

NAVY FUEL CELL DEMONSTRATION SITES

SITE: NORTH ISLAND NAVAL AIR STATION
 LOCATION: SAN DIEGO
 BUILDING APPLICATION: BLDG 2003 LAUNDROMAT



Site Description

San Diego, CA was a chosen site for eight Plug Power GenSys™ 5CS- 5kW PEM fuel cells. Three of the units are located at Building-2003, a centralized laundry facility at Naval Base Coronado, North Island Naval Air Station.

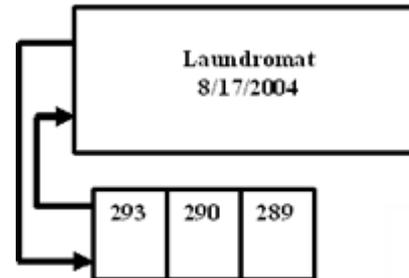
These fuel cells reform natural gas into a hydrogen fuel source, CO₂ and water vapor. The GenSys 5kW fuel cells offers uninterruptible power to a critical load in the event of grid disturbance. They are connected to the electric utility grid and set to allow 2.5kW output from the fuel cell.

These fuel cell installations 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 sites were chosen based on thermal energy requirements at the facility and the ability of the fuel cell units to provide combined heat and power in this application.

Fuel Cell Performance			
Cummulative Operating Hrs	17946.6 Hours	Capacity Factor	47.08%
Total Electric Output	44425.1 kWh	Availability	94.94%
Total Input Fuel	568.1 MMBTU	Electrical Efficiency	26.74%

Period Summary Statistics:

		Total	Unit # 289	Unit #290	Unit #293
Start Date		--	8/17/2004	8/17/2004	8/17/2004
Thru Date		--	8/31/2005	8/31/2005	8/31/2005
Hours of Operation	Hours	25211.0	8695.4	7902.9	8612.7
kWh Output	kWh	62523.2	21776.3	19869.1	20877.7
Input Fuel	MMBTU	801.2	282.1	252.1	267.2
Electric Efficiency	%	26.67%	26.35%	26.95%	26.70%
Availability	%	93.37%	94.39%	90.87%	94.85%
Capacity Factor	%	46.33%	47.26%	45.68%	46.05%



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Unit#2 (System Number#SU01B000000290)

Date	Oper. Hours	Total kWh	Avg. kW	Capacity Factor	Availability	Input Fuel (MMBTU)	Electric Eff.
08/04	336.0	838.5	2.50	49.91%	100%	10.19	28.10%
09/04	720.0	1815.0	2.52	50.42%	100%	22.35	27.72%
10/04	705.0	1374.1	1.95	36.94%	95%	21.93	21.39%
11/04	720.0	1820.7	2.53	50.57%	100%	22.27	27.91%
12/04	744.0	1685.6	2.27	45.31%	100%	21.07	27.32%
01/05	601.6	1510.1	2.51	40.59%	81%	18.9	27.27%
02/05	540	1308.7	2.42	38.95%	80.36%	16.7	26.74%
03/05	721	1728.4	2.4	46.46%	96.97%	22.3	26.46%
04/05	704	1748.8	2.48	48.58%	97.84%	21.6	27.57%
05/05	720	1748.2	2.43	47.05%	96.77%	22.2	26.81%
06/05	706	1718.6	2.43	47.74%	98.16%	22.0	26.67%
07/05	743	1813.9	2.44	48.76%	99.94%	23.4	26.45%
08/05	650	1581.3	2.43	42.51%	87.37%	20.2	26.68%

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]