



Fuel Cell Product List

Manufacturer	Product Name	Application1	Output	Fuel Cell Configuration - 2	Product Dimension	Product Description and System Availability	Electrical Efficiency	Efficiency	Warranty	Product Available Today?
Ballard	Mark902	Transportation	85 kw	PEM	10"H x 32"W x 15"D	Designed to produce 85kW, 300A@284VDC using commercial grade hydrogen. Stack operated at 80C and low pressure 1-2 barg.	N/A	NA	Yes	Yes
Ballard	Mark 9 SSL	Materials Handling / Light Mobility	4.4 - 19.3 kw	PEM	2.4" x 30"W x 4.2"D (4.4kW) 2.4"H x 30"W x 6.8"D (8.8kW) 2.4"H x 30"W x 9.2"D (14.4kW) 2.4"H x 30"W x 12.8"D (19.3kW)	The Mark9SSL is scalable and available from 4.4 to 19.3kW. Multiple stacks can be used in parallel for even greater power. The Mark9SSL features fast dynamic response, robust and reliable operation in a durable package	NA	NA	Yes	Yes
Ballard	Mark 1030	Cogeneration	1.3kW	PEM	9.1"H x 17" D x 6.7" W	Reformate based, long-life and high efficiency stack. Liquid cooled stack with built in cell voltage monitoring hardware.	NA	NA	Yes	Yes
Ballard	Mark 1020 ACS	Back-up power / Light Mobility	300W - 5000W	PEM	4.4"L x 16"W x 11"D (42-Cell, 1.3kW)	The Mark1020ACS has been engineered to incorporate advanced open cathode technology and state of the art self-humidifying membranes. These features completely eliminate the need for external humidification systems and greatly simplifies system integration	NA	NA	Yes	Yes
Ballard	HD6	Transportation / Bus	65 or 130kW net	PEM	49"W x 34"W x 17"H (1x65kW module)	Ballard's next generation heavy duty PEM fuel cell power module is ideal for integration into bus applications. This module established a new standard by optimizing cost, design for volume-manufacturing, reliability, power density and compatibility with customer system requirements	NA	NA	Yes	Pre-production modules available late 2007. Production module available mid-2008
FuelCell Energy	DFC 300MA	Stationary	300 kW	MCFC	~ 30 x 30	Natural Gas or Biogas Fueled Commercial Product	47%	Up to 75%	Yes	Yes
FuelCell Energy	DFC 1500MA	Stationary	1200 kW	MCFC	~ 50 x 70	Natural Gas or Biogas Fueled Commercial Product	47%	Up to 75%	Yes	Yes
FuelCell Energy	DFC 3000	Stationary	2400 kW	MCFC	~ 60 x 55	Natural Gas or Biogas Fueled Commercial Product	47%	Up to 75%	Yes	Yes
General Hydrogen	Hydricity ^(R) Packs	Battery replacements for industrial vehicles	Hybrids with 3 to 14 kW average can exceed up to 45 kW in 5 to 30 second bursts 24V, 36V, 48V, 72V, 80V	PEM	Drop-in replacement packs including correct weight and correct Center of Gravity	Complete Pack includes hybrid fuel cell system and high pressure fuel storage for up to 24 hour run on single fill Operating temp range -20 to +40 deg C. SAE J2600/1 fueling/communication	NA	NA	Standard product 2 yrs / 5000 hours	Call for delivery. Inventory changes often. 30 to 90 days for std; 4 mo ARO for specials
General Hydrogen	F1-3000 series	Small Class 1 lift trucks		PEM	industry std, call for tray #		NA	NA	Standard product 2 yrs / 5000 hours	Call for delivery. Inventory changes often. 30 to 90 days for std; 4 mo ARO for specials
General Hydrogen	F1-5000 series	Medium Class 1 lift trucks		PEM	industry std, call for tray #		NA	NA	Standard product 2 yrs / 5000 hours	Call for delivery. Inventory changes often. 30 to 90 days for std; 4 mo ARO for specials
General Hydrogen	F1-8000 series	Large Class 1 lift trucks		PEM	industry std, call for tray #		NA	NA	Standard product 2 yrs / 5000 hours	Call for delivery. Inventory changes often. 30 to 90 days for std; 4 mo ARO for specials
General Hydrogen	F2- series	Class 2 narrow aisle trucks		PEM	industry std, call for tray #		NA	NA	Standard product 2 yrs / 5000 hours	Call for delivery. Inventory changes often. 30 to 90 days for std; 4 mo ARO for specials

General Hydrogen	F3- series	Class 3 pallet trucks		PEM	industry std. call for tray #		NA	NA	Standard product 2 yrs / 5000 hours	Call for delivery. Inventory changes often. 30 to 90 days for std; 4 mo ARO for specials
General Hydrogen	F6 series	Class 6 tow tractors		PEM	industry std. call for tray #		NA	NA	Standard product 2 yrs / 5000 hours	Call for delivery. Inventory changes often. 30 to 90 days for std; 4 mo ARO for specials
General Hydrogen	AGV series	Automated Guided Vehicles		PEM	semi custom		NA	NA	Standard product 2 yrs / 5000 hours	Call for delivery. Inventory changes often. 30 to 90 days for std; 4 mo ARO for specials
General Hydrogen	SP series	Special Products		PEM	custom		NA	NA	Standard product 2 yrs / 5000 hours	Call for delivery. Inventory changes often. 30 to 90 days for std; 4 mo ARO for specials
Hydrogenics	HyPM XR (DC) Backup Power Systems	Stationary	8-16 kW	PEM	75"Hx 44"W x 42"D	DC backup power system for outdoor environments (e.g. telecom installations)	55	55	Yes	Yes
Hydrogenics	HyPM XR Power Modules	Stationary	4-12 kW	PEM	38"L x 20"W x 12"H	Rack-mountable, UPS (AC) power for extended run applications (e.g. data centers)	55	55	Yes	Yes
Hydrogenics	HyPM HD Power Modules	Mobility	4-65 kW	PEM	38"L x 20"W x 14"H	Compact, high durability power module for mobility applications	50-55	50-55	Yes	Yes
Hydrogenics	HyPM Power Packs	Mobility	12 kW continuous	PEM/hybrid	38.25"L x 32.75"W x 22.75"H	HyPM power module integrated with ultracaps, hydrogen storage and thermal management, particularly suited as lead acid battery replacement for forklift vehicles	55	55	yes	Yes
Hydrogenics	HySTAT Hydrogen Station	Hydrogen Refueling	4-60 Nm3/hr	alkaline electrolysis	variable	Turnkey hydrogen stations with optional hydrogen storage, dispensing		~75%	yes	Yes
IdaTech	ElectraGen™ 5	Backup	5 kW	PEM	26" x 40 x 53 (h)	Seamless Backup, Commercial	~50%	~50%	2 year	Yes
IdaTech	ElectraGen™ 3	Backup	3 kW	PEM	26" x 40 x 53 (h)	Seamless Backup, Commercial	~50%	~50%	2 year	Yes
IdaTech	ElectraGen XTR	Backup	hydrogen	PEM	28" x 28 x 53 (h)	Hydrogen generator for ElectraGen 3 & 5 using an on-board advanced fuel reforming	N/A	~80% MeOH to H2	2 year	Yes
IdaTech	iGen™	Portable	250 watts	PEM	14" x 20 x 6.5 (h)	Prime power for battery charging or portable power generation		None at present		Available on precommercial basis to qualified customer
Jadoo Power	N-Gen	Portable	100 Watt 12VDC	PEM	4.3"Lx4.3"Wx7.5"H	Fuel Cell Power Unit (includes PowerBase)	100%		2 years + optional 3rd year	Click and Buy www.jadoopower.com
Jadoo Power	XRT	Portable	100 Watt 12VDC with over 2,200 Watt-hours of run time	PEM	17.5"Lx7.2"Wx13.5"H	Extended Runtime System	100%		2 years + optional 3rd year	Click and Buy www.jadoopower.com
Jadoo Power	FillPoint	Portable	Support Equipment		14.8"Lx9.5"Wx14"H	4-Port Refill Station	N/A		2 years + optional 3rd year	Click and Buy www.jadoopower.com
Jadoo Power	FillOne	Portable	Support Equipment		8.5"Lx4.3"Wx7.5"H	1-Port Refill Station	N/A		2 years + optional 3rd year	Click and Buy www.jadoopower.com
Jadoo Power	N-Stor130	Portable	Fuel Storage System		2.5" dia x 4.5"H	Fuel Canister -	N/A		2 years + optional 3rd year	Click and Buy www.jadoopower.com
Jadoo Power	N-Stor360	Portable	Fuel Storage System		2.5" dia x 10.5"H	Fuel Canister -	N/A		2 years + optional 3rd year	Click and Buy www.jadoopower.com
Medis Technologies	Medis Power Pack	Portable	1W	Direct Borohydride	67mm x95 mm x 37 mm	Single use / disposable fuel cell for consumer portable electronics applications	N/A	N/A	TBD	Precommercial product available to qualified customers
MTI MicroFuel Cells	Mobion 30M	Micro/Portable	30w	DMFC	3.5x9.8x5.7**	30w DMFC fuel cell	360 wh/kg	360 wh/kg	Yes	IQ 2007*
MTI MicroFuel Cells	Mobion 1M	Micro/Portable	1w	DMFC	1.3x3.7x6.0**	1w DMFC fuel cell	TBD	TBD	Yes	IQ 2007*
Nuvera Fuel Cells	PowerFlow PFS-005	Portable, Stationary, Backup, APU	5 kWe	PEM	375x800x685mm	DC Power Module	56%	56%	Yes	Yes
Nuvera Fuel Cells	PowerFlow PFS-009	Portable, Stationary, Backup, APU	9 kWe	PEM	375x925x685mm	DC Power Module	56%	56%	Yes	Yes
Nuvera Fuel Cells	HDL-82	Transportation	82 kWe	PEM	150 liters	DC Power Module	58%	58%	Yes	Yes
Nuvera Fuel Cells	Forza RPM	Stationary, Backup	125 kWe	PEM	3000 liters	DC Power Module	52%	52%	Yes	Yes
Nuvera Fuel Cells	HDL-82	Transportation	82 kWe	PEM	150 liters	DC Power Module	58%	58%	Yes	Yes

Plug Power Inc.	GenCore® 5T	Backup	5kw (net)	PEM	44"H x 26"W x 24" D	Direct hydrogen fueled DC Backup systems, designed specifically to replace or supplement valve regulated lead acid batteries (VRLA) in the Wireless Telecom Industry. Configurations include 24v, 48v and -48vdc. This product is also available through State and Federal contract listings including GSA, NY-OGS, CA-CMAS and Tx- TXMAS.	N/A	N/A	2yrs	Yes
Plug Power Inc.	GenCore® 5U	Backup	5kw (net)	PEM	44"H x 26"W x 24" D	Direct hydrogen fueled DC Backup systems, designed for the extended back-up needs of Utility and UPS customers. Configurations include 48v Floating Ground, 120v Floating Ground and 120v Negative Ground. This product is also available through State and Federal contract listings including GSA, NY-OGS, CA-CMAS and Tx- TXMAS.	N/A	N/A	2yrs	Yes
Relion	T-1000	Backup	600-1200 w	PEM	12.75"w x 19"d x 23.5"h	Backup power solution based on modular, hot-swappable cartridges for high reliability	N/A	N/A	2 yr	Yes
Relion	T-2000	Backup	600w - 2kw	PEM	19.75"w x 19.5"d x 23.5"h	Backup power solution based on modular, hot-swappable cartridges for high reliability	N/A	N/A	2 yr	Yes
Relion	I-1000	Backup	1kw	PEM	17.25"w x 25.12"d x 20.5"h	Backup power solution based on modular, hot-swappable cartridges for high reliability	N/A	N/A	2 yr	Yes
SFC Smart Fuel Cell	EFOY 600	Mobile / Backup	600 Wh/day	DMFC	43.5x20.0x27.6 cm	The EFOY 600 fuel cell is SFC's starter model for use in off-grid industrial applications like sensors, surveillance cameras, monitoring and measuring systems, audio & video equipment, and for leisure applications, eg motor homes, sailboat and cabins.	N/A	N/A	3 yrs	> 500 sales points and at 30 online stores
SFC Smart Fuel Cell	EFOY 1200	Mobile / Backup	1,200 Wh/day	DMFC	43.5x20.0x27.6 cm	The EFOY 1200 fuel cell is SFC's around model for use in off-grid industrial applications like sensors, surveillance cameras, monitoring and measuring systems, audio & video equipment, and for leisure applications, eg motor homes, sailboat and yachts.	N/A	N/A	3 yrs	> 500 sales points and at 30 online stores
SFC Smart Fuel Cell	EFOY 1600	Mobile / Backup	1,600 Wh/day	DMFC	43.5x20.0x27.6 cm	The EFOY 1600 fuel cell is SFC's top model for use in off-grid industrial applications like sensors, surveillance cameras, monitoring and measuring systems, audio & video equipment, and for leisure applications, eg motor homes, sailboat and yachts.	N/A	N/A	3 yrs	> 500 sales points and at 30 online stores
Teledyne Energy Systems	Titan Series Hydrogen Generation Systems	Industrial, Transportation	2 to 60 nm3/hr	Alkaline Electrolysis	2 m3 to 12.5 m3	High reliability hydrogen and oxygen generation systems for use in industrial applications, refueling systems and laboratories.	N/A	N/A	Yes	Yes
Teledyne Energy Systems	Teledyne PEM Fuel Cells	Aerospace/Defense	100 Watts to 15 kW	PEM	Variable	High Efficiency, Hydrogen/Oxygen PEM FC systems for high altitude, subsea and space applications	N/A	N/A	None at present	Yes
Teledyne Energy Systems	Medusa Fuel Cell Test Stations	PEMFC, DMFC and SOFC Testing	Watts to 15 Kilowatts	PEM, DM, SO	Variable	High accuracy, NIST traceable test hardware for component and full stack testing	N/A	N/A	Yes	Yes
UTC Power	PureCellTM System Model 200	Stationary	200 kW	PAFC	18 x 10 x 10 feet	Cogeneration power plant with over 97% availability	Over 40%	90%	Yes. Several options	Yes
UTC Power	PureCellTM System Model 5	Backup	5 kW	PEM	21 x 17 x 28 inches (fits 19" or 23" rack)	High power density, expandable-scalable, reliable Backup power	Over 40%	40%	Yes. Several options	Demonstrators: Commercial offering in 2007
UTC Power	PureMotion™ 120 System	Transportation	120 kW	PEM	41 x 59 x 46 inches	Super efficient, quiet and emission free transportation fuel cell system. Revenue service began early in 2006; data is being evaluated	N/A	>46% @ 120 kW	Current offering is 4,000 hours	Yes

1 - Fuel Cell Applications

Micro - Battery Replacement
 Portable - Mobile Electric Generation
 Backup - Emergency Power, Grid Parallel
 Stationary - Primary Power and Peak Shaving
 APU - Auxiliary Power Unit
 Transportation - Bus and light duty vehicle propulsion

2 - Fuel Cell Configurations

PEM - Proton Exchange Membrane Fuel Cells
 PAFC - Phosphoric Acid Fuel Cells
 MCFC - Molten Carbonate Fuel Cell
 SOFC - Solid Oxide Fuel Cell
 AFC - Alkaline Fuel Cell
 DMFC - Direct Methanol Fuel Cell
 FFC - Formira Fuel Cell
 SBHFC - Sodium Borohydride Fuel Cell

* - Product is undergoing field testing