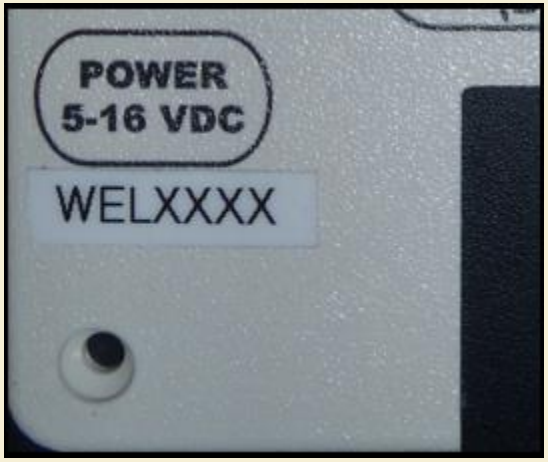
THERMO DYNAMICS LTD.

Congratulations!
Your unique solar monitor ID is located on your monitoring unit as seen on this page.

To access your solar monitoring website, go to Thermo-Dynamics.com and follow the Halifax Solar City link. Your four digit WEL ID can be found on your unit as seen here.



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This document explains the graphs and data displayed on your solar monitoring website. It will give you a better understanding of its function and importance within your home.

Glossary

Auxiliary Heater – The secondary means of heating your water load, aside from solar. This is typically electric or gas.

DHW - Domestic hot water. The water that exits your auxiliary heater and enters the home.

e-Mag – e-Mag Solar Pump. The e-Mag consists of a rotary vane pump driven by a photovoltaic powered DC motor and controller. The e-Mag pumps heat transfer fluid throughout the Solar Boiler and collectors.

HTF – Heat transfer fluid. Thermo-Dynamics Ltd uses a mix of food grade propylene glycol (40%) and distilled water (60%)

kWh – Kilowatt-hour. A unit of energy equivalent to one kilowatt of power expended for one hour of time.

PV module - Photovoltaic module. The photovoltaic module converts radiation from the sun into power. This provides proportional power to the e-Mag.

SDHW – Solar domestic hot water. The water that has been heated through the Solar Boiler.

Basic Information

The ynamics Solar Boiler™

Solar Boiler™ Solar Water Heater

The current time and date. The solar monitor logs data every minute.

Time: 08:39:08 ADT
Date: 03-02-2014

Photovoltaic Module

7.7	volts
0.01	amps
0.1	watts

Collector Slope and Orientation

27°	from horizontal
22°	from south ("+" is west "–" is east)

6.1°C **Solar Collector**

25 W/m2 **Solar Power**

1.1°C **Roof Temperature**

Solar Collector

Domestic Hot Water OUT

28.8°C

23.4°C **Solar Hot Water**

The power rating of your auxiliary heater.

3.80 kW

Off

The current status of your auxiliary heater.

°C **Solar Storage Tank**

15.1°C

Electric Water Heater

Your type of auxiliary heater.

	Today	Month	Year
hours	1.1	5.2	90
kWh	4.2	19.7	340

The number of hours your auxiliary heater has been operating and the kWh used. This data is logged daily, monthly and yearly.

If your auxiliary heater is oil fired, the litres of oil consumed are logged here.

Summary

	Now		Today		This Month		This Year	
Solar energy on collectors	152	watts	0.1	kWh	27	kWh	222	kWh
Solar energy to storage	0	watts	0.0	kWh	6	kWh	49	kWh
Solar energy to hot water	0	watts	0.0	kWh	0	kWh	14	kWh
Total energy to hot water					0	kWh	35	kWh
Solar Fraction					0	%	39	%
DHW Consumption					0	liters	482	liters

The amount of money saved, based on available energy in your solar storage tank. This is accumulated daily, monthly and yearly.

Savings (all taxes included)

	Today		This Month		This Year	
Dollars (based on electricity $0.151 per kWh)	0.00	$	0.91	$	7	$
kg CO2 (based on 1.2 kg CO_2 eq/kWh)	0.00	kg	7.2	kg	73	kg

Reduction of carbon dioxide emissions through usage of your system. This is accumulated daily, monthly and yearly.

Solar Loop Flowrate

0.00 LPM

0	Pump ON
0	Collector Temp
0	Storage Temp h
1	Collector < Storage Temp

1 = "ON" 0 = "OFF"

eMAG Solar Pump™ operation

Cold Water IN

0.0 LPM **Flowrate**

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The date your system began to log data.

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The graphs that accompany your solar data will be explained in the order you see them on your solar monitoring website. Terms will be defined and common trends will be highlighted.

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Water Temperatures

Thermo Dynamics Solar Boiler™

Solar Boiler™ Solar Water Heater

Time: 08:39:08 ADT
Date: 03-02-2014

Photovoltaic Module

7.7	volts
0.01	amps
0.1	watts

Collector Slope and Orientation

27°	from horizontal
22°	from south ("+" is west "–" is east)

25 W/m2 **Solar Power**

1.1°C **Roof Temperature**

6.1°C **Solar Collector**

Solar C

DHW temperature supplied to your home.

28.8°C

SDHW temperature exiting you solar storage tank and entering your auxiliary heater.

23.4°C

Solar Hot Water

Summary	Now	Today	This Month	This Year
Solar energy on collectors	152 watts	0.1 kWh	27 kWh	222 kWh
rgy to storage	0 watts	0.0 kWh	6 kWh	49 kWh
rgy to hot water	0 watts	0.0 kWh	0 kWh	14 kWh
rgy to hot water	0 watts	0.0 kWh	0 kWh	35 kWh
Solar Fraction	67 %	0 %	0 %	39 %
DHW Consumption	0.0 Lpm	0 liters	0 liters	482 liters

Savings (all taxes included)

Dollars (based on electricity $0.151 per kWh)	0.00 $	0.91 $	7 $
kg CO2 (based on 1.2 kg CO_2 eq/kWh)	0.00 kg	7.2 kg	73 kg

SDHW temperature exiting your Solar Boiler and entering your solar storage tank.

23.4°C

Solar Storage Tank

Electric Water Heater

15.1°C

17.7°C

17.4°C

Solar Loop Flowrate

0.00 LPM

0	Pump ON
0	Collector Temp High
0	Storage Temp High
1	Collector < Storage Temp

1 = "ON" 0 = "OFF"

olar Pump™ operation

Water temperature entering your solar storage tank.

12.4°C

Cold Water IN

0.0 LPM **Flowrate**

	Today	Month	Year
hours	1.1	5.2	90
kWh	4.2	19.7	340

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Thermo Dynamics Solar Boiler™

Solar Boiler™ Solar Water Heater

Time: 08:39:08 ADT
Date: 03-02-2014

Photovoltaic Module

7.7	volts
0.01	amps
0.1	watts

Collector Slope and Orientation

27°	from horizontal
22°	from south ("+" is west "–" is east)

25 W/m2 **Solar Power**

1.1°C **Roof Temperature**

6.1°C **Solar Collector**

Solar Collector

Domestic Hot

T_WATER_HOT 28.8°C

T_WATER_SOLAR 23.4°C

Solar Hot Water

3.80 kW

Off

Electric Water Heater

T_HX_WATER_OUT 23.4°C

Solar Storage Tank

15.1°C

17.7°C

17.4°C

	Today	Month	Year
hours	1.1	5.2	90
kWh	4.2	19.7	340

Solar Loop Flowrate

0.00 LPM

T_WATER_COLD 12.4°C

Cold Water IN

0.0 LPM **Flowrate**

Summary	Now	Today	This Month	This Year
Solar energy on collectors	152 watts	0.1 kWh	27 kWh	222 kWh
Solar energy to storage	0 watts	0.0 kWh	6 kWh	49 kWh
Solar energy to hot water	0 watts	0.0 kWh	0 kWh	14 kWh
Total energy to hot water	0 watts	0.0 kWh	0 kWh	35 kWh
Solar Fraction	67 %	0 %	0 %	39 %
DHW Consumption	0.0 Lpm	0 liters	0 liters	482 liters
Savings (all taxes included)				
Dollars (based on electricity $0.151 per kWh)		0.00 $	0.91 $	7 $
kg CO2 (based on 1.2 kg CO_2 eq/kWh)		0.00 kg	7.2 kg	73 kg

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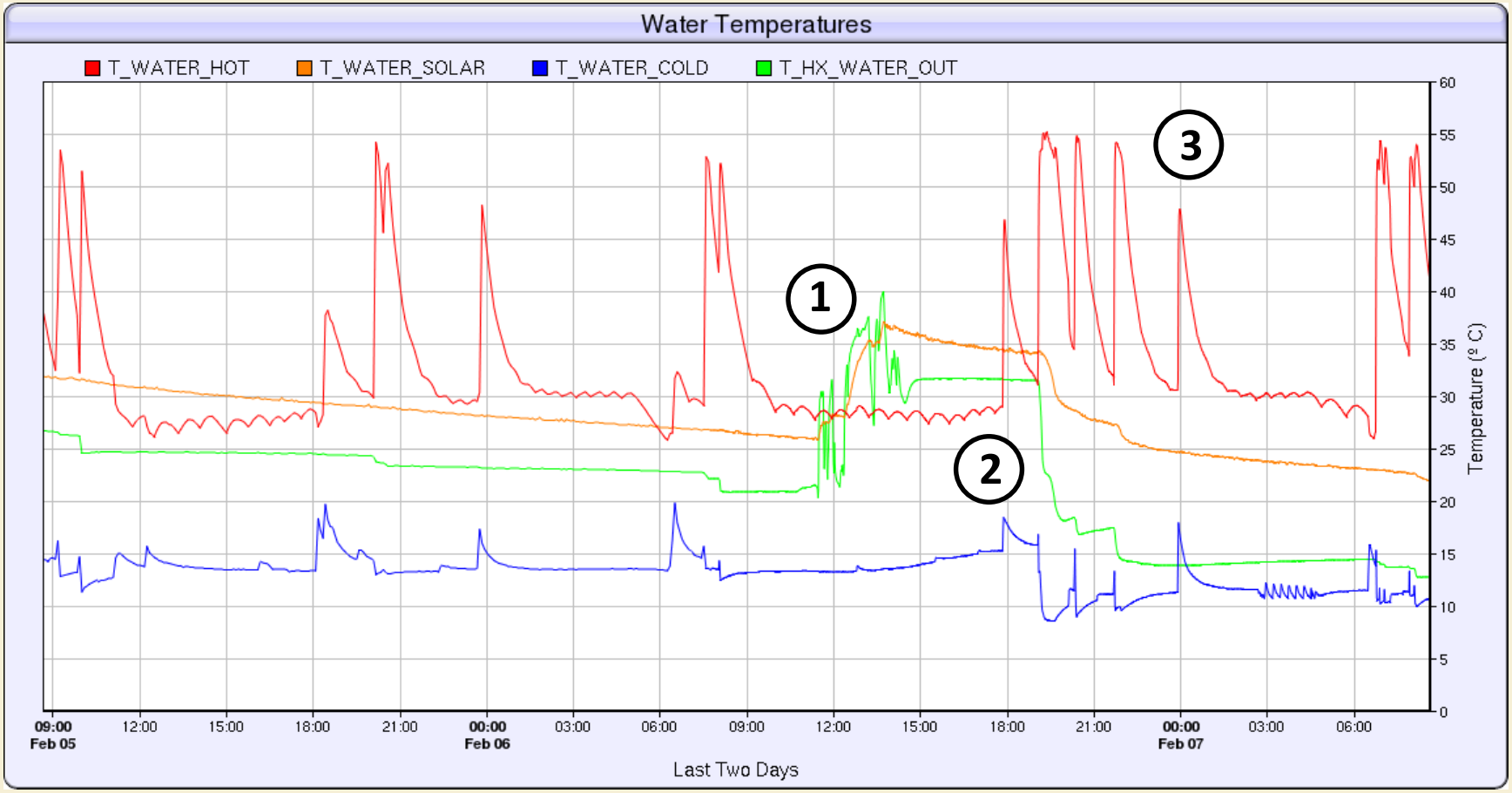
Water Temperatures



Common Trends

1. At about 12:00 PM, the sun has risen and the HTF in your collectors have began to heat. The collected energy is transferred to your SDHW through the Solar Boiler.
2. After dinner, at around 6:00PM, the temperature of the solar storage tank can quickly drop due to dishes, laundry and showers.
3. The DHW temperature supplied to your home stays relatively constant, due to assistance from your auxiliary heater. The spikes in temperature are due to the temperature sensor being mounted on the outlet pipe of your auxiliary heater rather than inside it The temperature exiting this auxiliary heater is nearly 55°C.

Glycol and Roof Temperatures

Thermo Dynamics Solar Boiler™

Solar Boiler™ Solar Water Heater

Time: 08:39:08 ADT
Date: 03-02-2014

Collector temperature, used by e-Mag controls.

6.1°C

Solar Collector

7.7	volts
0.01	amps
0.1	watts

Collector Slope and Orientation

27°	from horizontal
22°	from south ("+" is west "–" is east)

25 W/m2 **Solar Power**

1.1°C **Roof Temperature**

Roof temperature.

Solar Collector

28.8°C

23.4°C **Solar Hot Water**

Summary	Now	Today	This Month	This Year
Solar energy on collectors	152 watts	0.1 kWh	27 kWh	222 kWh
Solar energy to storage	0 watts	0.0 kWh	6 kWh	49 kWh
Solar energy to hot water	0 watts	0.0 kWh	0 kWh	14 kWh
Total energy to hot water	0 watts	0.0 kWh	0 kWh	35 kWh
Solar Fraction	67 %	0 %	0 %	39 %
DHW Consumption	0.0 Lpm	0 liters	0 liters	482 liters
Savings (all taxes included)				
Dollars (based on electricity $0.151 per kWh)		0.00 $	0.91 $	7 $
kg CO2 (based on 1.2 kg CO_2 eq/kWh)		0.00 kg	7.2 kg	73 kg

3.80 kW

Off

Electric Water Heater

23.4°C

Solar Storage Tank

Solar Loop Flowrate

0.00 LPM

Temperature of HTF leaving your Solar Boiler.

15.1°C

Temperature of HTF entering your Solar Boiler.

17.7°C

Commissioned
December 13, 2013

Today
hours 1.1
kWh 4.2

Solar Boiler temperature, used by e-Mag controls.

17.4°C

12.4°C **Cold Water IN**

0.0 LPM **Flowrate**

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Thermo Dynamics Solar Boiler™

Solar Boiler™ Solar Water Heater

Time: 08:39:08 ADT
Date: 03-02-2014

T_COLLECTOR

6.1°C

Solar Collector

Solar Collector

aic Module

7.7	volts
0.01	amps
0.1	watts

Collector Slope and Orientation

27°	from horizontal
22°	from south ("+" is west "–" is east)

25 W/m2 **Solar Power**

1.1°C **Roof Temperature**

T_AIR_OUTSIDE

Water OUT

28.8°C

23.4°C **Solar Hot Water**

Summary	Now		Today		This Month		This Year	
Solar energy on collectors	152	watts	0.1	kWh	27	kWh	222	kWh
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DHW Consumption	0.0	Lpm	0	liters	0	liters	482	liters
Savings (all taxes included)								
Dollars (based on electricity $0.151 per kWh)			0.00	$	0.91	$	7	$
kg CO2 (based on 1.2 kg CO_2 eq/kWh)			0.00	kg	7.2	kg	73	kg

3.80 kW

Off

Electric Water Heater

23.4°C

Solar Storage Tank

Solar Loop Flowrate

0.00 LPM

T_HX_GLY_OUT

15.1°C

T_HX_GLY_IN

17.7°C

	Today	Month	Year
hours	1.1	5.2	90
kWh	4.2		

T_STORAGE

17.4°C

12.4°C **Cold Water IN**

0.0 LPM **Flowrate**

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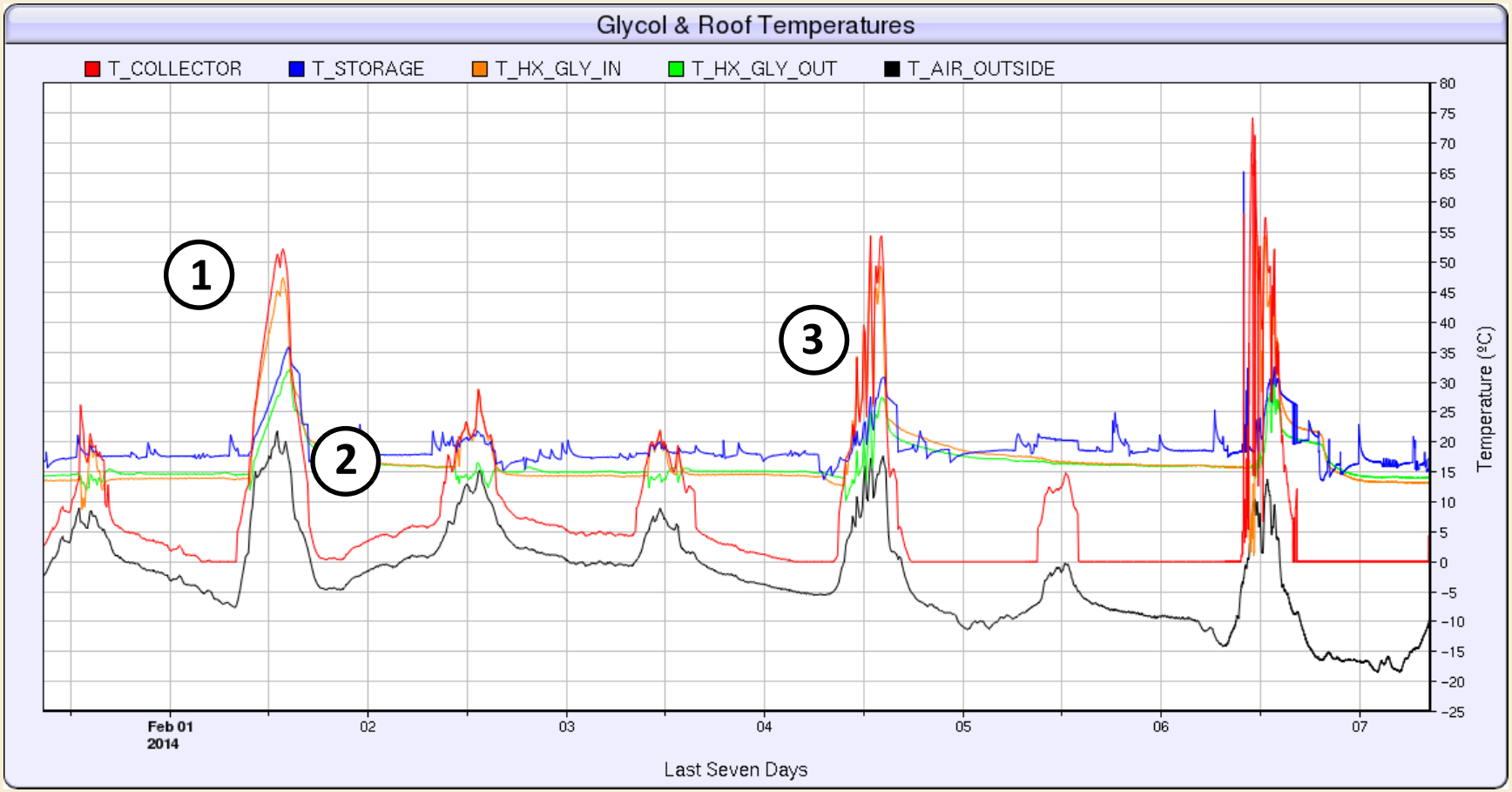
Glycol and Roof Temperatures



Common Trends

1. Your HTF temperature increases throughout the day. In this example, at just past noon on February 1st, the HTF entering your Solar Boiler is at a temperature of nearly 50°C. It exits at about 33°C, transferring energy to the cold water running through your Solar Boiler system.
2. The outside and collector temperatures will decrease throughout the evening and during the night. This will cause your e-Mag to shut off and any heating needs throughout the night will be done by your auxiliary heater.
3. The collector temperature can fluctuate throughout the day due to passing clouds. This was the case for this system in the late morning hours of February 4th.

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PV Module Data

Thermo Dynamics Solar Boiler™

Time: 08:39:08 ADT
Date: 03-02-2014

Amperage supplied by your PV module to your e-Mag. This value is scaled by a factor of 10 on graph.

Voltage supplied by your PV module to your e-Mag.

Power supplied by your PV module to your e-Mag.

Photovoltaic Module

7.7	volts
0.01	amps
0.1	watts

Orientation

27°	from horizontal
22°	from south ("+" is west "–" is east)

25 W/m2 Solar Power

1.1°C Roof Temperature

Solar Collector

Domestic Hot Water OUT

28.8°C

Solar Hot Water

23.4°C

3.80 kW

Off

Electric Water Heater

23.4°C

Solar Storage Tank

15.1°C

17.7°C

17.4°C

12.4°C

Cold Water IN

0.0 LPM Flowrate

Solar Loop Flowrate

0.00 LPM

Summ	w		Today		This Month		This Year	
Solar energy on collectors	152	watts	0.1	kWh	27	kWh	222	kWh
Solar energy to storage	0	watts	0.0	kWh	6	kWh	49	kWh
Solar energy to hot water	0	watts	0.0	kWh	0	kWh	14	kWh
Total energy to hot water	0	watts	0.0	kWh	0	kWh	35	kWh
Solar Fraction	67	%	0	%	0	%	39	%
DHW Consumption	0.0	Lpm	0	liters	0	liters	482	liters
Savings (all taxes included)								
Dollars (based on electricity $0.151 per kWh)			0.00	$	0.91	$	7	$
kg CO2 (based on 1.2 kg CO_2 eq/kWh)			0.00	kg	7.2	kg	73	kg

	Today	Month	Year
hours	1.1	5.2	90
kWh	4.2	19.7	340

Commissioned
December 13, 2013

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Thermo Dynamics Solar Boiler™

Time: 08:39:08 ADT
Date: 03-02-2014

Solar Boiler™ Solar Water Heater

Photovoltaic

PV VOLTS

PV AMPSX10

7.7	volts
0.01	amps
0.1	watts

Collector Slope and Orientation

27°	from horizontal
22°	from south ("+" is west "–" is east)

SOLAR POWER (watts/sq. meter)

25 W/m2 Solar Power

1.1°C Roof Temperature

Solar Collector

Domestic Hot Water OUT

28.8°C

Solar Hot Water

23.4°C

Summary	Now		Today	This Month	This Year
Solar energy on collectors	152	watts	0.1 kWh	27 kWh	222 kWh
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Savings (all taxes included)			
Dollars (based on electricity $0.151 per kWh)	0.00 $	0.91 $	7 $
kg CO2 (based on 1.2 kg CO_2 eq/kWh)	0.00 kg	7.2 kg	73 kg

Commissioned
December 13, 2013

3.80 kW

Off

Electric Water Heater

23.4°C

Solar Storage Tank

15.1°C

17.7°C

17.4°C

Solar Loop Flowrate
0.00 LPM

		Month	Year
hours	1.1	5.2	90
kWh	4.2	19.7	340

12.4°C Cold Water IN

0.0 LPM Flowrate

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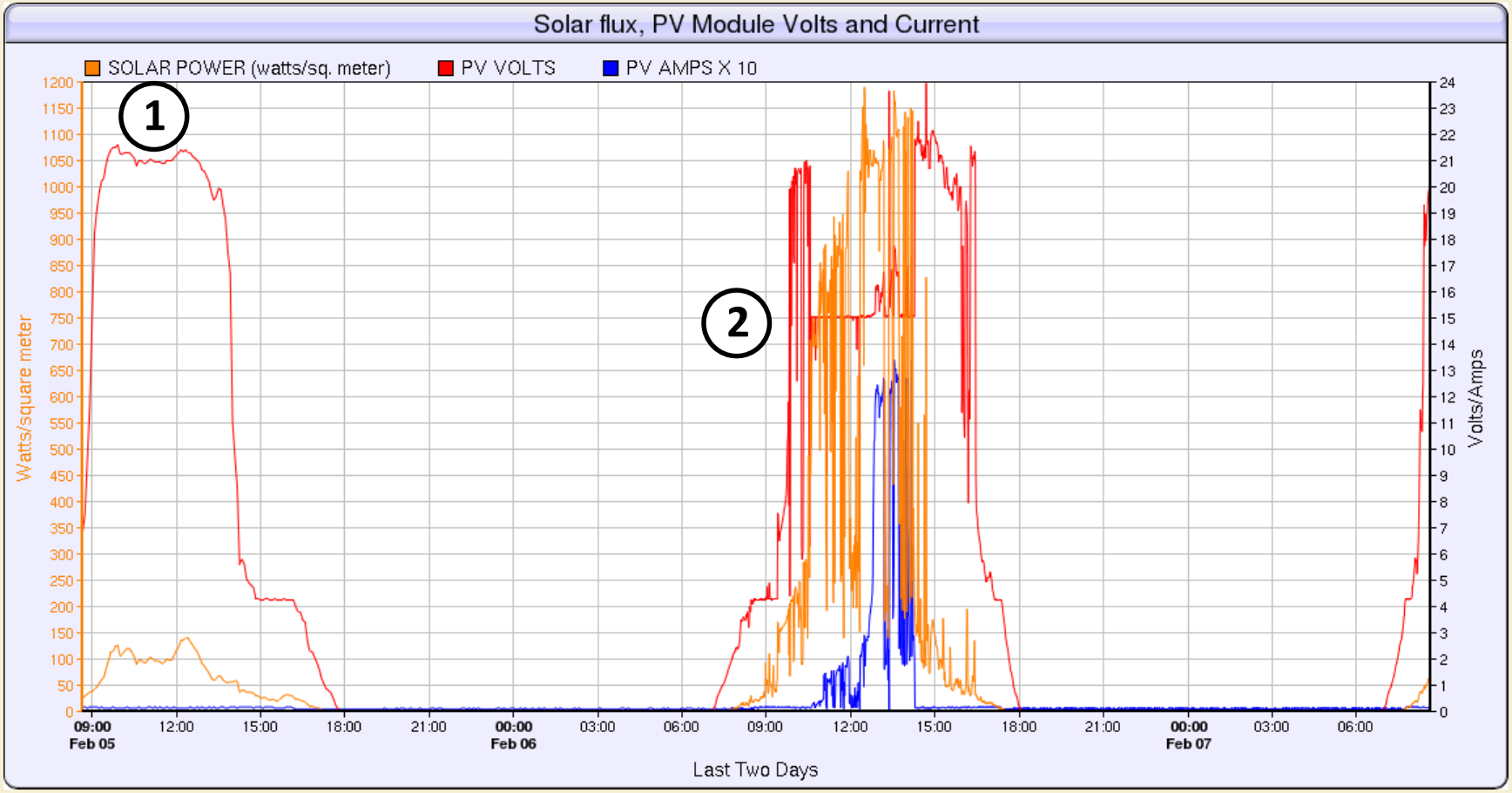
PV Module Data



Common Trends

1. On a cloudy/rainy day, the PV module will detect minimal sunlight, resulting in minimal amperage supplied to your e-Mag. It is common to experience 0 amps and around 22 volts during these less than perfect days.
2. The voltage supplied to your e-Mag climbs rapidly when your PV module is exposed to sunlight. On a typical sunny day, the PV module voltage averages at about 15 Volts.

Daily Heat

(Use the following energy flow diagram to better understand the next three graphs)

Energy Flow Diagram

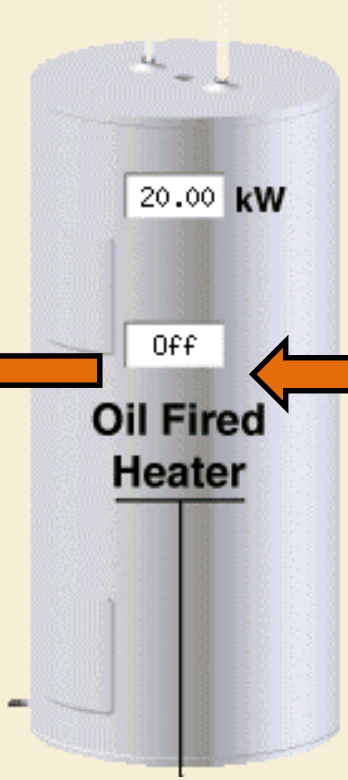
1

Amount of solar energy radiated from the sun onto your collectors.

Solar Collector

Total energy transfer involved, between the cold water entering your home and the DHW exiting your auxiliary heater.

4



Energy removed from your solar storage tank.

3

2

Energy transferred from your Solar Boiler to your solar storage tank.

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Summary	Now		Today		This Month		This Year	
Solar energy on collectors	152	Watts	0.1	kWh	27	kWh	222	kWh
Solar energy to storage	0	Watts	0.0	kWh	6	kWh	49	kWh
Solar energy to hot water	0	Watts	0.0	kWh	0	kWh	14	kWh
Total energy to hot water	0	Watts	0.0	kWh	0	kWh	35	kWh
Solar Fraction	67	%	0	%	0	%	39	%
DHW Consumption	0.0	Lpm	0	liters	0	liters	482	liters
Savings (all taxes included)								
Dollars (based on electricity $0.151 per kWh)			0.00	$	0.91	$	7	$
kg CO2 (based on 1.2 kg CO_2 eq/kWh)			0.00	kg	7.2	kg	73	kg

1
2
3
4

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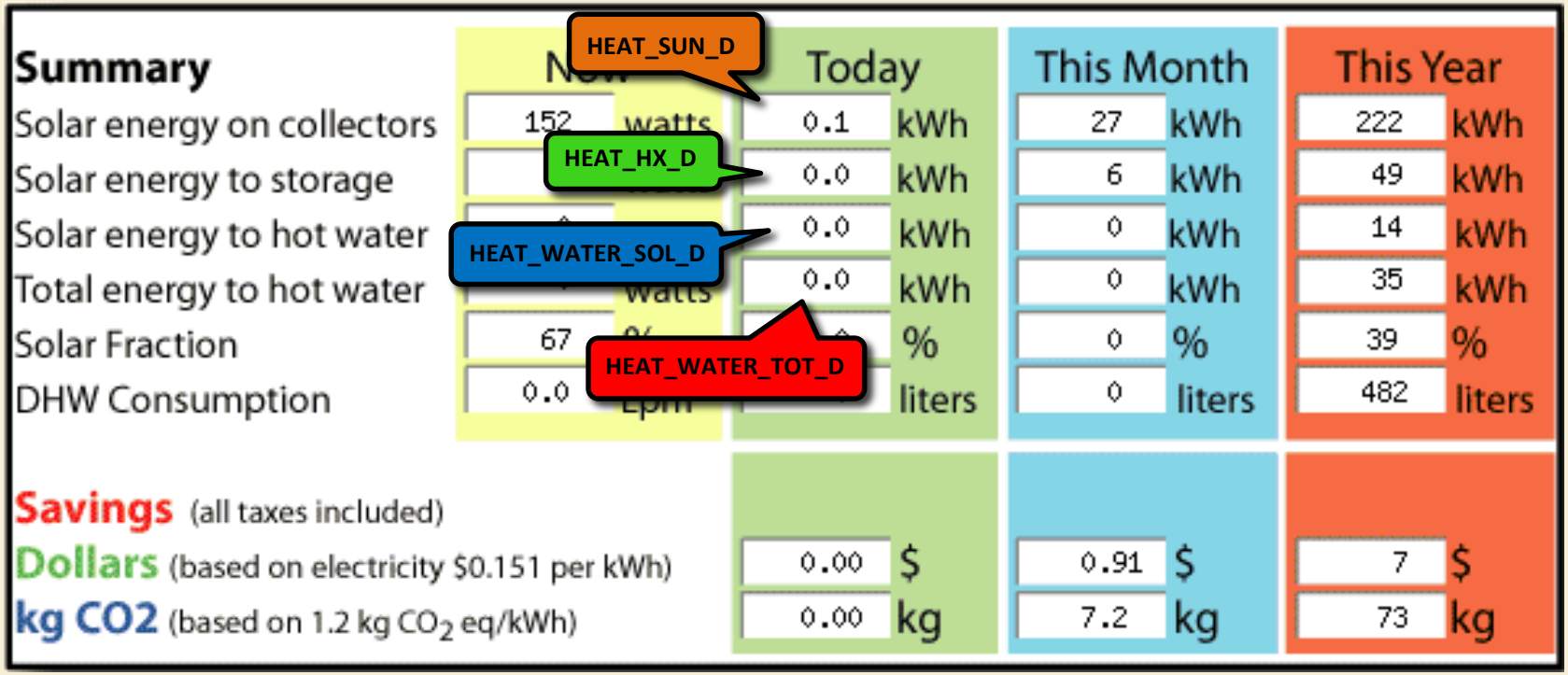

Summary	Now	Today	This Month	This Year
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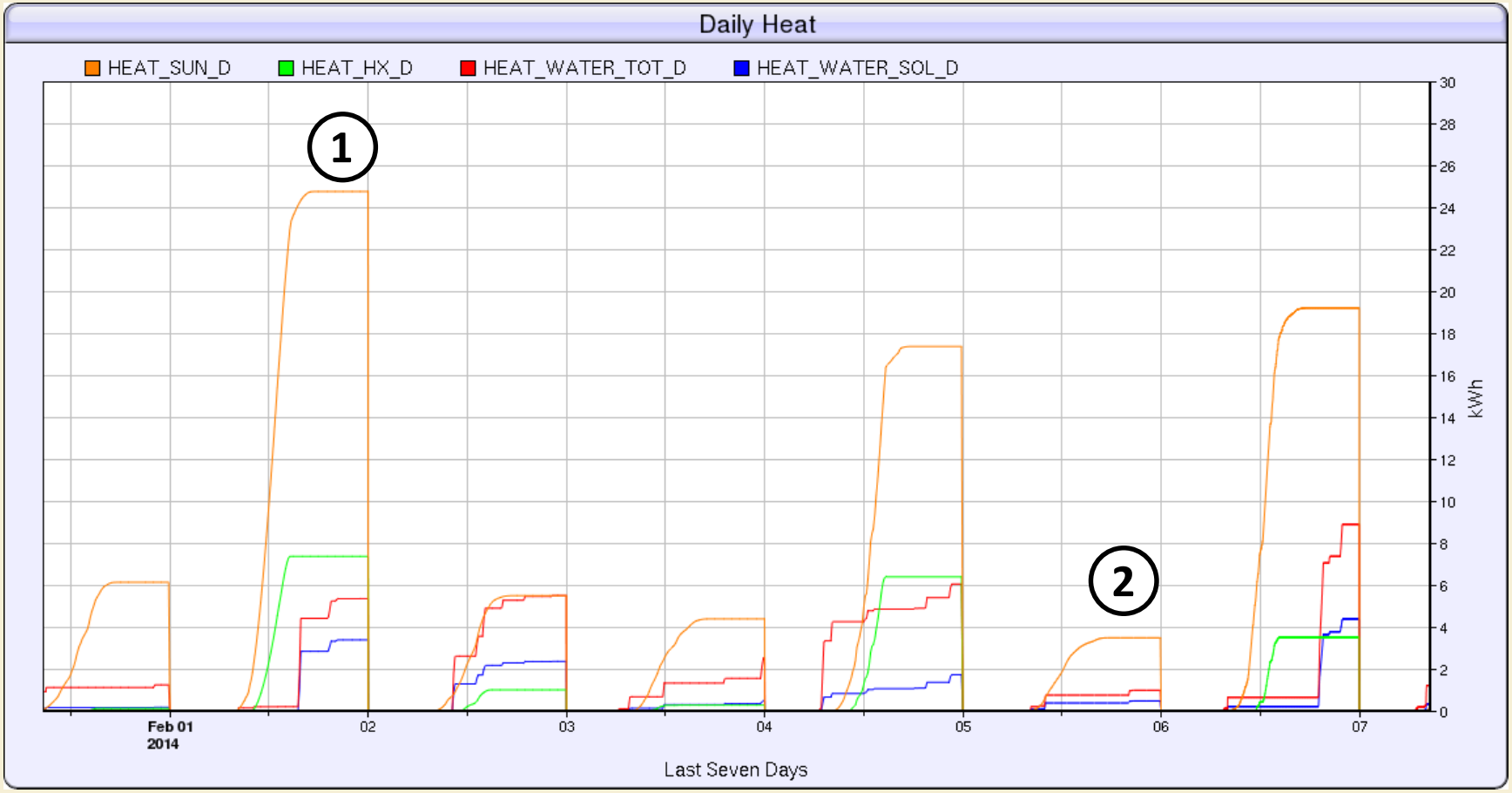
Solar Fraction	67 %	%	0 %	39 %
DHW Consumption	0.0 Lpm	liters	0 liters	482 liters
Savings (all taxes included)				
Dollars (based on electricity $0.151 per kWh)		0.00 $	0.91 $	7 $
kg CO2 (based on 1.2 kg CO_2 eq/kWh)		0.00 kg	7.2 kg	73 kg

Daily Heat


Daily Heat
HEAT_SUN_D
HEAT_HX_D
HEAT_WATER_TOT_D
HEAT_WATER_SOL_D
1
2
30
28
26
24
22
20
18
16
14
12
10
8
6
4
2
0
kWh
Feb 01
2014
02
03
04
05
06
07
Last Seven Days

Common Trends

1. On a hot sunny day in February, the amount of energy radiated on your collectors from the sun can reach 25 kWh, resulting in high savings.
2. Two days ago there was a reduction in solar energy collected due to cloudy conditions. This is known because the energy radiated on your collectors from the sun is low, as compared to other days. Because of this, your auxiliary heater was the main source of energy to heat your DHW.

Monthly Heat

THERMO DYNAMICS LTD.

Summary	Now		Today		This Month		This Year	
Solar energy on collectors	152	watts	0.1	kWh	27	kWh	222	kWh
Solar energy to storage	0	watts	0.0	kWh	6	kWh	49	kWh
Solar energy to hot water	0	watts	0.0	kWh	0	kWh	14	kWh
Total energy to hot water	0	watts	0.0	kWh	0	kWh	35	kWh
Solar Fraction	67	%	0	%	0	%	39	%
DHW Consumption	0.0	Lpm	0	liters	0	liters	482	liters
Savings (all taxes included)								
Dollars (based on electricity $0.151 per kWh)			0.00	$	0.91	$	7	$
kg CO2 (based on 1.2 kg CO_2 eq/kWh)			0.00	kg	7.2	kg	73	kg

1
2
3
4

THERMO DYNAMICS LTD.

Summary	Now		Today		This Month		This Year	
Solar energy on collectors	152	watts	0.1	kWh	27	kWh	222	kWh
Solar energy to storage	0	watts	0	kWh	6	kWh	49	kWh
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Solar Fraction	67	%	0	%		%	39	%
DHW Consumption	0.0	Lpm	0	liters		liters	482	liters

HEAT_SUN_M

HEAT_HX_M

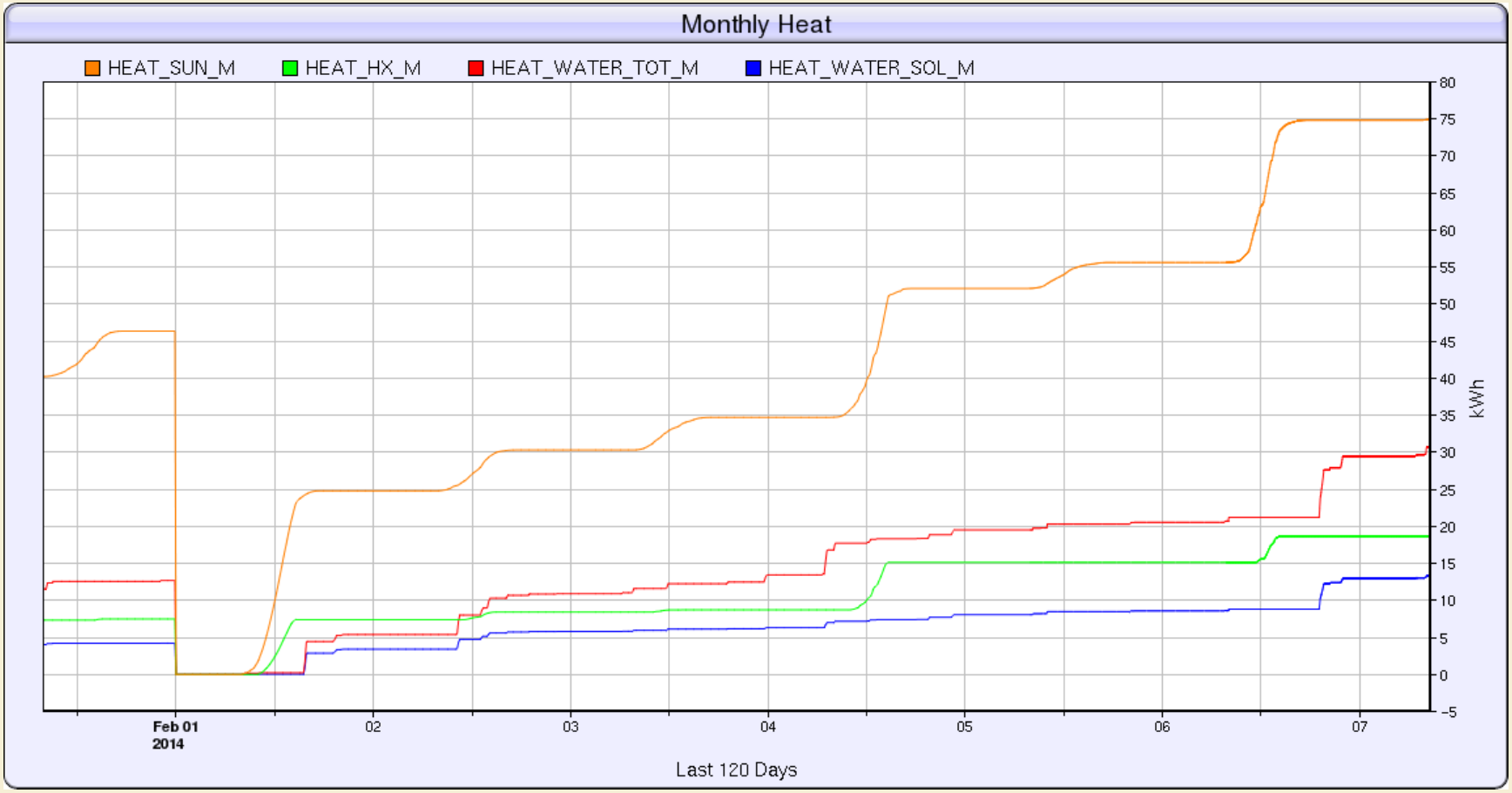
HEAT_WATER_SOL_M

HEAT_WATER_TOT_M

Savings (all taxes included)

Dollars (based on electricity $0.151 per kWh)	0.00	$	0.91	$	7	$
kg CO2 (based on 1.2 kg CO_2 eq/kWh)	0.00	kg	7.2	kg	73	kg

Monthly Heat



The common trends are the dips in data as the solar monitoring resets every month.

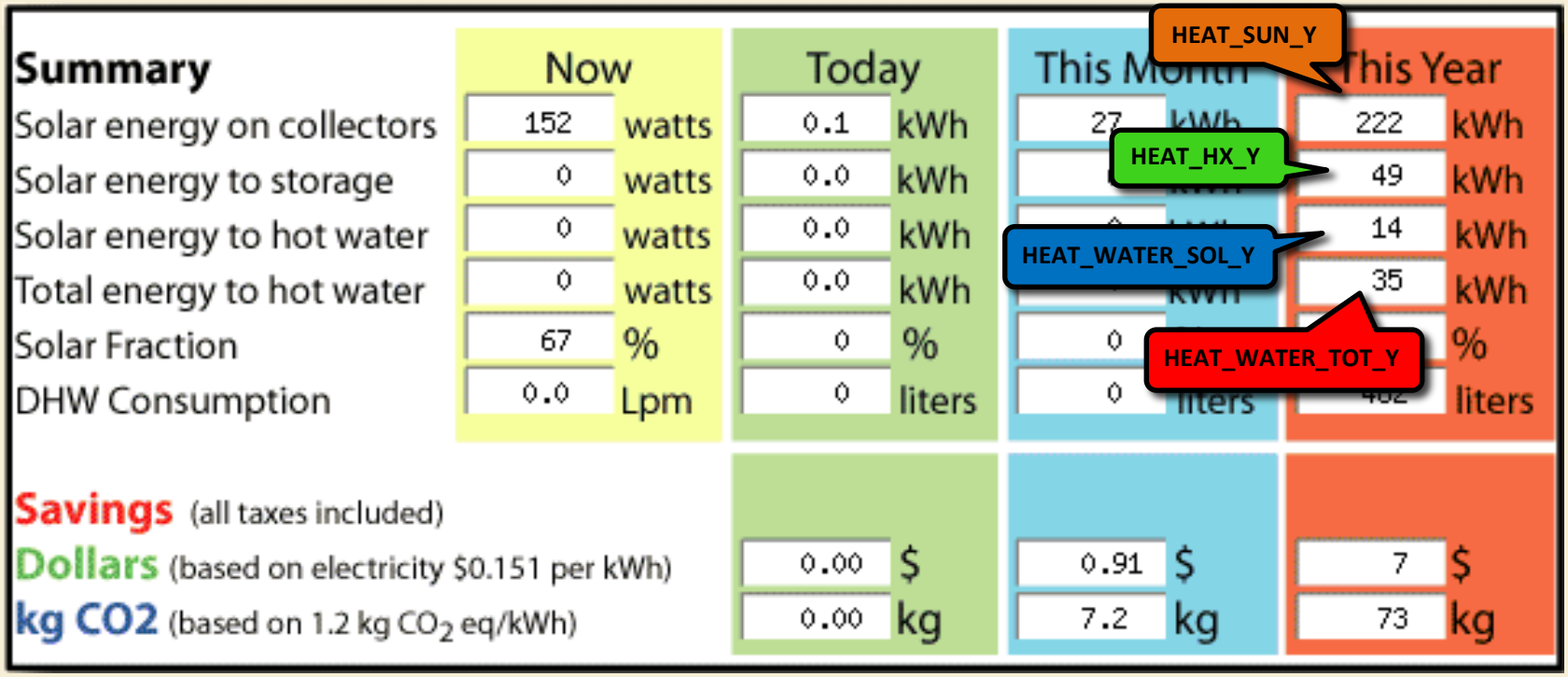
Yearly Heat

THERMO DYNAMICS LTD.

Summary	Now		Today		This Month		This Year	
Solar energy on collectors	152	watts	0.1	kWh	27	kWh	222	kWh
Solar energy to storage	0	watts	0.0	kWh	6	kWh	49	kWh
Solar energy to hot water	0	watts	0.0	kWh	0	kWh	14	kWh
Total energy to hot water	0	watts	0.0	kWh	0	kWh	35	kWh
Solar Fraction	67	%	0	%	0	%	39	%
DHW Consumption	0.0	Lpm	0	liters	0	liters	482	liters
Savings (all taxes included)								
Dollars (based on electricity $0.151 per kWh)			0.00	$	0.91	$	7	$
kg CO2 (based on 1.2 kg CO_2 eq/kWh)			0.00	kg	7.2	kg	73	kg

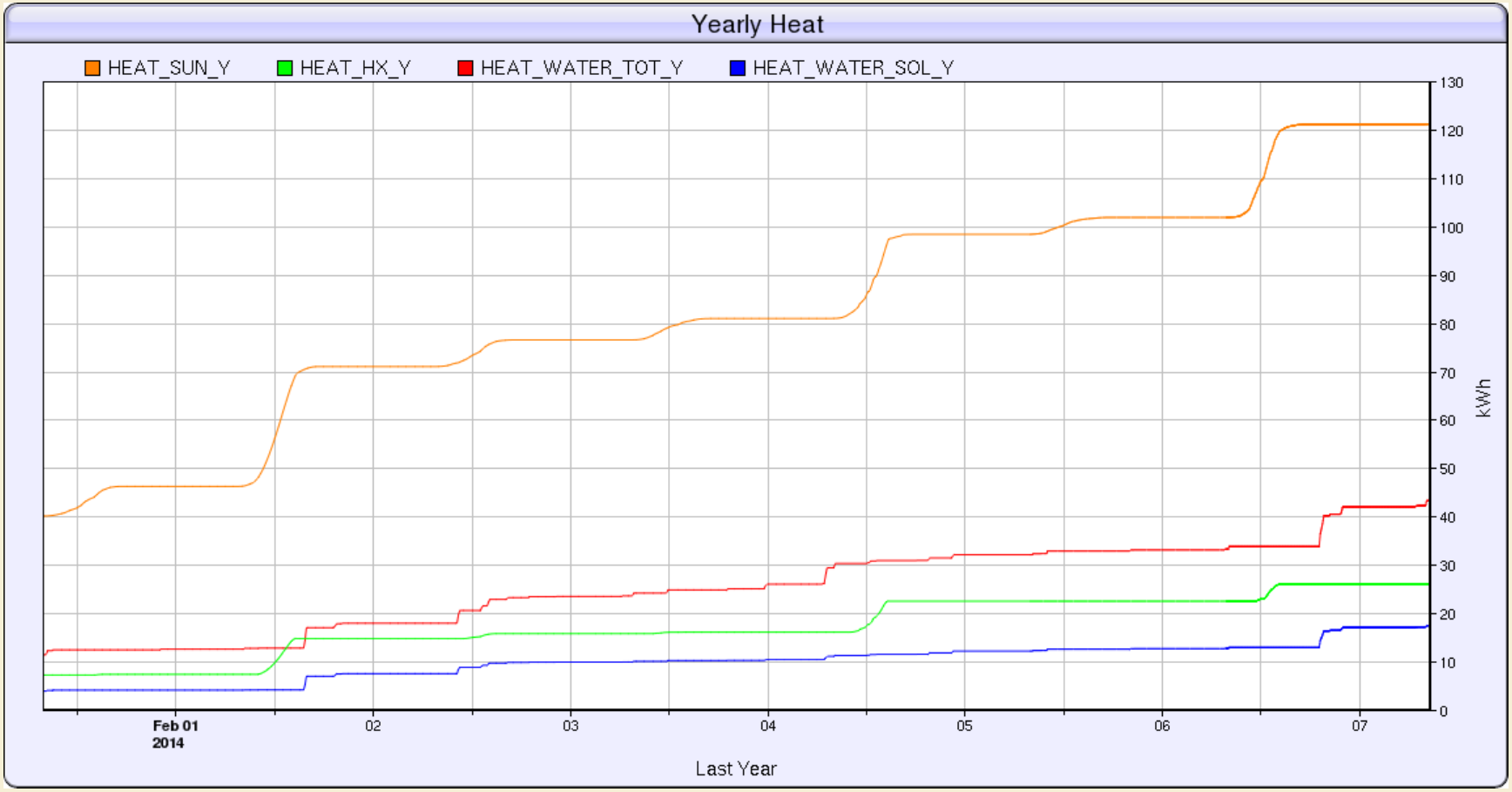
1
2
3
4

THERMO DYNAMICS LTD.



Summary	Now		Today		This Month		This Year	
Solar energy on collectors	152	watts	0.1	kWh	27	kWh	222	kWh
Solar energy to storage	0	watts	0.0	kWh			49	kWh
Solar energy to hot water	0	watts	0.0	kWh			14	kWh
Total energy to hot water	0	watts	0.0	kWh			35	kWh
Solar Fraction	67	%	0	%	0			%
DHW Consumption	0.0	Lpm	0	liters	0	liters		liters
Savings (all taxes included)								
Dollars (based on electricity $0.151 per kWh)			0.00	$	0.91	$	7	$
kg CO2 (based on 1.2 kg CO_2 eq/kWh)			0.00	kg	7.2	kg	73	kg

Yearly Heat


Yearly Heat
HEAT_SUN_Y
HEAT_HX_Y
HEAT_WATER_TOT_Y
HEAT_WATER_SOL_Y
130
120
110
100
90
80
70
60
50
40
30
20
10
0
kWh
Feb 01
2014
02
03
04
05
06
07
Last Year

The common trends are the dips in data as the solar monitoring resets every year.

Flow Rates and e-Mag Status

Thermo Dynamics Solar Boiler™

Solar Boiler™ Solar Water Heater

Time: 08:39:08 ADT
Date: 03-02-2014

Photovoltaic Module

7.7	volts
0.01	amps
0.1	watts

Collector Slope and Orientation

27°	from horizontal
22°	from south ("+" is west "–" is east)

25 W/m2 **Solar Power**

1.1°C **Roof Temperature**

6.1°C **Solar Collector**

Solar Collector

Domestic Hot Water OUT

28.8°C

23.4°C **Solar Hot Water**

3.80 kW

Off

Electric Water Heater

Storage Tank

15.1°C

17.7°C

17.4°C

12.4°C

0.0 LPM

HTF flow rate through your collector and Solar Boiler.

Solar Loop Flowrate

0.00 LPM

Cold water flow rate into your solar storage tank.

Summary	Now		Today		This Month		This Year	
Solar energy on collectors	152	watts	0.1	kWh	27	kWh	222	kWh
Solar energy to storage	0	watts	0.0	kWh	6	kWh	49	kWh
Solar energy to hot water	0	watts	0.0	kWh	0	kWh	14	kWh
Total energy to hot water	0	watts	0.0	kWh	0	kWh	35	kWh
Solar Fraction	67	%	0	%	0	%	39	%
DHW Consumption	0.0	Lpm	0	liters	0	liters	482	liters
Savings (all taxes included)								
Dollars (based on electricity $0.151 per kWh)			0.00	$	0.91	$	7	$
kg CO2 (based on 1.2 kg CO_2 eq/kWh)			0.00	kg	7.2	kg	73	kg

	Today	Month	Year
hours	1.1	5.2	90
kWh	4.2	19.7	340

Commissioned
December 13, 2013

THERMO DYNAMICS LTD.
101 Frazee Avenue
Dartmouth, Nova Scotia
Canada, B3B-1Z4

Tel: (902) 468-1001
www.thermo-dynamics.com

Thermo Dynamics Solar Boiler™

Solar Boiler™ Solar Water Heater

Time: 08:39:08 ADT
Date: 03-02-2014

Photovoltaic Module

7.7	volts
0.01	amps
0.1	watts

Collector Slope and Orientation

27°	from horizontal
22°	from south ("+" is west "–" is east)

25 W/m2 **Solar Power**

1.1°C **Roof Temperature**

6.1°C **Solar Collector**

Solar Collector

Domestic Hot Water OUT

28.8°C

23.4°C **Solar Hot Water**

3.80 kW

Off

Electric Water Heater

23.4°C

FLOW_GLY **Solar Loop Flowrate**

0.00 LPM

Storage Tank

15.1°C

17.7°C

17.4°C

12.4°C **Cold Water IN**

FLOW_WATER 0.0 LPM **Flowrate**

Summary	Now		Today		This Month		This Year	
Solar energy on collectors	152	watts	0.1	kWh	27	kWh	222	kWh
Solar energy to storage	0	watts	0.0	kWh	6	kWh	49	kWh
Solar energy to hot water	0	watts	0.0	kWh	0	kWh	14	kWh
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DHW Consumption	0.0	Lpm	0	liters	0	liters	482	liters
Savings (all taxes included)								
Dollars (based on electricity $0.151 per kWh)			0.00	$	0.91	$	7	$
kg CO2 (based on 1.2 kg CO_2 eq/kWh)			0.00	kg	7.2	kg	73	kg

	Today	Month	Year
hours	1.1	5.2	90
kWh	4.2	19.7	340

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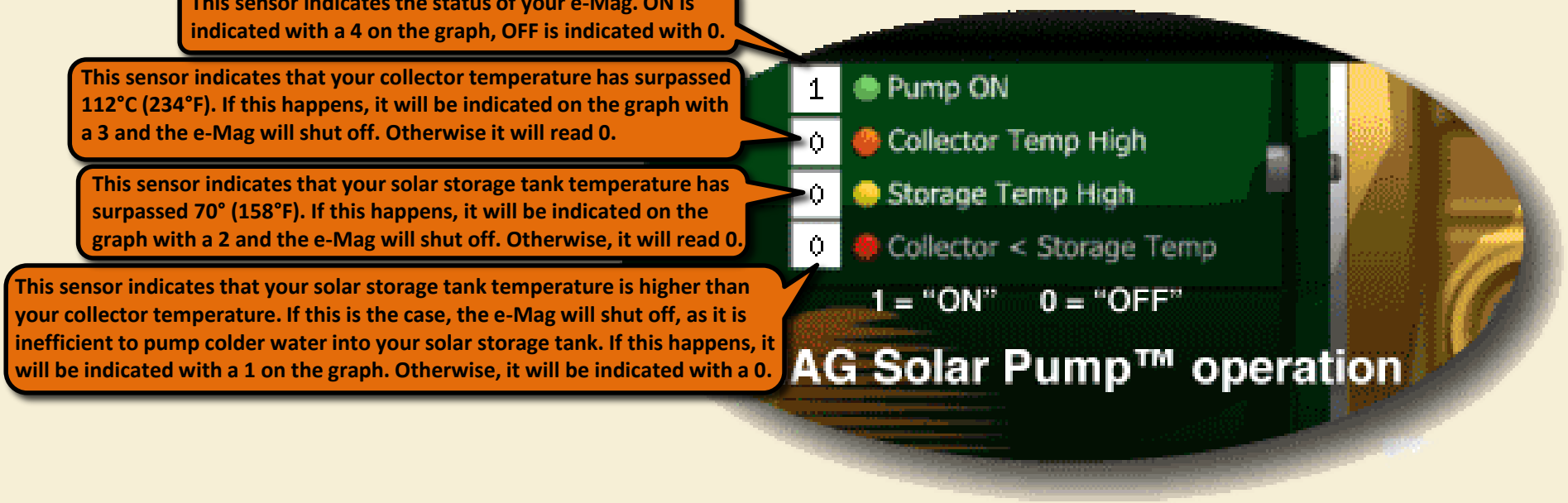
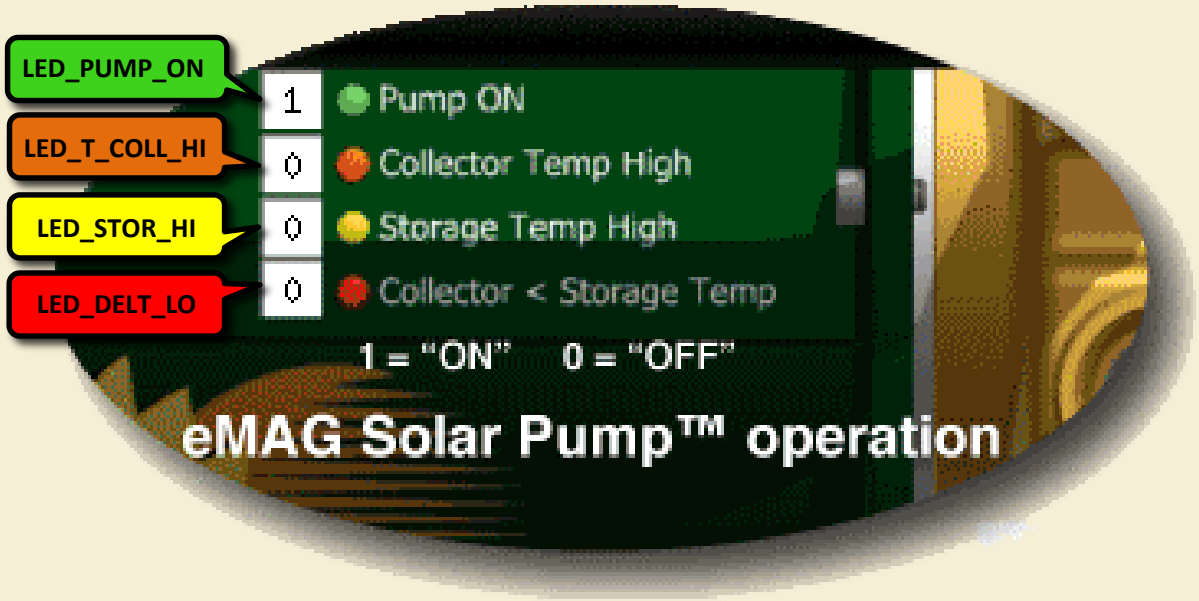
This sensor indicates the status of your e-Mag. ON is indicated with a 4 on the graph, OFF is indicated with 0.

This sensor indicates that your collector temperature has surpassed 112°C (234°F). If this happens, it will be indicated on the graph with a 3 and the e-Mag will shut off. Otherwise it will read 0.

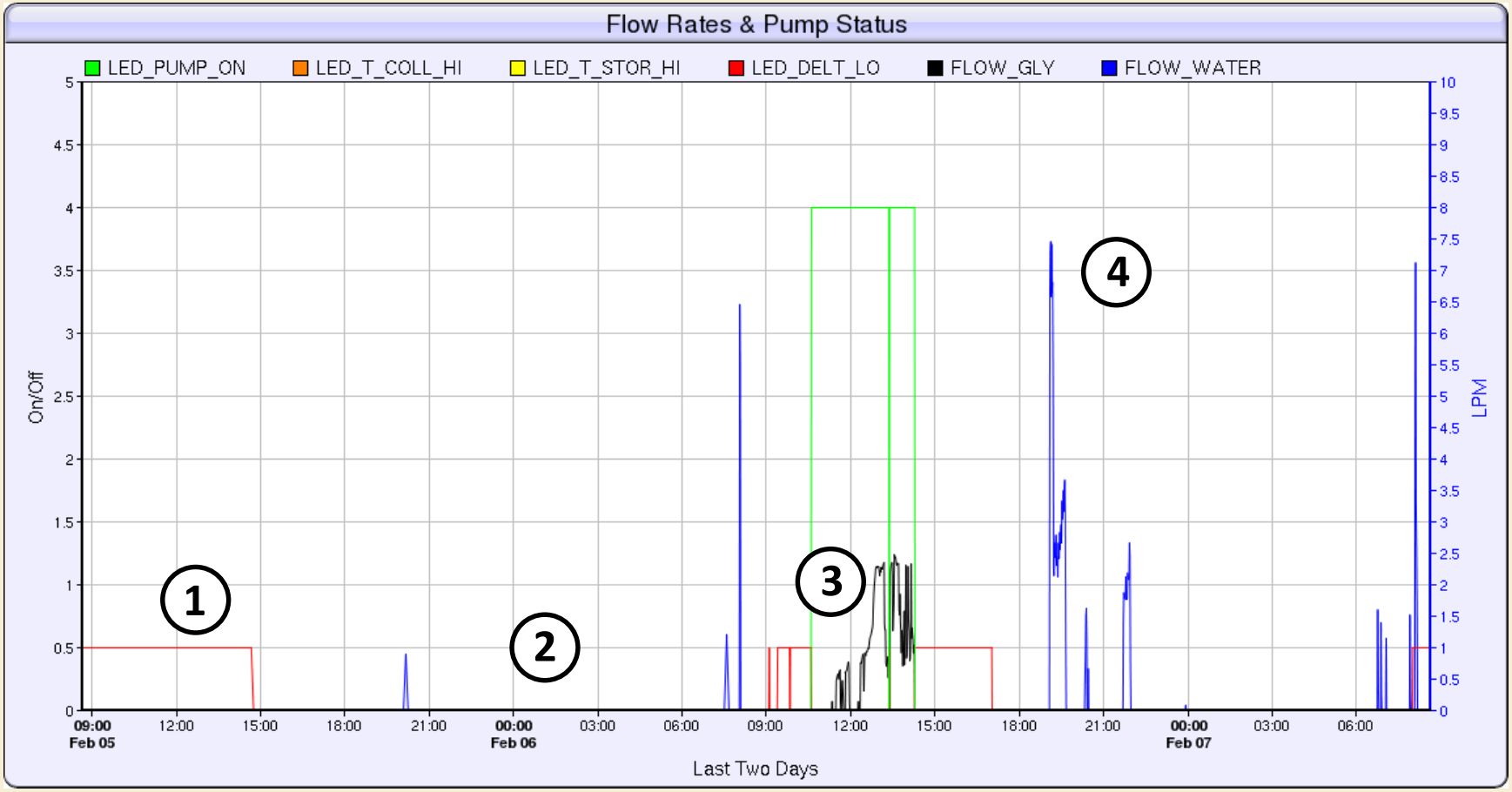
This sensor indicates that your solar storage tank temperature has surpassed 70° (158°F). If this happens, it will be indicated on the graph with a 2 and the e-Mag will shut off. Otherwise, it will read 0.

This sensor indicates that your solar storage tank temperature is higher than your collector temperature. If this is the case, the e-Mag will shut off, as it is inefficient to pump colder water into your solar storage tank. If this happens, it will be indicated with a 1 on the graph. Otherwise, it will be indicated with a 0.




LED_PUMP_ON
LED_T_COLL_HI
LED_STOR_HI
LED_DELT_LO
1
0
0
0
Pump ON
Collector Temp High
Storage Temp High
Collector < Storage Temp
1 = "ON"
0 = "OFF"
eMAG Solar Pump™ operation

Flow Rates and Pump Status



Common Trends

1. Throughout the day of February 5th, the temperature of your collectors is lower than your solar storage tank. Because of this, your “Collector < Storage Temp” alarm will be activated and the e-Mag will shut off.
2. Throughout the night, there will be no alarms displayed and the e-Mag will shut off. This is because the PV module is not exposed to sunlight.
3. Your e-Mag runs at a speed proportional to the amount of sunlight available. If there is a lot of sunlight, the HTF will heat faster, so the e-Mag will move it through the system quicker. If there is minimal sunlight, the e-Mag will run slower, allowing the HTF to heat up sufficiently.
4. When you draw water, you will notice a sharp jump in city water flow rate. The city water is flowing into your solar storage tank to replenish it.

Daily Hot Water Consumption

Thermo Dynamics Solar Boiler™

Solar Boiler™ Solar Water Heater

Time: 08:39:08 ADT
Date: 03-02-2014

Photovoltaic Module

7.7	volts
0.01	amps
0.1	watts

Collector Slope and Orientation

27°	from horizontal
22°	from south ("+" is west "–" is east)

25 W/m2 **Solar Power**

1.1°C **Roof Temperature**

6.1°C **Solar Collector**

Solar Collector

Domestic Hot Water OUT

28.8°C

23.4°C **Solar Hot Water**

3.80 kW

Off

Electric Water Heater

23.4°C

Solar Storage Tank

15.1°C

17.7°C

17.4°C

12.4°C **Cold Water IN**

0.0 LPM **Flowrate**

Solar Loop Flowrate

0.00 LPM

	Today	Month	Year
hours	1.1	5.2	90
kWh	4.2	19.7	340

Summary	Now	Today	This Month	This Year
Solar energy on collectors	152 watts	0.1 kW		kWh
Solar energy to storage	0 watts	0.0 kW		kWh
Solar energy to hot water	0 watts	0.0 kW		kWh
Total energy to hot water	0 watts	0.0		kWh
Solar Fraction	67 %	0 %	0 %	39 %
DHW Consumption	0.0 Lpm	0 liters	0 liters	482 liters
Savings (all taxes included)				
Dollars (based on electricity $0.151 per kWh)				7 $
kg CO2 (based on 1.2 kg CO_2 eq/kWh)				73 kg

The daily percentage of DHW that has been heated by your Solar Boiler. Resets to zero at midnight.

Cumulative DHW consumption. Reset to zero at midnight.

Commissioned
December 13, 2013

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Thermo Dynamics Solar Boiler™

Solar Boiler™ Solar Water Heater

Time: 08:39:08 ADT
Date: 03-02-2014

Photovoltaic Module

7.7	volts
0.01	amps
0.1	watts

Collector Slope and Orientation

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Solar Collector

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3.80 kW

Off

Electric Water Heater

23.4°C **Solar Storage Tank**

15.1°C

17.7°C

17.4°C

12.4°C **Cold Water IN**

0.0 LPM **Flowrate**

Solar Loop Flowrate

0.00 LPM

Summary	Now		Today		This Month		This Year	
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Dollars (based on electricity $0.151 per kWh)			0.00	$	0.91	$	7	$
kg CO2 (based on 1.2 kg CO_2 eq/kWh)			0.00	kg	7.2	kg	73	kg

SOL_FRAC_DAY

FLOW_WATER_D

	Today	Month	Year
hours	1.1	5.2	90
kWh	4.2	19.7	340

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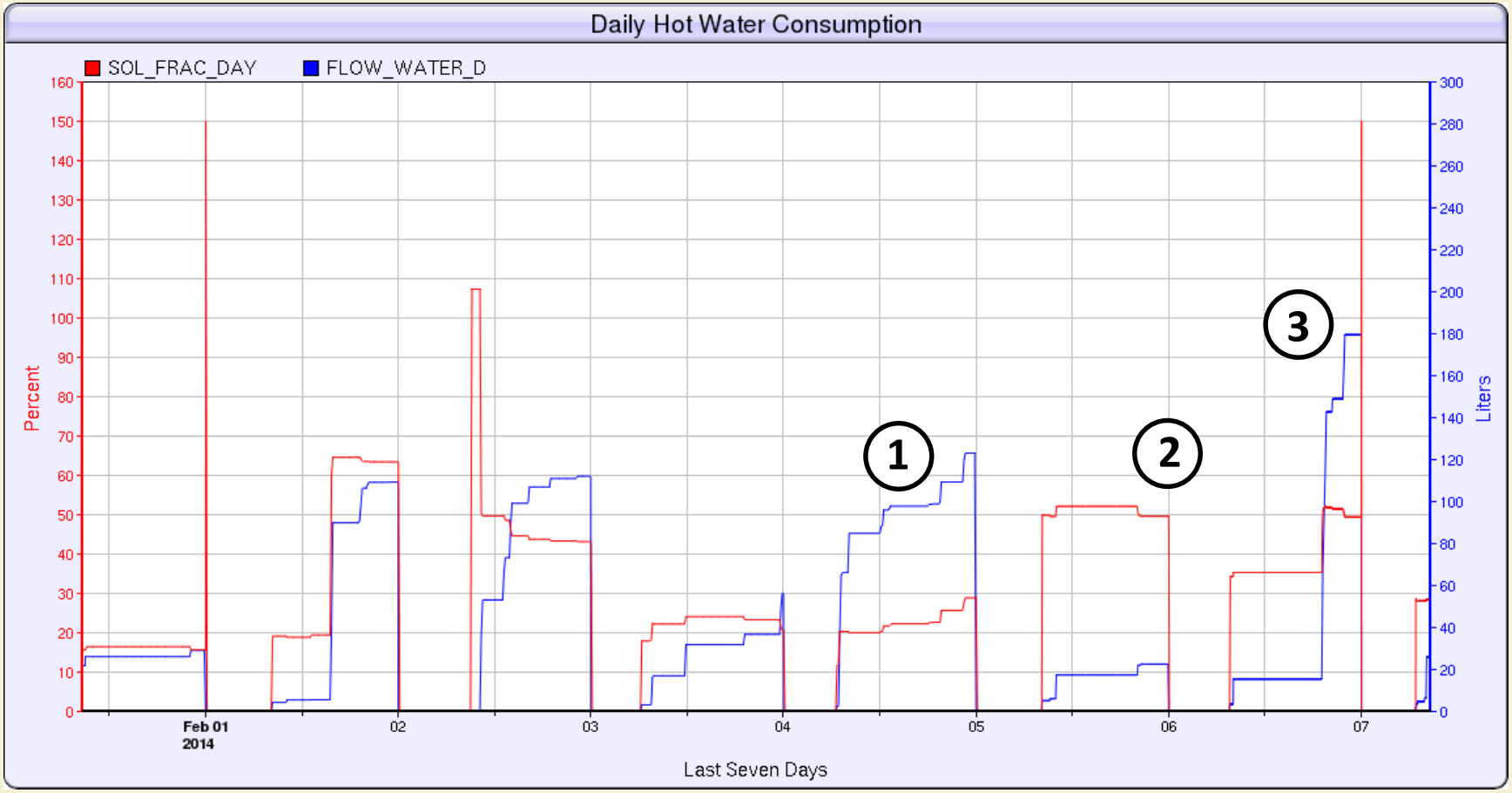
Daily Hot Water Consumption



Common Trends

1. The DHW usage slowly increases during the day due to dishes and laundry. In the evening, this usage increases rapidly due to filling the bathtub and showers.
2. By midnight of February 5th, the Solar Boiler has been used to heat nearly 100% of the DHW need for this household.
3. At midnight of February 6th, this household has used 180 litres of DHW throughout the day. This value resets to zero, along with the solar fraction, and starts accumulating for another day's worth of data.