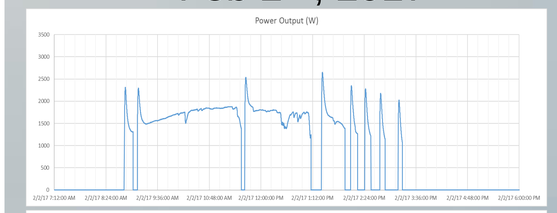
nscc

Solar Heater

CANSOLAIR EFFICIENCY MONITORING SYSTEM

By: Dylan Stone

Feb 2nd, 2017

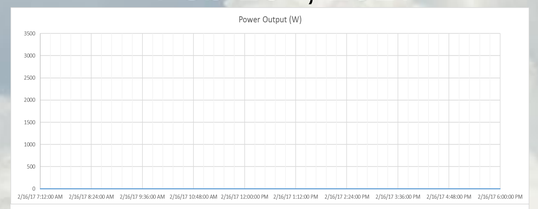


1.954 kWh

Time	Conditions	Temp	Weather	Comfort Wind	Humidity	Barometer	Visibility
7:00 am		-4 °C	Low clouds.	11 km/h	100%	101.05 kPa	24 km
8:00 am		-5 °C	Scattered clouds.	17 km/h	86%	101.10 kPa	24 km
9:00 am		-5 °C	Passing clouds.	17 km/h	80%	101.13 kPa	24 km
10:00 am		-4 °C	Passing clouds.	20 km/h	80%	101.17 kPa	24 km
11:00 am		-4 °C	Scattered clouds.	20 km/h	80%	101.17 kPa	24 km
12:00 pm		-3 °C	Scattered clouds.	19 km/h	74%	101.15 kPa	24 km
1:00 pm		-2 °C	Partly sunny.	24 km/h	69%	101.12 kPa	24 km
2:00 pm		-3 °C	Partly sunny.	20 km/h	69%	101.09 kPa	24 km
3:00 pm		-2 °C	Scattered clouds.	22 km/h	69%	101.08 kPa	24 km
4:00 pm		-1 °C	Passing clouds.	13 km/h	64%	101.09 kPa	24 km
5:00 pm		-2 °C	Passing clouds.	11 km/h	64%	101.11 kPa	24 km
6:00 pm		-3 °C	Passing clouds.	9 km/h	69%	101.14 kPa	24 km

Total kWh per day (February)	
1	0
2	1.954
3	1.705
4	1.046
5	0.154
6	0.66
7	0.723
8	0
9	0.729
10	0.222
11	0.355
12	1.655
13	0
14	0.095
15	0
16	0
17	0.132
18	0.666
19	0
20	0.06
21	1.791
22	1.484
23	1.11
24	0.973
25	0.232
26	0.379
27	1.96
28	1.843

Feb 16th, 2017



0 kWh

Time	Conditions	Temp	Weather	Comfort Wind	Humidity	Barometer	Visibility
7:00 am		-5 °C	Snow. Ice fog.	28 km/h	100%	97.74 kPa	1 km
8:00 am		-5 °C	Snow. Ice fog.	28 km/h	100%	97.41 kPa	1 km
9:00 am		-4 °C	Snow. Ice fog.	22 km/h	93%	97.13 kPa	1 km
10:00 am		-4 °C	Light snow. Ice fog.	17 km/h	100%	96.95 kPa	1 km
11:00 am		-3 °C	Light mixture of precip. Ice fog.	28 km/h	100%	96.79 kPa	2 km
12:04 pm		-2 °C	Light snow. Low clouds.	35 km/h	93%	96.95 kPa	2 km
1:00 pm		-2 °C	Light snow. Overcast.	39 km/h	93%	97.14 kPa	10 km
2:00 pm		-2 °C	Light snow. Overcast.	35 km/h	93%	97.37 kPa	6 km
3:00 pm		-2 °C	Light snow. Overcast.	41 km/h	86%	97.58 kPa	6 km
4:00 pm		-3 °C	Light snow. Overcast.	41 km/h	86%	97.77 kPa	6 km
5:00 pm		-3 °C	Light snow. Overcast.	33 km/h	80%	97.96 kPa	16 km
6:00 pm		-4 °C	Light snow. Mostly cloudy.	35 km/h	86%	98.11 kPa	16 km

Weather by CustomWeather, © 2017

Air Density x flow rate x °C Differential = Power

$1.125\frac{Kg}{m^3}$ x litres per second x variable = Watts

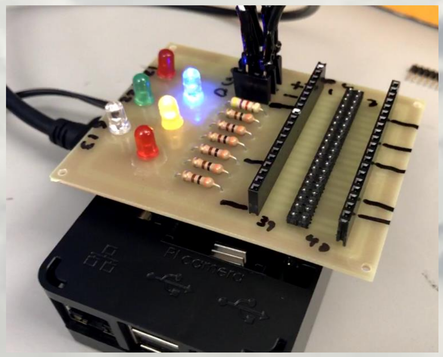
Power x time ÷ 3600 = Wh

Monitoring System

- Efficiency Monitoring
- Power Calculation
- Data Saving and Easy USB transfers
- LED Indicators

Temperature Sensor:

Prototype:



PCB Schematic