

FCE Direct FuelCell Basics

- Fuel cells are base-load energy conversion devices
- Fuel cells generate electricity and heat
- The exhaust heat from a fuel cell can be used as a energy source for
 - Hot-water heat exchanger systems
 - Steam generator systems
 - Absorption cooling systems



DFC300
300 kW



DFC1500
1.4 MW



DFC3000
2.8 MW

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Fuel Cell Requirements Utilities and Space

Utility Requirements

- Typical pipeline natural gas
- Typical municipal quality water
- Discharge water hookup. Discharge water may be used for cooling tower make-up or irrigation

	DFC300	DFC1500	DFC3000
Power output, net AC kW	300	1400	2800
Space requirements, excluding maintenance access	22' x 31'	42' x 58'	60' x 78'
Fuel Consumption (scfm)	39	181	362
Water Consumption - Average (gpm)	0.9	4.5	9
Water Discharge - Average (gpm)	0.45	2.25	4.5
Water Consumption/Discharge - Maximum (gpm)	10	15	30

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Fuel Cell Requirements Facility Power and Heat Load

- The facility should have a constant power and heat demand
- The facility should have a base load slightly higher than the rated output of the powerplant, for example:

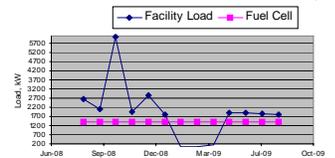
Powerplant	Rated Output, kW	Typical Baseload, kW
DFC300	300	> 320
DFC1500	1400	> 1500
DFC3000	2800	> 3000

- This requirement may change when feed in tariff is finalized, allowing excess power sales to grid

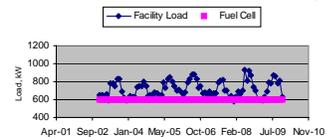
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Fuel Cell Requirements Facility Power and Heat Load

Load profile unsuitable for a fuel cell



Load profile suitable for a fuel cell



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