Commercially Available Fuel Cell & Related Products

Manufacturer	Product Name	Application	Output	Configuration	Dimensions	Product Description and System Availability	Efficiency	Available Today?
Bloom Energy	ES-5700 Energy Server	Power Generation	200 KW Baseload	Solid Oxide Fuel Ce	26' 5" x 8' 7" x 6' 9"	All electric solid oxide fuel cell system	60%+	Yes
	ES-5400 Energy Server	Power Generation	100 KW Baseload	Solid Oxide Fuel Ce	15' 6" x 8' 6" x 6' 9"	All electric solid oxide fuel cell system	60%+	Yes
	UPM-570 Uninterruptible Power Module	Power Generation	160 KW Baseload	Solid Oxide Fuel Ce	4' 2" x 8' 7" x 6' 9"	All electric solid oxide fuel cell system	60%+	Yes
Hydrogenics	HyPM XR	Back-up Power Generation	4.5-12.5 KW	PEM Fuel Cell	302mm x 446mm x 813mm	Compact, fully integrated rack mountable PEM fuel cell power module available in three power outputs - 4.5 kW, 8.5 kW and 12.5 kW	55%	Yes
	HyPM HD Series Fuel Cell	Power Generation	2.5KW - 180 KW	Fuel Cell	From 13.3" x 9.8" x 8.7" to 37.4" x 59.9" x 27.2"	Fuel cell power module for mobile and stationary applications	51-55%	Yes
	HyPM Rack Series Fuel Cell	Power Generation	10KW - 1MW	Fuel Cell	78.7" x 42.1" x 23.6"	fuel cell power for Alternating Current electric back up for data centers	55%+	Yes
	HyPX Fuel Cell Power Pack	Power Generation	n/a	PEM Fuel Cell	57cm x 68/83cm x 97cm	Hybrid fuel cell/ultracapacitor lead acid battery replacement for Class 1 and Class 2 (electric) forklift trucks. Includes integrated hydrogen storage tank, thermal management subsystem and power controls. (Specifications given apply to Class 1 product)	n/a	Yes
Daimler AG	B-Class F-CELL	Fuel Cell Electric Vehicle	70KW/100KW Continuous/Peak	PEM Fuel Cell	-	Proton Exchange Membrane (PEM) fuel cell system, fueled with compressed hydrogen and has a range of 250 miles (400 km), and a top speed of 170 km/h	n/a	Yes
Ballard Power Systems	FCgen-1020ACS	Power Generation	450W – 3.6kW	PEM Fuel Cell Stack	14.3" x 4.1" x 13.8"	Ballard Power Systems offers an air-cooled, scalable proton exchange membrane fuel cell stack suitable for a wide range of light duty applications where durability, reliability and a simplified balance of plant are key requirements.	55%	Yes
	FCgen-1300	Power Generation	2.4KW -10.5kW	PEM Fuel Cell Stack	9.2" x 11.5" x 14.01"	Ballard's Fcgen-1300 fuel cell is a low-cost liquid-cooled PEM fuel cell product line specifically designed for stationary applications. Available with fuel cell stack integration capability, it is especially suited to backup power and distributed generation systems.	54-64%	Yes

	FCvelocity-9SSL	Power Generation	3.8KW -21kW	PEM fuel cell stack	2.3" x 29.9" x 3.6" - 2.3" 29.9"x 11.9"	Ballard Power Systems offers a PEM fue lcell stack based on our proven, fourth generation transportation stack technology. Available now to customers with fuel cell stack integration capabilities, it is designed for perform in rugged environments and is scalable depending on cusomter requirements from 4 to 21 KW	52%	Yes
	FCvelocity-HD6	Power Generation	75kW/ 150kW	Modular fuel cell	60" x34" x 19"	Fcvelocity-HD6 offeres a design ideal for integration into bus applications. The heavy duty module can interface with a system controller, making it aplug and play product for any fuel cell or hybrid bus platform	60-71%	Yes
	ElectraGen-H2	Power Generation	1.7KW -5kW	hydrogen fuel cell	17.7" x 24.8" x 14.2"	Ballard Power Systems o ers complete direct hydrogen backup power solutions designed for telecom and related networks applications. ElectraGen™- H2 systems are clean, reliable, quiet, economical and have been deployed worldwide for critical backup power applications.	35-38%	Yes
	ELectraGen-ME	Power Generation	2.5KW -5kW	methanol fuel cell	53.1" x 45.3" x 69.3"	Ballard Power Systems' fuel cell solutions are clean, reliable, quiet, economical and have been deployed worldwide for critical backup power applications. The ElectraGen™- ME system provides power on an extended runtime basis for telecommunications and related network applications.	30%	Yes
	ClearGen	Power Generation	Multi-MW	hydrogen fuel cell	9.5' x 7.9' x 20.7'	ClearGen is a complete turnkey solution, providing zero-emission power. The system can operate continuously for baseload power generation or providing peak power during high demand. The self contained modules run on hydrogen fuel, scalable in increments of 500KW	40%	Yes
Nuvera	Orion (industrial)	Power Generation	10kw - 150KW	PEM Fue lcell	6.8" x 11.0" x 8.3" - 12.8" x 11.0" x 8.3"	The key benefits of fuel cell technology for industrial use include higher productivity, lower cost of ownership, and reduced emissions. The Orion stack is offered in standard configurations with power ratings from 10 to 30 kW. Orion offers superior performance and durability in a compact unit. Provided with its own control logic, called SmartStack™, Orion is easily integrated by OEMs into purpose-built industrial vehicles of all types.		Yes

	Orion (Automotive)	Power Generation	10kw - 150KW	PEM Fuel cell	11.7"/18.2" x 11.0" x 8.3"	Nuvera works closely with OEMs and Tier-1 automotive suppliers to customize the Orion fuel cell stack for specific models of fuel cell electric vehicles (FCEVs) and fuel cell buses. Orion-powered solutions vary from 30 kW range extenders for electric vehicles to 110+ kW engines for larger fuel cell vehicles.	Yes
	Orion (Aerospace)	Power Generation	10kw - 150KW	PEM Fuel Cell	11.7"/18.2" x 11.0" x 8.3"	Nuvera is partnering with a major airframe manufacturer and system integrator to develop onboard electrical power generators for a new generation of commercial airliners. Fuel cells can be used to power the avionics, the hydraulics, and the system used to keep fuel tanks safe by maintaining artificially low oxygen levels. Currently, an aircraft's main engines produce electrical power for these systems during a flight while a separate auxiliary power unit—a small turbine often contained within the tail—powers them on the ground.	Yes
Plug Power	GenDrive Series 1000	Power Generation	8-10 KW	Fuel Cell	38.3" x 24.7" x 22.6"	In today's evolving material handling industry, operational performance enhancements are key to growing a thriving business. And, the predictability of your productivity can be the main differentiator separating you from your competition. Plug Power's GenDrive® hydrogen fuel cell systems elevate lift truck performance to exceed the demanding requirements of high-volume manufacturing, warehousing and distribution operations. Your sit-down counterbalanced trucks will move more pallets faster, as time spent dealing with depleted batteries is now eliminated.	Yes
	GenDrive Series 2000	Power Generation	8-10 KW	Fuel Cell	38.3" x 17.75" x 30.75" / 48.1" x 19.6" x 30.7"	In today's evolving material handling industry, operational performance enhancements are key to growing a thriving business. And, the predictability of your productivity can be the main differentiator separating you from your competition. Plug Power's GenDrive® hydrogen fuel cell systems elevate your lift truck performance to exceed the demanding requirements of high-volume manufacturing, warehousing and distribution operations. Your reach trucks will lift heavy loads with accelerated speed, and maintain momentum during an entire shift. Time spent dealing with depleted batteries is now eliminated.	Yes

	GenDrive Series 3000	Power Generation	1.8 KW	Fuel Cell	12.9" x 31.0" x 30.8" / 12.9" x 30.1" x 30.8"	In today's evolving material handling industry, operational performance enhancements are key to growing a thriving business. And, the predictability of your productivity can be the main differentiator separating you from your competition. Plug Power's GenDrive® hydrogen fuel cell systems elevate lift truck performance to exceed the demanding requirements of high-throughput warehousing, distribution and manufacturing operations. Your rider pallet jacks will move more pallets, faster, maintaining rapid momentum during an entire shift. Time spent dealing with depleted batteries is now eliminated.	Yes
	E-200	Back-up Power Generation	<175W to 525W	Fuel Cell	17.25 "h x 3.4"w x 18.5"d	The E-200™ fuel cell system is designed specifically for small-scale backup power applications within the railroad, telecommunications, transportation, security and government sectors. The E-200™ provides DC power for equipment needing up to 200W in a 2U rack-mountable chassis. Fueled by hydrogen, it can affordably provide	Yes
	E-1000x	Back-up Power Generation	1kW to 4kW	Fuel Cell	7 "h x 17.25"w x 24"d	The E-1000x™ hydrogen fuel cell is designed for grid support and high duty cycle customer applications. It offers robust reliability and comes with an industry-leading warranty, providing extended runtime for critical equipment. The E-1000x™ fuel cell system produces DC power for equipment needing up to 1,000 Watts in a compact 4U rack-mount chassis. Multiple systems may be combined for higher power applications and N+1 redundancy. Because the only emissions are warm air and a small amount of water, the E-1000x™ is exempt from the most stringent air quality standards and is a valuable asset for use in CO2 reduction efforts.	Yes
	E-1100	Back-up Power Generation	1.1kW to 4.4kW	Fuel Cell	7 "h x 17.25"w x 24"d	The E-1100™ fuel cell system offers the latest innovation in high-reliability power solutions. Designed around ReliOn's patented modular, fault-tolerant architecture, the E-1100™ fuel cell system provides 1,100W of power in a compact, 4U (7" tall) rack-mountable package. This system has 2.5 times greater power density than ReliOn's T-1000® fuel cell, allowing for higher power configurations in the same environmentally-hardened outdoor enclosure footprint. Like all of ReliOn's fuel cell products, emissions are limited to warm air and a small amount of water, and the E-1100™ fuel cell is exempt from the most stringent air quality standards. The E-1100™ system can affordably provide hundreds of hours of runtime between refuelings and many years of service for critical equipment.	Yes

E-1100v	Back-up Power Generation	1.1kW	Fuel Cell	27 "h x 18.75"w x 7.375 "d	The E-1100v fuel cell is a fully integrated system producing up to 1,100 Watts of power in an industry first vertical-mount chassis. The product was developed for use with customers for whom total footprint at small power levels is most important. The E-1100v fuel cell system is available in both 24V or 48V DC and has a variety of indoor and outdoor mounting options including rack, wall and cabinet. Like all of ReliOn's fuel cell products, the E-1100v is a clean energy solution; emissions are limited to warm air and a small amount of water. The E-1100v system is exempt from the most stringent air quality standards, such as those set by the California Air Resources Board, because it produces no harmful emissions. The E-1100v system can affordably provide hundreds of hours of runtime between refuelings and many years of service for critical equipment.	Yes
E-2200x	Back-up Power Generation	2.2kW to 17.5kW	Fuel Cell	14 "h x 21.25"w x 24"d	The E-2200x™ fuel cell system is designed for grid-support and high duty cycle customer applications. It offers robust reliability and comes with an industry-leading warranty, providing extended runtime for critical equipment. The E-2200x™ fuel cell system provides DC power for equipment needing up to 2,200 Watts in an 8U rack-mount chassis. Multiple systems may be combined for higher power applications and N+1 redundancy. Because the only emissions are warm air and a small amount of water, the E-2200x™ is exempt from the most stringent air quality standards and is a valuable asset for use in CO2 reduction efforts.	Yes
E-2500	Back-up Power Generation	2.5kW to 20kW	Fuel Cell	14 "h x 21.25"w x 24"d	The E-2500™ fuel cell system offers the latest innovation in high-reliability power solutions. Designed around ReliOn's patented modular, fault-tolerant architecture, the E-2500™ fuel cell system provides 2,500W of power in a compact, 8U (14" tall) rack-mountable package. This system has 1.6 times greater power density than ReliOn's T-2000® fuel cell, allowing for higher power configurations in the same environmentally-hardened outdoor enclosure footprint. Emissions are limited to warm air and a small amount of water, and the E-2500™ fuel cell is exempt from the most stringent air quality standards. The E-2500™ system can affordably provide hundreds of hours of runtime between refuelings and many years of service for critical equipment.	Yes

	T-2000	Back-up Power Generation	100W to 6kW+	Fuel Cell	26"h x 21"w x 21.5 "d	The T-2000® fuel cell system is designed specifically for larger communications backup power loads within the wireless and wireline telecommunications, utility and government sectors. The T-2000® fuel cell uses Modular Cartridge Technology® for hot-swappable high reliability, ease of maintenance and simplicity of design. Modular electronics cards enable scalability by providing flexible configuration from 600 Watts to a full 2,000 Watt capacity in one chassis. Or combine multiple T-2000® fuel cells to provide higher outputs for a variety of site requirements up to 12kW.		Yes
FuelCell Energy	DFC3000	Power Generation	2.8 MW	Fuel Cell	69'11" x 26'6" x 43'2"	FuelCell Energy's DFC3000™ system is the largest of the Direct FuelCell® (DFC®) power plant fleet, capable of providing high-quality baseload power with 47% electric power generation efficiency around-the-clock. Scalable for Multi-Megawatt Fuel Cell Parks, the system is especially suitable for applications with larger load requirements such as universities, manufacturing facilities, wastewater treatment plants, and utility/grid support.	47%	Yes
	DFC1500	Power Generation	1.4 MW	Fuel Cell	55'7" x 39'1" x 20'0"	The DFC1500™ stationary fuel cell power plant from FuelCell Energy provides high-quality, Ultra-Clean electrical power with 47% efficiency around-the-clock. Designed for commercial and industrial applications, the system offers easy transport, quiet and reliable operation, and simple site planning and regulatory approval. The DFC1500 is ideal for wastewater treatment plants, manufacturing, food and beverage processing, universities and office campuses.	47%	Yes
	DFC300	Power Generation	300 KW	Fuel Cell	20' x 20' x 15.1'	The DFC300™ stationary fuel cell power plant from FuelCell Energy provides high-quality, Ultra-Clean electrical power with 47% efficiency in a compact footprint. Designed for commercial and industrial applications, the system offers operation around-the-clock, easy transport, quiet and reliable operation, and simple site planning and regulatory approval.	47%	Yes
									Yes
Johnson Matthey Fuel C	Membrane Electrode Assemblies	fuel cell component	n/a	n/a		Johnson Matthey specialises in manufacturing membrane electrode assembly (MEA) components for developers and manufacturers of polymer electrolyte fuel cell (PEMFC) systems for hydrogen, reformate and direct methanol operation.	n/a		Yes

	HiSPEC Catalyst	Fuel Cell component	n/a	Catalyst	n/a	A wide range of HiSPEC® Catalysts for different fuel types and operating conditions are produced at our US manufacturing plant. The HiSPEC® Catalysts product range includes single component, alloy, supported and unsupported catalysts. All are manufactured to a consistently high standard in our quality approved, high volume facility.	n/a	Yes
								Yes
Delphi	SOFC APU	Power Generation	up to 5 KW	SOFC	n/a	The Delphi Solid Oxide Fuel Cell (SOFC) Auxiliary Power Unit (APU) is a high-efficiency electrochemical generator designed to provide up to 5 kW of environmentally friendly electrical power for a wide range of transportation and stationary applications.	n/a	Yes
General Motors	Chevy Equinox Fuel Cell Vehicle	Automotive	n/a	n/a	n/a	Fuel Cell Electric Vehicle	n/a	Yes
Toyota	Toyota FCV	Automotive	n/a	n/a	n/a	Fuel Cell Electric Vehicle	n/a	Yes
Honda	FCX Clarity	Automotive	100KW	n/a	190.3' x 57.8' x 72.7'	Fuel Cell Electrci Vehicle	n/a	Yes
TruLite	KH4™	Power Generation	150 W	n/a	8.5”w x 13.7”h x 16.2”l	The highly portable Trulite KH4 hydrogen fuel cell power system providesyou with safe, quiet and environmentally friendly power for a wide range ofreliable power solutions. Trulite is the only fuel cell company that offers bothfuel cell and fuel source in one compact fully integrated system.		Yes
	MP-100	Power Generation	100 W	n/a	18.4" X 14.5" x 14.5"	Need more power? The FCS-300 generator offers 300W of continous power and 400W peak power.		Yes
Dupont	Nafion Membrane	Fuel Cell component		PEM Membrane				Yes
Delphi	Delphi SOFC	Power Generation	1.5KW - 9KW	SOFC	403 cm3	commercially ready for a wide range of high volume stationary power generation and transportation industry applications. Delphi's innovative fuel cell is robust, fuel flexible and highly efficient. A single Delphi Gen 4 SOFC Stack can provide 9 kW of electrical power and it features a modular design, ideal for integration into large power plants.		Yes

Intelligent Energy	Upp	USB Charger	25 amp-hours	Alkaline Fuel Cell	n/a	Upp™ provides instant energy at your fingertips allowing you to discover the freedom of personal energy generation. Upp conveniently powers and charges all your compatible hand-held electronic devices via USB. Just connect the Upp fuel cell to a replaceable Upp fuel cartridge and experience instant energy gratification. Stay connected with your favourite device on the move. Liberate yourself from the wall socket forever.		Yes
	Air Cooled Fuel Cell Solution	Fuel Cell	1 kw - 2.5 kw	n/a	n/a	Intelligent Energy Air Cooled fuel cell systems utilise low power fans to provide cooling and the oxidant supply for operation. In the Air Cooled fuel cell system, heat from the fuel cell stack is conducted to cooling plates and removed through airflow channels, resulting in a simplified and cost effective power solution. These systems are typically used in a wide range of power-critical consumer electronic, stationary power applications, two-wheel and small car range extenders.		Yes
	Evaporatively Cooled Fuel Cell	Fuel Cell	100 KW	n/a	n/a	Intelligent Energy's proprietary and patented high performance, Evaporatively Cooled (EC) fuel cell system provides reliable power generation up to 100kW. The EC system has been refined and proven in automotive and aerospace applications worldwide. Thermal management of the EC fuel cell stack utilises the benefits of the heat of vaporisation in contrast to circulating coolant through the cells, reducing systems complexity, mass and cost. Patented EC fuel cell stack and syste		Yes
Treadstone Technologie	LiteCell	Surface Treatment	-	Fuel Cell Coating	-	Surface treatment for metallic substrates	n/a	Yes

Gore	GORE PRIMEA MEA for Transportation	fuel cell component	n/a	Membrane Electrode Assembly		GORE® PRIMEA® MEAs for Transportation PRIMEA Series 57 MEAs for Automotive PEM Fuel Cells Datasheet (131 KB PDF) Meeting the challenges Automotive and other transportation applications represent some of the most challenging operating environments for a fuel cell, as well as some of the most cost-restrictive market environments. Gore has made tremendous progress toward meeting these challenges. Current Gore technologies include greater power density membrane electrode assemblies (MEA), which can operate in hotter and dryer operating conditions, in addition to other advances that will allow for smaller, more powerful fuel-cell stacks with greater system simplification. Cost reductions are also being realized through Gore's efficient, high-volume production process.	n/a	Yes
	ORE® PRIMEA® MEAs for Portable & Backup Power	fuel cell component	n/a	Membrane Electrode Assembly		GORE® PRIMEA® Membrane Electrode Assemblies (MEA) are designed to operate in the most extreme portable fuel cell environments. Gore's patented thin and extremely durable membrane and high activity electrodes allow smaller, more powerful portable fuel cell devices without the need for external humidification. These components allow superior fuel-cell operation with dry reactant gasses and a durable power density to meet the most challenging application requirements	n/a	Yes
	GORE® PRIMEA® MEAs for Stationary Power	fuel cell component	n/a	Membrane Electrode Assembly		Gore's thorough understanding of degradation mechanisms has led to the development of a new series of membrane electrode assemblies (MEA) with a unique combination of durability and power density. Available in high volume, GORE® PRIMEA® MEAs deliver the greatest power density over the longest lifetime of any MEA currently produced. Gore has demonstrated more than 10,000 hours of continuous use and continues to engineer improvements that will contribute to the commercial success of the stationary PEM fuel cell industry.	n/a	Yes
LG Fuel Cell Systems	LGFCS 1 MW Fuel Cell System	Power Generation	n/a	SOFC	n/a	protoype 1 MW scale SOFC	55%+	no

Clariant	HyProGen Catalyst	Fuel cell component	n/a	catalyst	n/a	Clariant offers high-performance HyProGen catalysts for all major fuel cell technologies and applications that are based on hydrocarbon fuels. Key fuel cell markets include: Large Stationary Fuel Cell Applications Small Stationary Fuel Cell Applications Mobile Fuel Cell Applications Portable-Power Fuel Cell Applications Distributed Hydrogen Production	n/a	Yes