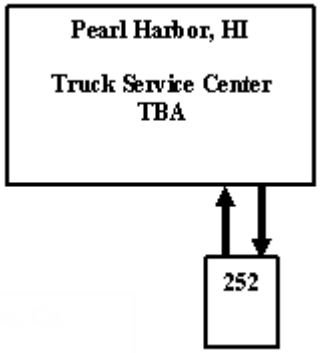
NAVY FUEL CELL DEMONSTRATION SITES

SITE: Pearl Harbor, HI
LOCATION: Hawaii
BUILDING APPLICATION: Residential Installation

Site Description

Pearl Harbor, HI was a chosen site for one Plug Power GenSysTM 5CS- 5kW PEM fuel cell. The fuel cell reforms high grade propane gas into a hydrogen fuel source, CO2 and water vapor. The Fuel cell is connected to the grid and set to allow 2.5kW output. This allows for a capacity factor of about 50% due the fuel cell primarily operating at half of its rated capacity. The fuel cell installation also capitalize on a combined heat and power (CHP) utilizing the fuel cells waste heat to be recovered to supplement an existing hot water system. The site was chosen based on their CHP utilization.

Fuel Cell Performance			
Cummulative Operating Hrs		Capacity Factor	
Total Electric Output		Availability	
Total Input Fuel		Electrical Efficiency	



Period Summary Statistics:

		Total	Unit # 252
Start Date		--	2/26/2004
Thru Date		--	8/31/2005
Hours of Operation	Hours	4462	4462
kWh Output	kWh	10843.1	10843.1
Input Fuel	MMBTU	158.1	158.1
Electric Efficiency	%	23.41%	23.41%
Availability	%	99.98%	99.98%
Capacity Factor	%	48.69%	48.69%

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Unit#1 (System Number#SU01B000000252)

Date	Oper. Hours	Total kWh	Avg. kW	Capacity Factor	Availability	Input Fuel (MMBTU)	Electric Eff.
08/04	0.0	0.0	0.00	0.00%	0%	0.00	0.00%
09/04	0.0	0.0	0.00	0.00%	0%	0.00	0.00%
10/04	0.0	0.0	0.00	0.00%	0%	0.00	0.00%
11/04	0.0	0.0	0.00	0.00%	0%	0.00	0.00%
12/04	0.0	0.0	0.00	0.00%	0%	0.00	0.00%
01/05	0.0	0.0	0.00	0.00%	0%	0.00	0.00%
02/05	48	118.63	2.47	49.43%	100%	1.74	23.2%
03/05	744	1769.24	2.38	47.56%	100%	26.03	23.1%
04/05	720	1781.78	2.47	49.49%	100%	25.25	24.0%
05/05	743	1846.39	2.48	49.63%	99.8%	25.63	24.5%
06/05	720	1721.6	2.39	47.82%	100%	25.5	23.08%
07/05	744	1785.7	2.40	48.00%	100%	26.4	23.04%
08/05	743	1819.7	2.45	48.92%	99.97%	27.3	22.74%

Average kW = kWh ÷ Operating Hours

Availability = Operating Hours ÷ Hours in Period

Capacity Factor = Total kW Hours ÷ [Total Period Hours * Fuel Cell Rated kW]

Electrical Efficiency = [kWh x 3413 Btu/kWh] ÷ [Input Fuel MMBTU x 1 million Btu/MMBTU]