ("Johnson"); Penon; United States Quantum Leap, LLC ("USQL"); and Fabiani. In support, Counter-Plaintiffs allege as follows:

INTRODUCTION

1. Industrial Heat and its affiliates, including IPH, are involved in developing and investing in "low energy nuclear reaction" (or LENR) technologies that have the potential to provide clean, reliable, efficient, and safe sources of energy. There are various forms of LENR technologies, including Electrolytic Cell Reactors ("ECR"), Gas Metal Matrix Reactors

(“GMMR”), and Solid State Hydride Reactors (“SSHR”). Industrial Heat and its affiliates are working on the development of all such technologies, often in conjunction with inventors who initially discovered or developed different forms or applications of these technologies.

2. Prior to 2012, Rossi claimed that he had developed an E-Cat device, which when used in connection with an E-Cat fuel/catalyzer formula (“E-Cat Fuel”), could produce well over six times the energy it consumed (which would equate to a coefficient of performance (“COP”) of 6.0). Consistent with its guiding mission to develop and invest in LENR technologies, Industrial Heat entered into the License Agreement with Leonardo and Rossi in October 2012.

3. Under the License Agreement, it was possible for Leonardo to earn three different payments. The first was for the Plant, but was refundable to Industrial Heat or IPH if Leonardo and Rossi could not “validate” during a 24-hour test period that the Plant could produce at least six times the energy it consumed – a COP of 6.0 (“Validation”). License Agreement § 3.2(a). The second payment was for a license and transfer to Industrial Heat or IPH of all of the E-Cat IP, but only if Validation could be achieved. *Id.* § 3.2(b). The third payment was due if Leonardo and Rossi could demonstrate that the Plant could consistently operate at a COP of at least 4.0, if not at the COP level at which Validation was achieved, for 350 out of 400 days (“Guaranteed Performance”). *Id.* § 3.2(c).

4. Industrial Heat made the first payment under the License Agreement to Leonardo – an amount deemed by the License Agreement to “include payment in full for the Plant” – in October 2012. License Agreement § 3.2(a). That payment was in the amount of \$1.5 million. Leonardo and Rossi purported to achieve the 24-hour validation from April 30 to May 1, 2013,² claiming a COP in excess of 10.0, after which they purported to transfer all of the E-Cat IP to

² Per the First Amendment, the 24-hour validation no longer needed to be of the Plant, but only of 30 E-Cat reactors combined into a “Unit A.”

Industrial Heat and IPH in exchange for the second payment. The second payment under the License Agreement – in the amount of \$10 million to Leonardo – was made in June 2013.

5. The long-term “Guaranteed Performance” demonstration under the License Agreement was to take place shortly after the 24-hour Validation. More specifically, Leonardo was required to deliver the Plant to Industrial Heat within 30 days following Validation, and then the Guaranteed Performance demonstration was to take place over the “400 day period commencing on the date immediately following delivery of the Plant” to Industrial Heat. *Id.* §§ 3.2(a), 3.2(c). Guaranteed Performance required Leonardo and Rossi to operate the Plant “at the same level (or better) at which Validation was achieved for a period of 350 days (even if not consecutive) over a 400 day period.” *Id.* § 5.

6. The testing Leonardo and Rossi now claim was the Guaranteed Performance did not commence immediately following the delivery of the Plant to Industrial Heat. In fact, that testing ***began*** well over one year after the Guaranteed Performance period commenced under the License Agreement – making it impossible for the Plant to achieve Guaranteed Performance during the time period required by the License Agreement.

7. Beyond the fact that Guaranteed Performance could not be achieved in the required time period, Leonardo and Rossi knew that the Plant could not produce a COP of 10.0 or greater (or even a COP of 4.0 or greater) for 350 out of 400 days. As a result, Leonardo and Rossi manipulated the testing process by, among other things, 1) insisting that the Plant be relocated to Miami, far away from Industrial Heat’s offices, to provide steam to a purported manufacturing “customer” that did not actually exist; 2) manipulating, along with Fabiani, the operation of the Plant and the reports of the Plant’s purported operations, to make it appear that

the Plant was producing a COP far greater than 10.0; and 3) enlisting Penon to produce a false report stating that Guaranteed Performance was achieved.

8. Eventually Counter-Plaintiffs discovered that the test that Leonardo and Rossi were conducting, in conjunction with the supposed “customer” in Miami, was not a real test at all, but a carefully scripted effort to deceive Counter-Plaintiffs into 1) providing Leonardo and Rossi with credibility in their efforts to license and promote the E-Cat IP to others and/or obtain investments from others in their business ventures, 2) making the third payment under the License Agreement to Leonardo, 3) paying a multitude of expenses of Leonardo and Rossi including in connection with their operations in Florida, and 4) paying Penon and Fabiani for services not rendered and reimbursing them for unnecessary expenses.

9. During the same time period, Counter-Plaintiffs continued their own efforts to replicate Rossi’s purported results using the E-Cat IP that Leonardo and Rossi had provided them when they received the \$10 million payment. Counter-Plaintiffs were unable to replicate any of Leonardo and Rossi’s claimed results or otherwise generate measurable excess energy. This led Counter-Plaintiffs to realize that there were only three possible conclusions: 1) Leonardo and Rossi’s claimed results, including the purported results from the Validation, were fabricated; 2) Leonardo and Rossi did not provide all of the E-Cat IP to Counter-Plaintiffs as was required under the License Agreement in exchange for the \$10 million payment; or 3) both.

10. Whether as a result of 1) fabricating the Validation test results so that it appeared that a COP greater than 6.0 was achieved when it was not, 2) not providing Counter-Plaintiffs with all the E-Cat IP, or 3) both, Leonardo and Rossi clearly breached the License Agreement.

11. In addition to the foregoing breach, as well as Leonardo and Rossi’s continuous efforts to deceive Counter-Plaintiffs, Leonardo and Rossi breached the License Agreement by,

among other things: 1) improperly disclosing the E-Cat IP and the terms of the License Agreement to unauthorized third parties without Counter-Plaintiffs' permission, 2) failing to assign certain patents and/or patent applications to IPH, 3) failing to inform Counter-Plaintiffs of the existence of certain patent applications and failing to fully prosecute patent applications related to the E-Cat IP, 4) participating or having a financial interest in companies that would be Counter-Plaintiffs' competitors, 5) failing to keep the original Leonardo entity (a New Hampshire corporation) active, and 6) failing to file and/or pay taxes on the payments made under the License Agreement for the Plant and the E-Cat IP.

THE PARTIES

12. Counter-Plaintiff Industrial Heat is a Delaware limited liability company having a principal place of business in North Carolina.

13. Counter-Plaintiff IPH is a Netherlands private limited liability company having a principal place of business in the Netherlands.

14. Counter-Defendant Rossi has a primary residence in Miami Beach, Florida and, upon information and belief, is a citizen of Italy.

15. Counter-Defendant Leonardo is a Florida corporation having a principal place of business in Miami Beach, Florida.

16. Third-Party Defendant JMP is a Florida corporation having a principal place of business in Doral, Florida.

17. Third-Party Defendant Johnson is a citizen of Florida with a primary residence in Boca Raton, Florida.

18. Third-Party Defendant Penon is a citizen of Italy with a primary residence in Abano Terme, Italy.

19. Third-Party Defendant Fabiani is a citizen of Italy with a primary residence in Miami Beach, Florida.

20. Third-Party Defendant USQL is a Florida limited liability company having a principal place of business in Miami Beach, Florida. Fabiani is USQL's sole member.

JURISDICTION AND VENUE

21. This Court has jurisdiction over this action pursuant to 28 U.S.C. § 1367. The claims pled herein are related to the claims pled in the Complaint and arise out of the same case or controversy.

22. Leonardo is subject to personal jurisdiction in this judicial district because it is a Florida corporation with a principal place of business in Miami Beach, Florida.

23. Rossi is subject to personal jurisdiction in this judicial district because he is a Florida resident with a primary residence in Miami Beach, Florida.

24. JMP is subject to personal jurisdiction in this judicial district because it is a Florida corporation with its principal place of business in Doral, Florida.

25. Johnson is subject to personal jurisdiction in this judicial district because he is a Florida resident with a primary residence in Boca Raton, Florida

26. Penon is subject to personal jurisdiction in this judicial district because he engaged in business in this judicial district from which the claim against him arises and committed tortious acts in this judicial district that are the basis of the claim against him.

27. USQL is subject to personal jurisdiction in this judicial district because it is a Florida limited liability company with its principal place of business in Miami Beach, Florida.

28. Fabiani is subject to personal jurisdiction in this judicial district because he is a Florida resident with a primary residence in Miami Beach, Florida.

29. Venue is proper in this judicial district pursuant to 28 U.S.C. § 1391(b)(1) & (c)(3) because Leonardo, Rossi, and Third-Party Defendants other than Penon reside in this district, and Penon does not reside in the United States. Venue is also proper in this judicial district pursuant to 28 U.S.C. § 1391(b)(2) because a substantial part of the events or omissions giving rise to the claims asserted herein occurred in this judicial district.

FACTUAL BACKGROUND

Thomas Darden's initial meeting with Rossi.

30. Industrial Heat was formed in October 2012 to support and invest in LENR technologies. If proven reliable and controllable, LENR technologies have the potential to provide an energy resource that does not generate radioactive waste or emit other harmful pollutants. Since its inception, Industrial Heat has worked to identify and partner with promising LENR inventors with an eye towards commercializing products that displace traditional fuel sources in generating both heat and electricity without emitting radioactive waste.

31. In June 2012, representatives from AEG introduced Darden to Rossi at Rossi's apartment in Miami Beach, Florida. In making the introduction, AEG explained that Rossi was an inventor working on certain LENR technology. At the time of the meeting, AEG held an exclusive right to commercially market Leonardo and Rossi's E-Cat technologies in the Americas.

32. During the June 2012 meeting, Rossi told Darden that he had developed and was continuing to develop a device (the E-Cat) that could produce energy at remarkably high levels without generating the harmful byproducts normally associated with nuclear reactions.

33. Thereafter, discussions continued among Rossi, Darden, and others regarding opportunities to develop and commercialize the E-Cat technology.

The License Agreement between Industrial Heat, Leonardo, Rossi, and AEG.

34. On or about October 26, 2012, Industrial Heat, Leonardo, Rossi, and AEG entered into the License Agreement. An incomplete copy of the License Agreement is attached as Exhibit B to the Complaint.³

35. The License Agreement was structured such that Leonardo could earn three payments from Industrial Heat – totaling over \$100 million – if certain conditions were satisfied. *See* License Agreement § 3.2; response to Paragraph 3 *supra*. In addition to the provisions of the License Agreement that gave Leonardo and Rossi an opportunity to earn the three payments, the License Agreement also imposes numerous obligations upon Leonardo and Rossi. Some of those obligations are described further below.

36. First, Section 3.2(b) requires that Validation be achieved as provided in Section 4 of the License Agreement. Section 4, as amended by the First Amendment, states in relevant part:

Retention by Leonardo of the \$1,500,000 component of the purchase price and payment of the \$10,000,000 described in Section 3.2(b) above are subject to successful Validation of the Plant. . . . The Validation will be made in the factory of Leonardo in Ferrara, Italy on April 30th and May 1, 2013 (unless otherwise agreed in writing by [Industrial Heat or IPH] and Leonardo). Validation will be deemed successful and achieved when the expert responsible for validation (“ERV”) certifies that the performance standards for the Plant set forth in Exhibit A to [the First Amendment] have been met. To make this measurement the ERV will 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.

37. Second, the License Agreement imposes confidentiality obligations on Leonardo and Rossi with respect to the terms of the License Agreement. The License Agreement states:

³ Missing from the copy of the License Agreement attached to the Complaint as Exhibit B are 1) Exhibit B to the License Agreement (Rossi and Leonardo’s license agreement with AEG) and 2) the first page of Exhibit C to the License Agreement.

“While this Agreement is in effect and after this Agreement terminates, each party hereto and its Affiliates shall keep confidential, and shall not disclose, the terms of this Agreement to any other Person without the prior consent of each other Party hereto,” with certain exceptions. *Id.* § 16.4.

38. Third, the License Agreement imposes confidentiality obligations on Leonardo and Rossi with respect to the E-Cat IP. The License Agreement states that “[d]uring the term of this Agreement, each of Leonardo, Rossi, and AEG agrees to keep the E-Cat IP strictly confidential and not disclose any of the E-Cat IP to any other party,” also with certain exceptions. *Id.* The License Agreement imposes no such confidentiality obligation on Counter-Plaintiffs. In fact, Counter-Plaintiffs are allowed to disclose the E-Cat IP to anyone they want.

39. Fourth, the License Agreement imposes very specific obligations upon Leonardo with respect to patent prosecution and maintenance. In particular, the License Agreement requires that Leonardo, with respect to all Licensed Patents (as defined in the License Agreement): 1) prepare, file, and prosecute patent applications relating to the Licensed Patents; 2) maintain the Licensed Patents; 3) pay all fees and expenses associated with the just mentioned first two requirements; 4) keep Counter-Plaintiffs informed of the filing and progress of the prosecution of Licensed Patents and related patent applications; 5) consult with Counter-Plaintiffs concerning decisions that could affect the scope or enforcement of any issued claims or the potential abandonment of patent applications or patents relating to the Licensed Patents; and 6) notify Counter-Plaintiffs in writing of any additions, deletions, or changes in status of the Licensed Patents or patent applications related to the Licensed Patents. *See id.* § 7.1. The License Agreement also imposes limitations on Leonardo’s ability to abandon any patent application or patent that is a Licensed Patent. *See id.* § 7.2.

40. Fifth, the License Agreement contains a “Covenant Not to Compete” provision that prohibits Leonardo, Rossi, or any of their affiliates from directly or indirectly owning, managing, operating, joining, or having a financial interest in any other business or enterprise “(a) engaged in the design, development, manufacture, distribution, lease, rental or sale of any E-Cat Products, or provision of any services related thereto or (b) which is competitive with the E-Cat Products, unless Leonardo . . . shall have obtained the prior written consent of [Counter-Plaintiffs].” *Id.* § 13.3.

41. Sixth, the License Agreement requires that Leonardo and Rossi “file all necessary documentation and returns with respect to any applicable sales, use, transfer, real property transfer, recording, gains, stock transfer and other similar taxes and fees pertaining to the respective revenues derived by the Parties in respect of the E-Cat IP (such as taxes and fees), including any interest or penalties thereon.” *Id.* § 13.5. The License Agreement also requires Leonardo and Rossi to keep the E-Cat IP “free and clear of any Liens.” *Id.* §§ 12(a), 12(e).

42. Finally, the License Agreement, as amended by the First Amendment, prohibits Leonardo and Rossi from “assign[ing] or otherwise transfer[ring] any of [their] rights . . . under this Agreement, in each case whether voluntarily, involuntarily, by operation of law or otherwise, without [Counter-Plaintiffs’] prior written consent.” *Id.* § 16.7; First Amendment § 1.C.

43. As explained more fully herein, Leonardo and/or Rossi violated each of the aforementioned provisions of the License Agreement.

44. Furthermore, Leonardo and Rossi made certain representations and warranties in the License Agreement. For example, Leonardo and Rossi, “jointly and severally,” represented that “[Leonardo was] duly organized, validly existing and in good standing as a corporation or other entity as represented herein under the laws and regulation of its jurisdiction of

incorporation or organization” and that “it [had], and throughout the term of the License [would] retain, the full right, power and authority to enter into this Agreement and to perform its obligations.” License Agreement §§ 11(a), 11(b). Furthermore, Leonardo and Rossi, jointly and severally, each represented that they “[had] and throughout the Term [would] retain the full, unconditional and irrevocable right, power and authority to License the E-Cat IP.” *Id.* § 12(a). Leonardo and Rossi also represented that “each had filed all necessary tax returns” and “ha[d] paid all taxes.” *Id.* § 12(j).

The First Amendment to the License Agreement and assignment of Industrial Heat’s rights to IPH.

45. On or about April 29, 2013, Leonardo, Rossi, AEG, and Industrial Heat executed the First Amendment, which is attached to the Complaint as Exhibit C.

46. On that same date, Industrial Heat and IPH executed an Assignment and Assumption of License Agreement (the “Assignment and Assumption”), wherein Industrial Heat assigned its rights under the License Agreement to IPH. The Assignment and Assumption is attached hereto as Exhibit 7. On the same date that the Assignment and Assumption was executed, Leonardo and Rossi executed a certification that “the representations and warranties of Leonardo and Rossi contained in the License Agreement . . . [were] true and correct as of the date of [the] Certification, as if made on the date [t]hereof, and further, that such representations and warranties w[ould] remain true and correct” upon payment of the \$10 million. *See* Ex. 8.

47. At or about the time of the Validation testing, Industrial Heat tendered a payment of \$10 million to a designated escrow agent. Pursuant to the License Agreement, the \$10 million was not paid directly to Leonardo and Rossi because Leonardo and Rossi were required not only to conduct the Validation testing, but also to provide all E-Cat IP to Industrial Heat in order to be entitled to the \$10 million.

Testing the Plant in Italy, North Carolina, and Florida.

Validation testing in Italy.

48. Because Leonardo and Rossi knew that the Plant could not achieve Validation as defined in the License Agreement, they manipulated the Validation testing procedure to deceive Counter-Plaintiffs into making the second payment under the License Agreement.

49. The Validation test was originally supposed to be performed on the Plant over the course of 24 hours. However, in an effort to manipulate the Validation test, Rossi, on behalf of Leonardo, contacted Industrial Heat to report that Italian law required certain modifications to the Validation test. On April 23, 2013, Rossi stated:

This morning I had a meeting with the Health Office of the Province of Ferrara, which has to authorize the 24 hours test (it is unthinkable to make it without authorization, we could be stopped by the police upon a phone call due to the noise of the air escape of the condensers, because we must dissipate the energy not having any possible utilization for it). We found an acceptable solution. He explained to me that the Italian law “DPR (Decreto del Presidente della Repubblica) # 551- Dec. 21 1999 requests an authorization for any plant that makes more than 35 kWh/h and this authorization takes at least 6 months. But we are advantaged, because LENR do not exist in the known technology, therefore when we say 35 kWh we say kWh consumed, because plants that produce more than the energy they consume “do not exist”. Now, $35 \times 6 = 210 \text{ kW}$ [.] Therefore if we can consume up to 35 kWh/h without authorization, this implies that in out LENR case I can produce up to 210 kWh/h, which is a consistent amount of energy. I will steal something (maybe the COP will be more)

Ex. 9.

50. Upon information and belief, Rossi had no such meeting with the Ferrara Health Office, and Rossi’s statement that Italian law would not allow for the Validation process as set forth in the License Agreement without obtaining a permit was false.

51. Unaware that Rossi had misrepresented his meeting with the Ferrara Health Office and Italian law, Industrial Heat agreed to amend the License Agreement so that Validation would require testing of only 30 reactors instead of the entire Plant.

52. The modifications to the Validation Protocol were memorialized in Exhibit A to the First Amendment. As modified, the Validation Protocol required that “[t]wo separate units (‘Unit A’ and ‘Unit B’), each composed of a different set of 30 individual E-Cat reactors, [] be tested for a period of 24 hours.” First Amendment, Ex. A. The modified Validation Protocol further states that “[f]or purposes concerning validation achievement, only the performance of Unit A will be considered.” *Id.* The performance requirements for Unit A are as follows:

Unit A will be required to consistently produce energy that is at least six times greater than the energy it consumes (that is, a coefficient of performance ‘COP’ of six or greater) and steam that is consistently 100 degrees Celsius or greater during the 24 hour test period.

Id. The Validation Protocol also states that Unit A would be tested from 9:00 a.m. on April 30, 2013 through 9:00 a.m. on May 1, 2013. *Id.*

53. Later in April 2013, Rossi confirmed that the Validation test could be performed with 30 E-Cat reactors. But just before the Validation test was commenced, Rossi claimed that even testing 30 E-Cat reactors was undoable due to restraints under Italian law, and explained that the test needed to be conducted with only 18 E-Cat reactors. This claim by Rossi was false.

54. Rossi further manipulated the Validation process by ensuring that his friend and colleague, Penon, served as the ERV for the Validation testing. Industrial Heat requested that “one of the big testing companies” work alongside Penon in the measurement and validation of the test. Rossi vehemently objected, insisting that having one of the big testing companies involved would “create big problems” for him.

55. The Validation testing occurred from April 30 through May 1, 2013. The testing lasted for slightly less than the 24-hour period required by the Validation Protocol and included only 18 E-Cat reactors. On or about May 7, 2013, Penon issued his Evaluation Test Report on the Validation test (the “Evaluation Report”). According to the Evaluation Report, the 18

individual E-Cat reactors tested over the course of the 23 1/2 hour period produced a COP of 10.85.

56. When Industrial Heat representatives arrived at the Validation testing site, Rossi provided them with a copy of a report (which he had received days earlier) by third parties who tested two different E-Cat reactors. That report, later published as “Indication of anomalous heat energy production in a reactor device containing hydrogen loaded nickel powder” was prepared by several Italian and Swedish scientists (Giuseppe Levi, Evelyn Foschi, Torbjorn Hartman, Bo Hoistad, Roland Pettersson, Lars Tegner, and Hanno Essen) who hailed from some of Europe's most prominent academic institutions (Royal Institute of Technology, Uppsala University and Bologna University). *See* Ex. 10 (the “Ferrara Report”). The Ferrara Report stated that one E-Cat reactor produced a COP of 5.6, though the scientists noted that that COP might be overstated. *Id.* at page 13. The Ferrara Report also stated that the second E-Cat reactor produced a COP of 2.6 or 2.9. *Id.* at page 24.⁴ These reported COP numbers, while less than what would have been required for validation under the License Agreement, nevertheless reflected positive COP findings by third parties from well known universities in Europe.⁵

57. On or about April 30, 2013, coinciding with the Validation testing and consistent with the License Agreement's requirements, Industrial Heat tendered a payment of \$10 million to a designated escrow agent. Pursuant to the License Agreement, the payment of the \$10 million was not made directly to Leonardo because, following any Validation testing, Leonardo and Rossi were also required to provide all E-Cat IP to Counter-Plaintiffs in order to be entitled to the \$10 million payment.

⁴ The E-Cat reactors addressed in the Ferrara Report were different in design from the E-Cat reactors in the Plant.

⁵ Since its publication, the Ferrara Report has been subject to criticism, but none of those criticisms was available at the time Rossi provided the report to the Industrial Heat representatives.

Rossi and Industrial Heat's inability to replicate Validation results in North Carolina.

58. Following the Validation testing, a process was undertaken for Leonardo and Rossi to assemble for transfer to Counter-Plaintiffs all E-Cat IP. On June 9, 2013, the escrow agent released the \$10 million to Leonardo. In exchange, Leonardo and Rossi purportedly transferred all E-Cat IP to Counter-Plaintiffs. In fact, on the same day that the \$10 million payment was released (June 9, 2013), Rossi met with Darden to provide him personally with the last piece of the E-Cat IP to be transferred – the formula for the E-Cat Fuel required to enable an E-Cat reactor to produce the high COP claimed by Leonardo and Rossi.

59. Leonardo caused the Plant to be delivered to Industrial Heat's facility in North Carolina in August 2013. This was later than the time required by the License Agreement, as amended by the First Amendment. *See* License Agreement § 3.2(a); First Amendment § 1.A.

60. Shortly after delivery, Industrial Heat hired several independent contractors to assist Rossi in connection with the development, modification, and testing of the Plant, of various E-Cat reactors, and of a prototype Six Cylinder Unit.

61. Shortly after the Plant was delivered, Industrial Heat retained Fabiani, who had long worked with Rossi, as an independent contractor. More specifically, on September 1, 2013, Industrial Heat entered into a Technical Consulting Agreement with USQL, through its sole member, Fabiani ("USQL Agreement"). The USQL Agreement is attached hereto as Exhibit 11. Industrial Heat engaged USQL and Fabiani – who joined the USQL Agreement in his individual capacity – to "provide services related to the manufacture and development" of the Plant and related E-Cat IP. USQL Agreement at 1. The USQL Agreement required, among other things, that USQL and Fabiani:

promptly disclose to Industrial Heat any and all improvements, inventions, developments, discoveries, innovations, systems, techniques, processes, formulas, programs and other things that may be of assistance to Industrial Heat or its affiliates, whether patentable or unpatentable, that (i) relate to the actual or demonstrably anticipated research or development by Industrial Heat or any of its affiliates, or (ii) result from any work performed by USQL for or at the request of Industrial Heat, or (iii) are developed on Industrial Heat's time or using the equipment, supplies or facilities or any Confidential Information or trade secret information of Industrial Heat, or any of its affiliates; and that are made or conceived by USQL . . . while engaged by Industrial Heat.

Id. § 7.

62. Leonardo and Rossi were fully aware that, per the clear and express terms of the License Agreement, they were required to commence any "Guaranteed Performance" in 2013. Nevertheless, Leonardo and Rossi made no efforts to commence such a test during 2013. Instead, from approximately September 2013 through December 2013, Rossi was on site at Industrial Heat's facility in North Carolina working with Industrial Heat personnel in efforts both (a) to develop new versions of E-Cat reactors or new devices in which E-Cat reactors would operate and (b) to replicate the results of prior E-Cat testing as either claimed by Leonardo and Rossi or reported by Penon in connection with the Validation testing in Italy.

63. Despite Rossi's presence and participation in the testing in North Carolina, the E-Cat testing in North Carolina was never able reliably or credibly to reproduce the COP of 10.85 as reported by Penon (or even reach the lowest COP threshold identified in the License Agreement, which was a COP of 4.0).

64. At the time, Industrial Heat personnel were uncertain whether the lack of success was due to the failure of the E-Cat IP technology, or to efforts by Rossi to undermine the testing. Industrial Heat was aware that Rossi had engaged in just such conduct in the past. For example, Rossi and/or Leonardo had agreed to license the E-Cat IP to a company called Hydro Fusion in Europe. *See* Ex. 12. However, in order to be released from their obligation, Leonardo and Rossi

purposely distorted the results of a testing of the E-Cat technology being performed for Hydro Fusion to dissuade Hydro Fusion from moving forward with the agreement:

With this company Hydrofusion we [meaning Leonardo and Rossi] had agreed upon a draft to sell them IP, know how and manufacturing license for Europe but Germany, France and Italy. By our law, if you send a proposal you are engaged to accept if the proposee accepts all the conditions of the proposal. After receiving your last text at the end of August I decided to go ahead with you, *therefore I had to get rid of this engagement*. The only way out was to invite them to a test, ask them to bring with them their consultant. *I made the test abort*, maintaining the temperatures below the starting limit. *Then I made up some discussions*, I said they made a wrong test, they escaped, I am free.

We did not have damages of image, because, knowing what was on the road, I had made before their test a disclaimer, saying that the Hot temperature E-Cat was just a prototype, still under test and validation and subject to modification, thing that I am repeating everywhere. Now I am publishing that I am surprised of all this ado for nothing, since I already said that for the Hot Cat we needed more tests before saying it is a product ready for the market. At this point we can organize with Cherokee a world strategy, since all the other licensees are just commercial: for example in Africa we will have just to pay a royalty to the local agent upon our sale price, but they all are very good and they can sell either energy or plants. Nobody has rights upon the IP, know how, manufacturing and so on.

Warmest Regards,

Andrea

See id. (emphases added). On the same day (September 10, 2012) but in a separate, earlier email, Rossi described his efforts at deceiving Hydro Fusion as a “masterpiece”: “I got rid of the European big license I had to sign. I made a masterpiece making them go voluntarily . . . I will explain personally.”⁶ *See* Ex. 13.

65. After Rossi left North Carolina, Counter-Plaintiffs’ personnel continued their work on developing new devices in which E-Cat reactors would operate and trying to replicate the results of prior E-Cat testing as either claimed by Leonardo and Rossi or reported by Penon.

Rossi would visit the North Carolina facility on occasion to provide his input and opinions as to

⁶ Leonardo and Rossi’s decision to “get rid of” their Hydro Fusion “engagement” was not of significance to Industrial Heat at the time because Industrial Heat was not negotiating for a license that would cover the same geographic territory as Hydro Fusion’s license.

the device designs (and design changes) and the testing methodologies and results. None of the testing replicated (or came close to replicating) the high COP results previously claimed by Leonardo, Rossi, and Penon, or otherwise generated measurable excess energy.

66. In late 2013 and early 2014, Leonardo and Rossi made arrangements with the team of scientists who had published the Ferrara Report to conduct another test of a single E-Cat reactor (not an entire Plant or an entire Six Cylinder Unit) over a roughly one month time period in February and March 2014 in Lugano, Switzerland. At the conclusion of the experiment, the scientists concluded in their report (the “Lugano Report”) that the E-Cat reactor produced a COP of 3.2 and 3.6 across two different “runs” of the reactor (which is still less than the lowest COP number reflected in the License Agreement). *See* Ex. 14. This conclusion was subsequently criticized in a series of publications identifying flaws in the methodology the scientists employed which led to overstatement of their COP calculations. These publications, however, did not surface until 2015.

The Plant moves to Miami to service a fake “customer.”

67. In 2014, knowing that the high COP results that Leonardo, Rossi, and Penon had previously claimed could not be replicated by the various testing of E-Cat reactors in North Carolina (some done with the direct participation of Rossi) or even by the scientists in Lugano (though Rossi had significant control over their testing), Leonardo, Rossi, and others devised a scheme to get the Plant removed from under Industrial Heat’s control in North Carolina and to a location in Florida where Leonardo, Rossi, and others could operate the Plant without careful oversight and could control how any measurements of the Plant’s performance were conducted.

68. To that end, Leonardo and Rossi enlisted their attorney, Johnson, to create a company that would pose as a “customer” in the Miami area that needed and would pay for

steam produced by the Plant. Johnson registered the company, JMP, as a Florida corporation in June 2014. *See* Ex. 15. JMP was originally incorporated as J.M. Chemical Products, Inc. in June 2014, but changed its name to J.M. Products, Inc. in September 2014.

69. Thereafter, Leonardo and Rossi made their pitch to Counter-Plaintiffs as to why they should allow Leonardo and Rossi to take the Plant down to Florida to operate it in Florida. That pitch is best captured in their July 5, 2014 email to Counter-Plaintiffs (and others):

Dear All:

In the incoming meeting we will have next week, please allow me to encourage you to take a decision regarding where to put at work our 1 MW plant. I really and strongly hope you will consider the solution I found, to rent it to JM, in its factory in Florida *where they will use it to process their chemical products*. Please think carefully before losing them. *They are positive to us, but in September must start and they must know asap if they have to use our plant or provide otherwise*. This solution will:

1- allow to Industrial Heat to say to the Investors that they are getting 360,000 dollars per year of rental, with a payback of a plant like this, whose construction cost is 200,000 \$, in less than 6 month

2- allow to your Customer-Investors-Visitors to *hear from a real Customer* that he is making money with our plant

3- allow us to start in September the operation of the plant, with no further loss of time

4- allow us not to expose the know how, since the maintainence of the plant is made by us and the plant remains our property: a rental is not a sale

5- *allow us to make all the Authorities make all the measurements necessary to get the Authorizations for the next plants*

6- allow you to get orders to supply for rent thousands of plants

7- allow the plant work for 24 hours per day for 360 days per year, while if used as a room heater it could work only 4 months, not per 24 hours per day, with obvious loss of profit.

Your proposal to put the plant in a factory owned by yourself at least until recently is dramatically less convincing.

Let me do this and I will make a masterpiece (half masterpiece has already been done *finding the Customer as a Chemical Industry* and getting the authorization from the Florida State Radiation Control Office).

Fulvio is completing the control system, made by 110 computers interconnected. Also that is a masterpiece.

Warmest Regards to all,
Andrea

See Ex. 16 (emphases added).

70. Of note in Leonardo and Rossi's proposal is that there is no discussion of moving the Plant to Florida to try to achieve "Guaranteed Performance" under the License Agreement. Instead, Leonardo and Rossi enticed Counter-Plaintiffs to allow the Plant to be moved to Florida so that it could be used to provide power to "a real Customer" – a customer in the "Chemical Industry" that had a need for the steam power the Plant could produce "to process their chemical products." *See id.* This, Leonardo and Rossi claimed, would provide a real-world demonstration, or test, of the Plant as a viable means of providing power to commercial users. *See id.* It would also, Leonardo and Rossi claimed, allow for regulatory agencies, to the extent required, to conduct any tests or measurements they needed to authorize the use of future Plants for other commercial purposes (*i.e.*, "allow us to make all the Authorities make all the measurements necessary to get the Authorizations for the next plants"). *See id.* Leonardo and Rossi further pressured Counter-Plaintiffs to decide on this proposal quickly because this chemical industry customer "must know asap" if it could use the Plant to provide the steam power it needed or if it had to "provide otherwise." *See id.*

71. Unbeknownst to Counter-Plaintiffs, everything material in the Leonardo and Rossi proposal was false – there was no customer in Florida who needed steam power for its chemical products processing, there was no intention for Leonardo and Rossi to operate the Plant

to provide power to a real customer, and there was no intention for Leonardo and Rossi to seek authorizations from regulatory agencies to allow the Plant or subsequent E-Cat plants to be used for other commercial purposes. Instead, the sole intention of Leonardo and Rossi all along was to find a way to get the Plant away from Counter-Plaintiffs and then to conduct a fatally flawed (and fatally late) run at demonstrating “Guaranteed Performance” so that they could falsely claim to be entitled to an additional \$89 million payment under the License Agreement.

72. Also in furtherance of this scheme, Rossi, both in his individual capacity and as the representative of Leonardo, and Johnson, both in his individual capacity and as the representative of JMP, traveled to North Carolina in August 2014 to meet with individuals from Industrial Heat. During this meeting, Rossi and Johnson made a number of false representations to Industrial Heat, most notably that JMP (at the time called J.M. Chemical Products, Inc.) was a confidential subsidiary of Johnson Matthey p.l.c. (“Johnson Matthey”), and that Johnson Matthey was interested in using the E-Cat technology in connection with a confidential manufacturing process it wanted to operate in Florida. In fact, in August 2014 Johnson on behalf of JMP even warranted in writing that JMP “[was] owned by an entity formed in the United Kingdom, and none of Leonardo, Dr. Andrea Rossi, Henry W. Johnson nor any of their respective subsidiaries, directors, officers, agents, employees, affiliates, significant others, or relatives by blood or marriage [had] any ownership interest” in JMP. *See* Compl. Ex. B. (last page of Plaintiffs’ Exhibit). JMP, however, has never been a subsidiary of Johnson Matthey, was not operating or planning to operate any manufacturing process in Florida, and was in fact owned by persons whom Johnson represented in writing did not have any ownership interest in JMP.

73. Not knowing that the representations made by Leonardo, Rossi, JMP, and Johnson about the customer in Florida and the operations to take place in Florida were false, Industrial Heat entered into an agreement with JMP and Leonardo to deliver the Plant to JMP's "production facility" in Miami, Florida. The agreement was memorialized in a "Term Sheet" executed by Industrial Heat, JMP, and Leonardo on August 13, 2014. The Term Sheet is attached hereto as Exhibit 17.

74. Industrial Heat would not have entered into the Term Sheet agreement had it known that JMP was not a real operating company, that JMP actually had no commercial use for the steam power generated by the Plant, or that JMP was created solely as a ruse to induce Industrial Heat to ship the Plant to Florida.

75. JMP's role in the scheme magnified when JMP started sending falsified invoices to Industrial Heat stating the amount of energy or steam JMP was purportedly receiving and using from the Plant during a given month. A selection of the invoices is attached hereto as Exhibit 18. JMP's unconscionable and deceptive practices are further evidence that the testing in Miami was nothing but a sham designed to create the illusion that the Plant performed at levels that could satisfy Guaranteed Performance (and further to confirm the results of the prior Validation testing).

76. In mid-2015, Industrial Heat hired Joseph Murray ("Murray") to serve as Vice President of Engineering, and empowered him to assemble a team of engineers and scientists to elevate the level of Industrial Heat's testing and evaluation of LENR technology. Among other things, one of the projects undertaken by that team was rigorous testing of the E-Cat IP. That testing demonstrated quite clearly that the results previously claimed by Leonardo, Rossi, and

Penon simply could not be replicated using the E-Cat IP that Leonardo and Rossi had provided to Counter-Plaintiffs.

77. Notwithstanding that Leonardo and Rossi allowed visitors to the facility in Doral where the Plant was located on a fairly regular basis, in July 2015, Rossi denied Murray access to the Plant without any reasonable justification. *See* Ex. 19. Had Murray – given his established engineering background – been allowed to access the Plant in July 2015, he would have immediately recognized the deficiencies in the operations that were being conducted by Leonardo and Rossi.

78. Indeed, when Murray eventually gained access to the Plant in February 2016 and examined the Plant, the methodology being used to operate the Plant, and the methodology being used to measure those operations, he immediately recognized that those methodologies were fatally flawed. Some of the flaws that he was quickly able to identify are explained in Exhibit 5.

79. Leonardo, Rossi, JMP, and Johnson also restricted access to the JMP area at the Doral location, claiming that there was a secretive manufacturing process being conducted there, when in fact it was simply recycling steam from the Plant and sending it back to the Plant as water.

80. Leonardo, Rossi, JMP, Johnson and Fabiani even went so far as to create a fictional JMP employee – James A. Bass, Director of Engineering for JMP. Despite diligent search, Counter-Plaintiffs have not been able to identify or locate this individual, for the simple reason that he does not exist. Rather, Leonardo, Rossi, JMP, Johnson and Fabiani created this fictional person as a means of making JMP appear to be a real manufacturing company that would need a Director of Engineering and to create a person with whom they would allegedly interact on technical issues involving JMP's non-existent operations and operational needs.

They even had an individual pose as James Bass in a meeting with Industrial Heat and express JMP's satisfaction with the steam power JMP was receiving from the Plant and using to run its manufacturing operations. Attached as Exhibit 20 is a copy of the business card provided by this JOHN DOE representing himself as JMP's "Director of Engineering."

81. Fabiani, USQL and Penon also played critical roles in the scheme to hide the fact that the Plant does not perform up to the standards set forth in the License Agreement.

82. The USQL Agreement imposes an affirmative obligation upon USQL and Fabiani promptly to disclose information relating to their work on the Plant or the E-Cat IP. *See* USQL Agreement § 7. The USQL Agreement also makes clear that information obtained by USQL or Fabiani during the course of their work under the USQL Agreement is the sole property of Industrial Heat. *Id.* § 6.

83. Despite the fact that Fabiani and USQL are required to "promptly disclose" an array of information related to their work on the Plant or the E-Cat IP, USQL and Fabiani have purposely only been providing very limited information to Industrial Heat. They have not been providing Industrial Heat with accurate, complete information on the Plant, knowing that such information would demonstrate that the Plant was not performing at levels claimed by Leonardo, Rossi and Penon.

84. Furthermore, Fabiani and USQL have refused and continue to refuse to provide records, "tests and results" and other information relating to their engagement under the USQL Agreement to Industrial Heat, even though they agreed that such information is the property of Industrial Heat. *Id.* § 6. They have so refused because they are aware that such information demonstrates that the Plant was not performing at levels claims by Leonardo, Rossi and Penon.

85. As just one example, in late February 2016, shortly after the conclusion of the purported Guaranteed Performance test, USQL and Fabiani committed to send certain data and a report by the end of March 2016 that would “bring to light all the flaws and functional deficiencies of the system” and identify “the plant stop periods (total or partial).” In later emails, USQL and Fabiani also committed to provide Industrial Heat with the raw data that USQL and Fabiani collected while working with the Plant in Doral, Florida. Despite repeated reminders, however, USQL and Fabiani have refused to provide either the report or the raw data to Industrial Heat. *See, e.g.,* Ex. 21.

86. For his part, among other things, Penon primarily contributed to the scheme in a variety of ways relating to the purported measurement of the Plant’s operations in Florida during the purported Guaranteed Performance test.⁷ To start, his initial plan and design for measuring the power coming into and out of the Plant was, as he well knew, fundamentally flawed – including using improper equipment to measure the flow of fluid into the Plant and no equipment to measure the flow of heated fluid out of the Plant. Moreover, when the purported Guaranteed Performance test departed from Penon’s plan and design almost immediately after the testing began – including that the number of reactors being operated was far less than the number of reactors specified in Penon’s plan and design – Penon simply disregarded the massive deviation. *See* Ex. 5.

87. Penon further knowingly relied on flawed or fabricated data collections in his supposed evaluation of the Plant’s performance. For example, Leonardo and Rossi have admitted (on their internet blog postings) that there were days when portions of the Plant were not operating, but Penon in his final report does not report any material decrease in output of the

⁷ Penon’s participation in the scheme was not limited to this time period. In connection with the Validation test, Penon backed Leonardo and Rossi’s false contention that Italian law only allowed for the test to be conducted using 18 E-Cat reactors. Penon also knowingly did not follow the Validation Protocol. *See* response to Paragraph 57, *supra*.

Plant on those days. Rather, he makes the (inexplicable) claim in his final report that on these days the Plant's performance either did not change or somehow even increased.

88. In February 2016 at an in-person meeting with Penon, Murray identified a number of flaws in how Penon was conducting his measurements of the Plant. Some of those flaws were also presented in writing to Penon on March 25, 2016. *See id.* Despite have full knowledge of the flaws, Penon nevertheless issued his false final report on March 28, 2016, claiming that guaranteed performance was achieved – and that the COPs achieved by the Plant were literally many multiples greater than ever claimed by anyone else (other than Leonardo and Rossi) who had ever tested an E-Cat reactor. Not surprisingly, since the day he left Florida in February 2016, Penon has refused to discuss his measurements, his measurement plan and design, or his report with Counter-Plaintiffs (though he has requested that Counter-Plaintiffs pay him for his work).

**COUNT I: BREACH OF CONTRACT
(Validation and Disclosure of E-Cat IP)
(Industrial Heat and IPH against Leonardo and Rossi)**

89. Counter-Plaintiffs reallege the allegations in Paragraphs 1 through 88 as if fully set forth herein.

90. The License Agreement states: “On the date the Escrow Agent pays the \$10,00,000 to Leonardo, the License will commence and Leonardo and Rossi will immediately transfer, and the Validation Agent (as defined in Schedule 3.2(b)) will deliver to the Company all E-Cat IP.” License Agreement § 3.2(b).

91. The escrow agent released the \$10 million payment to Leonardo and Rossi on June 9, 2013, at which point Leonardo and Rossi became obligated to transfer and deliver to Counter-Plaintiffs all E-Cat IP.

92. Leonardo and Rossi purportedly transferred and delivered all E-Cat IP to Counter-Plaintiffs on June 9, 2013. However, after numerous attempts, both with and without Rossi's involvement, Counter-Plaintiffs have been unable, using the transferred E-Cat IP, to replicate the results included in the Evaluation Report purportedly certifying that Validation was achieved from April 30 to May 1, 2013, or otherwise generate measureable excess energy.

93. Only one of three conclusions can be drawn from the foregoing facts: 1) Leonardo and Rossi did not transfer and deliver all E-Cat IP to Counter-Plaintiffs; 2) Validation was never achieved and Penon's reported COP calculations were false; or 3) both.

94. Each of these scenarios leads to only one conclusion: Leonardo and Rossi breached the terms of the License Agreement, either by not achieving Validation, not transferring or delivering all of the E-Cat IP to Counter-Plaintiffs, or both.

95. As a result of Leonardo and Rossi's breach, Counter-Plaintiffs have suffered and continue to suffer damages including, but not limited to: a) both the \$1.5 million and \$10 million payments made to Leonardo in connection with the License Agreement; b) other payments made to Leonardo or Rossi to reimburse them for unnecessary (in light of the conduct alleged herein) services, equipment, and expenses; and c) multi-million dollar payments made to a third party pursuant to the License Agreement, *see* License Agreement § 16.6.

COUNT II: BREACH OF CONTRACT
(Various Provisions in the License Agreement)
(Industrial Heat and IPH against Leonardo and Rossi)

96. Counter-Plaintiffs reallege the allegations in Paragraphs 1 through 88 as if fully set forth herein.

Confidentiality

97. The License Agreement imposed two distinct confidentiality obligations as it relates to Leonardo and Rossi. *See* License Agreement § 16.4.

98. The License Agreement provides that “[w]hile this Agreement is in effect and after this Agreement terminates, each party hereto and its Affiliates shall keep confidential, and shall not disclose, the terms of this Agreement to any other Person without the prior consent of each other Party hereto,” except in two specific situations not relevant to Leonardo and Rossi’s disclosures referenced below. *Id.*

99. The License Agreement also provides that “[d]uring the term of this Agreement, each of Leonardo, Rossi, and AEG agrees to keep the E-Cat IP strictly confidential and not disclose any of the E-Cat IP to any other party,” except in specific situations not relevant to Leonardo and Rossi’s disclosures referenced below. *Id.*

100. Notwithstanding the clarity of the confidentiality provisions set forth above, Rossi, both individually and on behalf of Leonardo as its owner and sole operating officer, repeatedly violated the confidentiality provisions.

101. Addressing solely the time period prior to the filing of their Complaint in April 2016, Leonardo and Rossi violated the first confidentiality provision by disclosing various specific terms of the Agreement:

- a. Leonardo and Rossi disclosed that their agreement with Counter-Plaintiffs required a test of the Plant.
- b. Leonardo and Rossi disclosed that their agreement with Counter-Plaintiffs required a test to be conducted over 400 days.
- c. Leonardo and Rossi disclosed that their agreement with Counter-Plaintiffs required a test involving 350 days of operation of the E-Cat Plant.
- d. Leonardo and Rossi disclosed that their agreement with Counter-Plaintiffs required a guaranteed performance, or “guarantees of performance” test.

102. Making matters worse, Leonardo and Rossi thereafter filed their Complaint, with the License Agreement attached to it, in a public court record without any attempt to seal the Agreement. Within an exceedingly short time, as Leonardo and Rossi knew would occur, the Agreement was replicated and made available to anyone in the world with access to the Internet. As a consequence of Leonardo and Rossi's public disclosure of the License Agreement, the confidentiality provision barring disclosure of the License Agreement's specific terms has been rendered a nullity.

103. Addressing solely the time period prior to the filing of their Complaint in April 2016, Leonardo and Rossi violated the second confidentiality provision by disclosing various information about the E-Cat IP:

- a. Leonardo and Rossi, without prior consent from Counter-Plaintiffs, provided samples of the E-Cat Fuel (purportedly from both before and after an E-Cat reactor was operated) to the scientists who prepared the Lugano Report. The scientists analyzed the E-Cat Fuel samples and published the results of their analysis. *See* Ex. 14.
- b. Leonardo and Rossi, without prior consent from Counter-Plaintiffs, disclosed specific information about the E-Cat Fuel to Norman Cook, a professor at Kansai University in Osaka, Japan. Rossi and Cook thereafter published a paper detailing new information about the E-Cat Fuel sample not disclosed in the Lugano Report. *See* Ex. 22.
- c. Leonardo and Rossi, without prior consent from Counter-Plaintiffs, have made public comments about the E-Cat Fuel sample on the Internet.

104. None of the E-Cat Fuel sample disclosures referenced in the prior Paragraph were protected by a non-disclosure agreement – as evidenced by the fact that the information obtained from the disclosures is publicly available. On information and belief, Leonardo and Rossi have made additional E-Cat Fuel sample disclosures without Counter-Plaintiffs' consent and without the protection of a non-disclosure agreement, including as recently as May 2016.

105. Leonardo and Rossi's disclosure of the terms of the License Agreement harms Counter-Plaintiffs. For example, because the terms of the License Agreement have been made public, other entities (including current counter-parties to agreements) can use the License Agreement's terms in negotiations over similar agreements with Counter-Plaintiffs.

106. Disclosure of the E-Cat IP also harmed Counter-Plaintiffs. For example, Counter-Plaintiffs have paid \$11.5 million to Leonardo and millions more to a third party per the License Agreement for (among other things) control over any disclosure of the E-Cat IP. Clearly any value associated with the exclusive control over the disclosure of the E-Cat IP was diminished with any disclosure of the E-Cat IP by Leonardo and Rossi without Counter-Plaintiffs' consent. Leonardo and Rossi disclosed that confidential information to third parties and, in some instances, made it available for large scale public consumption. To the extent that the E-Cat IP has commercial value, Counter-Plaintiffs' ability to capture that value is substantially harmed by Leonardo and Rossi's improper disclosures.

Failure to Assign Licensed Patents

107. The License Agreement requires Leonardo and Rossi to assign the Licensed Patents, as defined in License Agreement § 16.1 and License Agreement Exhibit A, to Counter-Plaintiffs upon request: "Upon the request of [Counter-Plaintiffs], Leonardo and Rossi shall assign to [Counter-Plaintiffs] the Licensed Patents with respect to the Territory[.]" License Agreement § 10.

108. On February 17, 2016, IPH, through its counsel, requested that Leonardo and Rossi "assign to IPH the Licensed Patents (as defined by the [License] Agreement) with respect to the Territory (as also defined in the [License] Agreement)." IPH also provided Leonardo and

Rossi an appropriate assignment form by which to assign the Licensed Patents. The request and assignment form are attached hereto as Exhibit 23.

109. Leonardo and Rossi refused to assign the Licensed Patents to IPH in violation of the express and unambiguous terms of the License Agreement.

110. Leonardo and Rossi's failure to assign the Licensed Patents to IPH caused IPH to suffer damages in that it is unable to secure any value that might be derived from having control over the Licensed Patents.

Failure to Inform/Consult on Patent Applications

111. The License Agreement contains clear directives relating to informing and consulting with Counter-Plaintiffs regarding patent prosecution and maintenance of the E-Cat IP. Section 7.1 of the License Agreement states:

For each patent application and patent under the Licensed Patents, Leonardo shall:

- (a) prepare, file and prosecute such patent application;
- (b) maintain such patent;
- (c) pay all fees and expenses associated with its activities pursuant to Section 7.1(a) and (b) above;
- (d) keep [Counter-Plaintiffs] currently informed of the filing and progress in all material aspects of the prosecution of such patent application, and the issuance of patents from any such patent application;
- (e) consult with [Counter-Plaintiffs] concerning any decisions which could affect the scope or enforcement of any issued claims or the potential abandonment of such patent application or patent; and
- (f) notify the Company in writing of any additions, deletions or changes in the status of such patent or patent application.

License Agreement § 7.1.

112. Section 7.2 of the License Agreement states: "If Leonardo wishes to abandon any patent application or patent that is a Licensed Patent, it shall give [Counter-Plaintiffs] ninety (90)

days prior written notice of the desired abandonment. Leonardo shall not abandon any such Licensed Patent except upon the prior written consent of [Counter-Plaintiffs].” *Id.* at § 7.2.

113. After executing the License Agreement, Leonardo filed patent applications relating to the Licensed Patents without informing Counter-Plaintiffs.

114. Leonardo also failed to keep Counter-Plaintiffs informed of the progress of the patent applications relating to the Licensed Patents. Finally, Leonardo, without prior written consent from Counter-Plaintiffs, abandoned several patent applications.

115. Leonardo and Rossi charged to Counter-Plaintiffs fees and expenses associated with preparing, filing, and prosecuting patent applications relating to the Licensed Patents, which fees and expenses Counter-Plaintiffs paid.

116. As a result of the foregoing, Counter-Plaintiffs have been harmed, not only as a result of the fees and expenses they paid, but also the diminution in value of the E-Cat IP for which they paid millions of dollars as a result of Leonardo’s improper handling of patent applications.

Covenant Not to Compete

117. The License Agreement contains a clear and defined non-compete provision:

For as long as the Company or any of its subsidiaries is engaged in any business related to the E-Cat Products and . . . Leonardo, Rossi or any Affiliate are performing services for the Company or such transferee (whether as an employee, consultant or otherwise and specifically including the period of services required by Section 13.1) and for an additional period of two (2) years after the last of Leonardo, Rossi or such Affiliate shall have ceased to provide such services, none of Leonardo, Rossi or any of their Affiliates will (except as an officer, director, stockholder, employee, agent or consultant of the Company or such subsidiary or the Company) directly or indirectly own, manage, operate, join, or have a financial interest in, control or participate in the ownership, management, operation or control of, or be employed or engaged as an employee, agent or consultant, or in any other individual or representative capacity whatsoever, or use or permit their names to be used in connection with, or be otherwise connected in any manner with any business or enterprise (a) engaged in the

design, development, manufacture, distribution, lease, rental or sale of any E-Cat Products, or the provision of any services related thereto or (b) which is competitive with the E-Cat Products, unless Leonardo or such Affiliate shall have obtained the prior written consent of the Company or such subsidiary of the Company, as the case may be.

License Agreement § 13.3.

118. Since at least the filing of their Complaint, and likely for months prior, Leonardo and Rossi have been open in broadcasting that they are engaged in designing and developing what are classified as “E-Cat Products” under the License Agreement. They have also been open that they are doing so in combination with a company or companies unaffiliated with Counter-Plaintiffs. *See e.g.*, Ex. 24. Leonardo and Rossi have even claimed that they have recently sold at least three E-Cat Units. *See e.g.*, Ex. 25.

119. Counter-Plaintiffs have not provided written consent to such conduct.

120. As a result, the conduct – regardless of whether it will ever lead to the creation of a viable commercial product that can be sold, leased, or rented – is in direct conflict with the License Agreement.⁸

121. Leonardo and Rossi’s violations of the License Agreement’s covenant not to compete have caused Counter-Plaintiffs to suffer harm, including the diminution in value of the E-Cat IP for which they paid millions of dollars.

⁸ The License Agreement also includes a “Right of First Offer” provision that requires Leonardo and Rossi to provide Counter-Plaintiffs with notice of their intent to license the E-Cat IP outside of the Territory covered by the License Agreement, and to give Counter-Plaintiffs an opportunity to purchase such license. License Agreement § 13.2. Upon information and belief, Leonardo and Rossi have breached this provision as well by licensing or offering to license the E-Cat IP outside of the Territory without first offering such license to Counter-Plaintiffs.

Failure to Pay Taxes

122. Prior to Leonardo and Rossi entering the License Agreement, it was well known that Rossi had taxation issues with the Italian government, which even led to him facing criminal tax charges in Italy.

123. As a result, the License Agreement has several carefully crafted provisions to ensure that Leonardo and Rossi would comply with their tax obligations as they relate to any payments from Counter-Plaintiffs.

124. First, the License Agreement (Section 12(j)) required a representation from both Leonardo and Rossi that each has filed all necessary “tax returns or reports” and “has paid all taxes required by any jurisdiction or subdivision or agency thereof” prior to entering the License Agreement. License Agreement § 12(j).

125. Second, the License Agreement (Section 13.5) required each party to file all necessary documentation and returns as to any tax applicable to its or his “respective revenues derived . . . in respect of the E-Cat IP.”

126. Third, the License Agreement (Section 12(a)) required Leonardo and Rossi to keep the E-Cat IP “free and clear of any Liens.” *See also* License Agreement § 12(e).

127. Fourth, IPH had Leonardo and Rossi provide it with a signed certificate certifying that all of their representations and warranties from the License Agreement, which included their representations as to compliance with their tax obligations, were true and correct as of the date of the certification (April 29, 2013) and would continue to be true after Leonardo was paid \$10 million under the License Agreement. *See* Ex. 8.

128. Notwithstanding the foregoing, on information and belief, Leonardo and Rossi have not paid their federal taxes on payments made to them from Counter-Plaintiffs, and have not filed all tax returns or reports relating to payments made to them from Counter-Plaintiffs.

129. As a result of Leonardo and Rossi's failure to file or pay their federal taxes, Counter-Plaintiffs have suffered harm because the value of the E-Cat IP is diminished by the likelihood of it being subject to or encumbered by a Federal tax lien, which in turn diminishes its alienability and marketability.

COUNT III: FRAUDULENT INDUCEMENT
(Term Sheet)
(Industrial Heat against Rossi, Leonardo, JMP, and Johnson)

130. Industrial Heat realleges the allegations in Paragraphs 1 through 88 as if fully set forth herein.

131. Rossi, Leonardo, JMP, and Johnson falsely represented to Industrial Heat that JMP was a manufacturing company with a real commercial use for the steam power generated by the Plant.

132. In reality, JMP was not a manufacturing company, had no commercial use for the steam power generated by the Plant, and was created solely as a ruse to induce Industrial Heat to ship the Plant to Florida.

133. Rossi, Leonardo, JMP, and Johnson made such false representations to induce Industrial Heat to enter into the Term Sheet so that Leonardo and Rossi could operate the Plant without Industrial Heat's direct supervision or oversight, thereby allowing them to manipulate the operation of the Plant, any measurement of the operation of the Plant, and any purported "Guaranteed Performance" testing of the Plant.

134. Industrial Heat justifiably relied on such false representations in entering into the Term Sheet. Industrial Heat would not have agreed to the Term Sheet but for such false representations.

135. As a result of Rossi, Leonardo, JMP, and Johnson's fraudulent inducement, Industrial Heat has suffered and continues to suffer damages. Among the damages are the following: the cost of transporting the Plant to Florida; the cost of operating the Plant in Florida; the cost of engaging and paying two independent contractors, one of whom was Fabiani; and a host of additional expenses charged to Industrial Heat in connection with the operation and maintenance of the Plant in Florida.

**COUNT IV: FLORIDA DECEPTIVE AND UNFAIR TRADE PRACTICES ACT
(Industrial Heat and IPH against Rossi, Leonardo, Johnson, JMP, Penon, Fabiani, USQL)**

136. Counter-Plaintiffs reallege the allegations in Paragraphs 1 through 135 as if fully set forth herein.

137. As described in greater detail above, Rossi, Leonardo, Johnson, JMP, Penon, Fabiani, and USQL (the "FDUTPA Defendants") were all engaged in a common scheme against Counter-Plaintiffs.

138. The first part of the scheme was to manipulate Counter-Plaintiffs into allowing the Plant to be sent from the Industrial Heat facility in North Carolina – where any work on, operation of, or testing of the Plant could be supervised and overseen by Counter-Plaintiffs – to Florida, where Leonardo, Rossi, USQL, Fabiani, and Penon could operate the Plant and purportedly conduct measurements of the Plant's operations away from the oversight and control of Counter-Plaintiffs.

139. The second part of the scheme was to manipulate the operation of the Plant and the measurements of the Plant's operations to create the false and deceptive appearance and

impression that the Plant was performing at astronomical levels, with COP measurements not only well in excess of anything achieved by any third party testing of the E-Cat technology, but in fact many multiples higher than anything achieved by any third party testing. For example, notwithstanding flaws in their testing methodology that would have caused them to overstate their conclusions of the COP they were measuring from an E-Cat reactor, the Lugano scientists concluded that the E-Cat reactors they measured were producing a COP of 2.6, 2.9, 3.2, 3.6 or 5.6. According to the manipulated and fabricated testing and measurements of the FDUTPA Defendants, they – through Leonardo, Rossi, and Penon – claimed that they were achieving COPs more than 10 times greater than the Lugano scientists, and in fact as high as 40+ times greater than the Lugano scientists.

140. The final part of the scheme, of course, was for Leonardo and Rossi, based on the false and deceptive operations of the Plant in Florida, to claim to Counter-Plaintiffs that they were required to pay Leonardo and Rossi \$89 million and, when Counter-Plaintiffs rightfully refused, to institute litigation against Counter-Plaintiffs.

141. Another goal of the scheme was to obtain various payments from Counter-Plaintiffs for work that one or more of the FDUTPA Defendants was performing not to benefit Counter-Plaintiffs, but in fact with the goal of harming Counter-Plaintiffs. Among these payments were service payments to USQL, Fabiani, and Penon; expense reimbursements to Leonardo, Rossi, USQL, Fabiani, and Penon (including for travel, apartment rentals, visa-related costs, repair work to the Plant, patent attorneys, and patent application fees); and payments for equipment (or the transportation of equipment) to be used – or purportedly to be used – by the FDUTPA Defendants.

142. In furtherance of this scheme, the FDUTPA Defendants engaged in the unconscionable, unfair, and deceptive acts and practices described above, including:

- a. Deceiving Counter-Plaintiffs about JMP, the operations of JMP, and the reasons for JMP wanting to use the steam power that could be generated by the Plant.
- b. Deceiving Counter-Plaintiffs as to the reasons for wanting to move the Plant from North Carolina to Florida.
- c. Manipulating the operation of the Plant and the measurements of the Plant's operations to create the false impression and appearance that it was producing a COP far in excess of the COP it was in fact achieving.
- d. Providing false information to Counter-Plaintiffs as to the operation of the Plant and the measurements of the Plant's operations.
- e. Refusing to provide other information properly requested by Counter-Plaintiffs, and to which Counter-Plaintiffs were entitled pursuant to the License Agreement, the Term Sheet, the USQL Agreement, and/or the nature of the purportedly (but in fact, not) independent work being done by Penon.
- f. Preventing or blocking Counter-Plaintiffs from obtaining truthful information about the Plant's operations, the measurements of those operations, the role of JMP, the use by JMP of steam provided by the Plant, the role of Penon, or the bases for expenses or costs charged to Counter-Plaintiffs.
- g. Charging Counter-Plaintiffs for services, expenses, and equipment that were purportedly being used either for the benefit of, and to further the goals of, Counter-Plaintiffs when in fact no such services, expenses, or equipment were being used for Counter-Plaintiffs' benefit.

143. The acts and practices alleged above, including in the prior paragraph, were unconscionable, unfair, and deceptive. As such, they have been declared unlawful pursuant to Section 501.204 of the Florida Deceptive and Unfair Trade Practices Act ("FDUTPA").

144. As a result of the foregoing acts and practices declared unlawful under FDUTPA, Counter-Plaintiffs have suffered and continue to suffer actual damages, as described above.

**COUNT V: BREACH OF CONTRACT
(Industrial Heat against Fabiani and USQL)**

145. Industrial Heat realleges the allegations in Paragraphs 1 through 88 as if fully set forth herein.

146. Industrial Heat retained USQL and Fabiani to “provide services related to the manufacture and development” of products relating to the E-Cat IP. *See* USQL Agreement, Page 1. They were required to act in a manner in, and not opposed to, the best interests of Industrial Heat. *See id.* § 3.

147. The USQL Agreement makes clear that information obtained by USQL and Fabiani arising out of the services they agreed to provide to Industrial Heat is the property of Industrial Heat. For example, the USQL Agreement states:

All Confidential Information, records, files, memoranda, reports, drawings, plans, designs, specifications, tests and results, recordings, documents and the like (together with all copies thereof), including any of the foregoing that are electronically maintained, relating to the business of Industrial Heat or the engagement of USQL [and Fabiani] pursuant to this Agreement that USQL [and Fabiani] shall use or prepare or come in contact with in the course of, or as a result of, the engagement of USQL [and Fabiani] under this Agreement shall remain the sole property of Industrial Heat

Id. § 6.

148. The USQL Agreement also requires that USQL and Fabiani promptly disclose to Industrial Heat (among other things) developments and discoveries relating to the Plant or the E-Cat IP:

USQL [and Fabiani] further agree[] that . . . [they] will promptly disclose to Industrial Heat any and all improvements, inventions, developments, discoveries, innovations, systems, techniques, processes, formulas, programs and other things that may be of assistance to Industrial Heat or its affiliates, whether patentable or unpatentable, that (i) relate to the actual or demonstrably anticipated research or development by Industrial Heat or any of its affiliates, or (ii) result from any work performed by USQL [and Fabiani] for or at the request of Industrial Heat, or (iii) are developed on Industrial Heat’s time or using the equipment, supplies or

facilities or any Confidential Information or trade secret information of Industrial Heat, or any of its affiliates; and that are made or conceived by USQL [and Fabiani], alone or with others, while engaged by Industrial Heat (collectively referred to herein as the “New Developments”). USQL [and Fabiani] agree that all New Developments shall be and remain the sole and exclusive property of Industrial Heat and that it shall upon the request of Industrial Heat, and without further compensation, but at the cost and expense of Industrial Heat, do all things reasonably necessary to [e]nsure Industrial Heat’s or its affiliate’s ownership of such New Developments.

Id. § 7.

149. USQL and Fabiani breached the USQL Agreement by failing to provide services to Industrial Heat relating to the manufacture and development of the Plant and the E-Cat IP. More specifically, USQL and Fabiani disregarded their contractual obligations to Industrial Heat in order to assist Leonardo and Rossi in their deceptive operations in Florida. Indeed, instead of working in “the best interests of Industrial Heat,” as required by USQL Agreement § 3, Fabiani and USQL were – as Fabiani publicly admitted – working “under Rossi’s orders,” including assisting Rossi in actions directly against Industrial Heat’s interests as alleged above.

150. USQL and Fabiani also breached the USQL Agreement by failing to provide Industrial Heat with information relating to the scheme to manipulate the operation and testing of the Plant. USQL and Fabiani had an affirmative obligation to inform Industrial Heat of the scheme to manipulate the Plant’s operations and the testing. Such information would constitute a “New Development” that USQL and Fabiani were required to disclose to Industrial Heat pursuant to the USQL Agreement. USQL and Fabiani also refused to provide other information to Industrial Heat, as alleged above. USQL and Fabiani intentionally withheld information from Industrial Heat relating to the scheme and, therefore, breached the USQL Agreement.

151. USQL and Fabiani further breached the USQL Agreement by failing to provide Industrial Heat with information, including reports and data, relating to the operation of the Plant

in Doral, Florida. Industrial Heat made several demands for such information and USQL and Fabiani have repeatedly refused to provide Industrial Heat with the reports and data. *See, e.g.*, Ex. 21.

152. Industrial Heat and IPH have suffered harm as a result of USQL and Fabiani's breaches of the USQL agreement including USQL and Fabiani's failure to further the best interest of Industrial Heat, failure to provide Industrial Heat with information relating to the scheme pled herein, and failure to provide Industrial Heat with other information requested by Industrial Heat or that they were required to provide Industrial Heat. These breaches have deprived Industrial Heat of the benefit of its bargain with USQL and Fabiani, led to Industrial Heat paying USQL and Fabiani for services not rendered, deprived Industrial Heat of property that is its property per the USQL Agreement, and prevented Industrial Heat from learning of the deceptive scheme as alleged above.

COUNTER-PLAINTIFFS' PRAYER FOR RELIEF

WHEREFORE, Counter-Plaintiffs respectfully request that the Court enter judgment in their favor and against Counter-Defendants and Third Party Defendants as follows:

- i. For compensatory and expectation damages and/or restitution in an amount to be determined at trial;
- ii. For costs of suit and for attorneys' fees and costs;
- iii. For pre-judgment interest; and
- iv. For such other and further relief as this Court deems just and proper.

Dated: August 5, 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
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/Counter-Plaintiffs

CERTIFICATE OF SERVICE

I HEREBY CERTIFY that on August 5, 2016, 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. This Answer, Counterclaims, and Third-Party Claims will be served on the Third-Party Defendants pursuant to Federal Rule of Civil Procedure 4.

/s/ Christopher R. J. Pace

Christopher R.J. Pace

EXHIBIT 1



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
 Address: COMMISSIONER FOR PATENTS
 P.O. Box 1450
 Alexandria, Virginia 22313-1450
 www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
12/736,193	09/16/2010	Andrea Rossi	1724-001	2834

47888	7590	01/11/2016
HEDMAN & COSTIGAN, P.C.		
ONE ROCKEFELLER PLAZA, 11TH FLOOR		
NEW YORK, NY 10020		

EXAMINER	
BURKE, SEAN P	

ART UNIT	PAPER NUMBER
3646	

NOTIFICATION DATE	DELIVERY MODE
01/11/2016	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

PTOmail@hgcpatent.com
 ipdocket@hgcpatent.com

Office Action SummaryApplication No.
12/736,193Applicant(s)
ROSSI, ANDREAExaminer
SEAN P. BURKEArt Unit
3646AIA (First Inventor to File)
Status
No**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --****Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTHS FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 6/12/2015.
☐ A declaration(s)/affidavit(s) under **37 CFR 1.130(b)** was/were filed on _____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ An election was made by the applicant in response to a restriction requirement set forth during the interview on _____; the restriction requirement and election have been incorporated into this action.
- 4) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims*

- 5) ☒ Claim(s) 1-7,9 and 10 is/are pending in the application.
5a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 6) ☐ Claim(s) _____ is/are allowed.
- 7) ☒ Claim(s) 1-7,9 and 10 is/are rejected.
- 8) ☐ Claim(s) _____ is/are objected to.
- 9) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

* If any claims have been determined allowable, you may be eligible to benefit from the **Patent Prosecution Highway** program at a participating intellectual property office for the corresponding application. For more information, please see http://www.uspto.gov/patents/init_events/pph/index.jsp or send an inquiry to PPHfeedback@uspto.gov.

Application Papers

- 10) ☒ The specification is objected to by the Examiner.
- 11) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

Certified copies:

- a) ☐ All b) ☐ Some** c) ☐ None of the:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

** See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Information Disclosure Statement(s) (PTO/SB/08a and/or PTO/SB/08b)
Paper No(s)/Mail Date _____
- 3) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 4) ☒ Other: Detailed Action

Application/Control Number: 12/736,193
Art Unit: 3646

Page 2

1. The present application is being examined under the pre-AIA first to invent provisions.

DETAILED ACTION

Status of Claims

2. Claims 1-7, 9 and 10 are under examination.

Affidavit

3. The affidavit filed by the inventor on 12 June 2015 is acknowledged, however the arguments of the affidavit are not persuasive. Applicant avers that the two submitted papers demonstrate independent confirmation of the device operability. Examiner respectfully disagrees.

4. Regarding the Parkhomov papers, as discussed previously, the purported reaction cannot be initiated without substantial energy. Assuming arguendo that a nuclear reaction occurs between hydrogen and nickel, it is fundamental that such a reaction produces both β and γ emissions. However, the paper author explicitly states that no such radiation was measured by the attendant dosimeter.¹ The absence of any detected radioactive signature is an indicia of inoperability.

5. The only indicator of operability in the Parkhomov papers is the claim of anomalous heat production. As has been stated previously, there are many potential sources anomalous heat in such a setup. One glaring example might be a chemical reaction between the nickel and lithium hydride. Or a reaction between the aluminum components and one of the fuel constituents. However, if the reaction is indeed

¹ Parkhomov, Exhibit D, § IV; Exhibit E, § V.

Application/Control Number: 12/736,193

Page 3

Art Unit: 3646

chemical and it is coming from elements that have been purified in the production process, it is axiomatic that the reaction cannot be exothermic.

6. As such, the Parkhomov papers are not persuasive.²

Response to Arguments

7. Applicant's arguments filed 12 June 2015 have been fully considered but they are not persuasive. A detailed response follows.

8. Applicant traverses the operability rejections, arguing that the dummy system served as a proper control because the only difference between the control run and the experimental run was that the latter system contained fuel. "Instead of building two identical systems, the operating characteristics of the same reactor was determined, with the same experimental set up before and after the fuel loading was carried out."³ It is hard to believe that Lugano et al. could certify this fact, because by the Applicant's own admission, they were not permitted to inspect the machine internals. How can a person determine if there is fuel in the device if he is not permitted to see within it? This

² Beyond the experimental criticisms, no reasonable person of ordinary skill in the art would accept an article from "The Journal of Unconventional Science" at face value. A selection of articles **from the same issue** reveal: "прибор новой физики. Часть 3. Лабораторные исследования торсинда" (A report on a spinning disk capable of harnessing the torque captured by the syzygy of a lunar eclipse), "13C, онтогенез и парадокс эволюции," (A paper exploring a new fundamental force - beyond the known four forces - as a determinate for the slow pace of evolution), "Могут ли двойной слепой контроль и двойная рандомизация быть критериями достоверности в "психофизических" экспериментах. (Обоснование необходимости введения мета-прибора в психофизические исследования)" (An admittedly laudable call for the use of double-blind criteria in the study of telekinesis), "Нетрадиционные исследования – псевдонаука, техномистицизм или новая область знания?" (Literally: "Unconventional Research: Pseudoscience, Technomysticism or a New Field of Knowledge?" The author advocates the latter.) and "Сверхъестественное. Научно доказанные факты (анонс книги)," (A review of a book entitled "Supernatural: Scientifically Proven Fact").

While the titles and summaries of the articles speak for themselves, given the cyclic nature of this prosecution, the Examiner reiterates that one of ordinary skill in the art would have serious cause to doubt the credibility of any article published in the Journal of Unconventional Science.

³ Remarks, p. 6.

Application/Control Number: 12/736,193

Page 4

Art Unit: 3646

kind of passive acceptance discredits any claim of operability made by the group. As such, the Lugano report still remains unpersuasive.

9. Applicant cites *Newman*⁴ in support of the contention that an applicant is not required to know how a device operates in order to receive a patent for it. While this is a correct statement of the law, it is premature. The Applicant has not proven **if** the device works; much less **how** it works. For the reasons discussed above and below, there is no credible assertion of operability.

10. The Applicant argues that the blog posting cited as Exhibit B, if it is not a credible reference, it should not be used in the rejection. This is a circular argument. The reference is not believable because it not peer reviewed. It demonstrates the precise form of undiscerning "review" that seems peculiar to the cold fusion art. Notwithstanding this observation, the reference was originally cited by the Applicant, not the Examiner.⁵

11. Applicant's remaining arguments reiterate that the inventor is not responsible for a theory of operation. Examiner reiterates the prior arguments as further notes that while Applicant is not bound by theory, the claimed invention is explicitly directed to "A method of carrying out an exothermal reaction of nickel and hydrogen." To date, there is no credible evidence of this reaction. Nor would one of ordinary skill in the art, after

⁴ 783 F.2d 971 (Fed. Cir. 1986).

⁵ Applicant further argues that the subject of blog post, Brian Ahern, "has long been a critic of the present applicant" but neglects to mention that Dr. Ahern also has a long track record in the annals of cold fusion. C.f. Swartz, "Survey of the Observed Excess Energy and Emissions in Lattice Assisted Nuclear Reactions," <http://world.std.com/~mica/Swartz-SurveyJSE2009.pdf> last visited 4 January 2016.

Applicant further states that Brian Ahern is "a distinguished MIT professor." While Dr. Ahern is no doubt distinguished, it appears that he is not a professor at MIT. Currently, the only Brian Ahern in the MIT directory is a Brian W. Ahern, a third year student in the biological engineering department.

Application/Control Number: 12/736,193

Page 5

Art Unit: 3646

reviewing the claimed evidence, consider Applicant's claims dispositive. Accordingly, Applicant's traversal the operability rejection is not persuasive.

12. Applicant's remaining arguments refer to the recent amendments. They are addressed in the rejections below.

Specification

13. The specification is objected to as directed solely to an inoperable device. Specifically, the present invention appears to be derived from the discredited "dry LENR" process embodied by Andrea Rossi's "e-Cat" device. As discussed below, claims directed to this mode of fusion have been rife with fraud and fail to measure up to even cursory examination under the generally accepted laws of physics.

14. Rossi's e-Cat device is a purported nuclear fusion reactor which exposes nickel powder to hydrogen gas at modest pressure (around 2 bar) and temperature (between 150-500°C).⁶ According to Rossi, the nickel nuclei absorb protons from the hydrogen gas and undergo β decay to form various isotopes of copper. Rossi does not propose a theory of operation for the device, but simply reviewing the products and the reactants would cause one of ordinary skill to doubt the operability of the system.

15. First, there is the issue of nickel. Nickel-62, one of the reactant isotopes, has the highest nuclear binding energy of any known isotope.⁷ In laymen's terms, this means that nickel-62 is the most stable and non-reactive nucleus in the known universe.

⁶ See Application. 12/736,193 (US 2011/0005506 A1). Note, the Abstract in this reference states a temperature range of 150-5000°C. This would appear to be a typographical error since the steel containment would melt at 1510°C. Examiner notes that this error is not repeated in elsewhere in the specification or the claims.

⁷ See Fewell, "The Atomic Nuclide With the Highest Mean Binding Energy," <http://adsabs.harvard.edu/abs/1995AmJPh..63..653F> (last visited 17 December 2015).

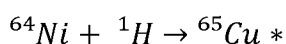
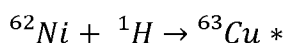
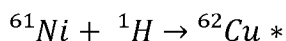
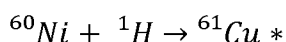
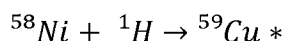
Application/Control Number: 12/736,193

Page 6

Art Unit: 3646

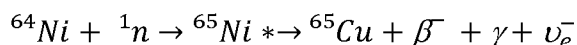
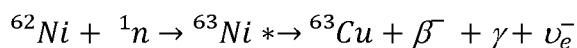
However, the other common isotopes of nickel (^{58}Ni , ^{60}Ni , ^{61}Ni and ^{64}Ni) share similar binding energies. This relative stability explains why the metal accumulates in stars - even under the most extreme fusion conditions imaginable, nickel will not react with other elements. However, for the sake of argument, we will assume that an unknown mechanism is causing nickel to react with hydrogen.

16. If nickel were to react with hydrogen, it would do so according to the following mechanisms:⁸



17. Where the star (*) signifies that copper is unstable and will undergo β -decay back to a nickel isotope of corresponding mass. This mechanism obviously fails because it does not produce the claimed reaction products.

18. One could create copper from nickel with neutrons, but then it is not clear where the present invention would obtain such a source. However, for the sake of argument, we assume that the unknown mechanism *also* has a ready supply of neutrons. If this is the case, then we can convert ^{62}Ni and ^{64}Ni into ^{63}Cu and ^{65}Cu respectively under the following reactions:⁹



⁸ See Thieberger, "The Physics of why the e-Cat's Cold Fusion Claims Collapse," pp. 7-8.

⁹ *Id.* at 10.

Application/Control Number: 12/736,193
Art Unit: 3646

Page 7

19. If one were to build a machine to leverage these reactions, one would expect the proportion of the products to equal the proportion of the reactants. Thus, the ratio of nickel-62 to nickel-64 should equal the ratio of copper-63 to copper-65. However, this is not the case.¹⁰

20. Putting aside the theoretical considerations, there is the additional matter of verifiability. To date, there exists no credible independent, peer-reviewed evaluation of the e-Cat device. Nor has there been a credible attempt at explaining the purported nickel phenomenon. Additionally, attempts to independently verify the Rossi device appear to have been met with resistance.¹¹

21. A person of ordinary skill in the art would have cause to doubt the operability of the claimed invention for three reasons. First, the inventors make the incredible claim of exothermic fusion of hydrogen and nickel in a laboratory environment. For the reasons discussed above, the known and existing laws of nature do not support this reaction. Next, the proponents have only been able to produce an ash that reflects the standard isotopic distribution of copper, not the distribution of copper that would occur if nickel were actually undergoing the fusion process. Finally, the absolute dearth independent confirmation and the carefully crafted "demonstrations" would cause a person of ordinary skill in the art to doubt the operability of the device as claimed.

¹⁰ See Aleklett, "Rossi energy catalyst - a big hoax or new physics?" Aleklett's Energy Mix, pp. 2-3. <https://aleklett.wordpress.com/2011/04/11/rossi-energy-catalyst-a-big-hoax-or-new-physics/> (last accessed 18 December 2015).

¹¹ See "Can Andrea Rossi's Infinite-Energy Black Box Power the World - Or Just Scam It?" Popular Science <http://www.popsci.com/science/article/2012-10/andrea-rossis-black-box> (last accessed 18 December 2015).

Application/Control Number: 12/736,193
Art Unit: 3646

Page 8

Claim Rejections - 35 USC § 101

22. 35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

21. Claims 1-7, 9 and 10 are rejected under 35 U.S.C. 101 because the disclosed invention is inoperative and therefore lacks utility. The claims are rejected for the reasons disclosed above.

Claim Rejections - 35 USC § 112

22. The following is a quotation of the first paragraph of 35 U.S.C. 112(a):

(a) IN GENERAL.—The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same, and shall set forth the best mode contemplated by the inventor or joint inventor of carrying out the invention.

The following is a quotation of the first paragraph of pre-AIA 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same, and shall set forth the best mode contemplated by the inventor of carrying out his invention.

23. Claims 1-7, 9, and 10 rejected under 35 U.S.C. 112(a) or 35 U.S.C. 112 (pre-AIA), first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. Specifically, any claim that is inoperable is necessarily non-enabled. *In re Swartz*, 232 F.3d 862 (Fed. Cir. 2000).

Application/Control Number: 12/736,193
Art Unit: 3646

Page 9

Claim Rejections - 35 USC § 103

24. The following is a quotation of pre-AIA 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

25. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under pre-AIA 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

26. Claims 1 and 7 are rejected under pre-AIA 35 U.S.C. 103(a) as being unpatentable over Butler et al., "Radiative Proton Capture by Ni⁵⁸, Ni⁶⁰, and Co⁵⁹."

27. Notwithstanding the inoperability of the claimed device, the reaction itself is obvious over Butler. Note, the Butler device uses the more traditional method of nucleosynthesis which employs accelerating protons into a stationary target. However, even if the alleged reaction could occur, one of ordinary skill in the art would understand that the reaction would be subject to varying the basic reaction parameters.

Application/Control Number: 12/736,193

Page 10

Art Unit: 3646

28. Applicant traverses the rejection because the Butler device employs nickel-plated silver and not nickel powder. However, if the reaction is to occur as described in the specification, it is not clear why the solid form of the fuel would matter.

29. Accordingly, claims 1 and 7 are rejected as obvious over Butler.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to SEAN P. BURKE whose telephone number is (571)270-5493. The examiner can normally be reached on Monday-Friday, 10:00 AM to 6:30 PM EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jack Keith can be reached on (571) 262-6878. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Application/Control Number: 12/736,193

Page 11

Art Unit: 3646

/SEAN P BURKE/

Examiner, Art Unit 3646

EXHIBIT 2

PATENT COOPERATION TREATY

From the
INTERNATIONAL SEARCHING AUTHORITY

To: FRANK OCCHIUTI
OCCHIUTI & ROHLICEK LLP
321 SUMMER STREET
BOSTON, MA 02210

PCT

WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY

(PCT Rule 43bis.1)

Date of mailing
(day/month/year)

19 OCT 2015

Applicant's or agent's file reference
60040-003WO1

FOR FURTHER ACTION

See paragraph 2 below

International application No.

PCT/US2015/042353

International filing date (day/month/year)

28 July 2015

Priority date (day/month/year)

01 August 2014

International Patent Classification (IPC) or both national classification and IPC

IPC(8) - F24J 1/00 (2015.01)

CPC - F24J 1/00 (2015.09)

Applicant **ROSSI, ANDREA**

1. This opinion contains indications relating to the following items:

- ☒ Box No. I Basis of the opinion
- ☐ Box No. II Priority
- ☐ Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- ☐ Box No. IV Lack of unity of invention
- ☒ Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step and industrial applicability; citations and explanations supporting such statement
- ☐ Box No. VI Certain documents cited
- ☐ Box No. VII Certain defects in the international application
- ☐ Box No. VIII Certain observations on the international application

2. FURTHER ACTION

If a demand for international preliminary examination is made, this opinion will be considered to be a written opinion of the International Preliminary Examining Authority ("IPEA") except that this does not apply where the applicant chooses an Authority other than this one to be the IPEA and the chosen IPEA has notified the International Bureau under Rule 66.1bis(b) that written opinions of this International Searching Authority will not be so considered.

If this opinion is, as provided above, considered to be a written opinion of the IPEA, the applicant is invited to submit to the IPEA a written reply together, where appropriate, with amendments, before the expiration of 3 months from the date of mailing of Form PCT/ISA/220 or before the expiration of 22 months from the priority date, whichever expires later.

For further options, see Form PCT/ISA/220.

Name and mailing address of the ISA/
Mail Stop PCT, Attn: ISA/US
Commissioner for Patents
P.O. Box 1450, Alexandria, Virginia 22313-1450
Facsimile No. 571-273-8300

Date of completion of this opinion

21 September 2015

Authorized officer

Blaine Copenheaver

PCT Helpdesk: 571-272-4300
PCT OSP: 571-272-7774

WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY

International application No.

PCT/US2015/042353

Box No. I Basis of this opinion

1. With regard to the **language**, this opinion has been established on the basis of:

- ☒ the international application in the language in which it was filed.
- ☐ a translation of the international application into _____ which is the language of a translation furnished for the purposes of international search (Rules 12.3(a) and 23.1(b)).

2. ☐ This opinion has been established taking into account the **rectification of an obvious mistake** authorized by or notified to this Authority under Rule 91 (Rule 43*bis*.1(a)).3. ☐ With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, this opinion has been established on the basis of a sequence listing:a. ☐ forming part of the international application as filed:

- ☐ in the form of an Annex C/ST.25 text file.
- ☐ on paper or in the form of an image file.

b. ☐ furnished together with the international application under PCT Rule 13*ter*.1(a) for the purposes of international search only in the form of an Annex C/ST.25 text file.c. ☐ furnished subsequent to the international filing date for the purposes of international search only:

- ☐ in the form of an Annex C/ST.25 text file (Rule 13*ter*.1(a)).
- ☐ on paper or in the form of an image file (Rule 13*ter*.1(b) and Administrative Instructions, Section 713).

4. ☐ In addition, in the case that more than one version or copy of a sequence listing has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that forming part of the application as filed or does not go beyond the application as filed, as appropriate, were furnished.

5. Additional comments:

**WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY**

International application No.

PCT/US2015/042353

Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step and industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Claims	1-28, 30, 31, 35, 36	YES
	Claims	29, 32-34	NO
Inventive step (IS)	Claims	19-28	YES
	Claims	1-18, 29-36	NO
Industrial applicability (IA)	Claims	1-36	YES
	Claims	None	NO

2. Citations and explanations:

Claims 29 and 32-34 lack novelty under PCT Article 33(2) as being anticipated by Mills.

Regarding claim 29, Mills discloses an apparatus for heating a fluid, said apparatus comprising means for containing said fluid, and means for holding a fuel mixture containing a catalyst and a reagent, and means for initiating a reaction sequence mediated by said catalyst to cause an exothermic reaction [see Fig. 1, and Paras. 0140, 0141, 0142, 0144, and 0146].

Regarding claim 32, Mills discloses a composition of matter for generating heat, said composition comprising a fuel mixture and a catalyst, said catalyst comprising a group 10 element such as nickel [see Paras. 0141, 0142, 0144, and 0146].

Regarding claim 33, Mills discloses the composition of claim 32, wherein said catalyst comprises nickel [see Paras. 0142 and 0144].

Regarding claim 34, Mills discloses the composition of claim 32, wherein said catalyst comprises nickel powder [see Paras. 0142, 0144, 0188, and 0195].

Claim 35 lacks an inventive step under PCT Article 33(3) as being obvious over Mills.

Regarding claim 35, Mills discloses the composition of claim 34. Mills fails to explicitly disclose the composition, wherein said nickel powder has been treated to enhance porosity thereof. It is submitted that the supports utilized in the fuel mixture or composition of Mills would appear to enhance the porosity of the nickel powder [see Paras. 0146, 0164, 0185, and 0188]. It would have been obvious to one skilled in the art at the time the invention was made, to modify the composition of Mills by including the recited nickel powder, for the purpose of optimizing the generation of heat from the fuel mixture.

Claims 1, 2, and 6-16 lack an inventive step under PCT Article 33(3) as being obvious over Coffey et al. (hereafter Coffey) in view of Mills.

Regarding claim 1, Coffey discloses an apparatus for heating fluid, said apparatus comprising a tank for holding fluid to be heated, and a fuel wafer in fluid communication with said fluid, said fuel wafer including a fuel mixture including reagents or reactant powders, and an ignition source in thermal communication with said fuel mixture, wherein the ignition source is selected from the group consisting of an induction heater, an electrical resistor, a heater that relies on natural gas combustion, and a heater that relies on combustion of fuel [see Figs. 12, 17, and 20, and Paras. 0007, 0072, 0085 and 0090]. Coffey fails to explicitly disclose the apparatus, wherein said fuel wafer including a fuel mixture including reagents and a catalyst. Mills teaches that it is known in the art to include fuel mixture comprising reagents and a catalyst in an apparatus for heating a fluid [see Fig. 1, and Paras. 0140, 0141, 0142, 0144, and 0146]. It would have been obvious to one skilled in the art at the time the invention was made, to modify the apparatus of Coffey by including the recited fuel mixture in view of the teachings of Mills, for the purpose of optimizing the generation of heat from a desired fuel mixture.

Regarding claim 2, Coffey in view of Mills discloses the apparatus of claim 1. Coffey further discloses the apparatus, wherein said ignition source comprises an electrical resistor [see Fig. 20 and Para. 0090].

Regarding claim 6, Coffey in view of Mills discloses the apparatus of claim 1. Coffey fails to explicitly disclose the apparatus, wherein said catalyst comprises nickel powder. Mills teaches that it is known in the art to include fuel mixture comprising nickel powder catalyst in an apparatus for heating a fluid [see Fig. 1, and Paras. 0140, 0141, 0142, 0144, and 0146]. It would have been obvious to one skilled in the art at the time the invention was made, to modify the apparatus of Coffey by including the recited catalyst in view of the teachings of Mills, for the purpose of optimizing the generation of heat from a desired fuel mixture.

**WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY**

International application No.

PCT/US2015/042353

Supplemental Box

In case the space in any of the preceding boxes is not sufficient.

Continuation of:

Regarding claim 7, Coffey in view of Mills discloses the apparatus of claim 1. Coffey fails to explicitly disclose the apparatus, wherein said nickel powder has been treated to enhance porosity thereof. Mills teaches that it is known in the art to utilize a support for nickel powder catalyst in a fuel mixture, which would appear to enhance the porosity of the nickel powder [see Paras. 0164 and 0185 and 0188]. It would have been obvious to one skilled in the art at the time the invention was made, to modify the apparatus of Coffey by including the recited nickel powder in view of the teachings of Mills, for the purpose of optimizing the generation of heat from the fuel mixture.

Regarding claim 8, Coffey in view of Mills discloses the apparatus of claim 1. Coffey fails to explicitly disclose the apparatus, wherein said catalyst comprises a group 10 element. Mills teaches that it is known in the art to include fuel mixture comprising group 10 element such as nickel in an apparatus for heating a fluid [see Fig. 1, and Paras. 0140, 0141, 0142, 0144, and 0146]. It would have been obvious to one skilled in the art at the time the invention was made, to modify the apparatus of Coffey by including the recited catalyst in view of the teachings of Mills, for the purpose of optimizing the generation of heat from a desired fuel mixture.

Regarding claim 9, Coffey in view of Mills discloses the apparatus of claim 1. Coffey further discloses the apparatus, further comprising a voltage source in electrical communication with said ignition source [see Fig. 20 and Para. 0090].

Regarding claim 10, Coffey in view of Mills discloses the apparatus of claim 2. Coffey further discloses the apparatus, further comprising a voltage source in electrical communication with said ignition source [see Fig. 20 and Para. 0090].

Regarding claim 11, Coffey in view of Mills discloses the apparatus of claim 1. Coffey fails to explicitly disclose the apparatus, wherein said fuel wafer comprises a multi-layer structure having a layer of said fuel mixture in thermal communication with a layer containing said ignition source. Mills teaches that it is known in the art to utilize fuel mixture with a multi-layer structure containing a metal catalyst and support in an apparatus for heating a fluid [see Figs. 1 and 20, and Paras. 0144, 0185, and 188]. It would have been obvious to one skilled in the art at the time the invention was made, to modify the apparatus of Coffey by including the recited multi-layer structure in view of the teachings of Mills, since where the general conditions of the claim are disclosed in the prior art, discovering the optimum or workable arrangement of fuel mixture and ignition source in the multi-layer structure involves only routine skill in the art, for the purpose of optimizing the generation of heat from a desired fuel mixture.

Regarding claim 12, Coffey in view of Mills discloses the apparatus of claim 2. Coffey fails to explicitly disclose the apparatus, wherein said fuel wafer comprises a multi-layer structure having a layer of said fuel mixture in thermal communication with a layer containing said ignition source. Mills teaches that it is known in the art to utilize fuel mixture with a multi-layer structure containing a metal catalyst and support in an apparatus for heating a fluid [see Fig. 1, and Paras. 0144, 0185, and 0188]. It would have been obvious to one skilled in the art at the time the invention was made, to modify the apparatus of Coffey by including the recited multi-layer structure in view of the teachings of Mills, since where the general conditions of the claim are disclosed in the prior art, discovering the optimum or workable arrangement of fuel mixture and ignition source in the multi-layer structure involves only routine skill in the art, for the purpose of optimizing the generation of heat from a desired fuel mixture.

Regarding claim 13, Coffey discloses the apparatus of claim 1. Coffey fails to explicitly disclose the apparatus, wherein said fuel wafer comprises a central heating insert and a pair of fuel inserts disposed on either side of said heating insert. Coffey discloses that it is known in the art to utilize a central heating insert in a container filled with a fuel or solid state heating composition [see Fig. 14A, and Para. 0073]. Coffey further discloses the use of other geometries to define various path shapes, lengths, and thicknesses, and the use of different particle shapes, size, and ratios for the heating and reaction regulator elements [see Paras. 0072 and 0073]. It would have been obvious to one skilled in the art at the time the invention was made, to modify the apparatus of Coffey by including the recited catalyst in view of the teachings of Mills, since where the general conditions of the claim are disclosed in the prior art, discovering the optimum or workable arrangement of the central heating and fuel inserts involves only routine skill in the art, for the purpose of optimizing the generation of heat from a desired fuel mixture.

Regarding claim 14, Coffey in view of Mills discloses the apparatus of claim 1. Coffey further discloses the apparatus, wherein said tank comprises a recess for receiving said fuel wafer therein [see Fig. 17, and Para. 0085].

Regarding claim 15, Coffey in view of Mills discloses the apparatus of claim 1. Coffey fails to explicitly disclose the apparatus, wherein said tank further comprises a door or safety seal for sealing said recess [see Fig. 17 and Para. 0085].

Regarding claim 16, Coffey in view of Mills discloses the apparatus of claim 1. Coffey fails to explicitly disclose the apparatus, wherein said tank comprises a radiation shield. It is submitted that the inert layers utilized in the tank of Coffey are considered indistinguishable from the recited radiation shield [see Fig. 13 and Para. 0075]. It would have been obvious to one skilled in the art at the time the invention was made, to modify the apparatus of Coffey by including the recited radiation shield, for the purpose of preventing heat dissipation to the external surfaces of the tank.

**WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY**

International application No.

PCT/US2015/042353

Supplemental Box

In case the space in any of the preceding boxes is not sufficient.

Continuation of:

Claims 30, 31, and 36 lack an inventive step under PCT Article 33(3) as being obvious over Mills in view of Hudson.

Regarding claim 30, Mills discloses the apparatus of claim 29. Mills fails to explicitly disclose the apparatus, wherein said catalyst that comprises a group 10 element and a reagent comprises lithium and lithium aluminum hydride, said apparatus further comprising means for periodically reinvigorating said reaction sequence. Hudson teaches that it is known in the art to include a catalyst comprising a group 10 element such as nickel and a reagent comprising lithium and lithium aluminum hydride in a fuel mixture [see Col. 2 Lns. 22-43 and Col. 4 Lns. 4-10]. It is submitted that the apparatus of Mills appears to include a reactor wherein reactants are continuously supplied and side products are continuously removed and regenerated and returned to the reactor, which would appear to reinvigorate the reaction sequence [see Para. 0147]. It would have been obvious to one skilled in the art at the time the invention was made, to modify the apparatus of Mills by including the recited catalyst and means for periodically reinvigorating the reaction sequence in view of the teachings of Hudson, for the purpose of optimizing the generation of heat from the fuel mixture.

Regarding claim 31, Mills discloses a composition of matter for generating heat, said composition comprising a mixture of nickel powder, lithium powder, and aluminum hydride powder [see Paras. 0141, 0142, 0144, and 0146]. Mills fails to explicitly disclose the composition of matter for generating heat comprising a mixture of porosity enhanced nickel powder, lithium powder, and lithium aluminum powder. It is submitted that the supports utilized in the fuel mixture or composition of Mills would appear to enhance the porosity of the nickel powder [see Paras. 0146, 0164, 0185, and 0188]. Hudson teaches that it is known in the art to include a catalyst comprising a group 10 element such as nickel and a reagent comprising lithium and lithium aluminum hydride in a fuel mixture [see Col. 2 Lns. 22-43 and Col. 4 Lns. 4-10]. It would have been obvious to one skilled in the art at the time the invention was made, to modify the composition of Mills by including the recited mixture in view of the teachings of Hudson, for the purpose of optimizing the generation of heat from a fuel mixture.

Regarding claim 36, Mills discloses a method of heating a fluid, said method comprising placing a mixture of nickel powder, lithium powder and aluminum hydride in thermal communication with said fluid [see Fig. 1, and Paras. 0140, 0141, 0142, 0144, and 0146]; and heating said mixture thereby initiating an exothermic reaction in said mixture [see Fig. 3, and Paras. 0157 and 0167]. Mills fails to explicitly disclose the method comprising placing a mixture of nickel powder, lithium powder and lithium aluminum hydride in thermal communication with said fluid. Hudson teaches that it is known in the art to utilize a mixture of nickel powder, lithium, and lithium aluminum hydride in a fuel mixture [see Col. 2 Lns. 22-43 and Col. 4 Lns. 4-10]. It would have been obvious to one skilled in the art at the time the invention was made, to modify the method of Mills by including the recited mixture in view of the teachings of Hudson, for the purpose of optimizing the generation of heat from a fuel mixture.

Claim 3 lacks an inventive step under PCT Article 33(3) as being obvious over Coffey in view of Mills and Rohrbaugh et al. (hereafter Rohrbaugh)

Regarding claim 3, Coffey in view of Mills discloses the apparatus of claim 1. Coffey fails to explicitly disclose the apparatus, wherein said ignition source comprises an induction heater. Rohrbaugh teaches that it is known in the art to utilize an induction heater in a heating system for a metal strip [see Fig. 1 and Col. 3 Lns. 13-26]. It would have been obvious to one skilled in the art at the time the invention was made, to modify the apparatus of Coffey by including the recited induction heater in view of the teachings of Rohrbaugh, for the purpose of providing heat for ignition of the fuel mixture.

Claim 4 lacks an inventive step under PCT Article 33(3) as being obvious over Coffey in view of Mills and C-nox GmbH & Co. KG (hereafter C-nox)

Regarding claim 4, Coffey in view of Mills discloses the apparatus of claim 1. Coffey fails to explicitly disclose the apparatus, wherein said ignition source obtains heat from combustion of natural gas. C-nox teaches that it is known in the art to obtain heat from combustion of natural gas and a electrical resistance heater, to provide a temperature required for a firing space [see Para. 0048]. It would have been obvious to one skilled in the art at the time the invention was made, to modify the apparatus of Coffey by including the recited ignition source in view of the teachings of C-nox, for the purpose of providing heat for ignition of the fuel mixture.

Claim 5 lacks an inventive step under PCT Article 33(3) as being obvious over Coffey in view of Mills and Hudson.

Regarding claim 5, Coffey in view of Mills discloses the apparatus of claim 1. Mills fails to explicitly disclose the apparatus, wherein said wherein said fuel mixture comprises lithium and lithium aluminum hydride. Hudson teaches that it is known in the art to include a catalyst comprising lithium and lithium aluminum hydride in a fuel mixture [see Col. 2 Lns. 22-43]. It would have been obvious to one skilled in the art at the time the invention was made, to modify the apparatus of Coffey by including the recited fuel mixture in view of the teachings of Hudson, for the purpose of optimizing the generation of heat from a desired fuel mixture.

WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY

International application No.

PCT/US2015/042353

Supplemental Box

In case the space in any of the preceding boxes is not sufficient.
Continuation of:

Claims 17 and 18 lack an inventive step under PCT Article 33(3) as being obvious over Coffey in view of Mills and Layer et al. (hereafter Layer)

Regarding claim 17, Coffey in view of Mills discloses the apparatus of claim 1. Coffey fails to explicitly disclose the apparatus, further comprising a controller in communication with said voltage source. Layer teaches that it is known in the art to utilize a temperature controller for regulating heat produced by a resistive heater including a power or voltage source, to achieve a preselected temperature in a container for heating a fluid [see Paras. 0008, 0020, and 0021]. It would have been obvious to one skilled in the art at the time the invention was made, to modify the apparatus of Coffey by including the recited controller in view of the teachings of Layer, for the purpose of regulating the generation of heat from a desired fuel mixture.

Regarding claim 18, Coffey in view of Mills discloses the apparatus of claim 17. Coffey fails to explicitly disclose the apparatus, wherein said controller is configured to cause vary said voltage in response to temperature of said fluid to be heated. Layer teaches that it is known in the art to utilize a temperature controller for regulating heat produced by a resistive heater including a power or voltage source, to achieve a preselected temperature in a container for heating a fluid [see Paras. 0008, 0020, and 0021]. It would have been obvious to one skilled in the art at the time the invention was made, to modify the apparatus of Coffey by including the recited controller in view of the teachings of Layer, for the purpose of regulating the voltage supplied to the resistive heater and the generation of heat from a desired fuel mixture.

Claims 19-28 meet the criteria set out in PCT Article 33(2)-(3) because the prior art does not teach or fairly suggest certain subject matter in the claims, as follows:

Regarding claim 19, the prior art of record, individually or in combination, does not teach or fairly suggest an apparatus of claim 2, wherein said tank is configured for holding fluid to be heated, wherein said fuel wafer is configured to be in thermal communication with said fluid, wherein said resistor is configured to be coupled to a voltage source, wherein said apparatus further comprises a controller in communication with said voltage source, and a temperature sensor, wherein said fuel mixture comprises lithium, and lithium aluminum hydride, wherein said catalyst comprises a group 10 element, wherein said controller is configured to monitor a temperature from said temperature sensor, and, based at least in part on said temperature, to reinvigorate a reaction in said fuel mixture, wherein reinvigorating said reaction comprises varying a voltage of said voltage source.

Claims 20-28 depend from base claim 19, and therefore meet the criteria set out in PCT Article 33(2)-(3) for at least the same reasons as does base claim 19.

WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY

International application No.

PCT/US2015/042353

Supplemental Box

In case the space in any of the preceding boxes is not sufficient.
Continuation of:

The following prior art is made of record to support and further define the reasons for meeting the criteria set out in PCT Article 33(2)-(3) for base claim 19:

(i) Regarding claim 19, Coffey discloses an apparatus for heating fluid, said apparatus comprising a tank for holding fluid to be heated, and a fuel wafer in fluid communication with said fluid, said fuel wafer including a fuel mixture including reagents or reactant powders, and an ignition source in thermal communication with said fuel mixture and said catalyst, wherein the ignition source is selected from the group consisting of an electrical resistor [see Figs. 12, 17, and 20, and Paras. 0007, 0072, 0085 and 0090]. Mills teaches that it is known in the art to include fuel mixture comprising reagents and a catalyst in an apparatus for heating a fluid [see Fig. 1, and Paras. 0140, 0141, 0142, 0144, and 0146]. Layer teaches that it is known in the art to utilize a temperature controller for regulating heat produced by a resistive heater including a power or voltage source, to achieve a preselected temperature in a container for heating a fluid [see Paras. 0008, 0020, and 0021]. Hudson teaches that it is known in the art to include a catalyst comprising a group 10 element such as nickel and a reagent comprising lithium and lithium aluminum hydride in a fuel mixture [see Col. 2 Lns. 22-43 and Col. 4 Lns. 4-10]. Coffey does not teach, either alone or in combination with the prior art of record, the apparatus of claim 2, wherein said tank is configured for holding fluid to be heated, wherein said fuel wafer is configured to be in thermal communication with said fluid, wherein said resistor is configured to be coupled to a voltage source, wherein said apparatus further comprises a controller in communication with said voltage source, and a temperature sensor, wherein said fuel mixture comprises lithium, and lithium aluminum hydride, wherein said catalyst comprises a group 10 element, wherein said controller is configured to monitor a temperature from said temperature sensor, and, based at least in part on said temperature, to reinvigorate a reaction in said fuel mixture, wherein reinvigorating said reaction comprises varying a voltage of said voltage source.

Claims 1-36 meet the criteria set out in PCT Article 33(4), and thus have industrial applicability because the subject matter claimed can be made or used in industry.

EXHIBIT 3



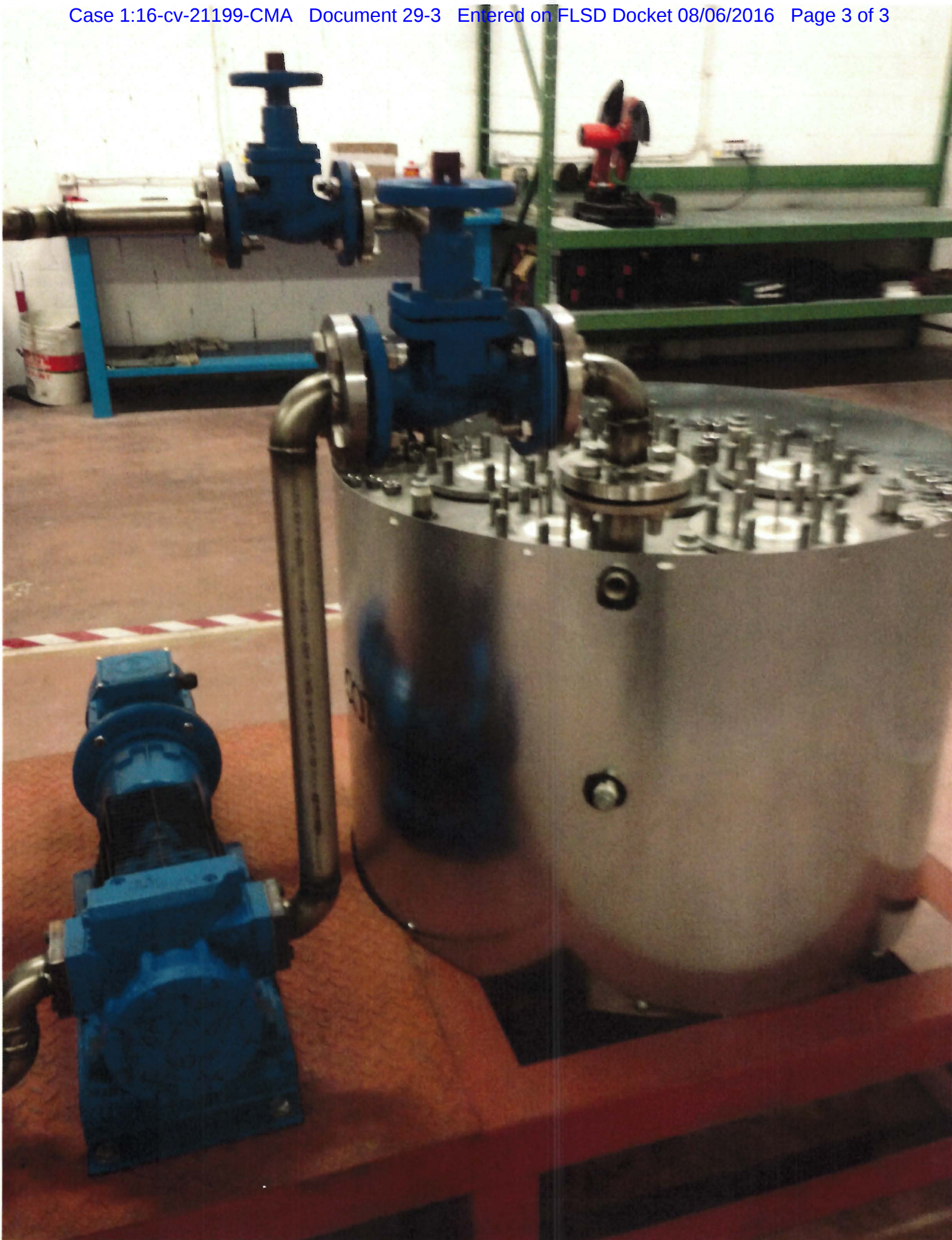


EXHIBIT 4

Now, at 08.16 a.m. of Wednesday Sept 16 the 1 MW E-Cat is stable; the E-Cat X is resisting at very promising levels, but we have to wait to know if we reached the necessary reliability.

September 13, 2015 (Day 202)

Right now it is 11.59 p.m. inside the computers container: we have just finished an important reparation to a reactor. The 1 MW is working at 3/4 of its power in this moment, but we are confident it will recover soon.

The E-Cat X continues to be very promising and extremely interesting. Now it seems much more robust and we'll see what will happen next...

September 10, 2015 (Day 202)

All right, let's put down at work: now, at 09.13 p.m. of Sept 10 I am inside the computers container, looking at the cover of ribbon of the USPTO, while the plant is well and stable.

September 7, 2015 (Day 199)

Now at 10.30 a.m. of Monday September 07 (Labor Day in the USA: greetings to all the workers of the USA!) the situation is: 1 MW E-Cat: stable and well, all data normal E-Cat X: is in operation.

September 5, 2015 (Day 197)

Now, at 08.20 a.m. of Saturday September 5th, the 1 MW plant is working well and stable but at 3/4 of its power, because we are making maintenance to a

[Privacy & Cookies Policy](#)

reactor. The "voice" is good, we are relatively calm.

September 3, 2015 (Day 195)

Today Sept 03 at 10 a.m.: E-Cat X in preparation, should start Sunday. 1 MW E-Cat stable.

September 2, 2015 (Day 194)

Now, at 07.53 p.m. inside the 1 MW plant the situation is normal; the E-Cat X is still in construction. I am working on new patents.

September 1, 2015 (Day 193)

Right now in the plant it's 10.05 p.m. of September 1. The 1 MW E-Cat is working at 3/4 of the power because we have problems in one reactor, The other 3 reactors are stable and well.

August 28, 2015 (Day 189)

Today, at 09.10 a.m. of Friday Aug 28th, the 1MW E-Cat is stable, the E-Cat X is in construction. No troubles, so far.

August 22, 2015 (Day 183)

Now it's 08.05 p.m. inside the plant, it is working stable: I am working here with my great Team. The E-Cat X is in re-construction and I am convinced we have resolved the problem. If God wants, we should be close ...it is very promising.

August 18, 2015 (Day 179)

EXHIBIT 5

**INITIAL QUERIES FOR M. ENG. FABIO PENON AS TO
MEASUREMENTS OF 1 MW PLANT
(at 7861 NW 46th Street, Doral, Florida; February 16-17, 2016)**

M. Eng. Fabio Penon:

I wanted to raise with you, and I was hoping you would address, several issues that surfaced during the time we were in Doral at the location of the 1 MW Plant. This is not an exhaustive list of the issues I identified or that we discussed, but they do represent some of the more glaring concerns that were identified.

1. The flow meter used.

The turbine flow meter used for your measurements was manufactured by Apator PoWoGaz. The model number is MWN130-80-NC.

The Apator PoWoGaz's device label clearly states that the unit has a minimum operational flow rate of 1.6 m³/hour. That is a minimum of 38.4 m³/day. Using 977.8 kg/m³ as the density of water at 70° C, the minimum operational mass flow rate measurable with this sensor is 37,548 kg/day. With few exceptions, your daily valuation reports reflect a flow rate clearly below this level. How can the measurements of the flow meter be valid when they are consistently below the minimum operating value?

The flow meter requires that the entire pipe volume be full of liquid to function properly, as described in the Apator PoWoGaz Operating Instructions [section 6.6 in document I-EN-2-003/2013, Operating Instructions, Flange water meters DN40 - 500]. The visible iron stain waterline marks on the static vanes indicate that the pipe was not continuously full of liquid, as required by the manufacturer's specifications, but rather had a substantial portion free of liquid. *See Exhibit A.* How can the measurements of the flow meter be valid when the pipe volume was far less than full?

2. The consistency of the reported flow rate statistics.

At different points in time during the assumed 350 operational days of the "test" you were measuring, a number of the reactors were turned off (apparently for repair). At even more points in time, different units within the reactors were either turned off or simply disabled. Yet there does not appear to be any impact on the mass flow rate in the system. How is that a credible outcome?

In fact, from June 30, 2015 through July 27, 2015, the effective flowed water in the unit was, according to your daily valuation report for that period, *36,000 Kg/d on each and every day*, without deviation. *See Exhibit B.* How is that plausible? It should be virtually impossible to have that level of consistency even over just a one-week period, let alone a one-month period.

3. *The number of reactor units in operation varied substantially over time.*

As discussed on February 16, 2016 while at the location, 21 of the 64 units in the 4 large reactors had clearly been disabled, leaving only 43 of those 64 units that may have been operational. Also, all 51 of the smaller units were disabled. *See Exhibit C* (examples).

Similarly, at the time you completed the "MW1-USA electrical measurement" chart on October 13, 2015, out of operation were all 51 of the smaller units, one of the large reactors (containing 16 units), and 17 of the 48 units in the remaining 3 large reactors. That means only 31 units were operational. In contrast, according to your February 2015 report, 111 units were operational at the beginning of the "test."

Your reports do not account for these substantial variations. There is no explanation as to how the energy output at times increased or stayed constant during periods when a substantial number of the units were inoperable and/or the average power supply into the system was decreased. There is also no explanation as to how other variables, such as the flow rate, were not impacted in an expected manner by changes in the number of operating units.

4. *System alterations on the night of February 16 or the morning of February 17.*

As reflected in the images shown in the last two exhibits, the system was altered after you and we left the location on February 16. The water level in the reservoir tank is clearly different as between (a) late in the afternoon of February 16, after you had instructed that the system be shut down, and (b) on the morning of February 17, when you continued to conduct your measurements and you collected your measurement equipment. *See Exhibit D*. Also, the pump water lines in the reactor compartment contained biofoul in the lines on the afternoon of February 16, but those lines were flushed sometime thereafter and were clean as of the morning of February 17. *See Exhibit E*. How can you opine as to your measurements of the system when the environment was altered during your measurement period?

5. *The flow of steam through the pipe to J.M. Products.*

You stated that the pressure of the steam that was available to J.M. Products (JMP) was nominally atmospheric pressure (0 kilo Pascals gauge (kPaG) or 14.7 psia). The steam passed through a stretch of insulated pipe that was at least 6 meters long before entering the JMP space. (Presumably there was additional steam pipe on the JMP side.) According to the data you have reported, the conserved mass flow rate of the system from February to November 2015 was on average 33,558 kg/day (1398 kg/h) and the temperature of the water and steam were on average 68.7° C and 102.8° C, respectively. The steam pressure was reported (for the entire period) to be 0 kPaG and the piping is DN40.

For steam to flow, a pressure differential is required to overcome the losses in the pipe. Given the foregoing, this would require that the pressure on the JMP side of the building was significantly below atmospheric (vacuum) and that the steam would flow at extraordinary velocity. But this was obviously not the situation present at the location.

Given your reported measurements, how do you account for the lack of an adequate pressure differential to provide for the flow of steam?

* * * * *

As I noted above, the questions above are not all of the questions I have from my visit to the 1 MW Plant location, but if you can address these, it would be a good start to me better understanding what you were measuring and how you were measuring it in connection with the 1 MW Plant. (Just to be clear, I am not asking you, and I do not plan to ask you, about the license agreement or whether you are an ERV under the agreement. I am trying to focus just on the test and its measurement.)

EXHIBIT 6

United States Patent and Provisional Patent Applications

US 12/736,193

US 13/420,109

US 14/262,740

US 61/818,553

US 61/819,058

US 61/821,914

US 62/060,215

Patent Cooperation Treaty Applications

PCT/US14/35588

PCT/US15/42353

PCT/IT2008/000532

Foreign Applications

Italian Patent App. No. MI2008A0629

European Patent App. No. EP 08873805.9

EXHIBIT 7

ASSIGNMENT AND ASSUMPTION OF LICENSE AGREEMENT

THIS ASSIGNMENT AND ASSUMPTION OF LICENSE AGREEMENT (this "Assignment") is made effective as of April 29, 2013, by and between **INDUSTRIAL HEAT, LLC**, a Delaware limited liability company (the "Assignor"), and **IPH INTERNATIONAL BV**, a Netherlands company (the "Assignee").

WHEREAS, the Assignor, LEONARDO CORPORATION, ANDREA ROSSI, and AMPENERGO, INC., entered into that certain License Agreement dated as of October 26, 2012, as amended by that certain First Amendment to License Agreement dated as of April 26, 2013 (as amended, the "Agreement");

WHEREAS, the Assignor desires to assign the Agreement to the Assignee and the Assignee desires to accept such assignment and to assume all obligations of the Assignor under the Agreement;

WHEREAS, the Assignee is, indirectly, a wholly-owned subsidiary of the Assignor and Section 16.7 of the Agreement permits the assignment as provided herein;

NOW, THEREFORE, in consideration of the above premises, and other good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged, the parties agree as follows:

1. Recitals and Exhibits. The Recitals set forth above are material and are incorporated into and made a part of this Assignment.
2. Assignment. The Assignor hereby transfers and assigns to the Assignee all right, title and interest of the Assignor in and to the Agreement.
3. Acceptance and Assumption. The Assignee hereby accepts the assignment of the Agreement and assumes all of Assignor's obligations under the Agreement.
4. Binding Effect. This Assignment shall inure to the benefit of, and be binding on, each of the parties hereto and their respective successors and assigns. This Assignment represents the entire agreement of the parties with respect to the subject matter hereof.
5. Counterparts. This Assignment may be executed in any number of counterparts, each of which shall be deemed an original but all of which together shall constitute one and the same instrument.
6. Governing Law. This Assignment and any claim, controversy or dispute arising under or related to this Assignment shall be governed by and construed in accordance with the laws of the State of Florida.

7. Further Assurances.

A. Assignor hereby agrees to provide to the Assignee such further assurances as may be reasonably requested by the Assignee at any time from and after the date hereof with respect to the Agreement and the assignment thereof to Assignee as provided herein, and, without limiting the foregoing, shall execute and deliver such affidavits, certificates and other instruments with respect to the Agreement as may be reasonably requested by the Assignee.

B. The Assignee hereby agrees to provide to Assignor such further assurances as may be reasonably requested by the Assignor at any time from and after the date hereof with respect to the Agreement and the assignment thereof to Assignee as provided herein, and, without limiting the foregoing, shall execute and deliver such affidavits, certificates and other instruments with respect to the Agreement as may be reasonably requested by the Assignor.

IN WITNESS WHEREOF, the Assignor and the Assignee have executed this Assignment effective the day and year first above written.

ASSIGNOR:

Industrial Heat, LLC

By: 
Thomas F. Darden
Manager

ASSIGNEE:

IPH International BV

By: IPH Management, LLC, Managing Director

By: 
Title: MANAGER

EXHIBIT 8

CERTIFICATE

The undersigned, **LEONARDO CORPORATION**, a New Hampshire corporation ("Leonardo"), and **ANDREA ROSSI** ("Rossi") each hereby certifies to **IPH INTERNATIONAL, B.V.**, an entity organized under the laws of The Netherlands (the "Company"), that the representations and warranties of Leonardo and Rossi contained in the License Agreement dated October 26, 2012, by and between Leonardo, Rossi, Industrial Heat, LLC and AmpEnergo, Inc., as amended (the "Agreement"), based on a current review of such representations and warranties, are true and correct as of the date of this Certificate, as if made on the date hereof, and further, that such representations and warranties will remain true and correct on and as of the date US \$10,000,000 is delivered to the Escrow Agent as provided in Section 3.2(b) of the Agreement. Capitalized terms used herein without definition shall have the meanings given them in the Agreement.

IN WITNESS WHEREOF, the undersigned has caused this certificate to be executed as of this 29th day of April, 2013.

LEONARDO CORPORATION

By: ANDREA ROSSI

Name: 

Title: CEO AND PRESIDENT

ROSSI



Andrea Rossi

EXHIBIT 9

>-----Original Message-----

>From: eon3333@tiscali.it

>To: Thomas F. Darden

>To: JT Vaughn

>ReplyTo: eon3333@tiscali.it

>Subject: To Tom Darden

>Sent: Apr 23, 2013 10:23 AM

>

>----Messaggio originale----

>Da: eon333@libero.it

>Data: 23/04/2013

>12.11

>A: <eon3333@tiscali.it>

>Ogg: Andrea Rossi

>

>Dear All,1- Next

>Friday April 26 I will receive the report: as agreed with the 3rd

>Independent Party I am entitled to read it before the pending

>publication, even if I have not the right to ask for modification (

>that had been foreseen because in case of a negative result I would

>have needed the time to organize a defense). The report is very good, I

>got confirmation. It will be registered and deposited in the Library of

>the Swedish Academy of Science Friday 26, pending the publication in a

>scientific magazine in May. Is an official document. I think it will

>help you investors.

>2- This morning I had a meeting with the Health

>Office of the Province of Ferrara, which has to authorize the 24 hours

>test (it is unthinkable to make it without authorization, we could be

>stopped by the police upon a phone call due to the noise of the air

>escape of the condensers, because we must dissipate the energy not

>having any possible utilization for it). We found an acceptable

>solution. He explained to me that the Italian law "DPR (Decreto del

>Presidente della Repubblica) # 551- Dec. 21 1999 requests an

>authorization for any plant that makes more than 35 kWh/h and this

>authorization takes at least 6 months. But we are advantaged, because

>LENR do not exist in the known technology, therefore when we say 35 kWh

>we say kWh consumed, because plants that produce more than the energy

>they consume "do not exist". Now, $35 \times 6 = 210 \text{ kW}$ Therefore if we can

>consume up to 35 kWh/h without authorization, this implies that in our

>LENR case I can produce up to 210 kWh/h, which is a consistent amount

>of energy. I will steal something (maybe the COP will be more). In
>this case we do not need any authorization and the amount of power is
>relevant and respects the fact to be consistent, as requested in the
>Agreement. Same thing for the Hot Cats. I will activate only 1/4 of
>the reactors, and I think it will not be a problem, since if 1/4 of the
>reactors work, there is no reason that the other won't work (unless
>they have mechanical things to repair, but the issue is not there).

>

>Warmest Regards,Andrea

>

>

>

>Invita i tuoi amici e Tiscali ti premia! Il consiglio di un amico vale più di
uno spot in TV. Per ogni nuovo abbonato 30 € di premio per te e per lui! Un
amico al mese e parli e navighi sempre gratis: <http://freelosophy.tiscali.it/>

>

EXHIBIT 11

Technical Consulting Agreement

This Technical Consulting Agreement (this "Agreement") is entered into effective as of the 1st day of September 2013 by and between:

USQL United States Quantum Leap LLC, with an address at 1331 Lincoln Road Unit 601, Miami Beach, Florida 33139 U.S.A. ("USQL")

And

Industrial Heat, LLC, with an address at c/o Paracorp Incorporated 2140 South Dupont Highway Camden, DE 19934 USA ("Industrial Heat")

(each a "Party" and collectively the "Parties").

Preamble

1. Industrial Heat's affiliate is the sole and exclusive licensee for the Americas and other territories of all intellectual property rights pertinent to the following patent applications:

- IT MI2008A000629, patent granted in Italy on April 06 2011, Patent Certificate n. 1387256
- EP 08873805.9, patent pending
- US 12/736.193; patent pending

The above mentioned patent applications are pertinent to an invention that allows the production of energy plants based on an innovative and experimental technology,

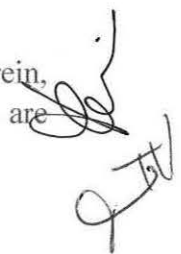
2. USQL and its professional personnel not only have a great technical and scientific competence in electronics and electromechanics and computer science, but also have gained considerable experience in producing and assembling important components of such energy plants;

3. Industrial Heat desires to engage USQL to provide services related to the manufacture and development of the above mentioned energy plants, and USQL desires to accept such engagement;

Now, therefore, in consideration of the mutual covenants and agreements set forth herein, and for other good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged, the Parties hereby agree as follows:

1. Recitals/ Exhibits

The foregoing recitals, as well as all exhibits and schedules that are attached to this Agreement are hereby included in and are made a part of this Agreement.

Handwritten signature and initials in the bottom right corner of the page.

2. Technical consulting and assistance.

USQL will supply Industrial Heat with technical consulting and assistance in order to manufacture and develop the electrical equipment and the electronic system of the above mentioned energy plants. Such services will be provided on behalf of USQL by Fulvio Fabiani, the sole member and the sole manager of USQL.

Industrial Heat, as it deems appropriate, will supply USQL with all the drawings, projects, information and knowledge about products and the production process, with the exception of the information and knowledge considered as industrial or trade secrets by Industrial Heat, in order to allow USQL to carry on its activity of technical consulting and assistance. USQL is not allowed to use any of the received information and documents for purposes not concerning this Agreement, without Industrial Heat's written authorization, and all such information and documents shall remain the sole property of Industrial Heat.

3. Independent Contractor

USQL is and shall remain an independent contractor in rendering services to Industrial Heat pursuant to this Agreement. USQL shall not be deemed an employee, partner, or a joint venturer with Industrial Heat or any of its affiliates for any purpose. USQL shall perform the services described in this Agreement in good faith and in a manner reasonably believed by USQL to be in or not opposed to the best interests of Industrial Heat. Neither USQL nor anyone acting on its behalf shall be authorized to enter into any contract on behalf of Industrial Heat. USQL or any of its affiliates shall not bind Industrial Heat or any of its affiliates in any way without prior approval by Industrial Heat. USQL and its employees, agents or other personnel shall have no claim against Industrial Heat or any of its affiliates hereunder or otherwise for employee benefits of any kind, including, without limitation, vacation pay or sick leave, health or disability benefits, unemployment insurance benefits, retirement benefits, or workers' compensation. USQL and its principal shall be solely responsible for its own income or other taxes with respect to its compensation hereunder, and Industrial Heat shall not be responsible for withholding taxes or any other amounts with respect to USQL's compensation.

4. Personnel Training.

USQL agrees to instruct and train Industrial Heat's personnel about the production systems, exercise, and maintenance of the plants. Any out of pocket expenses incurred by USQL with the prior approval of Industrial Heat and relating to such training will be reimbursed or paid for by Industrial Heat.

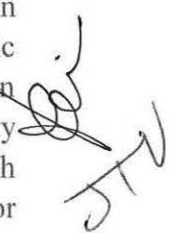
5. Industrial secrets. Confidentiality.

USQL acknowledges that during the term of its engagement by Industrial Heat, it will have access to confidential and valuable information relating to the business and affairs

Handwritten signature and initials, possibly "J. Fabiani" and "FT", are written in the right margin of the page.

of Industrial Heat and its affiliates. USQL understands that its engagement with Industrial Heat creates a relationship of confidence and trust with respect to all such confidential information, and that it is a condition of its engagement or continued engagement by Industrial Heat, and to its working on matters involving confidential information of Industrial Heat and its affiliates, that USQL enter into this Agreement. For purposes of this Agreement, the term "affiliate" shall mean, with respect to any person or entity, any other person or entity that controls, is controlled by, or is under common control with such person or entity.

During the term of its engagement by Industrial Heat and at all times thereafter, USQL agrees that it will not, and its employees and principals will not, except as permitted by the terms of this Agreement, disclose or use, either for itself or for the benefit of any third party, any confidential information relating in any way to the business and affairs of Industrial Heat or any of its affiliates. Information in any form, including any oral, written or electronically maintained information, that is not generally available to the public shall be constituted "Confidential Information" for purposes of this Agreement, which information shall include, without limitation, the fact that USQL is performing the services described in this Agreement for Industrial Heat, the location of any premises occupied by Industrial Heat, the substance of this Agreement, information relating to the business, technical, financial or other affairs of Industrial Heat or its affiliates, including, without limitation, the fact that this Agreement or any subsequent agreement exists or the terms thereof, all information relating to intellectual property, trade secrets and products of Industrial Heat or its affiliates, all information relating to pricing, financing, business structure, transactions and parties to transactions, investors, and the internal affairs and relationships of Industrial Heat or its affiliates with third parties, and all information disclosed to or received by USQL that is specifically and reasonably identified to it by Industrial Heat or any affiliate, either orally, in writing or electronically, as constituting Confidential Information hereunder or that from all relevant circumstances reasonably should be assumed by USQL to constitute confidential information, and any information that constitutes a "trade secret" of Industrial Heat or its affiliates. The provisions of this paragraph, however, shall not prevent USQL from use or disclosure of information (i) as necessary in the ordinary course of USQL's engagement by Industrial Heat, provided that USQL will not be allowed to communicate Confidential Information to third parties (including without limitation any suppliers) without Industrial Heat's prior written authorization, (ii) that is in the public domain (other than information in the public domain as a result of a violation of this Agreement by USQL), (iii) that USQL can demonstrate was acquired outside of its affiliation with Industrial Heat from a third party in rightful possession of such information and that is not prohibited from disclosing such information, or (iv) that USQL is required to disclose or produce by law or court order or pursuant to compulsory oral questions, interrogatories, requests for information or documents, deposition, subpoena, civil investigative demand or similar legal process, in which event USQL shall provide Industrial Heat with prompt notice of any request for such disclosure or production so that Industrial Heat may seek a protective order or other



appropriate remedy and/or waive USQL's compliance with the provisions of this Agreement.

6. Rights to Materials.

All Confidential Information, records, files, memoranda, reports, drawings, plans, designs, specifications, tests and results, recordings, documents and the like (together with all copies thereof), including any of the foregoing that are electronically maintained, relating to the business of Industrial Heat or the engagement of USQL pursuant to this Agreement that USQL shall use or prepare or come in contact with in the course of, or as a result of, the engagement of USQL under this Agreement shall remain the sole property of Industrial Heat or shall be deemed contracted for as a part of the services provided hereunder, as the case may be, and none of such items or materials may be reproduced or used by USQL for the benefit of any party other than Industrial Heat or one of its affiliates or for any purpose other than this Agreement. Upon termination of this Agreement or upon the prior demand of Industrial Heat, USQL shall immediately return all such items and materials (and all copies thereof, including any electronically maintained copies) to Industrial Heat and shall not thereafter cause removal thereof from Industrial Heat's premises. USQL further agrees that upon termination of its engagement or upon the prior demand of Industrial Heat, it will promptly return to Industrial Heat all items of equipment or any other property of Industrial Heat or any of its affiliates then in USQL's possession or control.

7. New Developments.

USQL further agrees that during the term of its engagement by Industrial Heat it will promptly disclose to Industrial Heat any and all improvements, inventions, developments, discoveries, innovations, systems, techniques, processes, formulas, programs and other things that may be of assistance to Industrial Heat or its affiliates, whether patentable or unpatentable, that (i) relate to the actual or demonstrably anticipated research or development by Industrial Heat or any of its affiliates, or (ii) result from any work performed by USQL for or at the request of Industrial Heat, or (iii) are developed on Industrial Heat's time or using the equipment, supplies or facilities or any Confidential Information or trade secret information of Industrial Heat, or any of its affiliates; and that are made or conceived by USQL, alone or with others, while engaged by Industrial Heat (collectively referred to herein as the "New Developments"). USQL agrees that all New Developments shall be and remain the sole and exclusive property of Industrial Heat and that it shall, upon the request of Industrial Heat, and without further compensation, but at the cost and expense of Industrial Heat, do all things reasonably necessary to insure Industrial Heat's or its affiliate's ownership of such New Developments, including without limitation the execution of any necessary documents assigning and transferring to Industrial Heat and its assigns all of USQL's rights, title and interest in and to such New Developments, and the execution of all necessary documents required to enable Industrial Heat to file and obtain patents in the United States and foreign countries on any of such New Developments. USQL agrees that its obligations pursuant to this paragraph shall

Handwritten signature and initials, possibly reading 'MS' or 'MS/17'.

continue beyond the termination or expiration of its engagement by Industrial Heat. In the event that USQL is unable or unavailable or shall unreasonably refuse to sign any lawful or necessary documents required in order for Industrial Heat to apply for and obtain a patent or patents or other intellectual property rights with respect to a New Development (including applications therefor or renewals, extensions, divisions or continuations thereof), USQL hereby irrevocably designates and appoints Industrial Heat and its duly authorized officers and agents as USQL's agents and attorneys-in-fact to act for and in USQL's behalf, and in its place and stead, to execute and file any such applications and other instruments, and to do all other lawfully permitted acts, to further the prosecution and issuance of patents or other intellectual property rights with respect to such New Developments and to vest ownership of such patents or other rights in Industrial Heat, with the same legal force and effect as if executed by USQL.

8. Duration of the Agreement.

This Agreement shall commence as of September 1, 2013 and shall continue in effect for an initial term through and including August 31, 2014 (the "Initial Term"). This Agreement shall terminate upon expiration of the Initial Term unless the parties agree in writing to extend it. Notwithstanding the foregoing, Industrial Heat may terminate this Agreement for "cause" during the Initial Term or at any time thereafter (i) immediately upon notice to USQL should USQL engage or be determined to have engaged in fraud or any act of material dishonesty, willful or criminal misconduct, or (ii) upon ten days prior notice to USQL that USQL has materially breached the Agreement, which failure or breach is not cured within the ten day notice period. Further, Industrial Heat may terminate this Agreement without "cause" during the Initial Term, provided that Industrial Heat shall pay the Contractor the balance of the Consultant Fee (as defined herein) due during the Initial Term, with such payment to be made at such times as it would have otherwise been due in accordance with the terms of this Agreement. If USQL terminates this Agreement at any time or if Industrial Heat terminates this Agreement for "cause" during the Initial Term, USQL shall, to the extent requested by Industrial Heat, promptly conclude all work then in process and Industrial Heat shall pay USQL for the balance of work performed to the date of termination in accordance with the compensation provisions hereof. Except as set forth in this paragraph, Industrial Heat shall not be obligated under this Agreement nor otherwise liable to USQL for any further payments following termination of this Agreement or for any costs, expenses, losses or damages arising out of or relating to a termination of this Agreement; as well as USQL shall not be obligated under this Agreement nor otherwise liable to Industrial Heat for any further payments following termination of this Agreement or for any costs, expenses, losses or damages arising out of or relating to a termination of this Agreement; provided, however, that nothing shall limit the liabilities or obligations of either party following termination of this Agreement that arise out of any breach of this Agreement by such party.

9. Compensation.

Industrial Heat will pay to USQL as compensation for the technical assistance and

consulting services provided during the Initial Term and in consideration of the terms of this Agreement, a sum equal to USD 126,000.00 (one hundred twenty six thousand/00 USD)(the "Consultant Fee"). Such Consultant Fee will be paid in monthly payments as provided in paragraph 8 below until expiration of the Initial Term or until the earlier termination of this Agreement as provided by paragraph 6. In addition to payment of the Consultant Fee, Industrial Heat will reimburse USQL for reasonable rent expenses incurred by USQL in connection with the rental of an apartment in the Raleigh, North Carolina area for Fulvio Fabiani, provided that Industrial Heat shall have the right to approve, in its sole discretion, any lease or rental agreement that binds USQL and requires the payments of any rents that USQL will be requesting be reimbursed by Industrial Heat.

10. Payment. Term and conditions

USQL, at the end of each month, will issue an invoice equal to USD 10,500.00 (ten thousand five hundred/00 USD), plus the monthly rent amount. The invoice will be sent by email to Industrial Heat. Industrial Heat will pay the above invoice within 15 days from receipt.

11. Nature of Engagement.

It is understood that USQL is engaged on a non-exclusive basis and that USQL shall remain free to provide services to other parties during the term hereof, provided that such other services by USQL do not unreasonably interfere with or impair USQL's ability to provide services as contemplated hereunder on a timely basis and are not competitive in any way with the activities of Industrial Heat and its affiliates, and further provided that Fulvio Fabiani shall devote substantially all of his business time to providing the services to the extent that such time is requested by Industrial Heat.

12. Notices.

Any kind of communications and notices concerning this Agreement shall be considered valid if they are transmitted by fax with confirmation of receipt, email with confirmation of receipt, or by registered post letter with confirmed delivery or by personal hand delivery with delivery confirmation signature.

The reference personnel and address for USQL are:

Fulvio Fabiani c/o USQL LLC 1331 Lincoln Road Unit 601, Miami Beach, FL 33139
USA - fulvio.fabiani@mail.com - +39 346 2440000

The reference personnel and address for Industrial Heat are:

Thomas F. Darden c/o Industrial Heat 111 East Hargett Street Ste 300, Raleigh NC 27601 USA - tdarden@industrialheat.co - +1 919 7432506

ST Vaughn svaughn@industrialheat.co 919-649-5299
Any change regarding the personnel referenced above, or to the address or to the fax

Handwritten signature and initials, possibly "FABIANI" or similar, in dark ink.

number or to the email address must be immediately communicated to the other Party and it will be considered valid on the date it is received.

13. Entire Agreement

This Agreement contains the entire agreement of the parties with respect to the subject matter contained in this Agreement and supersedes all agreements, documents or other understandings or communications heretofore made between USQL and Industrial Heat regarding the subject matter hereof.

14. Language and Applicable Law.

This Agreement has been made in the English language. All documents and communications delivered in connection therewith between the Parties shall be in the English language. This agreement shall be construed and enforced in accordance with and governed by the laws of the State of North Carolina.

15. Rights and Remedies.

The duties, obligations, rights and remedies in this Agreement shall be cumulative, and in addition to, and not in limitation of, any duties, obligations, rights and remedies otherwise imposed or available by law. No action or failure to act by Industrial Heat or USQL shall constitute a waiver of any right or duty afforded either party under this Agreement, nor shall any such action or failure to act constitute an approval of, or acquiescence in, any breach of this Agreement, except as may be specifically agreed in writing or specified herein.

16. Injunctive Relief.

USQL recognizes and agrees that its breach of the provisions of this Agreement relating to confidentiality and rights to materials may result in irreparable damage to Industrial Heat and/or its affiliates. Accordingly, should USQL at any time violate or threaten to violate any of the provisions of this Agreement relating to confidentiality or return of materials, Industrial Heat shall be entitled to all remedies available as a matter of law or equity, including, without limitation, specific performance and/or injunctive relief, to prevent or otherwise restrain a breach of such provisions.

17. Assignment.

USQL agrees that it will not assign or transfer its interest in this Agreement without the prior written consent of Industrial Heat.

[Signature page follows]

IN WITNESS WHEREOF, the parties have executed this Technical Consulting Agreement as of the day and year first above written.


Dated:

Signed, sealed and delivered by

USQL United States Quantum Leap LLC

By: 
Fulvio Fabiani – Manager

Industrial Heat LLC

By: 
~~Thomas F. Darden – Manager~~
ST Vaughn, Vice President

JOINDER

The undersigned, Fulvio Fabiani, the sole member and the sole manager of USQL United States Quantum Leap LLC (“USQL”), hereby joins in the foregoing Agreement for the purpose of agreeing to be bound by the provisions thereof relating to confidentiality, rights to materials, and new developments to the same extent as USQL is bound by such provisions. Further, the undersigned acknowledges that USQL is an independent contractor for purposes of this Agreement and that neither USQL nor the undersigned shall be deemed an employee of USQL for any purpose.

Date: 9/9/13

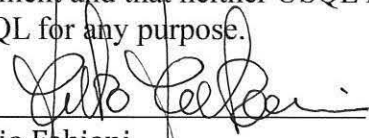

Fulvio Fabiani

EXHIBIT 12

From: **eon333@libero.it** <eon333@libero.it>

Date: Monday, September 10, 2012

Subject: I: Fwd: Fw: Our latest on the E-cat: 'Swedish investment in E-cat halted after test'

To: tdarden@cherokeefund.com, jvaughn@cherokeefund.com

Dear Tom,
mission accomplished.

With this company Hydrofusion we had agreed upon a draft to sell them IP, know how and manufacturing license for Europe but Germany, France and Italy. By our law, if you send a proposal you are engaged to accept if the proposee accepts all the conditions of the proposal. After receiving your last text at the end of August I decided to go ahead with you, therefore I had to get rid of this engagement . The only way out was to invite them to a test, ask them to bring with them their consultant. I made the test abort, maintaining the temperatures below the starting limit. Then I made up some discussions, I said they made a wrong test, they escaped, I am free.

We did not have damages of image, because, knowing what was on the road, I had made before their test a disclaimer, saying that the Hot temperature E-Cat was just a prototype, still under test and validation and subject to modification, thing that I am repeating everywhere. Now I am publishing that I am surprised of all this ado for nothing, since I already said that for the Hot Cat we needed more tests before saying it is a product ready for the market. At this point we can organize with Cherokee a world strategy, since all the other licensees are just commercial: for example in Africa we will have just to pay a roialty to the local agent upon our sale price , but they all are very good and they can sell either energy or plants. Nobody has rights upon the IP, know how, manufacturing and so on.

Warmest Regards,
Andrea

EXHIBIT 13

From: eon333@libero.it <eon333@libero.it>
Date: Mon, Sep 10, 2012 at 6:50 PM
Subject: R: Re: Andrea Rossi
To: tdarden@cherokeefund.com, jimcompton@mindspring.com, rickbauman14u@yahoo.com,
jvaughn@cherokeefund.com
Cc: ccassarino@lti-global.com

Thank you, Tom: on the 23rd I will return with the agreement signed by me, probably the same text you sent me, we will just adjust some particulars.

I got rid of the European big clicense I had to sign. I made a masterpiece making them go voluntarily...I will explain personally.

About the commercial licensees: Cherokee will direct them , I made up a very good organization that can be useful.

Enjoy Paris!

Warmest Regards,

Andrea

-----Messaggio originale-----

Da: tdarden@cherokeefund.com

Data: 10/09/2012 23.37

A: <eon333@libero.it>, <jimcompton@mindspring.com>, <rickbauman14u@yahoo.com>, <jvaughn@cherokeefund.com>

Cc: <ccassarino@lti-global.com>

Ogg: Re: Andrea Rossi

Good to hear from you. I am in France, but I would prefer to be in Bologna right now talking business, that's for sure.

I am glad JT Vaughn was able to come to your conference. I have not seen the online reports but will try to get an internet connection to do so.

I look forward to hearing more and to seeing you when you return. We look forward to the growth and development of your great technology.

Thomas F Darden

Cherokee

www.cherokeefund.com

919 743 2506 w

919 522 4095 c

From: eon333@libero.it <eon333@libero.it>

To: tdarden@cherokeefund.com <tdarden@cherokeefund.com>;

jimcompton@mindspring.com <jimcompton@mindspring.com>;

rickbauman14u@yahoo.com <rickbauman14u@yahoo.com>;

jvaughn@cherokeefund.com <jvaughn@cherokeefund.com>

Cc: ccassarino@lti-global.com <ccassarino@lti-global.com>

Sent: Mon Sep 10 13:36:58 2012

Subject: Andrea Rossi

Dear Tom:

I am back from Zurich.

Before contacting your attorneys we want to complete the study of the document you sent

. I want to tell you that so far we have not changements to make. It is good.

For this reason I have put on hold everything else and I am downplaying all the talks here.

I explained well to John in Zurich what I am doing.

On the 22nd I will be in Miami, so that we could make a meeting immediately after to initial a final draft.

The first plant could be put in Africa do desalinate water: wecould put it there to work for free, making good making well: millions of units could be sold after that. We have a new technology to desalinate very cheap using the 1 MW E-Cat.

Warmest Regards,

Andrea

p.s. did you see Zurich on the Internet?

EXHIBIT 15

06/27/2014 14:38 954755230

Division of Corporations

TITLE

PA

Page 1 of 2

P/4000056117

Florida Department of State
Division of Corporations
Electronic Filing Cover Sheet

Note: Please print this page and use it as a cover sheet. Type the fax audit number (shown below) on the top and bottom of all pages of the document.

(((H14000155256 3)))



H140001552563ABC5

Note: DO NOT hit the REFRESH/RELOAD button on your browser from this page. Doing so will generate another cover sheet.

To:

Division of Corporations
Fax Number : (850) 617-6381

From:

Account Name : LAW OFFICE OF HENRY W. JOHNSON
Account Number : I20130000002
Phone : (561) 672-7264
Fax Number : (561) 235-5416

SECRETARY OF STATE
TALLAHASSEE, FLORIDA

14 JUN 27 AM 11:25

FILED

****Enter the email address for this business entity to be used for future annual report mailings. Enter only one email address please.****

Email Address: _____

FLORIDA PROFIT/NON PROFIT CORPORATION

J.M. Chemical Products, Inc.

Certificate of Status	0
Certified Copy	0
Page Count	01
Estimated Charge	\$70.00

SECRETARY OF STATE
TALLAHASSEE, FLORIDA

14 JUN 27 PM 3:23

FILED

00

Handwritten signature and date: 06/30/14

Electronic Filing Menu

Corporate Filing Menu

Help

06/27/2014 14:33

9547552430

NOVATITLE

PAGE 02

(((B14000155256 3)))

**ARTICLES OF INCORPORATION
OF
J.M. CHEMICAL PRODUCTS, INC.**

ARTICLE I. NAME

The name of this corporation is J.M. Chemical Products, Inc.

ARTICLE II. DURATION

This corporation shall have perpetual existence commencing upon the filing of these Articles.

ARTICLE III. PURPOSE

This corporation is organized for the purpose of transacting any or all lawful business.

ARTICLE IV. CAPITAL STOCK

This corporation is authorized to issue 1,000 shares (\$1.00) par value common stock which shall be designated "Common Shares."

ARTICLE V. PRE-EMPTIVE RIGHTS

The shareholders of the corporation shall have no pre-emptive right to acquire unissued or treasury shares of the corporation.

ARTICLE VI. PRINCIPAL OFFICE

The principal place of business/mailling address is: 7900 Glades Road, Suite 530, Boca Raton, Florida 33434.

ARTICLE VII. REGISTERED AGENT

The name and street address of the initial registered office of this corporation is Henry W. Johnson, 7900 Glades Road, Suite 530, Boca Raton, Florida 33434.

ARTICLE VIII. INITIAL DIRECTORS/OFFICERS

The names and addresses of the members of the initial Board of Directors and officers of this corporation are:

NAME

ADDRESS

(((B14000155256 3)))

06/27/2014 14:33 9547552430

NOVATITLE

PAGE 03

H14000155256 3

D/P/S/T Henry W. Johnson 7900 Glades Road, Suite 530, Boca Raton, Florida 33434

ARTICLE IX. INCORPORATOR

The name and address of the incorporator is:

NAME

ADDRESS

Henry W. Johnson 7900 Glades Road, Suite 530, Boca Raton, Florida 33434

ARTICLE X. INDEMNIFICATION


The corporation shall indemnify any officer or director, or any former officer or director, to the full extent permitted by law.

ARTICLE XI. AMENDMENT

This corporation reserves the right to amend or repeal any provision contained in these Articles of Incorporation, or any amendment hereto; and any right conferred upon the shareholders is subject to this reservation.

ACCEPTANCE OF REGISTERED AGENT

Having been named as registered agent to accept service of process for the above stated corporation at the place designated in this certificate, I am familiar with and accept the appointment as registered agent and agree to act in this capacity. I submit this document and affirm that the facts stated herein are true. I am aware that the false information submitted in a document to the Department of state constitutes a third degree felony as provided for in s817.155, F.S.


Henry W. Johnson, Registered Agent
Incorporator

7/24/2014

FILED
14 JUN 27 AM 11:20
SECRETARY OF STATE
TALLAHASSEE, FLORIDA

EXHIBIT 16

Sent: Saturday, July 05, 2014 at 10:36 PM

From: "Andrea Rossi" <ar.123@mail.com>

To: "Tom Darden" <tdarden@industrialheat.co>, "Joe Pike" <jpike@evofem.com>, "John Mazzarino" <jmazzarino@industrialheat.co>, "JT Vaughn" <jvaughn@industrialheat.co>, "Elizabeth Darden Wooten" <edarden@gmail.com>, "T. Barker Dameron" <tbdameron@gmail.com>

Subject: Andrea Rossi- next important step

Dear All:

In the incoming meeting we will have next week, please allow me to encourage you to take a decision regarding where to put at work our 1 MW plant. I really and strongly hope you will consider the solution I found, to rent it to JM, in its factory in Florida where they will use it to process their chemical products. Please think carefully before losing them. They are positive to us, but in September must start and they must know asap if they have to use our plant or provide otherwise. This solution will:

1- allow to Industrial Heat to say to the Investors that they are getting 360,000 dollars per year of rental, with a payback of a plant like this, whose construction cost is 200,000 \$, in less than 6 month

2- allow to your Customer-Investors-Visitors to hear from a real Customer that he is making money with our plant

3- allow us to start in September the operation of the plant, with no further loss of time

4- allow us not to expose the know how, since the maintainance of the plant is made by us and the plant remains our property: a rental is not a sale

5- allow us to make all the Authorities make all the measurements necessary to get the Authorizations for the next plants

6- allow you to get orders to supply for rent thousands of plants

7- allow the plant work for 24 hours per day for 360 days per year, while if used as a room heater it could work only 4 months, not per 24 hours per day, with obvious loss of profit.

Your proposal to put the plant in a factory owned by yourself at least until recently is dramatically less convincing.

Let me do this and I will make a masterpiece (half masterpiece has already been done finding the Customer as a Chemical Industry and getting the authorization from the Florida State Radiation Control Office).

Fulvio is completing the control system, made by 110 computers interconnected. Also that is a masterpiece.

Warmest Regards to all,
Andrea

EXHIBIT 17

Term Sheet

The parties to this Term Sheet are Industrial Heat, LLC ("IH"); JM Chemical Products, Inc. ("JMC"), the operator of a Miami production facility; and Leonardo Corporation ("Leonardo").

1. Industrial Heat, LLC, directly or through its affiliates, owns a 1 MW E-Cat steam plant (the "1 MW Plant") built by affiliates of Leonardo in Italy in 2013.
2. JMC operates a production facility in Miami, FL, which requires low temperature steam.
3. Leonardo has technical knowledge about the operation and maintenance of the 1 MW Plant.
4. IH intends to make available to JMC the 1 MW plant for a period of 2 years.
5. Leonardo will assist in the installation of the 1 MW Plant at the Miami JMC facility, at no cost to JMC or IH.
6. JMC will pay rent of \$1000 per day to IH or its designee, monthly in arrears, once the 1 MW plant is installed in their facility and operating at a capacity of 1 MW. However, if the plant provides less than 1 MW of thermal energy, the rental rate will be reduced proportionally. If the plant produces more than 1 MW, there will be no increase in the rental rate.
7. IH will provide all maintenance on the 1 MW Plant during the 2 year rental period.
8. Dr. Andrea Rossi of Leonardo Corp will be responsible for the operation of the 1 MW Plant, assisted by Eng. Fulvio Fabiani and any others designated by IH. There will be no additional cost to JMC or IH for these services.
9. The personnel of JMC will not have access to the inside of the 1 MW Plant or to information about how the 1 MW Plant operates, which are trade secrets of Leonardo and IH.
10. If the 1 MW Plant fails to operate, rent will be reduced proportional to the time that the 1 MW Plant fails to operate, unless the failure is caused by some other party or reason besides IH or Leonardo. If the 1 MW Plant fails to operate for reasons which are not controlled by IH or Leonardo, rent will not be reduced. By way of example, if electrical power is not furnished to the plant, and as a result it fails to operate, rent will be owed nonetheless.
11. If the 1 MW Plant fails to operate for any reason, JMC will not be paid any consequential damages or costs and IH will have the option to terminate the rental agreement and pick up the 1mW Plant.
12. JMC will provide reasonable insurance covering the cost of any damage caused by the 1 MW Plant, naming IH and Leonardo as additional insureds.
13. IH will be allowed to visit the 1 MW Plant at any time, with customers or with IH personnel.
14. IH may provide whatever security, monitoring and control measures it deems appropriate to protect and monitor the 1 MW Plant and related equipment.
15. IH will continue to own the 1 MW Plant and JMC will not have any right to buy or retain the plant. Upon expiration of the rental period, or earlier termination if there is a

default under the rental agreement provided for above, IH may pick up the 1 MW Plant and/or exercise any other rights under this Term Sheet or available by law.

16. JMC will not encumber the 1 MW Plant with any lien or obligation to any third party.
17. IH or Leonardo will furnish to JMC a letter from the Healthcare Office of Miami allowing the operation of the 1 MW Plant.
18. IH and Leonardo will be responsible for their personnel inside the factory of JMC, and JMC will be responsible for their personnel inside their factory.
19. JMC will keep records of the operation of the 1mW Plant as reasonably requested by Leonardo or IH and will provide copies of such records to Leonardo and IH upon request.
20. The Confidentiality Agreement entered into as of July 28th, 2014, by and between IH and JMC shall continue in full force and effect. JMC agrees that it will not make any public announcements regarding the 1 MW Plant unless first approved by IH.

This term sheet is executed effective as of August 13th, 2014 and is binding upon the parties hereto unless and until modified by a subsequent written agreement executed by the parties.

INDUSTRIAL HEAT, LLC

By: [Signature]

Name: J.T. Vaughan

Title: Vice President

LEONARDO CORPORATION

By: [Signature]

Name: ANDREA ROSSI

Title: CEO

JM CHEMICAL PRODUCTS, INC.

By: [Signature]

Name: Henry W. Johnson

Title: President

EXHIBIT 18

J.M. Products, Inc.
“Advanced Derivatives of Johnson Matthew Platinum Sponges”
7861 46TH STREET
DORAL, FLORIDA 33166

HENRY W. JOHNSON
<mailto:hjohnson@hwjlaw.net>

TELEPHONE (786)631-4676
TELECOPIER (786)631-4741

July 1, 2015

Industrial Heat
8025 Triangle Drive
Raleigh, NC 27617

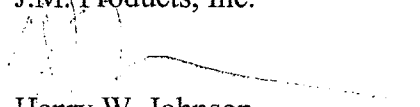
Attention: J.T. Vaughn
Vice President

Dear Mr. Vaughn:

During the month of June in our Doral factory we received from your plant the amount of energy of 1 MWh/h, for a total of 624 MWh for 26 days, while for 4 days we received 750 kWh/h, for a total of 72 MWh Please forward your invoice for the agreed daily amount of \$1,000.00 per day for 26 days = \$26,000.00 plus \$750/day for 4 days=\$3,000.00, for a total of \$29,000.00.

Sincerely,

J.M. Products, Inc.


Henry W. Johnson
President

HWJ:ck

J.M. Products, Inc.
7861 46TH STREET
DORAL, FLORIDA 33166

HENRY W. JOHNSON
mailto:hjohnson@hwjlaw.net

TELEPHONE (786)631-4676
TELECOPIER (786)631-4741

August 1, 2015

Industrial Heat
8025 Triangle Drive
Raleigh, NC 27617

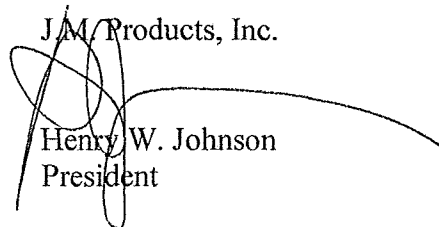
Attention: J.T. Vaughn
Vice President

Dear Mr. Vaughn:

During the month of July in our Doral factory we received from your plant the amount of energy of 1 MWh/h, for a total of 624 MWh for 26 days, while for 4 days we received 750 kWh/h, for a total of 72 MWh. Please forward your invoice for the agreed daily amount of \$1,000.00 per day for 26 days = \$26,000.00 \$ plus \$750/day for 4 days=\$3,000.00, for a total of \$29,000.00.

Sincerely,

J.M. Products, Inc.



Henry W. Johnson
President

HWJ:ck

J.M. Products, Inc.
7861 46TH STREET
DORAL, FLORIDA 33166

HENRY W. JOHNSON
mailto:hjohnson@hwjlaw.net

TELEPHONE (786)631-4676
TELECOPIER (786)631-4741

October 12, 2015

Industrial Heat
8025 Triangle Drive
Raleigh, NC 27617

Attention: J.T. Vaughn
Vice President

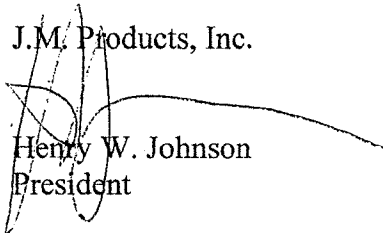
Dear Mr. Vaughn:

During the month of September in our Doral factory we received from your plant the amount of energy of:

15 days @ 1 MWh/h
15 days@ .75 MWh/h

Sincerely, ,

J.M. Products, Inc.


Henry W. Johnson
President

HWJ:ck

J.M. Products, Inc.
7861 46TH STREET
DORAL, FLORIDA 33166

HENRY W. JOHNSON
mailto:hjohnson@hwjlaw.net

TELEPHONE (786)631-4676
TELECOPIER (786)631-4741

September 8, 2015

Industrial Heat
8025 Triangle Drive
Raleigh, NC 27617

Attention: J.T. Vaughn
Vice President

Dear Mr. Vaughn:

During the month of August in our Doral factory we received from your plant the amount of energy of:

15 days @ 1 MWh/h
16 days @ .75 MWh/h

Please invoice to us as follows:

\$ 1,000.00 x 15, total	\$ 15,000.00
\$ 750.00 x 16, total	\$ 12,000.00
Total amount:	\$ 27,000.00

Sincerely,

J.M. Products, Inc.

Henry W. Johnson
President

HWJ:ck

J.M. Products, Inc.

7861 46TH STREET
DORAL, FLORIDA 33166

HENRY W. JOHNSON
<mailto:hjohnson@hwjlaw.net>

TELEPHONE (786)631-4676
TELECOPIER (786)631-4741

January 4, 2016

Industrial Heat
8025 Triangle Drive
Raleigh, NC 27617

Attention: J.T. Vaughn
Vice President

Dear Mr. Vaughn:

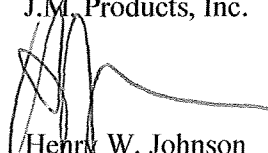
During the month of December in our Doral factory we received from your plant the amount of energy of:

20 days @ 1 Mwh/h, 24 hours /day

11 days @ 750 kWh/h, 24 hours/day (upon our request the power has been reduced due to our technical problems)

Sincerely,

J.M. Products, Inc.



Henry W. Johnson
President

HWJ:ck

EXHIBIT 19

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

From: **eon333@libero.it** <eon333@libero.it>
Date: Mon, Jul 13, 2015 at 12:26 PM
Subject: R: Re: Andrea Rossi
To: jvaughn@industrialheat.co

Hi, JT!

OK for the address to send from now on the patent papers.

About the meeting of Tuesday, you obviously can come when you want, while Joe Murray cannot enter in the factory of JM because, as I have explained to Tom during the visit with Brian Mc Laughlin, I do not allow anybody, except for the personnel already reciprocally authorized, to approach the plant before the tests on course will have been completed.

Warm Regards,
Andrea Rossi

----Messaggio originale----

Da: jvaughn@industrialheat.co
Data: 13/07/2015 15.10
A: "eon333@libero.it"<eon333@libero.it>
Cc: "Trista Balmer"<tbalmer@industrialheat.co>
Ogg: Re: Andrea Rossi

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, eon333@libero.it <eon333@libero.it> wrote:
Dear Tista, JT:

Please find attached the invoice # 29-2015.
Warmest Regards,
Andrea

--

JT Vaughn
Industrial Heat
jvaughn@industrialheat.co

THIS ELECTRONIC TRANSMISSION IS DIRECTED TO ITS INTENDED RECIPIENT ONLY AND MAY CONTAIN INFORMATION THAT IS PROPRIETARY AND CONFIDENTIAL. If you are not the intended recipient, you are hereby notified that any use, disclosure, distribution or copying of this communication or any attachment is strictly prohibited. If you have received this electronic transmission in error, please delete it from your system without copying it, and notify the sender immediately by reply e-mail or by calling 919.743.5724. Thank you.

EXHIBIT 20

J. M. Products, Inc



James A. Bass

Director of Engineering

7861 N. W. 46th St
Doral, Florida 33166
786-631-4676

EXHIBIT 21



Ecat final documentation

M.Eng. Fulvio Fabiani

to:

JT Vaughn

02/23/2016 10:28 AM

Cc:

tdarden

Hide Details

From: "M.Eng. Fulvio Fabiani" <fulvio.fabiani@mail.com>

To: "JT Vaughn" <jvaughn@industrialheat.co>

Cc: tdarden <tdarden@industrialheat.co>

History: This message has been forwarded.

Dear JT (and Dear Tom who reads us in copy),
finally after a year of stress I have slept a full weekend (YEAAAAHHHH)

I wanted to let you know the schedule of how to proceed for the next days.

First step: Condensation of digital data for not distracting precise analysis.

At the end I will send you a excel file with all electrical and thermal data of the system throughout the period test.

This step will keep me busy until approximately the first week of March 2016.

Then I will work on my official report to bring to light all the flaws and functional deficiencies of the system in order to have sufficient information to replicate a system with lower costs and with greater reliability.

In that report, the plant stop periods (total or partial) will be also mentioned and the reasons therefor.

This phase will use my time to the end of March 2016.

At the same time I believe it is appropriate to clarify if you are interested in the continuation of our counseling relationship maybe exchanging a draft of a contract renewal.

I am convinced that we will be able to find a point of mutual interest and useful to meet together the future development of the project.

Best regards.

M.Eng. Fulvio Fabiani

+1(919)812-7863



Fw: Re: February 2016 invoice

M.Eng. Fulvio Fabiani

to:

JT Vaughn, tdarden

04/06/2016 01:30 PM

Cc:

"Wendy Carter Industrial Heat NC"

Hide Details

From: "M.Eng. Fulvio Fabiani" <fulvio.fabiani@mail.com>

To: "JT Vaughn" <jvaughn@industrialheat.co>, tdarden <tdarden@industrialheat.co>

Cc: "Wendy Carter Industrial Heat NC" <wcarter@industrialheat.co>

2 Attachments



Industrial Heat - TCA with USQL 2016 april 2016.odt USQL 03 2016 - March Invoice to IH.pdf

Hello JT (and TOM),

thanks for your permission via sms.

I prepare the raw data for the official delivery as soon as possible.

After the certified delivery of RAW DATA, I will format all the digital media eliminating any sensitive technical information concerning our business relationship as stipulated in the contract expired April 1, 2016.

Attached to this email, copy of the March 2016 invoice relating to the contract mentioned above, I ask the favor of authorizing the payment as soon as possible.

I also attach my proposal to renew the contract that I would be happy to discuss with you and/or Tom.

Have a nice day.

Fulvio Fabiani
C.E.O. of USQL LLC
+1(919)8127863



Fulvio Fabiani to: jvaughn

04/14/2016 08:34 PM

Cc: tdarden

Dear JT (and Tom in CC),

I am collecting the raw data you requested me and I will provide asap to send them to you.

In the meantime, please be informed that my invoice in March has not been processed and I did not receive any payment.

As per your proposal to talk sometime about the prolongement of the Agreement between the two of us and to continue on a monthly basis, I am not fully convinced that I would be able to perform my job in the best way I can do - which is the only way I can work.

Therefore, I would kindly ask you to consider the possibility to agree a time limited agreement that would make me comfortable in performing my activities in the interest of your company.

Thank you. Best regards,

Fulvio Fabiani
C.E.O. of USQL LLC



Check in hand

Joseph Murray

to:

Fulvio Fabiani, Fulvio Fabiani

04/26/2016 11:53 AM

Hide Details

From: Joseph Murray <jmurray@industrialheat.co>

To: Fulvio Fabiani <fulviofabiani@mail.com>, Fulvio Fabiani <fulvio.fabiani@mail.com>

Fulvio,

I understand from Barry that you are in Canada. I have your check in hand for delivery. I am more than happy to meet you somewhere and give you the check and you can give me the final report and the IH raw data. Just to make sure we are sync'ed up: You committed to delivering a final report from your efforts at the plan at the end of March-2016. You made that commitment when we met we met in March. In addition you said you would provide us with the raw data that belongs to IH. Furthermore, you indicated that you had measurements from the flow meter that you had taken from time to time.

Several weeks ago you agreed to give me the final report and the raw data once JT or Tom approved. We both received approval from JT.

I would like to give you this check as soon as possible. I am happy to fly to Miami to give you the check and to catch up on outstanding issues.

Note that it is unnecessary to use Barry as a go between. I have sent you text messages and emails. Feel free to reply.

Please advise.

Joe.

--

Joe Murray

Industrial Heat

p: 919.670.2771

e: jmurray@industrialheat.co

This communication and any attachments may contain confidential information. All unauthorized use, disclosure or distribution is prohibited. If you are not the intended recipient, please notify infosecurity@industrialheat.co immediately and destroy all copies of this communication. Thank you.



Status update

Joseph Murray

to:

Fulvio Fabiani, Fulvio Fabiani

05/16/2016 04:29 PM

Hide Details

From: Joseph Murray <jmurray@industrialheat.co>

To: Fulvio Fabiani <fulviofabiani@mail.com>, Fulvio Fabiani <fulvio.fabiani@mail.com>

Fulvio:

I still have the check made out to US Quantum Leap. If you have the raw data and your final report, I am happy to meet with you somewhere to exchange the check for the data and final report. Or if you would prefer, you can send me the data and final report, and I will that same day FedEx to you the check at whatever address you provide. But I need the data and final report in order to release the check.

Thanks,

Joe .

--

Joe Murray

Industrial Heat

p: 919.670.2771

e: jmurray@industrialheat.co

This communication and any attachments may contain confidential information. All unauthorized use, disclosure or distribution is prohibited. If you are not the intended recipient, please notify infosecurity@industrialheat.co immediately and destroy all copies of this communication. Thank you.

EXHIBIT 22

On the Nuclear Mechanisms Underlying the Heat Production by the E-Cat

Norman D. Cook¹ and Andrea Rossi²

1. Department of Informatics, Kansai University, Osaka, 1095-569, Japan

2. Leonardo Corporation, Miami Beach, Florida, 33139, USA

We discuss the isotopic abundances found in the E-Cat reactor with regard to the nuclear mechanisms responsible for excess heat. We argue that a major source of energy is a reaction between the first excited-state of Li-7 and a proton, followed by the breakdown of Be-8 into two alphas with high kinetic energy, but without gamma radiation. The unusual property of the Li-7 isotope that allows this reaction is similar to the property that underlies the Mossbauer effect: the presence of unusually low-lying excited states in stable, odd-Z and/or odd-N nuclei. We use the lattice version of the independent-particle model (IPM) of nuclear theory to show how the geometrical structure of isotopes indicate nuclear reactions that are not predicted in the conventional version of the IPM. Finally, we speculate on similar mechanisms that may be involved in other low-energy nuclear reactions (LENR).

PACS numbers: 21. Nuclear structure 27.40.+z Properties of specific nuclei $1 < A < 64$

1 Introduction

The checkered history of low-energy nuclear reaction (LENR) research remains highly controversial. It includes disputed claims of both experimental successes and failures in both Nickel and Palladium systems. Reported results and theoretical models are far too diverse to allow definitive conclusions to be drawn, but Storms [1, 2] has summarized the overwhelming consensus that nuclear effects have been obtained in experimental set-ups where conventional theory predicts the total absence of nuclear involvement. While further empirical work remains a high priority, a remaining theoretical task is to demonstrate how the published data on heat production and isotopic transmutations are consistent with the major themes of nuclear physics, as established over the past century.

In the latest empirical test of Andrea Rossi's invention, known as the E-Cat, significant excess heat (a ratio of output/input energy in excess of 3.0) over the course of one

month was found [3]. For technological exploitation, it may be sufficient to mimic the materials and protocols that have made that possible (e.g., Parkhomov [4]), but the huge diversity of conditions that have been reported in the "cold fusion" literature for 26 years suggest that there may exist general LENR mechanisms that have not yet been identified. Although progress has been made in defining the solid-state, chemical and electromagnetic field properties of the nuclear active environment (NAE), the specifically *nuclear* aspects of the NAE have not generally been addressed. Here, we argue that femtometer-level LENR can occur in isotopes with low-lying excited-states, provided that an appropriate, Angstrom-level molecular environment has been created.

In the present study, we focus on recent findings of nuclear transmutations concerning Lithium isotopes [3] in light of the lattice version [5] of the independent-particle model (IPM) of the nucleus. Specifically, after brief review of the well-established IPM, we consider details of the substructure of the ${}^7_3\text{Li}_4$

and ${}^8\text{Be}_4$ isotopes that allow for the generation of alpha particles at kinetic energies well beyond what could be produced solely through chemical reactions.

2 Methods

2.1 Theory: The Independent-Particle Structure of Nuclei

For more than six decades, it has been known that many nuclear properties can be described in terms of the simple summation of the properties of the constituent protons and neutrons. In the 1930s, this theoretical perspective was rejected by Niels Bohr, who favored a “collective” view of nuclei, but the shell model assumption of spin-orbit coupling in the early 1950s proved to be a major theoretical success that established the “independent-particle” approach as the central paradigm of nuclear structure theory.

Most importantly, the IPM description of nuclear states allowed for a coherent explanation of experimentally observed spins and parities ($J\pi$) (and, more approximately, magnetic moments, μ) as the summation of the $j\pi$ and μ of any unpaired protons and neutrons. Subsequently, the ground-state spin and parity of more than 2800 relatively-stable nuclear isotopes and, most impressively, the nearly half-million excited-states of those isotopes, as tabulated in the *Firestone Table of Isotopes* (1996) [6], have been classified in the IPM. Arguably, it is this undisputed success of the IPM that has led many nuclear physicists to conclude that LENR phenomena are unlikely to be real, insofar as they are not consistent with the established principles of nuclear theory. As discussed below, we have found that the theoretical framework provided by the IPM is, on the contrary, essential for explaining the transmutations reported to occur in the E-Cat.

The early mathematical development of the IPM was undertaken by Eugene Wigner [7] in the 1930s, but the IPM did not become the dominant model of nuclear structure until the early 1950s, with the emergence of the shell model [8]. In fact, Wigner and the

inventors of the shell model shared the Nobel Prize in Physics in 1963, and their combined insights gave nuclear structure theory a coherent quantum mechanical basis. The bold assumption of the shell model was that there occurs a coupling between quantum numbers, l and s , to produce an **observable** total angular momentum, j ($=l \pm s$). Inherent to that assumption, however, was the highly **unrealistic** notion that “point” nucleons “orbit” freely in the nuclear interior and do not interact with other nucleons (in first approximation) that as orbiting within the nuclear potential well. Similar assumptions had also been made in the still earlier Fermi gas model of the nucleus, but were eventually rejected because of the theoretical successes of the liquid-drop model (LDM) concerning nuclear binding energies, radii, fission phenomena, etc. The LDM, in turn, was based upon **realistic** assumptions about the nuclear interior: electrostatic and magnetic RMS radii of protons and neutrons of about 0.85 fm [9], a nuclear core density of 0.17 nucleons/fm³ (implying a nearest-neighbor internucleon distance of only 2.0 fm) and the **non-orbiting** of nucleons – all of which argued strongly **against** a diffuse nuclear “gas” and **for** a dense nuclear “liquid”.

The inherent contradictions between the gaseous-phase IPM and the liquid-phase LDM are of course summarized in most nuclear textbooks, but an interesting blend of those two competing models was first developed in the 1970s in the form of a lattice model of nuclear structure (the history of which is discussed in ref. [5]). The lattice model (a “frozen liquid-drop”) has most of the properties of the traditional LDM, but, when nuclei are built around a central tetrahedron of four nucleons, the lattice shows the remarkable property of reproducing the correct sequence and occupancy of all of the **n**-shells of the shell model as triaxially-symmetrical (spherical) lattice structures. Moreover, the **j**-subshells within the **n**-shells of the shell model emerge as cylindrical structures and the **m**-subshells arise as conical substructures – all in the same sequence and with the same occupancy of protons and

neutrons as known from the conventional IPM.

Although various aspects of the mathematical identity between the shell and lattice models have frequently been published in the physics literature, the lattice model itself has been dismissed as a “lucky” reproduction of the symmetries of the shell model and has had little impact on nuclear theorizing, in general. The fact remains, however, that the lattice and gaseous-phase versions of the IPM reproduce the same patterns of *observable* spin and

parity ($J\pi$) values based upon very different assumptions concerning the “point” or “space-occupying” structure of the nucleons themselves. Here, we consider the lattice IPM to be a realistic alternative to the gaseous-phase IPM, and elaborate on its implications in relation to LENR phenomena.

The quantal properties in the lattice model are defined in Eqs. (1-6), and are illustrated in Figure 1. Related theoretical arguments have been published since the 1970s, and full details are available online [5].

$$n = (|x| + |y| + |z| - 3) / 2 \quad (\text{Eq. 1})$$

$$l = (|x| + |y|) / 2 \quad (\text{Eq. 2})$$

$$j = (|x| + |y| - 1) / 2 \quad (\text{Eq. 3})$$

$$m = |y| * (-1)^{(x-1)/2} / 2 \quad (\text{Eq. 4})$$

$$s = (-1)^{(x-1)/2} / 2 \quad (\text{Eq. 5})$$

$$i = (-1)^{(z-1)/2} \quad (\text{Eq. 6})$$

The significance of the “quantal geometry” (Eqs. 1-6) (Figure 1) can be simply stated: every unique grid site in the lattice corresponds to a unique set of nucleon quantum numbers, the sum of which is

identical to that produced in the conventional IPM. Conversely, knowing the quantum characteristics of individual nucleons, their positions (Cartesian coordinates) in the lattice can be calculated, as shown in Eqs. (7-9).

$$x = 2ml(-1)^{(m-1)/2} \quad (\text{Eq. 7})$$

$$y = (2j+1-|x|)(-1)^{(i/2+j+m+1)/2} \quad (\text{Eq. 8})$$

$$z = (2n-3+|x|-|y|)(-1)^{(i/2+n+j+1)} \quad (\text{Eq. 9})$$

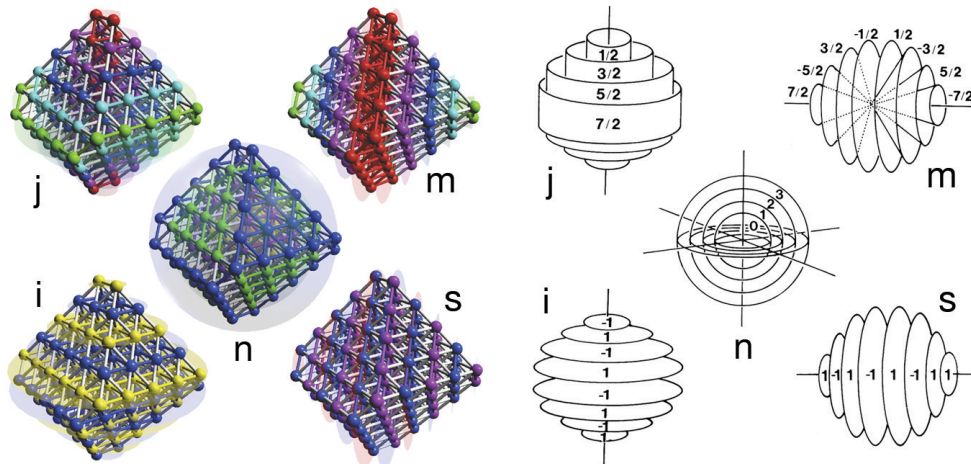


Figure 1: The geometry of nuclear quantum numbers in the lattice representation of the IPM.

A simple example of the identity between IPM quantal features and lattice symmetries is illustrated in Figure 2 for the ground-state of $^{15}_7\text{N}_8$. On the left is shown the build-up of protons and neutrons in a

conventional tabulation of IPM states in relation to the quantum numbers. On the right is shown the corresponding lattice structure for those 15 nucleons. Note that the geometrical configuration of neutrons (blue)

and protons (yellow) is given explicitly by the lattice definitions of the quantum numbers. In other words, the configuration

of nucleons in the lattice IPM is determined by the quantum characteristics of the given isotope's nucleons.

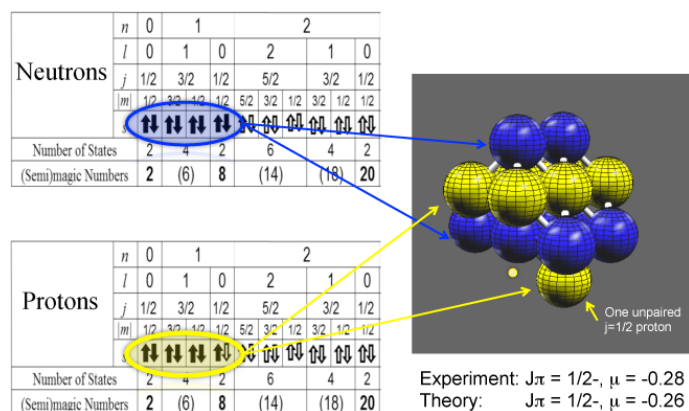


Figure 2: The IPM quantal states of the 8 neutrons and 7 protons of $^{15}_7\text{N}_8$ (the filled arrows on the left) and their lattice positions (right), as determined from Eqs. (1-6). The unpaired proton is responsible for the spin/parity and magnetic moment predictions of the IPM; the lone unfilled proton site $(-1, -1, -3)$ in the second n -shell is shown as a dot.

In the same way that there is a precise identity between IPM states and lattice configurations for all ground-state nuclei, excited-states have corresponding lattice

structures whose spins/parities are identical to those measured experimentally. For example, the nine lowest-lying states of $^{15}_7\text{N}_8$ are shown in Figure 3.

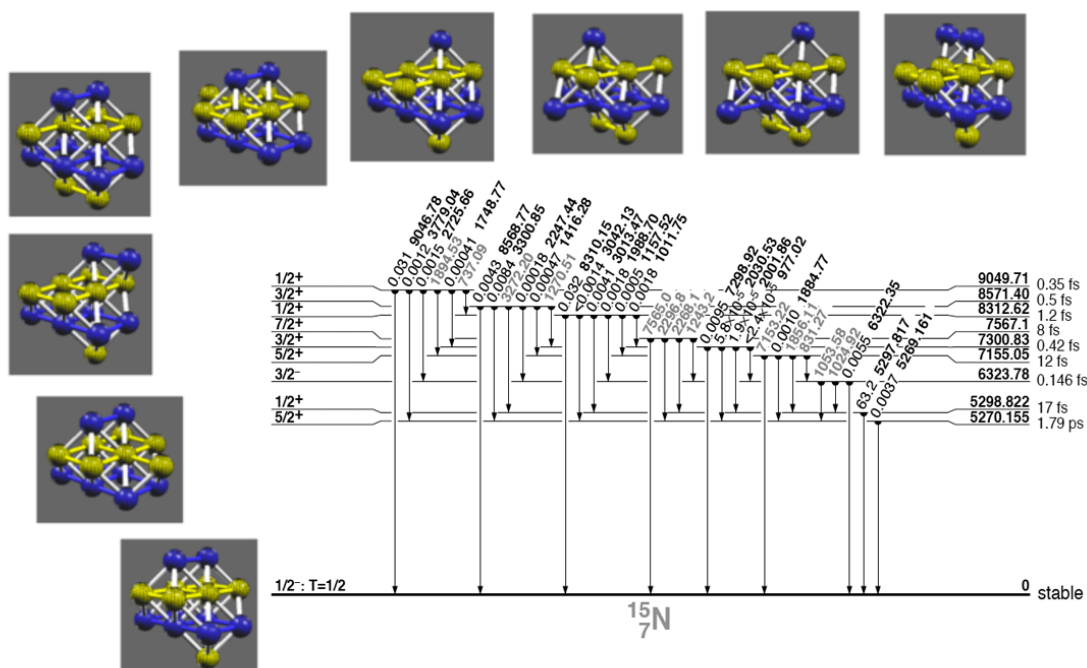


Figure 3: The low-lying excited states of $^{15}_7\text{N}_8$, and their corresponding lattice structures. Every lattice structure is a unique set of proton and neutron sites, whose $j\pi$ values sum to the measured $J\pi$ values that are known from experiment and shown in the level diagram.

2.2 Experiment: The New Transmutation Data

In the recent Lugano report on the E-Cat [3], two types of nuclear transmutation were noted (Table 1). Similar isotopic changes have also been reported by Parkhomov [4], lending credence to the earlier report, but neither experimental study discussed possible theoretical nuclear mechanisms. The first type of transmutation was a strong decrease in ${}^7_3\text{Li}_4$ relative to the only other stable isotope of Lithium, ${}^6_3\text{Li}_3$. The second was a strong relative increase in one Nickel isotope, ${}^{62}_{28}\text{Ni}_{34}$, and large relative decreases in ${}^{58}_{28}\text{Ni}_{30}$ and ${}^{60}_{28}\text{Ni}_{32}$, accompanied by small, but significant decreases

in ${}^{61}_{28}\text{Ni}_{33}$ and ${}^{64}_{28}\text{Ni}_{36}$ (Table 1). These effects need to be explained within the framework of conventional nuclear theory.

The dilemma that theorists face is that both excess heat production and altered isotopic ratios are strongly suggestive of nuclear involvement, but conventional theory alone provides no clue on how these nuclear reactions could arise. While this theoretical stalemate remains unresolved, however, we demonstrate below how specific isotopic structures in the lattice IPM could in principle lead to the strong depletion of ${}^7_3\text{Li}_4$, while implying the generation of alpha particles – provided only that energetic justification for such effects can be found from basic theory.

Table 1: Transmutations at the Onset and Conclusion of the E-Cat Test [1]

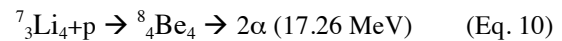
Isotope	Natural Abundance	Abundance at Onset	Abundance at Conclusion
${}^6_3\text{Li}_3$	7.5%	8.6%	92.1%
${}^7_3\text{Li}_4$	92.5%	91.4%	7.9%
${}^{58}_{28}\text{Ni}_{30}$	68.077%	67.0%	0.8%
${}^{60}_{28}\text{Ni}_{32}$	26.223%	26.3%	0.5%
${}^{61}_{28}\text{Ni}_{33}$	1.140%	1.9%	0.0%
${}^{62}_{28}\text{Ni}_{34}$	3.634%	3.9%	98.7%
${}^{64}_{28}\text{Ni}_{36}$	0.926%	1.0%	0.0%

In theory, the changes in Lithium isotopes could be a consequence of three distinct mechanisms: (i) *de novo* creation of ${}^6_3\text{Li}_3$ (leading to relative increases in this isotope) (ii) the transmutation of ${}^6_3\text{Li}_3$ and/or ${}^7_3\text{Li}_4$ by the addition/removal of one neutron (leading to relative increases and decreases, respectively), or (iii) *de novo* destruction of ${}^7_3\text{Li}_4$ (leading to relative decreases in this isotope).

De novo creation of ${}^6_3\text{Li}_3$ (i) is the most problematical, because it implies the sequential accretion of protons and neutrons; low energy mechanisms of that type are unknown. Similarly, the transmutation of ${}^6_3\text{Li}_3$ into ${}^7_3\text{Li}_4$ or vice versa (ii) requires the accretion or depletion of neutrons in an experimental set-up where free neutrons have not been detected; nuclear mechanisms of that type are also unknown.

De novo destruction of ${}^7_3\text{Li}_4$ (iii), in contrast, is theoretically plausible, insofar as the accretion of one proton would transmute ${}^7_3\text{Li}_4$

into ${}^8_4\text{Be}_4$, which could then decay to two alphas with the release of significant kinetic energy, leading to a relative decrease in ${}^7_3\text{Li}_4$:



The question of energetic mechanisms aside, the depletion of ${}^7_3\text{Li}_4$ through the accretion of one proton is a theoretical possibility insofar as it does not imply gamma radiation. That is to say, the decay of ${}^8_4\text{Be}_4$ to two alpha particles is known to be gamma-free. Provided that the initial approach of a proton to the Lithium isotope can be energetically justified, the formation of ${}^8_4\text{Be}_4$ and the subsequent generation of energetic alphas would therefore not be problematical. Clearly, an abundance of such reactions would lead to four observable effects: (i) absolute decreases in ${}^7_3\text{Li}_4$ with (ii) relative increases in ${}^6_3\text{Li}_3$, together with (iii) the generation of alpha particles, and (iv) the production of significant kinetic

energies, as the alphas are repelled from one another.

2.3 Using the Lattice IPM to Explain LENR

While the IPM accurately specifies the properties of excited-states (as was illustrated for the level diagram of $^{15}_7\text{N}_8$, Figure 3), the conventional Fermi-gas-like perspective on nuclear structure explicitly denies the possibility of nuclear substructure (beyond that implied by deformations of the nuclear potential well).

In contrast, the lattice representation of the IPM makes precisely the same predictions concerning the quantal properties of nuclei (Eqs. 1-6), but the lattice structures can also be used to specify the “stereochemical” structure of nuclei. In other words, because there are specific, often unique, lattice structures corresponding to each and every ground- and excited-state, the lattice version of the IPM provides candidate structures that are involved

in various nuclear reactions. If the high-temperature, high-pressure conditions within the E-Cat provide sufficient energy to allow Hydrogen nuclei to overcome the Coulomb barrier and to approach Lithium nuclei, then the Lithium nucleus itself may be promoted to a low-lying excited state. An interaction between Hydrogen and Lithium nuclei within appropriate solid-state environments could then be accompanied by certain types of LENR that depend principally on the detailed substructure of the Lithium isotope.

3 Results

3.1 Lithium Transmutations

The two stable Lithium isotopes, $^6_3\text{Li}_3$ and $^7_3\text{Li}_4$, are well characterized in the IPM in terms of their constituent particles (Table 2). Given the IPM properties of the nucleons around the $^4_2\text{He}_2$ core, their fine-structure in the lattice IPM is unambiguous.

Table 2: The substructure of the Lithium isotopes. Generally, the IPM description of isotopes gives properties close to those measured experimentally (spin/parities matching empirical values and magnetic moments within 20% of empirical values).

Isotope	Binding Energy	Spin/Parity	Magnetic Moment	RMS Radius
Li-6	31.994 MeV	1+	+0.822	2.589 fm
[He-4	28.296 MeV	0+	0.000	1.676 fm]
[p		1/2+	+2.793	0.865 fm]
[n		1/2+	-1.914	0.873 fm]
	Theory:	1+	+0.889	2.545 fm
Li-7	39.244 MeV	3/2-	+3.256	2.444 fm
[He-4	28.296 MeV	0+	0.000	1.676 fm]
[p		3/2-	+3.793 (Schmidt)	0.865 fm]
[n		1/2+	-1.914	0.873 fm]
[n		1/2+	+1.914	0.873 fm]
	Theory:	3/2-	+3.793	2.550 fm

That is, both the spin/parity and the magnetic moments of these nuclei can be understood simply as the summation of the properties of a $^4_2\text{He}_2$ core plus a few additional nucleons. For $^6_3\text{Li}_3$, the spins of the last unpaired proton ($j=1/2-$) and the last unpaired neutron ($j=3/2-$) combine to give a $J=1+$ nucleus. In contrast, the spin properties of the two neutrons from the second shell in $^7_3\text{Li}_4$ cancel each other out, and the properties of

$^7_3\text{Li}_4$ are essentially due to the one unpaired $j=3/2-$ proton.

We have previously suggested [11] that the bulk of the energy produced by the E-Cat may be a consequence of Lithium reactions. Here, we hypothesize that the energy is a consequence of an interaction between $^7_3\text{Li}_4$ and a proton, resulting in the formation of $^8_4\text{Be}_4$, which immediately breaks down into 2 alpha particles. The alpha particles are

released with significant kinetic energy, but without gamma radiation. We must reiterate that the energetics of this reaction are still uncertain. On the one hand, we know that there is a strong relative depletion in ${}^7\text{Li}_4$, and many of the classical LENR systems utilize Lithium in the electrolyte and produce ${}^4\text{He}_2$ particles. On the other hand, alphas were not measured in the Lugano test, while gamma radiation was entirely absent. What therefore can be said about the structure of ${}^7\text{Li}_4$, in particular, in relation to the hypothesized: ${}^7\text{Li}_4 + p \rightarrow {}^8\text{Be}_4 \rightarrow 2 \text{ alpha}$ reaction?

The lattice structure for the ${}^7\text{Li}_4$ ground-state is shown in Figure 4 (left), but this turns out not to be the basis for an explanation of the ${}^7\text{Li}_4 + p \rightarrow 2 \text{ alphas}$ reaction. As illustrated in Figure 4 (right), there are four

strongly-bonded proton sites on the surface of the ground-state ${}^7\text{Li}_4$ (all of which are candidate structures for excited-states of ${}^8\text{Be}_4$), but binding of a proton at any of those four sites does *not* lead to a ${}^8\text{Be}_4$ geometrical structure containing two alpha tetrahedrons. As a consequence, if a proton were added to the ground-state ${}^7\text{Li}_4$ shown in Figure 4, the newly-formed ${}^8\text{Be}_4$ isotope would require reconfiguration of nucleon positions and the inevitable release of gamma radiation prior to alpha release. Significant (in excess of 1.0 MeV) gamma radiation has not been observed in the E-Cat, indicating that the ground-state of ${}^7\text{Li}_4$ (Figure 4) is an *unlikely* starting point for the relevant reaction. Does the lattice IPM provide no insight?

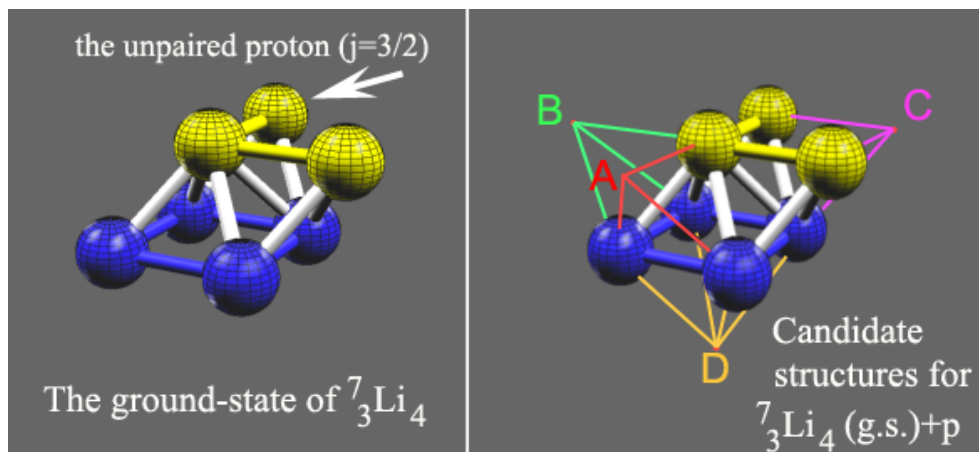


Figure 4: (Left) The ground-state of ${}^7\text{Li}_4$. Among several dozen theoretical possibilities, the lattice locations of the last two paired-neutrons and the last unpaired-proton, as shown here, provide a $J\pi$ value ($3/2^-$) that is in agreement with experiment. A mirror-image isomeric state has the same properties. (Right) The ground-state of ${}^7\text{Li}_4$ and the four lattice locations to which a proton can be added [(A) 1, -3, 1; (B) -3, -3, 1; (C) -1, 3, 1; and (D) -1, -1, -3]. All four produce compact structures (with 3 or 4 nearest neighbor bonds to the ${}^7\text{Li}_4$ core), but none produces a ${}^8\text{Be}_4$ isotope with two distinct, pre-formed alpha tetrahedrons.

On the contrary, the lattice IPM provides clues when excited-state configurations are considered. There is an unusually low-lying excited state of ${}^7\text{Li}_4$ at 0.477 MeV ($J\pi=1/2^-$). A ${}^7\text{Li}_4$ isotope with those properties can be constructed in the lattice IPM, if the third proton of ${}^7\text{Li}_4$ is located at the lower level of protons (lattice coordinates: -1, -1, -3) (Figure 5A). When a fourth proton is added at a

neighboring lower proton level (lattice coordinates: -3, -3, -3) (Figure 5B), the newly-formed ${}^8\text{Be}_4$ isotope will have a $J\pi$ value of $2+$, and will contain two distinct alpha tetrahedrons (Figure 5C). As is experimentally known, the first excited-state of ${}^8\text{Be}_4$ has $J\pi=2+$ and decays to 2 alpha particles without gamma irradiation (Figure 5D).

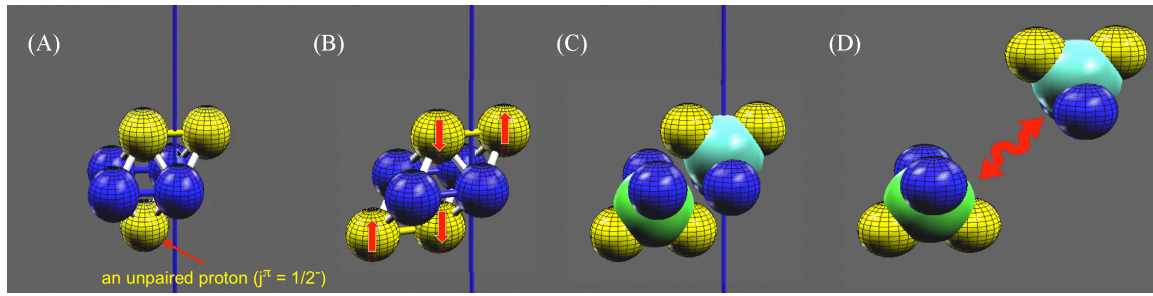


Figure 5: The lowest-lying excited-state of ${}^7\text{Li}_4$ (A) has a lattice structure to which an additional proton will produce a two-tetrahedron structure, giving ${}^8\text{Be}_4$ (B). The double alpha lattice structure (C) can then break into independent two alpha particles (D), which are released with 17 MeV of angular momentum, but without gamma radiation.

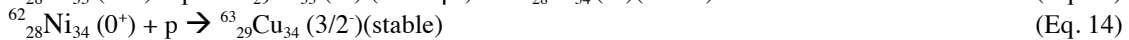
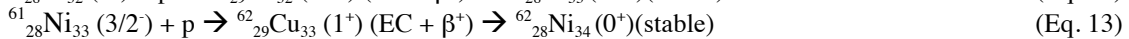
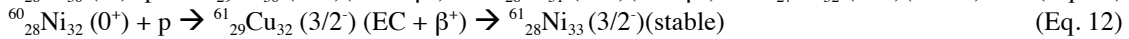
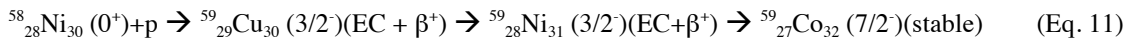
What is of particular interest with regard to the structure shown in Figure 5B is that the ${}^8\text{Be}_4$ configuration is formed from ${}^7\text{Li}_4$, where there is one unpaired, spin-up $j=1/2^-$ proton. By adding one spin-down $j=5/2^-$ proton to form ${}^8\text{Be}_4$, the properties of the two unpaired protons sum to a $J\pi=2+$ state. The $J\pi=2+$ ${}^8\text{Be}_4$ isotope is relevant because there are three distinct ${}^8\text{Be}_4$ states (a ground-state, $J\pi=0+$, and two $J\pi=2+$ excited states) – all three of which decay to 2 alpha particles without gamma radiation. In other words, unlike the gaseous-phase version of the IPM (where nuclear substructure is essentially absent), the lattice IPM predicts the generation of two alpha particles, unaccompanied by gamma radiation, directly from the $J=1/2^-$ first excited-state (0.478 MeV) of ${}^7\text{Li}_4$.

The two stable Lithium isotopes illustrate the fact that the excited-states of most isotopes arise at energies greater than 2 MeV. The lowest-lying excited state of ${}^6\text{Li}_3$ ($J\pi=1+$) is at 2.186 MeV, whereas that for ${}^7\text{Li}_4$ ($J\pi=3/2^-$) is moderately low at 0.478 MeV. We suggest that it is the presence of

odd-A isotopes that makes them more susceptible to configurational changes, in general, and proton accretion, in particular. It must be stated that an energetic justification of the ${}^7\text{Li}_4 + p \rightarrow {}^8\text{Be}_4$ reaction is still lacking, but if such a reaction is possible, then the geometry of these nuclear states becomes relevant.

3.2 Nickel Transmutations

With regard to the transmutations of Nickel, the most obvious reaction mechanisms in NiH systems are listed in Eqs. (11-15). They all entail the addition of one proton to stable Nickel isotopes. If all five reactions actually occur, the net effect would be several β^+ decays, and small deposits of stable isotopes: ${}^{59}_{27}\text{Co}_{32}$, ${}^{63}_{29}\text{Cu}_{34}$, and ${}^{65}_{29}\text{Cu}_{36}$ in the E-Cat “ash”. In the recent experimental reports [3, 4], significant accumulations of Cobalt and Copper isotopes were *not* found, indicating that reactions (11), (14) and (15) did not occur and therefore that all Nickel isotopes were *not* equally susceptible to transmutation.



Moreover, in spite of the fact that the absorption of an alpha particle by ${}^{58}_{28}\text{Ni}_{30}$ would lead directly to an increase in ${}^{62}_{28}\text{Ni}_{34}$ (${}^{58}_{28}\text{Ni}_{30} + \alpha \rightarrow {}^{62}_{30}\text{Zn}_{32} \rightarrow {}^{62}_{29}\text{Cu}_{33} \rightarrow {}^{62}_{28}\text{Ni}_{34}$),

the absence of stable isotopes ${}^{62}_{30}\text{Zn}_{34}$, ${}^{64}_{30}\text{Zn}_{36}$, and ${}^{66}_{30}\text{Zn}_{38}$ in the post-reaction ash indicates that alpha particles (released from the LiH reaction) were *not* absorbed by ${}^{60}_{28}\text{Ni}_{32}$ and

$^{62}_{28}\text{Ni}_{34}$. The dramatic increase in $^{62}_{28}\text{Ni}_{34}$ must, therefore, be explained through a different mechanism, without implying transmutations for which there is no empirical evidence.

Again, neglecting details of the energetic mechanisms, the main possibility for augmenting $^{62}_{28}\text{Ni}_{34}$ abundance is reaction (13). Reaction (13) entails the direct uptake of a proton by $^{61}_{28}\text{Ni}_{33}$ (mechanism unknown), leading to $^{62}_{29}\text{Cu}_{33}$ (9.7 min), the decay of which would result in the desired isotope, $^{62}_{28}\text{Ni}_{34}$. Problematical here is the small abundance of the precursor $^{61}_{28}\text{Ni}_{33}$, which accounts for only 1.14% of the Nickel isotopes. The overwhelming abundance of $^{62}_{28}\text{Ni}_{34}$ in the ash and the virtual absence of other isotopes might nonetheless be explained as a consequence of the sampling method. Because ToF-SIMS analysis was made on milligram samples obtained specifically at regions observed under the scanning electron microscope to have undergone morphological changes, it is possible that the $^{62}_{28}\text{Ni}_{34}$ isotopes recoiled toward the surface of the Nickel grains. If the sample itself was not representative of the Nickel remaining in the E-Cat, the large abundance of $^{62}_{28}\text{Ni}_{34}$ would indicate only the participation of $^{61}_{28}\text{Ni}_{33}$ in the reaction and its migration to sites that were sampled for isotopic analysis. Further experimental study is needed to clarify the situation.

At the temperature of operation of the E-Cat used in the Lugano test, the Lithium contained in the LiAlH_4 is vaporized, and consequently was distributed evenly within the volume of the E-Cat. In contrast, the Nickel fuel remained in a solid or liquid state. At the time of sampling after one month of operation, Nickel was found to be encrusted on the internal surface of the reactor, from which a 2 mg sample of “ash” was obtained near to the center of the charge. Starting with an initial charge of approximately 1 gram, it cannot be said that the 2 mg sample was necessarily representative of the entire Nickel charge, but it remains to be explained how the isotopic ratios in the 2 mg sample show predominantly $^{62}_{28}\text{Ni}_{34}$.

Isotopes with extremely low-lying excited states are of particular interest in

LENR research because they exhibit quantal transitions from one nucleon state to another with minimal external input. In this regard, the lowest-lying excited-state of one of the most stable isotopes in the Periodic Table of Elements, $^{61}_{28}\text{Ni}_{33}$ (a $J=5/2+$ state at 0.0674 MeV), is a likely candidate for energy release in response to low-level thermal agitation. That excitation energy stands in contrast to all of the stable even-even isotopes of Nickel whose lowest-lying excited-states are typically 20~40 fold higher (>1.3 MeV).

There is, in fact, a small number of comparable excited states in stable isotopes across the Periodic Table, notably, $^{103}_{45}\text{Rh}_{58}$ ($J=7/2$, 0.0397 MeV) and $^{105}_{46}\text{Pd}_{59}$ ($J=3/2$, 0.280 MeV), both of which have been implicated in prior LENR research. Noteworthy, however, is the fact that their natural abundances are extremely low. Specifically, $^{103}_{45}\text{Rh}_{58}$ is present in the Earth’s crust at a level of 0.0010 mg/kg, and $^{105}_{46}\text{Pd}_{59}$ at 0.0033 mg/kg, whereas $^{61}_{28}\text{Ni}_{33}$ is present at a level of 0.9576 mg/kg. These relative abundances mean that technological application of their LENR capacities would be, respectively, 1000 times and 300 times more expensive for Rhodium and Palladium relative to Nickel.

As noted above, nuclear reactions involving low-lying excited-states are speculative insofar as the initiating “cold fusion” reaction demands the accretion of a proton by a stable nucleus at temperatures not normally reached except in “hot fusion” conditions. The question arises whether or not an energetically favorable mechanism might initiate MeV nuclear events. In this context, the relatively low-energy $^7_3\text{Li} + p$ reaction, leading to 17 MeV alpha release, is of considerable interest.

4 Discussion

The Nickel- LiAlH_4 system known as the E-Cat is one of several dozen LENR configurations for which excess heat has been experimentally demonstrated [1, 2]. The E-Cat is, however, apparently unique in allowing for the reliable production of significant energy using relatively inexpensive materials. Although its main source of energy

appears to be the ${}^7_3\text{Li}_4(p, \alpha)\alpha$ reaction, the recently reported transmutations [3] are strongly suggestive of two distinct types of LENR – neither of which is easily explained in traditional nuclear physics. Specifically, both of the most likely reactions induced in the E-Cat entail nucleon uptake by stable, odd-A isotopes. The coincidence that both ${}^7_3\text{Li}_4$ and ${}^{61}_{28}\text{Ni}_{33}$ are stable $J=3/2^-$ isotopes with low-lying excited states (<0.5 MeV) is suggestive that the unanticipated phenomena of LENR may be a consequence of the detailed substructure of easily-excited stable isotopes. Particularly in light of the fact that the quantal states of nucleons in the IPM have a straightforward lattice geometry [5], from which nuclear $J\pi$ -values and magnetic moments can be predicted, we conclude that it is worthwhile to examine the largely-overlooked nuclear structure aspects of LENR. Stated conversely, as important as the solid-state environment and the surrounding electromagnetic field is for inducing nuclear effects, the nuclear reactions themselves appear to occur only in a few specific isotopes and involve only a few specific quantal transitions. If the excitation of stable nuclei to low-lying excited-states is indeed an essential prerequisite of LENR phenomena, it would not be surprising that LENR effects can occur in very different solid-state/chemical environments, provided only that the necessary proton/deuteron constituents can be brought into contact with the unusually-reactive low-lying excited-states of substrate nuclei.

4.1 A Plethora of Cold Fusion Theories

Many quantum-theory-based hypotheses have been advocated to explain cold fusion phenomena. Gullstroem [12] has proposed a neutron exchange mechanism to explain specifically the E-Cat transmutation effects. Muelenberg [13] and Muelenberg and Sinha [14] have proposed a “lochon” (local charged boson) model as a means for overcoming the Coulomb repulsion between protons, deuterons and other nuclei. Previously, Ikegami and others [15-21] have proposed that alpha particles can be generated by

Lithium (following proton accretion or deuteron stripping). Quantitative results and a consensus concerning their significance in specific experimental contexts are yet to be obtained, but such theoretical work will eventually be of fundamental importance in order to provide an energetic justification for LENR phenomena.

4.2 A Common Theme

What all LENRs have in common are unanticipated nuclear events that traditional nuclear physicists would categorically maintain to be impossible. There is indeed little doubt that the “central dogma” of atomic physics:

$$\text{Neutrons} \leftrightarrow \text{Protons} \rightarrow \text{Electrons}$$

generally holds true. Nuclei have strong influence on extra-nuclear events, but not vice versa – primarily because electron transitions occur at the level of several electron-Volts (eV), while nuclear transitions typically occur at the level of millions of electron Volts (MeV). However, LENR phenomena, in general, and the recently reported transmutation results [3], in particular, clearly indicate that there are circumstances where nuclear reactions can be initiated in chemical systems at relatively low-energies.

It is noteworthy, moreover, that the well-known Mössbauer effect also entails “violation” of the central dogma, but is today an established part of nuclear physics. As Wertheim noted in 1960 [22]:

“Nuclear physicists have a strong and understandable tendency to ignore the chemical binding of the atoms whose nuclei they investigate. This is based on the fundamentally sound precept that the energies involved in nuclear reactions are so much larger than the energies of chemical binding that the atom may well be thought of as a free atom when analyzing nuclear events.”
(p. 1)

This “precept” was, however, found to be violated in the Mössbauer effect and

immediately led to a suitable expansion of the central dogma of atomic physics to include a small set of low-energy solid-state phenomena in which electron effects can influence nuclear effects:

Neutrons \leftrightarrow Protons \leftrightarrow Electrons

The phenomena of late 20th / early 21st century “cold fusion” physics (LENR) appear to take place in a similar energetic context.

Be that as it may, the changes in natural isotopic abundances in the E-Cat and other “cold fusion” systems are unambiguous indication that nuclear reactions have occurred – reactions that require explanation that is consistent with nuclear structure theory. Clarification of precise mechanisms will undoubtedly require measurements of low-level gamma radiation within LENR systems to establish unambiguously which quantum states of which nucleons in which isotopes are involved.

References

- [1] Storms, E. (2007) *The Science of Low Energy Nuclear Reaction*, World Scientific, Singapore.
- [2] Storms, E. (2012) An explanation of low-energy nuclear reactions (cold fusion). *Journal of Condensed Matter Nuclear Science* 9, 96-107.
- [3] Essen, H., Foschi, E., Hoistad, B., Levi, G., Pettersson, R., & Tegner, L. (2014) *Report on the Lugano Test*, (www.elforsk.se/lenr-matrapport-publicerad)
- [4] Parkhomov, A.G. (2015) Investigation of the heat generator similar to Rossi reactor. *International Journal of Unconventional Science* 7(3), 68-72.
- [5] Cook, N.D. (2010) *Models of the Atomic Nucleus*, 2nd ed., Springer, Berlin.
- [6] Firestone, R.B., ed., (1996) *Table of Isotopes*, 8th ed., Wiley, New York.
- [7] Wigner, E. (1937) On the consequences of the symmetries of the nuclear Hamiltonian on the spectroscopy of nuclei. *Physical Review* 51, 106-119.
- [8] Mayer, M., & Jensen, J.H.D. (1956) *Elementary Nuclear Shell Theory*, Wiley, New York.
- [9] Sick, I. (2005) Nucleon radii. *Progress in Particle and Nuclear Physics* 55, 440-450.
- [11] Focardi, S., & Rossi, A. (2010) A new energy source from nuclear fusion. *Journal of Nuclear Physics.com*, 28 Feb.
- [12] Gullstroem, C.O. (2014) Collective neutron reduction model for neutron transfer reaction (*Ecatworld.com* 18 Nov).
- [13] Muelenberg, A. (2013) Femto-atom and femto-molecule models of cold fusion. *Infinite Energy Magazine* 112, 19-28.
- [14] Muelenberg, A., & Sinha, K.P. (2013) Lochon and extended-lochon models for LENR in a lattice. *Infinite Energy Magazine* 112, 29-32.
- [15] Jones, S.E. (1986) Muon-catalysed fusion revisited. *Nature* 321, 127-133.
- [16] Cohen, J.S., & Davies, J.D. (1989) Is cold fusion hot? *Nature* 338, 705-706.
- [17] Sundqvist, B.U.R., et al. (1989) On the observation of charged particles in cold fusion. *Physica Scripta* 40, 303-306.
- [18] Frodl, P., et al. (1990) Possible participation of Lithium in Fleischman-Pons reaction is testable. *Zeitschrift fur Naturforschung* 45a, 757-758.
- [19] Kim, Y.E., & Passell, T.O. (2004) Alternative interpretation of low-energy nuclear reaction processes with deuterated metals based on the Bose-Einstein condensation mechanism. *Proceedings of ICCF11*, World Scientific, Singapore, pp. 718-729.
- [20] Ikegami, H., & Pettersson, R. (2002) *Uppsala University Bulletin*.
- [21] Ikegami, H. (2006) Ultradense nuclear fusion in metallic Lithium liquid, *Swedish Energy Agency Doc.*, ER 2006: 42; the term “chemonuclear fusion” has been coined by Sven Kullander.
- [22] Wertheim, G.K. (1960) *The Mössbauer Effect: Principles and applications*, Academic, New York.

EXHIBIT 23

JONES DAY

600 BRICKELL AVENUE • BRICKELL WORLD PLAZA • SUITE 3300 • MIAMI, FLORIDA 33131

TELEPHONE: +1.305.714.9700 • FACSIMILE: +1.305.714.9799

Direct Number: (305) 714-9730
crjpace@jonesday.com

February 17, 2016

Via E-Mail and US Mail

John W. Annesser, Esq.
Silver Law Group
87889 Overseas Highway
P.O. Box 710
Islamorada, Florida 33036

John:

IPH International B.V. ("IPH"), pursuant to Section 10 of the License Agreement dated October 26, 2012 (the "Agreement"), is hereby requiring Leonardo Corporation and Andrea Rossi to assign to IPH the Licensed Patents (as defined in the Agreement) with respect to the Territory (as also defined in the Agreement). Section 10 of the Agreement states, in part, that "[u]pon the request of the Company, Leonardo and Rossi shall assign to the Company the Licensed Patents with respect to the Territory"

An assignment is enclosed with this letter. Please promptly either return the executed assignment to me or advise me that Leonardo Corporation and Andrea Rossi will not execute the assignment.

Respectfully,


Christopher R.J. Pace

cc: IPH International BV

Encl. Assignment

ASSIGNMENT

THIS ASSIGNMENT, made by us, **Andrea Rossi**, a citizen of Italy, currently residing at 1331 Lincoln Road, Apt. 601, Miami Beach, Florida 33139, and **Leonardo Corporation**, a domestic corporation, currently having a principal place of business at 1331 Lincoln Road, Apt. 601, Miami Beach, Florida, 33139;

WITNESSETH: That,

WHEREAS, Andrea Rossi is the inventor listed in all the patent applications/patents contained in Exhibit A to this Assignment and all patents issued from such patent applications and all continuations, continuations-in-part, divisions, extensions, substitutions, reissues, re-examinations and renewals of any of the foregoing; and

WHEREAS, **IPH International B.V.**, a Netherlands company, having a registered address at Burgemeester des Tombeplein 97, 7311 AK, Apeldoorn, Netherlands, hereinafter referred to as Assignee, is entitled pursuant to an existing agreement between the parties to have assigned to it all (100%) of Andrea Rossi and Leonardo Corporation's rights, titles and interests in and to said inventions as described in said applications/patents, and in and to any and all Letters Patent which shall be granted therefor in the United States, the remainder of North America, Central America, Caribbean, South America, China, Russia, Saudi Arabia, or Arabian Emirates;

NOW, THEREFORE, To Whom It May Concern, be it known that for good and valuable consideration, the receipt and sufficiency of which is hereby acknowledged, Andrea Rossi and Leonardo Corporation by these presents do hereby assign, transfer and convey unto said Assignee, its successors and assigns, the entire (100%) right, title, and interest in and to the said inventions and applications/patents, and in and to any and all continuations, continuations-in-part, divisions, or extensions thereof, and in and to any and all Letters Patent of the United States of America, the remainder of North America, Central America, Caribbean, South America, China, Russia, Saudi Arabia, or Arabian Emirates, reissues, reexaminations or other forms of protection thereof which may be granted therefor or thereon, for the full end of the term for which said Letters Patent may be granted along with any term extensions thereon or therefor, together with the right to claim the priority of said applications/patents in the United States, the remainder of North America, Central America, Caribbean, South America, China, Russia, Saudi Arabia, or Arabian Emirates in accordance with the International Convention, the same to be held and enjoyed by said Assignee, its successors and assigns, as fully and entirely as the same would have been held and enjoyed by Andrea Rossi and Leonardo Corporation if this assignment had not been made.

Andrea Rossi and Leonardo Corporation hereby request that said Letters Patent be issued in accordance with this assignment.

Andrea Rossi and Leonardo Corporation further covenant and agree that, at the time of the execution and delivery of these presents, Andrea Rossi and/or Leonardo Corporation possess full title to the inventions and applications/patents above-mentioned (except to the extent such title is already held by Assignee or Industrial Heat, LLC), and that Andrea Rossi and/or Leonardo Corporation have the unencumbered right and authority to make this assignment.

Andrea Rossi and Leonardo Corporation further covenant and agree to execute any additional papers which may be requested to confirm the right of the Assignee, its representatives, successors, or assigns to secure patent or similar protection for the said inventions in the United States, the remainder of North America, Central America, Caribbean, South America, China, Russia, Saudi Arabia, or Arabian Emirates and to vest in the Assignee complete title to the said inventions and Letters Patent, without further compensation, but at the expense of said Assignee, its successors, assigns, and other legal representatives; and we hereby instruct, and further covenant and agree to bind our heirs, legal representatives, and assigns, to do same, without further compensation, but at the expense of said Assignee or its representatives.

IN WITNESS WHEREOF, I have hereunto set my hand and seal on this _____ day of February, 2016.

Andrea Rossi

IN WITNESS WHEREOF, I have hereunto set my hand and seal on this _____ day of February, 2016.

Leonardo Corporation

Name: _____

Title: _____

WITNESSED BY:

Signature

Date

Signature

Date

Exhibit A

1. All patent applications or patents that claim priority to Italian Patent No. IT1387256, entitled “Processo ed apparecchiatura per ottenere reazioni esotermiche, in particolare da nickel ed idrogeno”, that are filed and/or issued in North America, Central America, Caribbean, South America, China, Russia, Saudi Arabia, or Arabian Emirates
2. U.S. Patent Application No. 12/736,193, entitled “Method and Apparatus for Carrying Out Nickel and Hydrogen Exothermal Reaction”
3. All patent applications or patents that claim priority to European Publication No. EP2259998 published December 15, 2010, entitled “Method and Apparatus for Carrying Out Nickel and Hydrogen Exothermal Reaction”, that are filed and/or issued in North America, Central America, Caribbean, South America, China, Russia, Saudi Arabia, or Arabian Emirates
4. U.S. Patent Application for particulars and theory
5. U.S. Patent Application for control systems
6. U.S. Patent Application for additives and catalyzers in process and apparatus
7. U.S. Patent Application for Hot Cat
8. U.S. Patent Application for direct conversion of photons into electric energy
9. U.S. Patent Application for particulars of the reactor
10. U.S. Patent No. 9,115,913, entitled “Fluid Heater”

EXHIBIT 25

Ronald:
That's in my dreams, yes. F8.
Warm Regards,
A.R.

5. Catherine
April 14, 2016 at 12:25 PM

Dear Dr Andrea Rossi:
I read from your enemies that they do not accept the results of the ERV because they have made different measures: but this is ridiculous, it is as if a team refuses the results recorded by the official referee because they have a personal referee that has measured differently !!!
Go ahead, Andrea, get rid of them and go on with the production of the E-Cat !
Catherine

6. Andrea Rossi
April 14, 2016 at 1:47 PM

Catherine:
You gave me a brilliant idea: the next time I will make a tennis match with my wife I will bring my personal referee.
Thank you, that's genial. We use to bet pizza and beer, but next time if we will end up with the usual 6-0, 6-0, 6-0 for her, I will pull out the results got from my P.R.V.R. (Personal Referee for Validation of Result) and if the results of him will be that I won, I will not pay the pizza, let alone the beer !
Warm Regards,
A.R.

7. Bernie Koppenhofer
April 14, 2016 at 12:38 PM

Dr. Rossi: We have agreed on one issue for five years. Happy customers will ultimately decide the fate of your new fire. That is why I do not understand why you cannot persuade the customer of the year long test to come forward and give his opinion of his savings using the E-Cats.

8. Andrea Rossi
April 14, 2016 at 1:44 PM

Bernie Koppenhofer:
You are too intelligent not to understand that a company cannot be happy of all the blogosphere hurricane around this issue. Our Customer spoke his satisfaction with facts, not words: he bought 3 units like the one he tested during this year with a company set up specifically for this purpose.
Warm Regards,
A.R.