Test of Energy Catalyzer

Bologna April 28, 2011

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Measured voltage: 236 V (AC)

Weight hydrogen bottle (attached, opened, closed, and detached)**:**
- before: 13653.2 grams
- after: 13652.9 grams
Total loaded: 0.3 grams

Pressure H2
Bottle: 85 bar
Reduced: 25 bar

Temperature:

T2 – temperature outlet
T3 – temperature water inlet

The temperature probe was initially checked submerged in a pot with boiling water. The measured value was 99.6 °C. All values above this should indicate that the probe is not submerged in water.

11.47	Reservoir 2: 11144 grams
11.48	Start pump
	Checking outflow 3 minutes: 206 grams which means approx 4.12 kg/h
12.02	Stop pump. Reservoir 2: 10188 grams. Consumed: 956 grams in 14 minutes, which means approx 4.10 kg/h.
12.08	Start pump. Reservoir 2: 10394 grams.
	T1: 19.3 T2: 19.4 T3: 19.2
12.10	Start control unit. Measured AC current: 275 mA, which means 65 watts
12.11	Start heating Measured AC current: 1.6 A, which means 378 watts
12.16	T=100.0 °C. Outlet hose hot.
13.15	Added water from reservoir 1: 10172 – 9856 = 316 grams
13.18	Added water from reservoir 1: 5712 – 2050 = 3662 grams
14.32	Added water from reservoir 1: 2049 – 325 = 1724 grams
15.11	T1: 21,9 T2: 100.6 T3: 20.20
15.12	Stop heating. AC current measured to 271 mA.
15.14	Stop pump. Reservoir 2: 4389 grams

Water flow

Reservoir 1:

Weight at start 12.08	+10394 grams
Added 13.15	+ 316 grams
Added 13.18	+ 3662 grams
Added 14.32	+ 1724 grams
Remaining 15.14	– 4389 grams

Tot flow in 3:06 (3.1) h 11707 grams, which means 3.8 kg/h

Total water flow from boiling at 12:16 – time reduced by eight minutes. Calculating conservatively with initial flow of 4.1 kg/h means that mass of water is reduced by 547 grams.

Total mass of water vaporized (not counting water already inside the copper tube of the energy catalyzer): 11160 grams

Total running time: 2:58 (2.97) h.

Energy calculation:

Inlet water temperature, T3: 20°C
Boiling temperature: 99.5°C
ΔT= 79.5 K

Heat capacity of water is 4.18 kJ/(kg x K)

Energy required for heating water, W_{heat} = 332 kJ/kg = 92 Wh/kg

Enthalpy of vaporization is 2260 kJ/kg. Energy required for vaporization, W_{vap} = 627.8 Wh/kg.

Total energy required, $W_{tot} = W_{heat} + W_{vap}$ = 720 Wh/kg

Total mass of water, m_{tot} = 11160 grams

Total energy produced W_{tot} x m_{tot} = 720 x 11.160 = 8035 Wh

Max electric heating energy (including 65 watts power for control unit): 378 x 2.97 = 1123 Wh

Net energy: 6912 Wh ≈ 6.9 kWh (≈ 25 MJ)

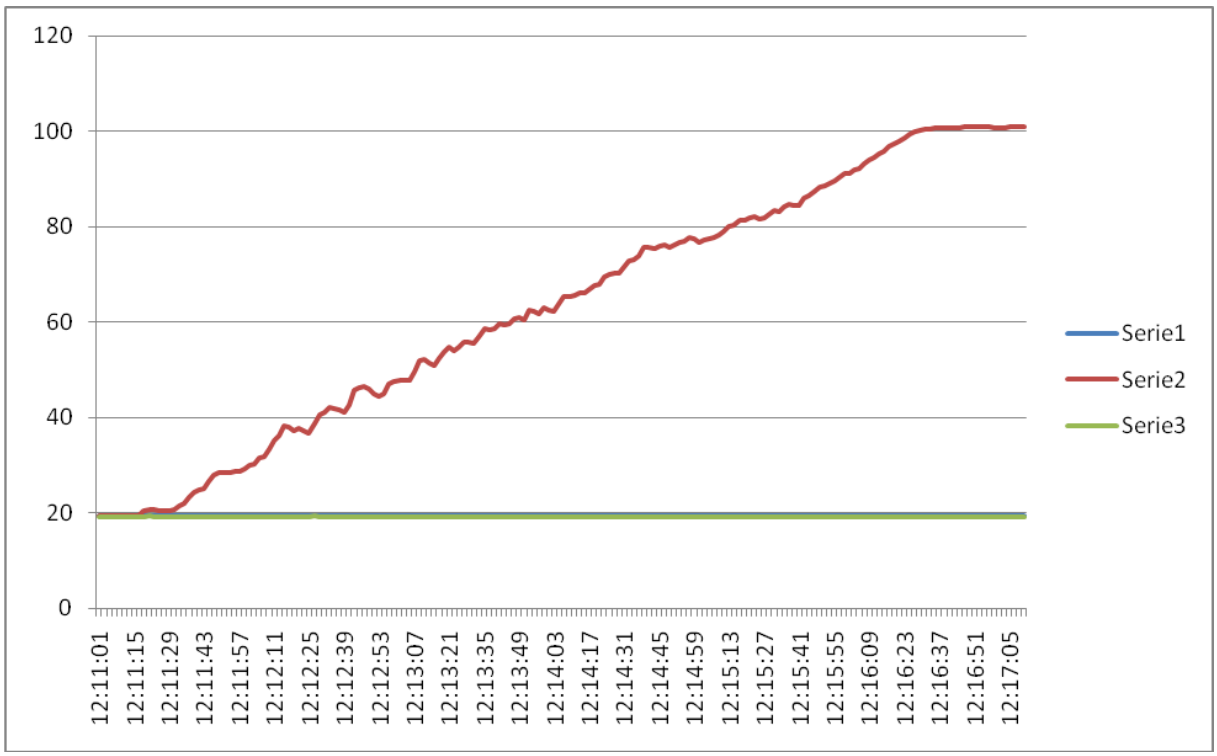
Average net heating power in 2:58 (2.97) h: 6.912 / 2.97 ≈ 2.3 kW

Note:

Condensed water and vapor from outlet hose was collected in a plastic bucket with the hose submerged in the water most of the time. Vapor bubbled from the hose under the water surface. After the test the mass of the water was about 5.4 kg.

The water depth in the bucket was in the end at the most 200 mm. This creates a pressure which can explain the lowered water flow. It should also result in an increase in boiling temperature of water of at the most 0.5 degrees, according to the approximate formula for vapor pressure of water P(mm Hg) = exp (20.386 – 5132/T).

Temperature during start-up:



Instruments

* Peristaltic pump NSF
Model # CEP183-362N3
Serial # 060550065
Max output 12.0 liters/h
Max press 1.50 bar

* Temperature logger Testo
177-T3
0554 1765 Usb Interface

* Temperature probe Testo
Calibration certificate No 838/2010 PD 29/12 2010 (measured T2)
Calibration certificate No 839/2010 PD 29/12 2010 (measured T3)

* Scale
Model: TKW 15 S
S/N: 2917029003
Max 15000 g
d= 0.1 g
Certified according to ISO 9001:2000

* Amperemeter Digimaster DM201
1090647637
(Checked against a multimeter afterwards by Mats Lewan).

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