







PORTABLE FUEL CELLS – Technical Info.

Company Name	Product	Types of Fuel Cells Developed	# Of Cells in Stack	Standard Voltage	Current (A)	Power (W)	Efficiency	Size	Weight	Picture
Acumentrics	Super Cell	Tubular SOFC with Hi-Speed Flywheel				100 kW				
Anuvu Incorporated		Carbon-X PEM								
Astris Energi, Inc.	Model E3	Alkaline	Several configurations			1 kW				
Avista Labs (now ReliOn)	SR-12 500W PEM Fuel Cell	PEM	12 cartridges (each having 4 MEAs)	25 – 39 DC dynamic (120 VAC Single Phase available with optional inverter)		500 W		22.3 x 24.2 x 13.6 inches (.56 x .61 x .345 m)	97 lbs. W/ cartridges (44 kg)	
Avista Labs (now ReliOn)	Independence 100	PEM	One 650 cartridge	12 volt (DC)		100 W		19 5/8" X 10.3/4" X 14"	45 lbs.	
Avista Labs (now ReliOn)	Independence 500	PEM	Ten 250 Hot Swap Cartridges	48v (12v & 24v available in Q3 2002)		500 W		16.8" h x 17.6"w x 18.5"d		
Avista Labs (now ReliOn)	Independence 1000	PEM	Eight 650 Avista Cartridges	48 VDC		1 kW		35.1"h x 19.1"w x 30.8"d (89.2cm x 48.5cm x 78.2cm)		
AXANE	PEMFCs	Nuvera PEMFCs								
Ball Aerospace & Technologies Corp.	Snorkler	Uses BALLARD PEM fuel cell				100 W				
Ball Aerospace & Technologies Corp.	PPS-100	Uses H Power PEM fuel cells		24 volts		100 W (125 W peak)		4.3 x 8 x 10 inches	8.3 pounds	
Ball Aerospace & Technologies Corp.	PPS-50	Uses H Power PEM fuel cells		12 volts		50 W (peak 65 W)		4.3 x 7.7 x 8 inches	6.5 pounds	
Ball Aerospace & Technologies Corp.	PPS-30	Uses H Power PEM fuel cells				30 W				
Ball Aerospace	DMFC-60	Uses Los		13.5 volts	3.7 A	60 W		20 x 20 x 19	6.8 kg	

& Technologies Corp.		Alamos DMFCs						cm		
Ball Aerospace & Technologies Corp.	DMFC-20	Uses Los Alamos DMFCs		12.6 volts	1.6 A	20 W (35 W max)		20x10x6.4 cm	.7 kg	
Ballard Power Systems	Nexa™ Power Module	PEM	N/A	26 Volts (DC voltage)	46 Amps (At rated net output)	1.2 kW (rated net output: beginning of life, sea level, rated temperature range)	N/A	56 x 25 x 33 cm (22.0 x 10.0 x 13.0 in)	13 kg (29 lbs.)	
Coleman	Coleman Powermate AirGen™	Uses Ballard's Nexa™ module		120 VAC +/- 3% @ 60 Hz		1 kW contin.		27.3" x 15.8" x 19"	101 lbs.	
Energy Conversion Devices, Inc.		Ovonic Regenerative Fuel Cell								
Energy Visions, Inc.		PEM-based DMFC								
Forschungszentrum Jülich GmbH	DMFCs	DMFC				500 W				
Fuel Cell Resources, Inc.	PS1000	Direct Methanol Fuel Cells	24	110 VAC, single phase @ 60 Hz. Or 220 VAC and 24 VDC	70A	1 kW net output	60	21" x 21" x 21"	61 lbs.	
Fuel Cell Resources, Inc.	PS 2000	Direct Methanol Fuel Cells	48	110 VAC, single phase @ 60 Hz. Or 220 VAC and 24 VDC	70A	2 kW net output	60	21" x 21" x 21"	68 lbs.	
Fuel Cell Resources, Inc.	PS3000	Direct Methanol Fuel Cells	72	110 VAC, single phase @ 60 Hz. Or 220 VAC, 24 VDC and 48 VDC	70A	3 kW net output	60	25" x 25" x 25"	83 lbs.	
Fuel Cell Resources, Inc.	PS5000	Direct Methanol Fuel Cells		110 VAC, single phase @ 60 Hz. Or 220 VAC, 24 VDC and 48 VDC	70A	5 kW	60	36" x 36" x 36"	154 lbs.	
Fuel Cell Resources, Inc.	PS7000	Direct Methanol Fuel Cells		110 VAC, single phase @ 60 Hz. Or 220 VAC, 24 VDC and 48 VDC	70A	7 kW	60	36" x 36" x 36"	180 lbs.	
Fuel Cell Systems, Inc.	Mk2 module	Alkaline	24 cells	4 VDC +/- 5%	107A +/- 5% (max = 120A)	410W +/- 5%	45 to 55% = electrical eff.	98 x 250 x 310 mm	6 kg	
Fuel Cell Technologies LTD	Portable APU	Planar SOFC from SiemensWestinghouse				1 kW				

Giner, Inc	Direct Methanol Fuel Cell	DMFC				55 Watt				
Giner, Inc	Regenerative Fuel Cell	PEM								
Giner, Inc	Reformate-Air Fuel Cell	PEM								
Greenvolt Power Corp.	PM-60 Emergency Fuel Cell Module	Magnesium Air Saltwater Fuel Cell (MASWFC)		6 VDC	2 amps (max)				3 lbs.	
Greenvolt Power Corp.	PM-120 Portable Fuel Cell Module	Magnesium Air Saltwater Fuel Cell (MASWFC)		12 V	2 amps (max)	40 to 60 W			4.5 lbs.	
Greenvolt Power Inc.	PM-135	Magnesium Air Saltwater Fuel Cell (MASWFC)		13.5 V	10 amps (max)				7 lbs.	
Hydrogenics Corp.	HyTEF Series Generators	PEM		4V to 60V (AC optional)		5 to 200 W	Up to 80% combined electrical and thermal efficiency			
Hydrogenics Corp.	HyPORT Power Generator	PEM		24VDC or 28VDC both at 300W; or 120 - 240VAC at 2 kW (other options available)		1 to 5 kW (multi kW)	Up to 80% combined electrical and thermal efficiency			
Hydrogenics Corp.	HyPORT C Power Generator	PEM				Sub kW				
IdaTech	FCS 1200	Uses BALLARD's NEXA™ module		120 VAC or 10.5 – 14.0 DC		850 W (AC model); 1 kW (DC model)		81x60x50 cm	65-100 kg.	
IdaTech	iGen™	PEM				250 W				
Jadoo Power	N-Gen	PEM		12 VDC		100 W				
Jadoo Power	XRT	PEM		12 VDC		100 W with over 2,200 W-hours run time				
Jadoo Power	Fillpoint					Support equipment				
Jadoo Power	FillOne					Support equipment				
Jadoo Power	N-Stor130					Fuel storage system				
Jadoo Power	N-Stor360					Fuel				

						storage system				
Lynntech, Inc.		Monopolar DMFC	40 cells			15 W			1.5 kg dry weight (FC stacks = 175 g)	
Manhattan Scientifics, Inc.	NovArs Mid-Range Fuel Cell									
Medis Technologies	Medis Power Pack	Direct Borohydride				1W				
MTI MicroFuel Cells	Mobion 30M	DMFC				30w				
MTI MicroFuel Cells	Mobion 1M	DMFC				1w				
Nuvera	PowerFlow PFS-009	PEM				5 kWe				
Nuvera	PowerFlow PFS-005	PEM				9 kWe				
Nuvera	1 kW hydrogen system				120/240 VAC @ 60 Hz. Or 100/230 VAC @ 50 Hz. (24 VDC standard US)	1 kW	40% electrical eff. @ 1 kWe output	3 cubic ft.	145 lbs.	 1 kW Hydrogen Power Module
Palcan	PEM fuel cell stack	PEM				Scalable to 300 W to 1 kW				
Phocos	Hybrid Fuel Cell System (FC1000)	PEM		24 V nominal	46 A (fuel cell component)	1000 W (fuel cell component only)		600 x 350 x 760 mm	51 kg	
Protonex Technology Corp.		PEMFC and DMFC				Focused on 10-3000 W				
Schatz Energy Research Center (SERC)	Portable Fuel Cell Generator	PEM	15	110 VAC		250 kW (peak)				

Notice: For additional information or comments on Fuel Cells 2000's charts, contact Jennifer Gangi at: jennifer@fuelcells.org.