

Composite Exhibit 58

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

Dear Mr. Murray,

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

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

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

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

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

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

Sincerely

Dr. Eng. Fabio Penon



Ing. Fabio Penon

Plant start up

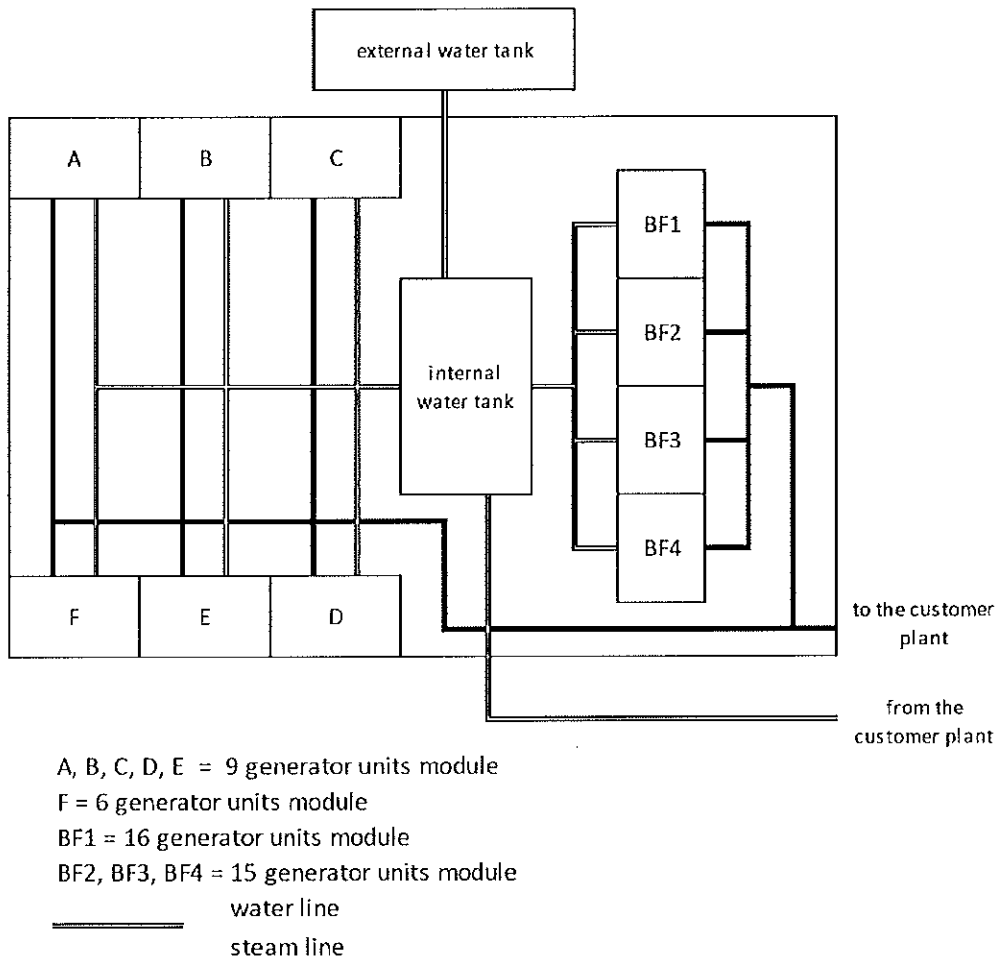
E-CAT MW1 ENERGY PLANT IN MIAMI PLANT START UP

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

1. Plant configuration and measuring instruments positioning

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

Figure 1: Thermohydraulic diagram of the plant



Ing. Fabio Penon

Plant start up

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

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

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

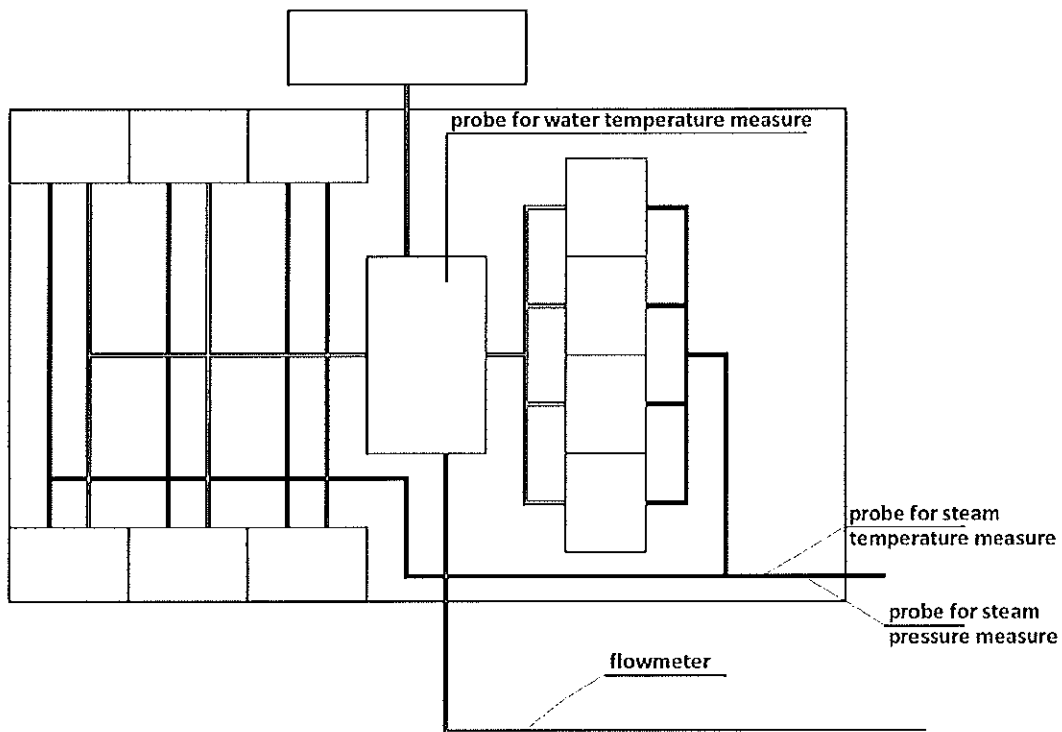
The internal tank is connected with the external one.

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

The amount of water refilled is recorded

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

Figure 2: Position of the thermohydraulic measuring instrumentation



Identification of thermohydraulic measuring instrumentation

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

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Plant start up

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

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

Identification electrical measuring instrumentation

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

2. Start up procedure

- Every power generation unit is filled with distilled water, coming from inner tank. until the water level is the desired.

The internal tank is filled with distilled water coming from external tank, until the water level in the inner tank is equal to the initial one.

- The hydraulic circuit is closed to see if there are leaks in the E-Cat plant or in the customer's one.

All the leaked water is refilled with water coming from external tank, until the water level in the inner tank is equal to the initial one.

- When the level of the water in the inner tank has stabilized, the hydraulic circuit is closed. The heating resistors are switched on.

Power supply is increased by 5% every 10 minutes till the desired power level

- The water in the circuit heats up to the temperature of vaporization.

When vaporization process is finished and all the water is transformed into superheated steam, after about 2 hours, the power is reduced up to that required for the stability of this situation (stability level)

- After 24 hours, a power supply cycle is started: ten minutes power supply at stability level, ten minutes no power supply

3. Data recording

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

All data are recorded in a data logger

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

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

Ing. Fabio Penon

Plant start up

4. Data analysis

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

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

The maximum water temperature has been 69,1 °C

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

The supplied energy has been 247000 wh/d

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

$$E_p = E_R + E_v + E_s$$

In order to be conservative:

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

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

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

Consequently

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

where

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

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

The absorbed energy (E_λ) supplied from the public grid

In order to be conservative:

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

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

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

5. Annexes

Annexe 1: Wiring diagram

Abano Terme, 2015/04/30

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Dr Eng. Fabio Penon
(Nuclear Engineer)

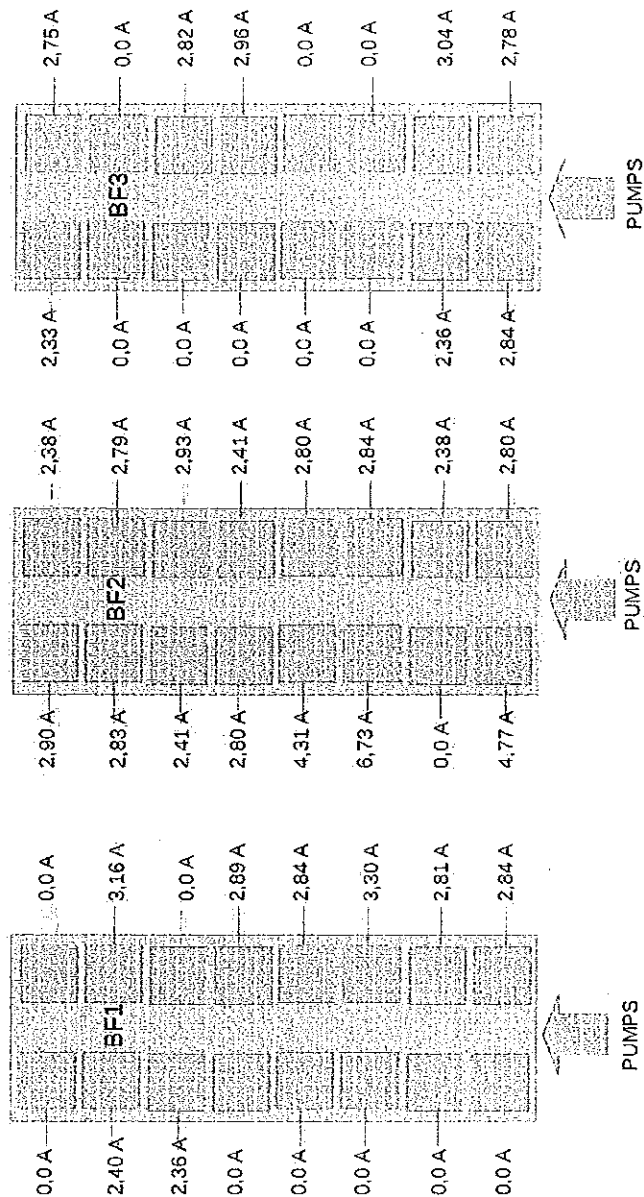
| DAILY VALUATION OF THE ENERGY MULTIPLE - FEBRUARY 2015 | | | | | | | | | | |
|--|-------------|--------------------------------|-------------------------|--------------------------|----------------------------------|---------------------------------|----------------------|-------------------|--------------------------|------|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

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

| Annex 7: DAILY VALUATION OF THE ENERGY MULTIPLE - NOVEMBER 2015 | | | | | | | | | | |
|---|-------------|-------------------------------|-------------------------|--------------------------|----------------------------------|---------------------------------|----------------------|-------------------|--------------------------|------|
| | | average power supply (w) | supplied energy wh/d | tank water T max (°C) | effective flowed water(Kg/d) | reduced flowed water (kg/d) | steam T min (°C) | steam pressure | produced energy (wh) | COP |
| 11/17 22:30 | 11/18 22:30 | 11083.3 | 266000 | 71,1 | 36000 | 32400 | 103,6 | 0.0 | 2,03E+07 | 76,4 |
| 11/18 22:30 | 11/19 22:30 | 11404.2 | 273700 | 71,1 | 36000 | 32400 | 103,6 | 0.0 | 2,03E+07 | 74,3 |
| 11/19 22:30 | 11/20 22:30 | 11358.3 | 272600 | 71,1 | 36000 | 32400 | 103,7 | 0.0 | 2,03E+07 | 74,6 |
| 11/20 22:30 | 11/21 22:30 | 11266.7 | 270400 | 71,1 | 36000 | 32400 | 103,9 | 0.0 | 2,03E+07 | 75,2 |
| 11/21 22:30 | 11/22 22:30 | 11262.5 | 270300 | 71,1 | 36000 | 32400 | 103,6 | 0.0 | 2,03E+07 | 75,2 |
| 11/22 22:30 | 11/23 22:30 | 11333.3 | 272000 | 71,1 | 36000 | 32400 | 103,6 | 0.0 | 2,03E+07 | 74,7 |
| 11/23 22:30 | 11/24 22:30 | 11291.7 | 271000 | 71,1 | 36000 | 32400 | 103,5 | 0.0 | 2,03E+07 | 75,0 |
| 11/24 22:30 | 11/25 22:30 | 11291.7 | 271000 | 71,1 | 36000 | 32400 | 103,5 | 0.0 | 2,03E+07 | 75,0 |
| 11/25 22:30 | 11/26 22:30 | 11166.7 | 268000 | 71,4 | 36000 | 32400 | 103,7 | 0.0 | 2,03E+07 | 75,9 |
| 11/26 22:30 | 11/27 22:30 | 11083.3 | 266000 | 71,4 | 36000 | 32400 | 103,9 | 0.0 | 2,03E+07 | 76,4 |
| 11/27 22:30 | 11/28 22:30 | 11125.0 | 267000 | 71,1 | 36000 | 32400 | 103,9 | 0.0 | 2,03E+07 | 76,1 |
| 11/28 22:30 | 11/29 22:30 | 11083.3 | 266000 | 71,1 | 36000 | 32400 | 103,9 | 0.0 | 2,03E+07 | 76,4 |
| 11/29 22:30 | 11/30 22:30 | 11083.3 | 266000 | 71,1 | 36000 | 32400 | 104,5 | 0.0 | 2,03E+07 | 76,4 |

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

Clamp: MASTECH S.N.: MBEI 053309
Date: 10/13/2015 time: 11:00AM



STAFF present at measurements:

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

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

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

Ing. Fabio Penon

Plant start up

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

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

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

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

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

1. Plant configuration and measuring instruments positioning

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

2. Data recording

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

All data are recorded in a data logger

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

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

3. Data analysis

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

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

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

$$E_p = E_R + E_v + E_s$$

In order to be conservative:

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

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

Ing. Fabio Penon

Plant start up

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

Consequently

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

where

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

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

The absorbed energy (E_A) supplied from the public grid

In order to be conservative:

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

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

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

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

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

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

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

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

4. Annexes

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

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

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

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

Abano Terme, 2015/05/25

POIESIS srl
Dr Eng. Fabio Penon
(Nuclear Engineer)

| DAILY VALUATION OF THE ENERGY MULTIPLE - MARCH 2015 | | | | | | | | | | | |
|---|-------------|--------------------------------|-------------------------|---------------------------|----------------------------------|---------------------------------|----------------------|-------------------|--------------------------|------|--|
| | | average power supply (Kw) | supplied energy wh/d | tank water T max (°C) | effective flowed water(Kg/d) | reduced flowed water (kg/d) | steam T min (°C) | steam pressure | produced energy (wh) | COP | |
| 02/28 22:30 | 03/01 22:30 | 10.59 | 254000 | 69,7 | 36000 | 32400 | 104,5 | 0.0 | 2,03E+07 | 80,0 | |
| 04/01 22:30 | 04/02 22:30 | 10.46 | 251000 | 69,1 | 36000 | 32400 | 104,5 | 0.0 | 2,03E+07 | 81,0 | |
| 03/02 22:30 | 03/03 22:30 | 9,92 | 238000 | 69,7 | 36000 | 32400 | 104,5 | 0.0 | 2,03E+07 | 85,4 | |
| 03/03 22:30 | 03/04 22:30 | 10.56 | 253000 | 69,7 | 36000 | 32400 | 104,5 | 0.0 | 2,03E+07 | 80,4 | |
| 03/04 22:30 | 03/05 22:30 | 10.63 | 255000 | 69,1 | 36000 | 32400 | 104,5 | 0.0 | 2,03E+07 | 79,7 | |
| 03/05 22:30 | 03/06 22:30 | 10.63 | 255000 | 69,1 | 36000 | 32400 | 103,9 | 0.0 | 2,03E+07 | 79,7 | |
| 03/06 22:30 | 03/07 22:30 | 10,5 | 252000 | 68,6 | 36000 | 32400 | 103,9 | 0.0 | 2,03E+07 | 80,7 | |
| 03/07 22:30 | 03/08 22:30 | 10.59 | 259000 | 69,1 | 36000 | 32400 | 103,9 | 0.0 | 2,03E+07 | 78,5 | |
| 03/08 22:30 | 03/09 22:30 | 10.21 | 245000 | 69,1 | 36000 | 32400 | 103,9 | 0.0 | 2,03E+07 | 83,0 | |
| 03/09 22:30 | 03/10 22:30 | 10.67 | 256000 | 69,1 | 36000 | 32400 | 104,5 | 0.0 | 2,03E+07 | 79,4 | |
| 03/10 22:30 | 03/11 22:30 | 10.63 | 255000 | 69,7 | 36000 | 32400 | 104,5 | 0.0 | 2,03E+07 | 79,7 | |
| 03/11 22:30 | 03/12 22:30 | 10.54 | 253000 | 69,7 | 36000 | 32400 | 104,5 | 0.0 | 2,03E+07 | 80,4 | |
| 03/12 22:30 | 03/13 22:30 | 10.63 | 255000 | 69,7 | 36000 | 32400 | 104,5 | 0.0 | 2,03E+07 | 79,7 | |
| 03/13 22:30 | 03/14 22:30 | 10.63 | 255000 | 69,7 | 36000 | 32400 | 103,9 | 0.0 | 2,03E+07 | 79,7 | |
| 03/14 22:30 | 03/15 22:30 | 10,5 | 252000 | 69,1 | 36000 | 32400 | 103,9 | 0.0 | 2,03E+07 | 80,7 | |
| 03/15 22:30 | 03/16 22:30 | 10.79 | 259000 | 69,1 | 36000 | 32400 | 103,9 | 0.0 | 2,03E+07 | 78,5 | |
| 03/16 22:30 | 03/17 22:30 | 10.25 | 246000 | 68,6 | 36000 | 32400 | 103,9 | 0.0 | 2,03E+07 | 82,6 | |

| DAILY VALUATION OF THE ENERGY MULTIPLE - MARCH 2015 | | | | | | | | | | |
|---|-------------|--------------------------------|-------------------------|---------------------------|----------------------------------|---------------------------------|----------------------|-------------------|--------------------------|------|
| | | average power supply (Kw) | supplied energy wh/d | tank water T max (°C) | effective flowed water(Kg/d) | reduced flowed water (kg/d) | steam T min (°C) | steam pressure | produced energy (wh) | COP |
| 03/17 22:30 | 03/18 22:30 | 10.46 | 251000 | 68,6 | 36000 | 32400 | 103,9 | 0.0 | 2,03E+07 | 81,0 |
| 03/18 22:30 | 03/19 22:30 | 10.29 | 247000 | 68,6 | 38000 | 34200 | 103,9 | 0.0 | 2,15E+07 | 86,9 |
| 03/19 22:30 | 03/20 22:30 | 10.63 | 255000 | 68,6 | 36000 | 32400 | 103,9 | 0.0 | 2,03E+07 | 79,7 |
| 03/20 22:30 | 03/21 22:30 | 10.54 | 253000 | 68,6 | 36000 | 32400 | 103,9 | 0.0 | 2,03E+07 | 80,4 |
| 03/21 22:30 | 03/22 22:30 | 10.58 | 255000 | 68,6 | 36000 | 32400 | 103,9 | 0.0 | 2,03E+07 | 79,7 |
| 03/22 22:30 | 03/23 22:30 | 10.63 | 255000 | 68,6 | 36000 | 32400 | 103,9 | 0.0 | 2,03E+07 | 79,7 |
| 03/23 22:30 | 03/24 22:30 | 10.5 | 252000 | 69,1 | 36000 | 32400 | 103,9 | 0.0 | 2,03E+07 | 80,7 |
| 03/24 22:30 | 03/25 22:30 | 10.79 | 259000 | 69,1 | 36000 | 32400 | 103,9 | 0.0 | 2,03E+07 | 78,5 |
| 03/25 22:30 | 03/26 22:30 | 10.59 | 254000 | 68,6 | 36000 | 32400 | 103,9 | 0.0 | 2,03E+07 | 80,0 |
| 03/26 22:30 | 03/27 22:30 | 10.46 | 251000 | 66,9 | 36000 | 32400 | 103,9 | 0.0 | 2,03E+07 | 81,0 |
| 03/27 22:30 | 03/28 22:30 | 10.5 | 252000 | 66,9 | 36000 | 32400 | 103,9 | 0.0 | 2,03E+07 | 80,7 |
| 03/28 22:30 | 03/29 22:30 | 10.54 | 253000 | 68,6 | 36000 | 32400 | 104,5 | 0.0 | 2,03E+07 | 80,4 |
| 03/29 22:30 | 03/30 22:30 | 10.55 | 258000 | 69,1 | 36000 | 32400 | 103,9 | 0.0 | 2,03E+07 | 78,8 |
| 03/30 22:30 | 03/31 22:30 | 10.34 | 248000 | 68,6 | 36000 | 32400 | 103,9 | 0.0 | 2,03E+07 | 82,0 |

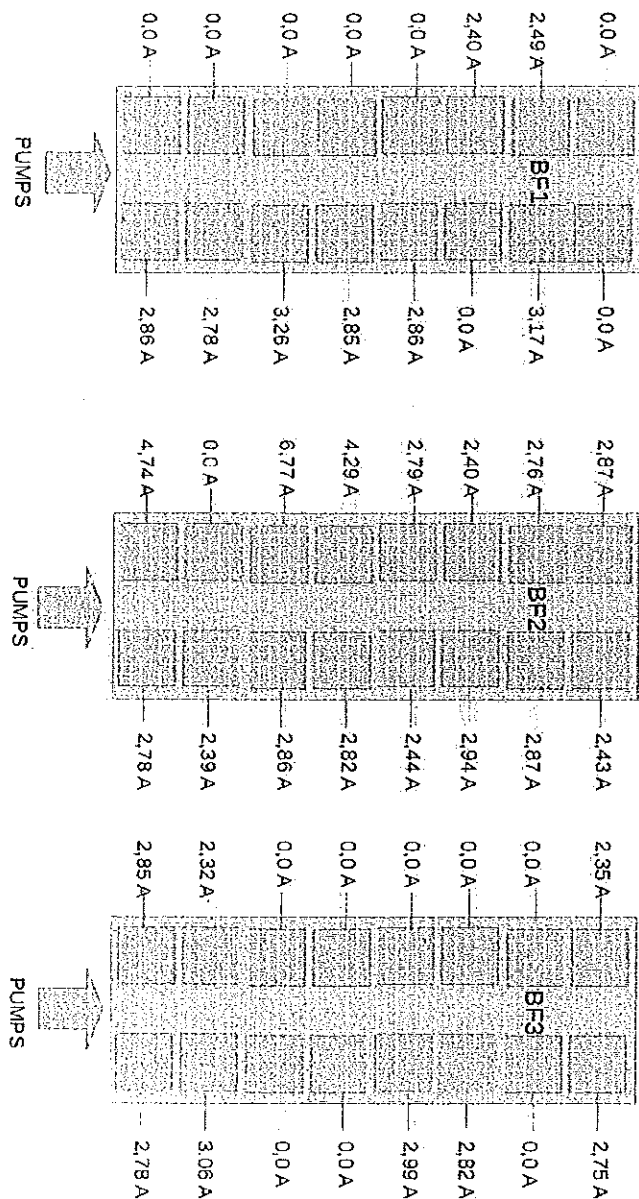
| Annexe 6: DAILY VALUATION OF THE ENERGY MULTIPLE - OCTOBER 2015 | | | | | | | | | | |
|---|-------------|-------------------------------|-------------------------|----------------------------|----------------------------------|---------------------------------|-----------------------|-------------------|--------------------------|------|
| | | average power supply (w) | supplied energy wh/d | tank water T max (°C) | effective flowec water(Kg/d) | reduced flowec water (kg/d) | steam T min (°C) | steam pressure | produced energy (wh) | COP |
| 09/30 22:30 | 10/01 22:30 | 7625,0 | 183000 | 70,7 | 27000 | 24300 | 103,5 | 0.0 | 1,52E+07 | 83,3 |
| 10/01 22:30 | 10/02 22:30 | 10333.3 | 248000 | 70,7 | 36000 | 32400 | 104,4 | 0.0 | 2,03E+07 | 82.0 |
| 10/02 22:30 | 10/03 22:30 | 11166.7 | 268000 | 71.1 | 36000 | 32400 | 104,4 | 0.0 | 2,03E+07 | 75,9 |
| 10/03 22:30 | 10/04 22:30 | 11000.0 | 264000 | 70,7 | 36000 | 32400 | 104,2 | 0.0 | 2,03E+07 | 77,0 |
| 10/04 22:30 | 10/05 22:30 | 11041.7 | 265000 | 71,1 | 36000 | 32400 | 104,4 | 0.0 | 2,03E+07 | 76,7 |
| 10/05 22:30 | 10/06 22:30 | 11250.0 | 270000 | 70,7 | 36000 | 32400 | 104,2 | 0.0 | 2,03E+07 | 75,3 |
| 10/06 22:30 | 10/07 22:30 | 11458.3 | 275000 | 70,3 | 36000 | 32400 | 104 | 0.0 | 2,03E+07 | 73,9 |
| 10/07 22:30 | 10/08 22:30 | 11458.3 | 275000 | 70 | 36000 | 32400 | 103,9 | 0.0 | 2,03E+07 | 73,9 |
| 10/08 22:30 | 10/09 22:30 | 11250.0 | 270000 | 70 | 36000 | 32400 | 103,9 | 0.0 | 2,03E+07 | 75,3 |
| 10/09 22:30 | 10/10 22:30 | 11250.0 | 270000 | 70 | 36000 | 32400 | 103,9 | 0.0 | 2,03E+07 | 75,3 |
| 10/10 22:30 | 10/11 22:30 | 11458.3 | 275000 | 70,3 | 36000 | 32400 | 103,9 | 0.0 | 2,03E+07 | 73,9 |
| 10/11 22:30 | 10/12 22:30 | 11500.0 | 276000 | 70 | 36000 | 32400 | 103,9 | 0.0 | 2,03E+07 | 73,7 |
| 10/12 22:30 | 10/13 22:30 | 11474.2 | 275380 | 70,3 | 36000 | 32400 | 104 | 0.0 | 2,03E+07 | 73,8 |
| 10/13 22:30 | 10/14 22:30 | 11470.8 | 275300 | 70 | 36000 | 32400 | 104,4 | 0.0 | 2,03E+07 | 73,9 |
| 10/14 22:30 | 10/15 22:30 | 11483.3 | 275600 | 70,3 | 36000 | 32400 | 104,4 | 0.0 | 2,03E+07 | 73,8 |
| 10/15 22:30 | 10/16 22:30 | 11493.8 | 275850 | 70,3 | 36000 | 32400 | 104,4 | 0.0 | 2,03E+07 | 73,7 |
| 10/16 22:30 | 10/17 22:30 | 11416.7 | 274000 | 70,3 | 36000 | 32400 | 104,3 | 0.0 | 2,03E+07 | 74.2 |

| Annexe 6: DAILY VALUATION OF THE ENERGY MULTIPLE - OCTOBER 2015 | | | | | | | | | | |
|---|-------------|-------------------------------|-------------------------|--------------------------|----------------------------------|---------------------------------|---------------------|-------------------|--------------------------|------|
| | | average power supply (w) | supplied energy wh/d | lank water T max (°C) | effective flowed water(Kg/c) | reduced flowed water (kg/d) | steam T min (°C) | steam pressure | produced energy (wh) | COP |
| 10/17 22:30 | 10/18 22:30 | 11458.3 | 275000 | 70,3 | 36000 | 32400 | 104,4 | 0.0 | 2,03E+07 | 73,9 |
| 10/18 22:30 | 10/19 22:30 | 11208.3 | 269000 | 70,7 | 36000 | 32400 | 104,2 | 0.0 | 2,03E+07 | 75,6 |
| 10/19 22:30 | 10/20 22:30 | 11208.3 | 269000 | 70,3 | 36000 | 32400 | 104 | 0.0 | 2,03E+07 | 75,6 |
| 10/20 22:30 | 10/21 22:30 | 11333.3 | 272000 | 70,3 | 36000 | 32400 | 104 | 0.0 | 2,03E+07 | 74,7 |
| 10/21 22:30 | 10/22 22:30 | 11333.3 | 272000 | 70,3 | 36000 | 32400 | 104 | 0.0 | 2,03E+07 | 74,7 |
| 10/22 22:30 | 10/23 22:30 | 11375.0 | 273000 | 70,3 | 36000 | 32400 | 104,3 | 0.0 | 2,03E+07 | 74,5 |
| 10/23 22:30 | 10/24 22:30 | 11375.0 | 273000 | 70,3 | 36000 | 32400 | 104,3 | 0.0 | 2,03E+07 | 74,5 |
| 10/24 22:30 | 10/25 22:30 | 11375.0 | 273000 | 70,7 | 36000 | 32400 | 104,4 | 0.0 | 2,03E+07 | 74,5 |
| 10/25 22:30 | 10/26 22:30 | 11333.3 | 272000 | 70,7 | 36000 | 32400 | 103,9 | 0.0 | 2,03E+07 | 74,7 |
| 10/26 22:30 | 10/27 22:30 | 11250.0 | 270000 | 71,1 | 36000 | 32400 | 104 | 0.0 | 2,03E+07 | 75,3 |
| 10/27 22:30 | 10/28 22:30 | 11375.0 | 273000 | 71,1 | 36000 | 32400 | 104,3 | 0.0 | 2,03E+07 | 74,5 |
| 10/28 22:30 | 10/29 22:30 | 11291.7 | 271000 | 71,1 | 36000 | 32400 | 104,4 | 0.0 | 2,03E+07 | 75,0 |
| 10/29 22:30 | 10/30 22:30 | 11250.0 | 270000 | 71,1 | 36000 | 32400 | 104,2 | 0.0 | 2,03E+07 | 75,3 |
| 10/30 22:30 | 10/31 22:30 | 11375.0 | 273000 | 70,7 | 36000 | 32400 | 104,4 | 0.0 | 2,03E+07 | 74,5 |

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

Clamp: MASTECH S.N.: MBEI 053309

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



STAFF present at measurements:
 Dr. Ing. Fabio Penon (ERV).....
 M.Eng. Fulvio Fabiani (Designer).....
 Barry West (Chief Electrical Maintenance).....

[Handwritten signatures of Dr. Ing. Fabio Penon, M.Eng. Fulvio Fabiani, and Barry West]

| DAILY VALUATION OF THE ENERGY MULTIPLE - APRIL 2015 | | | | | | | | | | | |
|---|-------------|--------------------------------|-------------------------|---------------------------|----------------------------------|---------------------------------|----------------------|-------------------|--------------------------|--------------|--|
| | | average power supply (Kw) | supplied energy wh/d | tank water T max (°C) | effective flowed water(Kg/d) | reduced flowed water (kg/d) | steam T min (°C) | steam pressure | produced energy (wh) | COP | |
| 03/31 22:30 | 04/01 22:30 | 10.25 | 246000 | 69,1 | 36000 | 32400 | 103,9 | 0.0 | 2,03E+07 | 82,6 | |
| 04/01 22:30 | 04/02 22:30 | 10.29 | 247000 | 69,1 | 36000 | 32400 | 103,9 | 0.0 | 2,03E+07 | 82,3 | |
| 04/02 22:30 | 04/03 22:30 | 10.67 | 256000 | 68,6 | 36000 | 32400 | 103,9 | 0.0 | 2,03E+07 | 79,4 | |
| 04/03 22:30 | 04/04 22:30 | 10.21 | 247000 | 68 | 36000 | 32400 | 103,9 | 0.0 | 2,03E+07 | 82,3 | |
| 04/04 22:30 | 04/05 22:30 | 10.29 | 247000 | 68,6 | 36000 | 32400 | 103,9 | 0.0 | 2,03E+07 | 82,3 | |
| 04/05 22:30 | 04/06 22:30 | 9,96 | 239000 | 69,1 | 36000 | 32400 | 103,9 | 0.0 | 2,03E+07 | 85,1 | |
| 04/06 22:30 | 04/07 22:30 | not measured | not measured | not measured | not measured | not measured | not measured | not measured | not measured | not measured | |
| 04/07 22:30 | 04/08 22:30 | 9,92 | 238000 | 69,1 | 36000 | 32400 | 103,9 | 0.0 | 2,03E+07 | 85,4 | |
| 04/08 22:30 | 04/09 22:30 | 10.54 | 253000 | 69,1 | 28000 | 25200 | 103,9 | 0.0 | 1,58E+07 | 62,5 | |
| 04/09 22:30 | 04/10 22:30 | 10.55 | 253000 | 69,1 | 38000 | 34200 | 103,9 | 0.0 | 2,15E+07 | 84,8 | |
| 04/10 22:30 | 04/11 22:30 | 10.75 | 258000 | 69,1 | 36000 | 32400 | 103,9 | 0.0 | 2,03E+07 | 78,8 | |
| 04/11 22:30 | 04/12 22:30 | 10.64 | 253000 | 68,6 | 37000 | 33300 | 103,9 | 0.0 | 2,09E+07 | 82,6 | |
| 04/12 22:30 | 04/13 22:30 | 10.67 | 256000 | 68,6 | 36000 | 32400 | 103,9 | 0.0 | 2,03E+07 | 79,4 | |
| 04/13 22:30 | 04/14 22:30 | 10.64 | 255000 | 69,1 | 36000 | 32400 | 103,9 | 0.0 | 2,03E+07 | 79,7 | |
| 04/14 22:30 | 04/15 22:30 | 10,5 | 252000 | 68,6 | 36000 | 32400 | 103,9 | 0.0 | 2,03E+07 | 80,7 | |
| 04/15 22:30 | 04/16 22:30 | 10.67 | 256000 | 69,1 | 36000 | 32400 | 103,9 | 0.0 | 2,03E+07 | 79,4 | |
| 04/16 22:30 | 04/17 22:30 | 10.59 | 254000 | 68,6 | 36000 | 32400 | 103,9 | 0.0 | 2,03E+07 | 80,0 | |

| DAILY VALUATION OF THE ENERGY MULTIPLE - APRIL 2015 | | | | | | | | | | |
|---|-------------|--------------------------------|-------------------------|---------------------------|----------------------------------|---------------------------------|----------------------|-------------------|--------------------------|------|
| | | average power supply (Kw) | supplied energy wh/d | tank water T max (°C) | effective flowed water(Kg/d) | reduced flowed water (kg/d) | steam T min (°C) | steam pressure | produced energy (wh) | COP |
| 04/17 22:30 | 04/18 22:30 | 10.46 | 251000 | 69,1 | 36000 | 32400 | 103,9 | 0.0 | 2,03E+07 | 81,0 |
| 04/18 22:30 | 04/19 22:30 | 10.54 | 253000 | 68,6 | 39000 | 35100 | 103,9 | 0.0 | 2,20E+07 | 87,1 |
| 04/19 22:30 | 04/20 22:30 | 10.67 | 256000 | 69,1 | 36000 | 32400 | 103,9 | 0.0 | 2,03E+07 | 79,4 |
| 04/20 22:30 | 04/21 22:30 | 10.46 | 251000 | 69,7 | 36000 | 32400 | 103,9 | 0.0 | 2,03E+07 | 81,0 |
| 04/21 22:30 | 04/22 22:30 | 10.67 | 256000 | 69,1 | 36000 | 32400 | 103,9 | 0.0 | 2,03E+07 | 79,4 |
| 04/22 22:30 | 04/23 22:30 | 10.67 | 256000 | 69,1 | 36000 | 32400 | 103,9 | 0.0 | 2,03E+07 | 79,4 |
| 04/23 22:30 | 04/24 22:30 | 10.59 | 254000 | 69,1 | 36000 | 32400 | 103,9 | 0.0 | 2,03E+07 | 80,0 |
| 04/24 22:30 | 04/25 22:30 | 10.75 | 258000 | 69,1 | 36000 | 32400 | 103,9 | 0.0 | 2,03E+07 | 78,8 |
| 04/25 22:30 | 04/26 22:30 | 10.54 | 253000 | 68,6 | 36000 | 32400 | 103,9 | 0.0 | 2,03E+07 | 80,4 |
| 04/26 22:30 | 04/27 22:30 | 10.55 | 253000 | 68,6 | 36000 | 32400 | 103,9 | 0.0 | 2,03E+07 | 80,4 |
| 04/27 22:30 | 04/28 22:30 | 10.34 | 248000 | 69,1 | 36000 | 32400 | 103,9 | 0.0 | 2,03E+07 | 82,0 |
| 04/28 22:30 | 04/29 22:30 | 10.25 | 246000 | 69,1 | 36000 | 32400 | 103,9 | 0.0 | 2,03E+07 | 82,6 |
| 04/29 22:30 | 04/30 22:30 | 10.29 | 247000 | 69,7 | 36000 | 32400 | 103,9 | 0.0 | 2,03E+07 | 82,3 |

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

| Annexe 5: DAILY VALUATION OF THE ENERGY MULTIPLE - SEPTEMBER 2015 | | | | | | | | | | |
|---|-------------|-------------------------------|-------------------------|----------------------------|----------------------------------|---------------------------------|----------------------|-------------------|--------------------------|-------|
| | | average power supply (w) | supplied energy wh/d | tank water T max (°C) | effective flowed water(Kg/d) | reduced flowed water (kg/d) | steam T min (°C) | steam pressure | produced energy (wh) | COP |
| 09/17 22:30 | 09/18 22:30 | 5625,0 | 135000 | 58 | 27000 | 24300 | 104,2 | 0.0 | 1,52E+07 | 113,0 |
| 09/18 22:30 | 09/19 22:30 | 5625,0 | 135000 | 58 | 27000 | 24300 | 104,2 | 0.0 | 1,52E+07 | 113,0 |
| 09/19 22:30 | 09/20 22:30 | 5666,7 | 136000 | 58 | 27000 | 24300 | 104,2 | 0.0 | 1,52E+07 | 112,1 |
| 09/20 22:30 | 09/21 22:30 | 5666,7 | 136000 | 58 | 27000 | 24300 | 104,2 | 0.0 | 1,52E+07 | 112,1 |
| 09/21 22:30 | 09/22 22:30 | 5625,0 | 135000 | 58 | 27000 | 24300 | 104,2 | 0.0 | 1,52E+07 | 113,0 |
| 09/22 22:30 | 09/23 22:30 | 5666,7 | 136000 | 58 | 27000 | 24300 | 104,2 | 0.0 | 1,52E+07 | 112,1 |
| 09/23 22:30 | 09/24 22:30 | 5583,3 | 134000 | 58 | 27000 | 24300 | 104,2 | 0.0 | 1,52E+07 | 113,8 |
| 09/24 22:30 | 09/25 22:30 | 5625,0 | 135000 | 58 | 27000 | 24300 | 104,2 | 0.0 | 1,52E+07 | 113,0 |
| 09/25 22:30 | 09/26 22:30 | 5666,7 | 136000 | 58 | 27000 | 24300 | 104,2 | 0.0 | 1,52E+07 | 112,1 |
| 09/26 22:30 | 09/27 22:30 | 5625,0 | 135000 | 58 | 27000 | 24300 | 104,2 | 0.0 | 1,52E+07 | 113,0 |
| 09/27 22:30 | 09/28 22:30 | 6166,7 | 148000 | 58 | 28000 | 25200 | 104,2 | 0.0 | 1,58E+07 | 106,8 |
| 09/28 22:30 | 09/29 22:30 | 6104,2 | 146500 | 58 | 27000 | 24300 | 104,2 | 0.0 | 1,52E+07 | 104,1 |
| 09/29 22:30 | 09/30 22:30 | 5687,5 | 136500 | 58 | 27000 | 24300 | 104,2 | 0.0 | 1,52E+07 | 111,7 |

Annexe 4: DAILY VALUATION OF THE ENERGY MULTIPLE - AUGUST 2015

| | | average power supply (w) | supplied energy wh/d | tank water T max (°C) | effective flowed water (Kg/d) | reduced water (kg/d) | steam T min (°C) | steam pressure | produced energy (wh) | COP |
|-------------|-------------|-------------------------------|-------------------------|----------------------------|------------------------------------|---------------------------|-----------------------|-------------------|---------------------------|-------|
| 07/31 22.30 | 08/01 22:30 | 6291,7 | 151000 | 76,8 | 36000 | 32400 | 103 | 0.0 | 2,03E+07 | 134,6 |
| 08/01 22.30 | 08/02 22:30 | 6208,3 | 149000 | 68,6 | 36000 | 32400 | 103,9 | 0.0 | 2,03E+07 | 136,4 |
| 08/02 22.30 | 08/03 22:30 | 6125,0 | 147000 | 68,6 | 27000 | 24300 | 103,5 | 0.0 | 1,52E+07 | 103,7 |
| 08/03 22.30 | 08/04 22:30 | 5750,0 | 139000 | 68,6 | 27000 | 24300 | 103,5 | 0.0 | 1,52E+07 | 110,5 |
| 08/04 22.30 | 08/05 22:30 | 6458,3 | 155000 | 69,1 | 27000 | 24300 | 103,9 | 0.0 | 1,52E+07 | 98,4 |
| 08/05 22.30 | 08/06 22:30 | 6291,7 | 151000 | 70,3 | 36000 | 32400 | 103,9 | 0.0 | 2,03E+07 | 134,6 |
| 08/06 22.30 | 08/07 22:30 | 6291,7 | 151000 | 70,3 | 36000 | 32400 | 103,9 | 0.0 | 2,03E+07 | 134,6 |
| 08/07 22.30 | 08/08 22:30 | 5958,3 | 143000 | 70,8 | 36000 | 32400 | 103,5 | 0.0 | 2,03E+07 | 142,2 |
| 08/08 22.30 | 08/09 22:30 | 5708,3 | 137000 | 70,3 | 27000 | 24300 | 103,5 | 0.0 | 1,52E+07 | 111,3 |
| 08/09 22.30 | 08/10 22:30 | 5875,0 | 141000 | 69,7 | 27000 | 24300 | 103,5 | 0.0 | 1,52E+07 | 108,1 |
| 08/10 22.30 | 08/11 22:30 | 6125,0 | 147000 | 70,3 | 27000 | 24300 | 103,5 | 0.0 | 1,52E+07 | 103,7 |
| 08/11 22.30 | 08/12 22:30 | 6166,7 | 148000 | 69,7 | 29000 | 26100 | 103,5 | 0.0 | 1,64E+07 | 110,7 |
| 08/12 22.30 | 08/13 22:30 | 6125,0 | 147000 | 69,1 | 29000 | 26100 | 103,9 | 0.0 | 1,64E+07 | 111,4 |
| 08/13 22.30 | 08/14 22:30 | 6125,0 | 147000 | 69,7 | 29000 | 26100 | 103,9 | 0.0 | 1,64E+07 | 111,4 |
| 08/14 22.30 | 08/15 22:30 | 6125,0 | 147000 | 69,7 | 29000 | 26100 | 103,9 | 0.0 | 1,64E+07 | 111,4 |
| 08/15 22.30 | 08/16 22:30 | 6083,3 | 146000 | 69,7 | 29000 | 26100 | 103,5 | 0.0 | 1,64E+07 | 112,2 |
| 08/16 22.30 | 08/17 22:30 | 6125,0 | 147000 | 69,7 | 29000 | 26100 | 103,5 | 0.0 | 1,64E+07 | 111,4 |

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IH-00011115

Annexe 4: DAILY VALUATION OF THE ENERGY MULTIPLE - AUGUST 2015

| | | average power supply (w) | supplied energy wh/d | tank water T max (°C) | effective flowed water(Kg/d) | reduced flowed water (kg/d) | steam T min (°C) | steam pressure | produced energy (wh) | COP |
|-------------|-------------|-------------------------------|-------------------------|---------------------------|----------------------------------|---------------------------------|----------------------|-------------------|--------------------------|-------|
| 08/17 22.30 | 08/18 22:30 | 5958,3 | 143000 | 69,7 | 29000 | 26100 | 103,5 | 0.0 | 1,64E+07 | 114,5 |
| 08/18 22.30 | 08/19 22:30 | 5666,7 | 136000 | 66,7 | 29000 | 26100 | 103,5 | 0.0 | 1,64E+07 | 120,4 |
| 08/19 22.30 | 08/20 22:30 | 5625,0 | 135000 | 65,9 | 29000 | 26100 | 103 | 0.0 | 1,64E+07 | 121,3 |
| 08/20 22.30 | 08/21 22:30 | 5625,0 | 135000 | 62 | 29000 | 26100 | 103,9 | 0.0 | 1,64E+07 | 121,3 |
| 08/21 22.30 | 08/22 22:30 | 5666,7 | 136000 | 60,9 | 27000 | 24300 | 103,9 | 0.0 | 1,52E+07 | 112,1 |
| 08/22 22.30 | 08/23 22:30 | 5708,3 | 137000 | 65,9 | 27000 | 24300 | 103,9 | 0.0 | 1,52E+07 | 111,3 |
| 08/23 22.30 | 08/24 22:30 | 5666,7 | 136000 | 65,9 | 27000 | 24300 | 103,9 | 0.0 | 1,52E+07 | 112,1 |
| 08/24 22.30 | 08/25 22:30 | 5666,7 | 136000 | 60,9 | 27000 | 24300 | 103,5 | 0.0 | 1,52E+07 | 112,1 |
| 08/25 22.30 | 08/26 22:30 | 5625,0 | 135000 | 60,2 | 27000 | 24300 | 103,5 | 0.0 | 1,52E+07 | 113,0 |
| 08/26 22.30 | 08/27 22:30 | 5625,0 | 135000 | 59,8 | 27000 | 24300 | 103,9 | 0.0 | 1,52E+07 | 113,0 |
| 08/27 22.30 | 08/28 22:30 | 5583,3 | 134000 | 59,0 | 27000 | 24300 | 103,9 | 0.0 | 1,52E+07 | 113,8 |
| 08/28 22.30 | 08/29 22:30 | 5583,3 | 134000 | 56,8 | 27000 | 24300 | 103,5 | 0.0 | 1,52E+07 | 113,8 |
| 08/29 22.30 | 08/30 22:30 | 5625,0 | 135000 | 62,8 | 27000 | 24300 | 103,5 | 0.0 | 1,52E+07 | 113,0 |
| 08/30 22.30 | 08/31 22:30 | 5625,0 | 135000 | 58,5 | 27000 | 24300 | 103,9 | 0.0 | 1,52E+07 | 113,0 |

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IH-00011116

Ing. Fabio Penon

Second step

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

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

1. Plant configuration and measuring instruments positioning

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

2. Data recording

The measuring systems collect the following data every ten seconds: power supply (Kw), water temperature in the inner tank (°C), steam temperature (°C) and steam pressure (bar) in the pipe going to customer plant.
All data are recorded in a data logger
Only the mass of water (m³), flowed through the plant, is recorded manually once in a day at 10.30 p.m.
In the logbook the E-Cat each addition of distilled water from external tank to an internal tank is registered.
On 10/13/2015 and 10/14/2015 a control of absorption of instantaneous current in the reactors BF1, BF1 and BF3 has been performed manually

3. Data analysis

The data analysis shows that steam pressure has been about 0,0 bar throughout the period 10/12 – 10/14.
The steam temperature, manually checked, has been about 103 – 104 °C during the same period, i.e. the steam has been always superheated steam.
The water temperature, manually checked, has been between 60 – 80 °C during the same period.

The energy produced by E-Cat plant is given by the sum of the heat of heating of water, heat of vaporization of water and heat of superheating the steam.
 $E_p = E_R + E_v + E_s$

Ing. Fabio Penon

Second step

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

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

the energy produced by the E-Cat plant is:

$$E_P = E_V = \lambda \times M_w$$

where

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

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

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

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

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

The energy multiple value has been always about 74.

4. Annexes

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

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

Abano Terme, 10/19/2015

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

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

| Annexe 3: DAILY VALUATION OF THE ENERGY MULTIPLE - JULY 2015 | | | | | | | | | | |
|--|-------------|-------------------------------|-------------------------|--------------------------|----------------------------------|---------------------------------|----------------------|-------------------|--------------------------|-------|
| | | average power supply (w) | supplied energy wh/d | tank water T max (°C) | effective flowed water(Kg/d) | reduced flowed water (kg/d) | steam T min (°C) | steam pressure | produced energy (wh) | COP |
| 07/17 22:30 | 07/18 22:30 | 8708,3 | 209000 | 69,7 | 36000 | 32400 | 103,9 | 0.0 | 2,03E+07 | 97,3 |
| 07/18 22:30 | 07/19 22:30 | 8708,3 | 209000 | 75,3 | 36000 | 32400 | 103,5 | 0.0 | 2,03E+07 | 97,3 |
| 07/19 22:30 | 07/20 22:30 | 8666,7 | 208000 | 73,7 | 36000 | 32400 | 103,9 | 0.0 | 2,03E+07 | 97,7 |
| 07/20 22:30 | 07/21 22:30 | 8625,0 | 207000 | 69,7 | 36000 | 32400 | 103,9 | 0.0 | 2,03E+07 | 98,2 |
| 07/21 22:30 | 07/22 22:30 | 8625,0 | 207000 | 81,5 | 36000 | 32400 | 103,9 | 0.0 | 2,03E+07 | 98,2 |
| 07/22 22:30 | 07/23 22:30 | 8541,7 | 205000 | 78,4 | 36000 | 32400 | 103,5 | 0.0 | 2,03E+07 | 99,2 |
| 07/23 22:30 | 07/24 22:30 | 8583,3 | 206000 | 78,4 | 36000 | 32400 | 103,9 | 0.0 | 2,03E+07 | 98,7 |
| 07/24 22:30 | 07/25 22:30 | 8500,0 | 204000 | 76,8 | 36000 | 32400 | 103,9 | 0.0 | 2,03E+07 | 99,7 |
| 07/25 22:30 | 07/26 22:30 | 8500,0 | 204000 | 78,4 | 36000 | 32400 | 103,5 | 0.0 | 2,03E+07 | 99,7 |
| 07/26 22:30 | 07/27 22:30 | 9125,0 | 219000 | 78,4 | 36000 | 32400 | 103,5 | 0.0 | 2,03E+07 | 92,8 |
| 07/27 22:30 | 07/28 22:30 | 6083,3 | 146000 | 81,5 | 36000 | 32400 | 103,9 | 0.0 | 2,03E+07 | 139,3 |
| 07/28 22:30 | 07/29 22:30 | 6458,3 | 155000 | 75,3 | 31000 | 27900 | 103,5 | 0.0 | 1,75E+07 | 113,0 |
| 07/29 22:30 | 07/30 22:30 | 5958,3 | 143000 | 83,1 | 27000 | 24300 | 103,5 | 0.0 | 1,52E+07 | 106,6 |
| 07/30 22:30 | 07/31 22:30 | 6375,0 | 153000 | 80 | 36000 | 32400 | 103,9 | 0.0 | 2,03E+07 | 132,9 |

Ing. Fabio Penon

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

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

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

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

The energy produced by the E-Cat plant is:

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

where

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

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

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

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

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

Annexes

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

Abano Terme, 07/01/2016

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

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

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

| DAILY VALUATION OF THE ENERGY MULTIPLE - MAY 2015 | | | | | | | | | | | |
|---|-------------|--------------------------------|-------------------------|---------------------------|----------------------------------|---------------------------------|----------------------|-------------------|--------------------------|------|--|
| | | average power supply (Kw) | supplied energy wh/d | tank water T max (°C) | effective flowed water(Kg/d) | reduced flowed water (kg/d) | steam T min (°C) | steam pressure | produced energy (wh) | COP | |
| 04/30 22:30 | 05/01 22:30 | 10.25 | 246000 | 70,8 | 36000 | 32400 | 103,4 | 0.0 | 2,03E+07 | 82,6 | |
| 05/01 22:30 | 05/02 22:30 | 10.29 | 247000 | 69,1 | 36000 | 32400 | 103,9 | 0.0 | 2,03E+07 | 82,3 | |
| 05/02 22:30 | 05/03 22:30 | 10.29 | 247000 | 71,4 | 36000 | 32400 | 103,9 | 0.0 | 2,03E+07 | 82,3 | |
| 05/03 22:30 | 05/04 22:30 | 9,96 | 239000 | 69,7 | 35000 | 31500 | 103,9 | 0.0 | 1,98E+07 | 82,7 | |
| 05/04 22:30 | 05/05 22:30 | 10.67 | 256000 | 71,4 | 36000 | 32400 | 103,4 | 0.0 | 2,03E+07 | 79,4 | |
| 05/05 22:30 | 05/06 22:30 | 10.29 | 247000 | 70,3 | 36000 | 32400 | 103,4 | 0.0 | 2,03E+07 | 82,3 | |
| 05/06 22:30 | 05/07 22:30 | 10.21 | 245000 | 70,3 | 35000 | 31500 | 103,9 | 0.0 | 1,98E+07 | 80,7 | |
| 05/07 22:30 | 05/08 22:30 | 10.12 | 243000 | 70,3 | 36000 | 32400 | 103,9 | 0.0 | 2,03E+07 | 83,7 | |
| 05/08 22:30 | 05/09 22:30 | 10.25 | 246000 | 70,8 | 36000 | 32400 | 104,5 | 0.0 | 2,03E+07 | 82,6 | |
| 05/09 22:30 | 05/10 22:30 | 9,96 | 239000 | 73,1 | 36000 | 32400 | 104,5 | 0.0 | 2,03E+07 | 85,1 | |
| 05/10 22:30 | 05/11 22:30 | 10.33 | 248000 | 70,3 | 32000 | 28800 | 104,5 | 0.0 | 1,81E+07 | 72,9 | |
| 05/11 22:30 | 05/12 22:30 | 10.33 | 244000 | 71,4 | 34000 | 30600 | 104,5 | 0.0 | 1,92E+07 | 78,7 | |
| 05/12 22:30 | 05/13 22:30 | 10.29 | 245000 | 70,8 | 35000 | 31500 | 104,5 | 0.0 | 1,98E+07 | 80,7 | |
| 05/13 22:30 | 05/14 22:30 | 10.25 | 246000 | 70,3 | 36000 | 32400 | 104,5 | 0.0 | 2,03E+07 | 82,6 | |
| 05/14 22:30 | 05/15 22:30 | 10.21 | 245000 | 70,8 | 34000 | 30600 | 104,5 | 0.0 | 1,92E+07 | 78,4 | |
| 05/15 22:30 | 05/16 22:30 | 8,67 | 208000 | 70,3 | 29000 | 26100 | 104,5 | 0.0 | 1,64E+07 | 78,7 | |
| 05/16 22:30 | 05/17 22:30 | 10.28 | 247000 | 69,1 | 38000 | 34200 | 104,5 | 0.0 | 2,15E+07 | 86,9 | |

| DAILY VALUATION OF THE ENERGY MULTIPLE - MAY 2015 | | | | | | | | | | |
|---|-------------|--------------------------------|-------------------------|--------------------------|----------------------------------|---------------------------------|----------------------|-------------------|--------------------------|------|
| | | average power supply (Kw) | supplied energy wh/d | tank water T max (°C) | effective flowed water(Kg/d) | reduced flowed water (kg/d) | steam T min (°C) | steam pressure | produced energy (wh) | COP |
| 05/17 22:30 | 05/18 22:30 | 10 | 240000 | 70,3 | 29000 | 26100 | 104,5 | 0.0 | 1,64E+07 | 68,2 |
| 05/18 22:30 | 05/19 22:30 | 10,39 | 249600 | 70,8 | 30000 | 27000 | 104,5 | 0.0 | 1,69E+07 | 67,9 |

Annexe 1: DAILY VALUATION OF THE ENERGY MULTIPLE - MAY 2015

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

| Annexe 1: DAILY VALUATION OF THE ENERGY MULTIPLE - MAY 2015 | | | | | | | | | | |
|---|-------------|--------------------------------|-------------------------|---------------------------|----------------------------------|---------------------------------|----------------------|-------------------|--------------------------|------|
| | | average power supply (Kw) | supplied energy wh/d | lank water T max (°C) | effective flowed water(Kg/c) | reduced flowed water (kg/d) | steam T min (°C) | steam pressure | produced energy (wh) | COP |
| 05/17 22:30 | 05/18 22:30 | 10 | 240000 | 70,3 | 29000 | 26100 | 104,5 | 0.0 | 1,64E+07 | 68,2 |
| 05/18 22:30 | 05/19 22:30 | 10,39 | 249600 | 70,8 | 30000 | 27000 | 104,5 | 0.0 | 1,69E+07 | 67,9 |
| 05/19 22:30 | 05/20 22:30 | 10,22 | 245100 | 70,3 | 36000 | 32400 | 104,5 | 0.0 | 2,03E+07 | 82,9 |
| 05/20 22:30 | 05/21 22:30 | 10,09 | 242100 | 69,7 | 36000 | 32400 | 105,1 | 0.0 | 2,03E+07 | 84,0 |
| 05/21 22:30 | 05/22 22:30 | 10,17 | 244000 | 81,5 | 38000 | 34200 | 105,1 | 0.0 | 2,16E+07 | 88,0 |
| 05/22 22:30 | 05/23 22:30 | 10,22 | 245200 | 78,4 | 34000 | 30600 | 104,5 | 0.0 | 1,92E+07 | 78,3 |
| 05/23 22:30 | 05/24 22:30 | 10,46 | 251000 | 78,4 | 36000 | 32400 | 104,5 | 0.0 | 2,03E+07 | 81,0 |
| 05/24 22:30 | 05/25 22:30 | 10,29 | 247000 | 76,8 | 36000 | 32400 | 104,5 | 0.0 | 2,03E+07 | 82,3 |
| 05/25 22:30 | 05/26 22:30 | 10,38 | 249000 | 78,4 | 36000 | 32400 | 104,5 | 0.0 | 2,03E+07 | 81,7 |
| 05/26 22:30 | 05/27 22:30 | 10,59 | 254000 | 80 | 36000 | 32400 | 104,5 | 0.0 | 2,03E+07 | 80,0 |
| 05/27 22:30 | 05/28 22:30 | 9,75 | 234000 | 81,5 | 36000 | 32400 | 104,5 | 0.0 | 2,03E+07 | 86,9 |
| 05/28 22:30 | 05/29 22:30 | 10,38 | 249000 | 80 | 36000 | 32400 | 104,5 | 0.0 | 2,03E+07 | 81,7 |
| 05/29 22:30 | 05/30 22:30 | 9,17 | 220000 | 83 | 36000 | 32400 | 104,5 | 0.0 | 2,03E+07 | 92,4 |
| 05/30 22:30 | 05/31 22:30 | 9,67 | 232000 | 80 | 36000 | 32400 | 104,5 | 0.0 | 2,03E+07 | 87,6 |

Ing. Fabio Penon

Tests plan

E-CAT MW1 ENERGY PLANT IN MIAMI TESTS PLAN

1. Plant description

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

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

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

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

The power panel regulates the power supply of the electric heaters

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

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

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

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

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

In the plant some measuring instruments are installed:

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

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

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

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

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

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

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

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

- power analyzer for measuring the power supply.

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

Ing. Fabio Penon

Tests plan

2. Test set up

2.1 List of components

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

2.2 Measurement instrumentation

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

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

3. Calculation of the energy mutiple

6.1 Calculation of the energy produced (E_p)

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

$$E_p = E_R + E_v + E_s$$

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

where

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

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

C_{sw} = specific heat of water = 1,14 Wh/(kg°K)

T_{vw} = vaporization temperature of the water = 100 °C

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

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

Ing. Fabio Penon

Tests plan

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

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

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

The values refer to the atmospheric pressure

In order to be conservative:

- it will be not taken into account the heating energy of steam
 - the temperature of the incoming water will be always considered to be equal to the maximum value of the same measured during the entire test day
- It will be possible small leaks of water to the inside of the shelter and are present measurement uncertainties

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

3.2 Calculation of the energy absorbed (E_a)

The energy is supplied from the public grid

In order to be conservative:

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

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

3.3 Calculation of the 'energy multiple'

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

4. Test protocol

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

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

Leonardo Corporation will install measuring devices with reference documentation

Ing. Fabio Penon

Tests plan

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

He will carry out a trial run

Leonardo Corporation will start the system

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

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

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

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

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

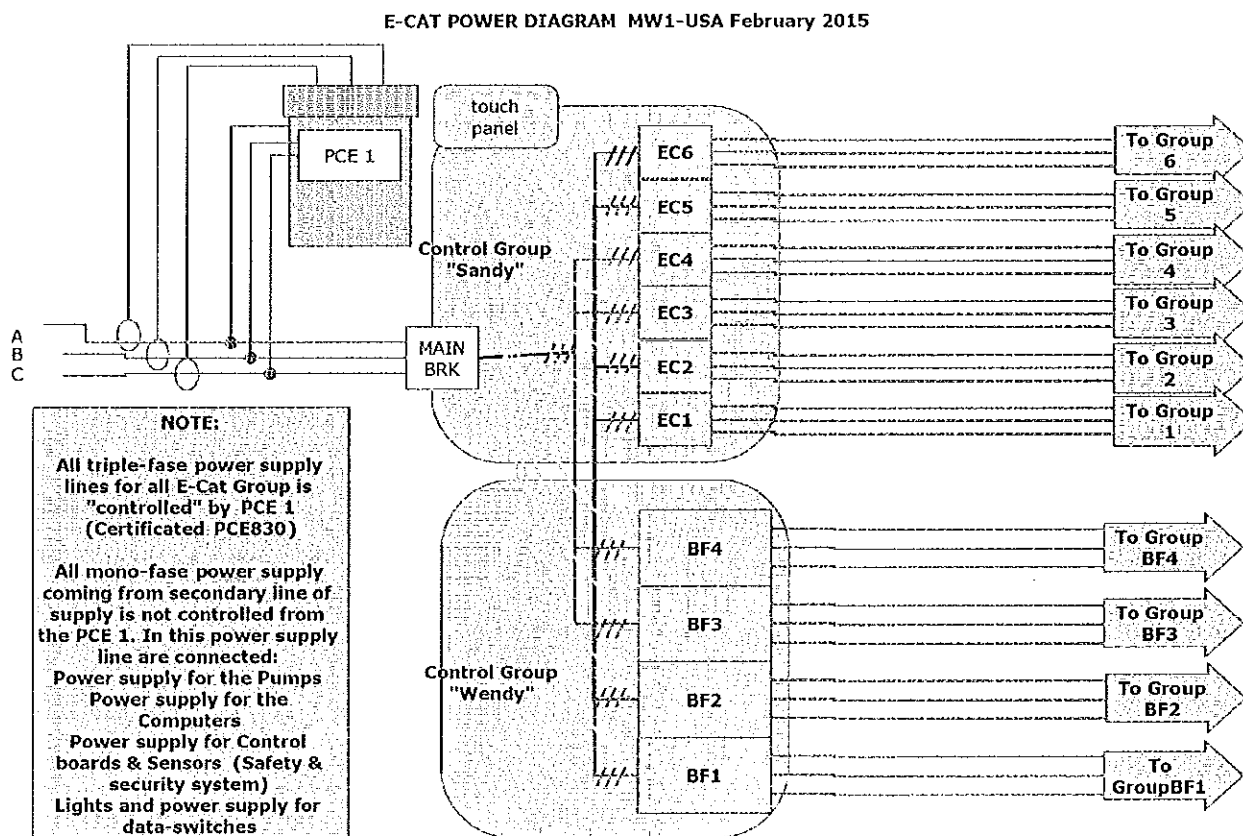
During the 350 days of operation, the ERV will visits to the plant with a frequency approximately four months in order to verify the configuration of the system and the measuring chains and make evaluations of Multiple Energy

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

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

Abano Terme, 2015/02/09

POIESIS srl
Fabio Penon M.E.



UNITED STATES DISTRICT COURT
SOUTHERN DISTRICT OF FLORIDA

ANDREA ROSSI and LEONARDO
CORPORATION,

Plaintiffs,

v.

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

Defendants.

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

**EXPERT DISCLOSURE OF JOSEPH
A. MURRAY**

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

Counter-Plaintiffs,

v.

ANDREA ROSSI and LEONARDO
CORPORATION,

Counter-Defendants,

and

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

Third-Party Defendants.



EXPERT DISCLOSURE OF JOSEPH A. MURRAY

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

I. INTRODUCTION

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

II. SUMMARY OF OPINIONS

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

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

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

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

Inverse Relationship of Power Input to Plant and Coefficient of Power

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

Heat Simulations

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

Water Flow

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

QUALIFICATIONS

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

Dated: January 30, 2017.

Respectfully submitted,

/s/ Christopher R.J. Pace

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Third Party-Plaintiffs

CERTIFICATE OF SERVICE

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

/s/ Michael A. Maugans

Michael A. Maugans

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EXHIBIT A

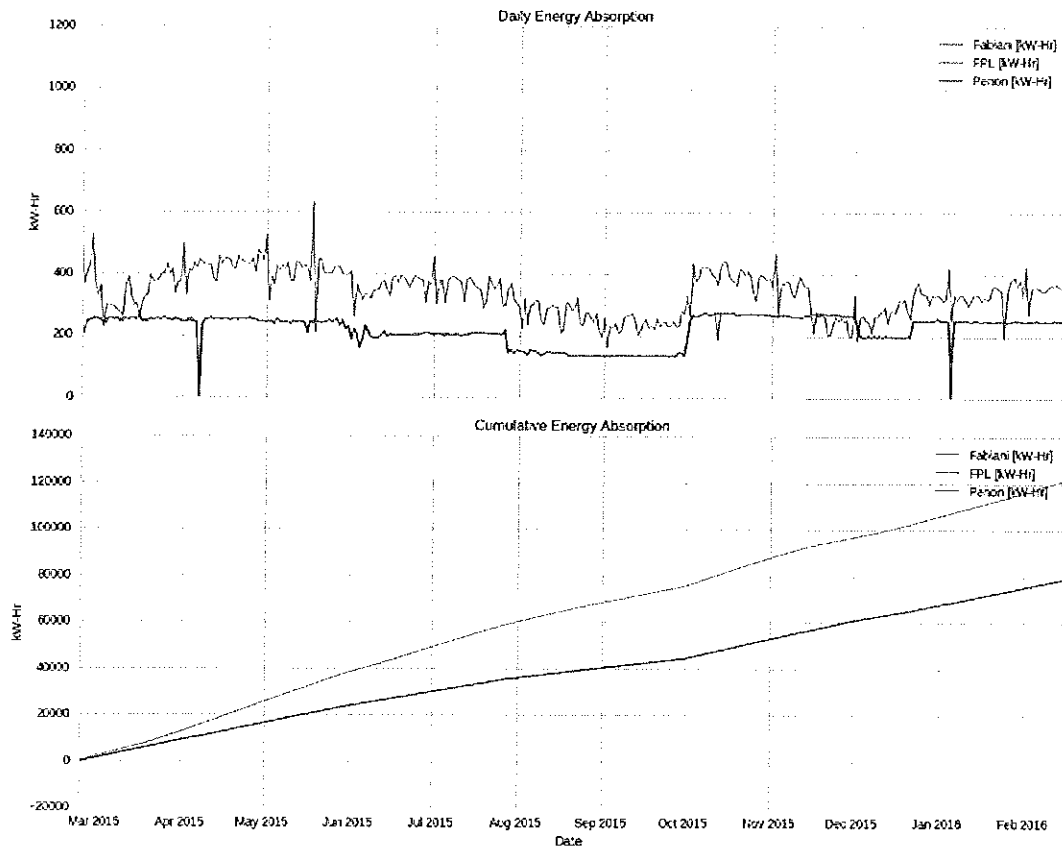


EXHIBIT B

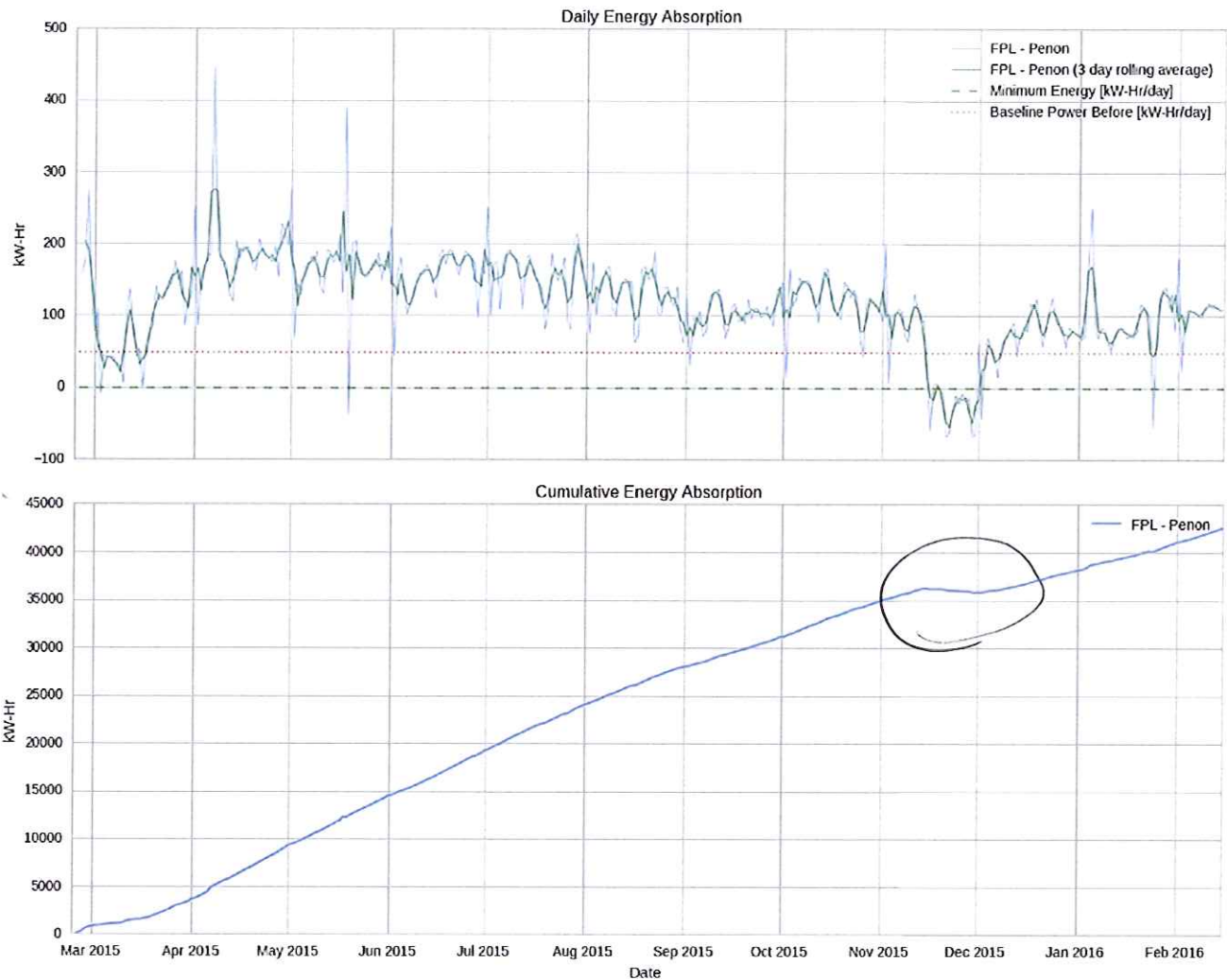


EXHIBIT C

