FUEL CELLS 2000
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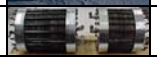
STATIONARY FUEL CELLS – Market Info.

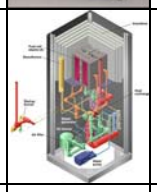
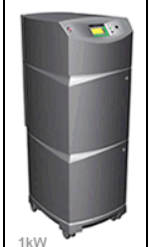
Company Name	Product	Market Entry Date	Price	Picture	Where Demonstrated	Comments
Acumentrics	Tubular SOFCs					They are exploring varies applications such as: Portable and stationary SOFC for the Broadband, Commercial, Residential, Remote, and Auxiliary Vehicle markets. The SOFC requires no reformer when using natural gas, so it has a higher fuel/electricity efficiency.
Acumentrics	BB-SOFC™				Acumentrics Corporation has delivered a fully integrated rapid-start solid oxide fuel cell uninterruptible power supply, or "UPS" to ChevronTexaco Technology Ventures in Houston, Texas under the terms of a purchase order. Acumentrics supplied the factory-tested full-on-line 2 kilowatt fuel cell unit based on their proprietary anode-supported tubular solid oxide fuel cell "TSOFC" and power electronics technology	The primary intended application for the BB-SOFC(tm) is out-door 90vAC broadband backup, but is also configurable to output DC or 120vAC for telecom and computer backup applications. In addition, the output can be connected to other units for greater output capacity
Alternative Fuel Systems (A.F.S.)	Hydrogen Fuel Cell Generator	In testing			At the end of June 2001 AFS demonstrated their 2 kW Microcell Fuel Cell Generator at a special Senate Commissioned demonstration of Alternative and Sustainable energy sources in Washington DC. It was also demonstrated at the Hannover Messe in April and Sustain 2001 in Amsterdam in early June.	For more information, go to: http://www.afs.uk.com
Apollo Energy Systems	Apollo Power Plant - Hybrid Model 101-A	Testing				This power plant is designed to be operated by a battery and a fuel cell. The battery does most of the work, operating 24-hours a day. The fuel cell is simply a battery charger, keeping the battery charged at various rates of charge during the day as directed by the microprocessor which controls the entire system.
Apollo Energy Systems	Model 101-B	In development				
Apollo Energy Systems	Model 106-B	In development				
Apollo Energy Systems	Model 102	Testing	Considerably less than the cost of the Hybrid Model 101-A			Model 102 is a mini-power plant, which operates on an Apollo Fuel Cell only, without a battery. A steady stream of power is available throughout the day, with small surges absorbed by the fuel cell.
Astris Energi, Inc.	POWERSTACK™ MC250	Available worldwide later in ~2002				This product is based on the company's successful and proven LABCELL™ mono-polar product line, which Astris has been supplying for several years.
Astris Energi, Inc.	POWERSTACK™ MC500	In Development				
Astris Energi, Inc.	Model E4B	In development				

Astris Energi, Inc.	Model E6	In development				
Astris Energi, Inc.	Model E3	In development				
Astris Energi, Inc.	Model E5B	In development				
Avista Lab	Independence 1000 (1-4kW range)	Available http://www.avistalabs.com/prod_indp.asp	$8050.00		Advanced replacement for Avista'sSR-72 unit, which accumulated thousands of hours of running time.	Introduced in 2001, the Independence 1000 represents the latest in design and performance achievement in Modular Cartridge Technology™ fuel cells. The Independence 1000 is powered by eight of Avista Labs' hot swappable 650 series modular power cartridges. It is designed to provide power in a variety of backup power situations, especially as a replacement for battery stacks needed to provide power for extended periods of time, and as an alternative back up power source where internal combustion generators are not practical.
Ballard Power Systems	250-kilowatt Stationary Fuel Cell Power Generator	In Development	N/a		In September 1999 – Ballard delivered its first 250 kW stationary power generator for field-testing to Cinergy Technology Inc. The delivery of the unit to Cinergy marked the beginning of a field trial program, which will continue through 2003. Since 1999, several units have been delivered and further units will be delivered through 2001 for a total of nine field-trial units. Field trial locations for the 250 kW unit are: 1) Naval Surface Warfare Center, Crane, Indiana, USA - Customer - Cinergy Corp. 2) Bewag Treptow Heating Plant, Berline, Germany - Customer - Alstom/Bewag 3) EBM headquarters, Basel, Switzerland - Customer - Alstom/EBM and 4) NTT research laboratory, Tokyo, Japan - Customer - Ebara/NTT. Additional Units are being manufactured for delivery in 2000 and 2001	Ballard Power Systems Inc. reserves the right to change specifications or to discontinue products at any time. For additional information about current products and business activities, please visit www.ballard.com.
Ballard Power Systems (Ebara Corp.)	1 kW PEMFC co-generators (residential system)	Mass production in Spring 2003 for Japanese market	$24,000 at first		A number of prototypes were constructed in 2001 – commercialization in Spring 2003.	This is specifically designed for the Japanese residential market. Tokyo Gas is developing the necessary natural gas reforming technology. This system uses Ballard's 1.2 kW Nexa Module. Ballard Power Systems Inc. reserves the right to change specifications or to discontinue products at any time. For additional information about current products and business activities, please visit www.ballard.com.
Ballard Power Systems	Scalable Power Product (Alpha Prototype)	Market entry in 2004 – available in alpha prototype version for customer evaluation.	N/a		First seen in Tokyo and at the 2002 Fuel Cell Seminar in Palm Springs, CA	Utilizing Ballard's leading PEM fuel cell technology and the Nexa™ power module platform, the scalable power product provides a modular configuration of power outputs in 1 kW, +/- 24 VDC increments for a wide variety of applications. In addition to flexibility of power options, the scalable power-product has been designed for industry-standard 19-inch rack mounting, allowing turnkey replacement of incumbent technologies such as battery racks. For additional information about current products and business activities, please visit www.ballard.com.
Ceramatec, Inc.	1.4 kW SOFC (Planar)	Market entry is targeted within 5 years			A 1.4 kW unit has been demonstrated with natural gas fuel and was found to be more efficient than single-cycle units with an internal combustion engine or	Present development is directed at scaling up to 10 kW modules, diesel-fueled for mobile electric power (MEP) generation.

					turbines.	
Ceramic Fuel Cells Limited	40 kW SOFC (Planar)				This product has been designed to service hotels, office buildings, apartment blocks, supermarkets and telecommunications infrastructure and computer networks **July 1999** Demonstrated stacking of thin film electrolyte cell by constructing and testing a 1kW stack. It achieved peak power of 2.5kW at 770°C. **August 1997** A 50 layer 2x4 array stack with machined ferritic SS interconnect plates was tested for 400 hours (mostly at an output of 3kW). It achieved a peak power output of 5.5kW and total energy delivered of 0.7MWh	In April 2000, they established an electrolyte-supported cell fabrication at steady rate of 1000 cells per week (110 x 90 mm size). In June 2000, a 25 kW test-bed system experiment provided scale-up challenge and identified high-risk areas for further development. In February 2001, they completed the Concept Generation Phase Project Alpha (CFCL's stationary market-entry product development project). In March 2001, the successfully operated a 1 kW stack using LPG fuel. They also increased the volumetric power density by 100% on previous stack design.
Dais-Analytic / Hamburg Gas Consult GmbH	3.5 kW CHP system	In Testing – commercialization in 2004-5			Hamburg Gas Consult GmbH has successfully completed field tests of first generation ALPHA prototypes in Europe. BETA testing will begin in 2003 with commercialization expected in 2004-5	
Fuel Cell Energy, Inc.	DFC 300 stationary fuel cell unit	Testing			FuelCell Energy, with its partners, are operating and constructing commercial field trials worldwide. They currently have field trials in Bielefeld, Germany; Rhoen Klinikum, Germany; Mercedes-Benz, AL, USA; Danbury, CT, USA - hybrid with turbine; Los Angeles Dept. of Water and Power, CA, USA; King County, WA, USA; Marubeni - sites TBA. The company is also pursuing niche markets including remote locations. FuelCell Energy will provide a 3 kW DFC power plant at the Cape Henry Lighthouse, for a field test at the lighthouse to demonstrate fuel cell capabilities at remote sites. The US Coast Guard operates several hundred unattended power systems at remote site communication stations, radio navigation stations, weather stations, and aids to navigation such as lighthouses, structures, and buoys. Stand-alone fuel cell power systems offer efficiency and environmental advantages for remote site operation.	The single stack Direct Fuel Cell Power Plant is an ideal, skid-mounted, compact power plant. It can be used to add incremental capacity or to gain operational familiarity with DFC power plants. For example, this unit could power a 100 home subdivision or a light industrial or commercial facility. Additional units could subsequently be added to meet incremental demand growth, whether it is new houses, facility expansion or new commercial tenants
Fuel Cell Energy, Inc.	DFC 3000 stationary fuel cell unit	Testing				The dual module power plant contains two modules, each with four DFC fuel cell stacks. The field trial units have a nominal output of 2 MW, and is designed for larger commercial and industrial settings where power quality, reliability, and possible cogeneration are important
Fuel Cell Energy, Inc.	DFC 1500 stationary fuel cell unit	Testing				The single module power plant contains four DFC stacks. The field trial units will have a nominal output of 1 MW, which can be used in a variety of small-to-medium commercial and industrial settings where power quality, reliability and possible cogeneration are important
Fuel Cell Energy, Inc.	DFC Turbine	Testing			Under a Department of Energy-supported Vision21 program, activities are underway to operate a subscale system and to develop an ultra-high-efficiency 40MW powerplant design.	Fuel Cell Energy Inc. has developed a hybrid concept combining the Direct FuelCell (DFC®) and an unfired gas turbine. This hybrid system uses a network of heat exchangers to transfer waste heat from the DFC system to the turbine, which converts a portion of the waste heat to mechanical energy and then electricity. The system adds 10 to 15 percentage points to the efficiency of the DFC. For large systems in the long term, unsurpassed net electric efficiency of close to 80% is possible. In the nearer term, it is believed that

						cost effective small MW class hybrid systems can be configured with efficiencies of 70% or better
Fuel Cell Resources, Inc.	PS1000 1 kW (STACK ONLY)	Available				Uses BCS Technology fuel cell stacks for integration http://www.fuelcell-resources.com/system%20spec.htm
Fuel Cell Resources, Inc.	PS 2000 2 kW (STACK ONLY)	Available				Uses BCS Technology fuel cell stacks for integration http://www.fuelcell-resources.com/system%20spec.htm
Fuel Cell Resources, Inc.	PS3000 3 kW (STACK ONLY)	Available				Uses BCS Technology fuel cell stacks for integration http://www.fuelcell-resources.com/system%20spec.htm
Fuel Cell Resources, Inc.	PS5000 4 kW (STACK ONLY)	Available				Uses BCS Technology fuel cell stacks for integration http://www.fuelcell-resources.com/system%20spec.htm
Fuel Cell Resources, Inc.	PS7000 5 kW (STACK ONLY)	Available				Uses BCS Technology fuel cell stacks for integration http://www.fuelcell-resources.com/system%20spec.htm
Fuel Cell Systems, Inc.	6 and 9 kW module systems	In development				
Fuel Cell Technologies LTD	Modular 5 kW SOFC electrical power system	In development – beta testing	Expected to be US$1,000/kW		They signed an understanding on Feb. 21, 2002 with Border States Electric Supply (BSE) giving them the right to distribute the FCT 5 kW SOFC power system to customers in 15 states. BSE will market, sell, and distribute only FCT's product line of 1 to 50 kW SOFC power systems.	This will be marketed for residential, small commercial and remote facility applications. The fuel cell stacks are manufactured by Siemens Westinghouse. 2/02 – FCT signed a contract of understanding with Border States Electric Supply (BSE) giving them the right to distribute the FCT 5 kW SOFC power system to customers in 15 of the United States. BSE will market, sell and distribute only FCT's product line of 1 to 50 kW SOFC power systems.
Fuel Cell Technologies LTD	Modular 50 kW commercial unit	Planned future program				Co-generation system to provide electricity and heat to commercial units using natural gas, propane, bio-gas directly, as well as diesel fuel with a pre-reformer
Fuel Cell Technologies LTD	Cold Power	In development				For remote applications
Fuji Electric Co Ltd	1 to 10 kW PEM systems	2005			The PEFC is under accelerated development for putting to practical use; for example, a single stack underwent operational evaluation exceeding 10,000 hours, and a power unit of the 1kW class using city gas for fuel was made on an experimental basis and continuously operated about 1,000 hours.	They have only unveiled one 1 kW prototype thus far. They are targeting commercial applications first and then residential applications.
Fuji Electric Co Ltd	100 kW PAFC system	Available			Fuji Electric is now promoting marketing and development for the second commercial type of phosphoric acid fuel cells which aims at lower cost, higher durability, and advanced functions. The first unit was delivered to Fuji Electric Human Resources Development Center. With regard to the first commercial type supplied from 1998, nine units have so far been shipped. They show the working ratio exceeding 98% and continue satisfactory	First commercial type of 100 kW (FP-100E) supplied from 1998 has been in operation with high reliability and the high rate of operation, and the marketing of the second commercial type (FP-100F) was started in 2001.

					operation. The paper describes the case of application to an office building as an installation example.	
General Motors	75 kW GM Stationary Fuel Cell System	2005 in Japan	Anticipated at $500/kW in 2005 and $50/kW in 2010		Previous prototype: over six months of operation at GM's fuel cell research facility in Rochester, NY. 75-kilowatt (kW) units will be marketed to such customers as semi-conductor plants and data centers. A number of these prototypes will be installed in 2003.	Grid Parallel Capabilities For More Information: http://media.gm.com/about_gm/vehicle_tech/fuel_cell/stationary/stationary_index.htm
Global Thermoelectric Inc.	Remote SOFC system	Niche markets (remote power) in small quantities in late 2002				2/02 - Superior Propane Inc. is joining forces with Global-Enbridge to distribute Global Thermoelectric Inc.'s fuel cell products in Canada. Enbridge and Global signed a strategic alliance in July 2000 where Enbridge became the exclusive distributor of Global's residential fuel cell system.
Global Thermoelectric Inc.	2 kW Residential SOFC system	In development – beta testing	$1000/kW		Two natural gas prototype systems have been tested. The most recent test was completed June 2000 provided 1.35 kW of peak power and operated in excess of 1,100 hours. Beta testing off site will commence in 2003.	
H Power Corp.	RCU1-10 kW AC	Market Entry date in 2003			Expected to extend its US testing and demonstration program with partner ECO (Energy Co-Opportunity). They are also working with Osaka Gas on the development of 500W and 1 kW systems for the Japanese market.	Initial market is off-grid sites fueled with propane. Follow-up market is grid-connected sites fueled with natural gas. This is their Multi-Kilowatt HPAC system. Designed to run on Natural Gas or Propane, the systems vary in wattage from 3 to 10 kW. In addition, these systems can run grid-connected or off-grid. The system is also offered with an optional heat recovery module, to provide hot water and space heating for the home or office. Suitable for indoor or outdoor operation. http://hpower.ihs.ssdw.net/pdf/HPC-RCU.pdf
Hydrogenics Corp.	HyPM Power Modules	In development			Released 3rd Generation 12/2002: HyPM-LP2.	This uses a GM PEM fuel cell stack. Hydrogenics provides the following subsystems: fuel management, humidification, power conditioning, controls (software and hardware), and proprietary distribution manifold. It is scalable from 10 to 120 kW. It is adaptable across stationary and transportation markets. The unit will initially target backup applications.
Hydrogenics Corp.	HyPORT Power Generator	In Testing			2/26/02 – they fulfilled its contract with Canada's Depart. Of National Defense with delivery and demon. Of a prototype portable fuel cell power generator (HyPORT). They was also demo.'d to the US Army Tank-automotive and Armaments Command (TACOM) unit.	Operates with outside temperatures of 0 to 40 degrees C. They are currently under contract with TACOM to deliver a fuel cell powered auxiliary power system in military light armored vehicles.
Hydrogenics Corp.	H2X ™ Series Fuel Cell PEM Stacks	In development				
Hydrovolt	Hydrovolt mid-sized residential and commercial fuel cell generator	In development - early 2002	$7,000 to $10,000			
IdaTech	3 to 4 kilowatt residential system	Expected to hit the commercial market in 2003.			Field trials of several APLPHA units conducted through Bonneville Power Administration (BPA) have taken place since 2000, and testing of 104-second generation BETA units to qualified residences is underway.	Uses Ballard fuel cells. Has a 1 kW portable fuel cell generator running on methanol commercially available (late 2002/early 2003).
Lynntech, Inc.	5 kW PEM Stack	In development				PEM fuel cells are currently undergoing further development, and are not for commercial sale.

Matsushita Electric Industrial Co Ltd	Co-generation Residential Fuel Cell system	In Testing. Aims to introduce unit in 2004			Two 1.3 kW units are currently being tested by the Japan Gas Association. They have been testing units since 1999 to achieve higher efficiency rates.	These are amongst the most advanced of their type in Japan, principally because of Matsushita's experience with related component technology as a battery developer.
Matsushita Electric Works Co.	PEM residential system	In Testing				
McDermott Technology, Inc.	Planar 2 kW SOFC scalable systems	In development				McDermott and its partners are developing planar SOFC power generators that are fully integrated, thermally self-sustaining power systems. Cell and stack technology performance has shown that commercial targets can be achieved.
Metallic Power	Back up power unit					The systems comprise of a fuel cell stack, a fuel tank containing zinc pellets suspended in a liquid electrolyte, and a build in regeneration module. They use zinc pellets combined with oxygen to produce electricity and a byproduct of zinc-oxide (a common substance often used in sunscreen and cosmetics) that is then internally regenerated back into fresh zinc fuel that can be recycled indefinitely in this manner.
Mitsubishi Electric Corp.	PEM Residential System	In Testing				Initially for the Japanese market.
Nu Element Inc.	Scalable PEMFC	In development				
Nuvera	I kW hydrogen system	In testing				Nuvera is developing 1 kW power modules that offer an alternative choice for energy needs in places where there are no existing power grids and where reliability, fuel flexibility, and noise reduction are highly desirable. Such power modules are suitable for manufacturers of recreational products (RVs), yachts, power hand tools, telecom backup systems, remote power generation systems, industrial equipment, home backup systems, portable military field units, and remote sensing equipment.
Nuvera	1 kW propane system	In testing				Nuvera is developing 1 kW power modules that offer an alternative choice for energy needs in places where there are no existing power grids and where reliability, fuel flexibility, and noise reduction are highly desirable. Such power modules are suitable for manufacturers of recreational products (RVs), yachts, power hand tools, telecom backup systems, remote power generation systems, industrial equipment, home backup systems, portable military field units, and remote sensing equipment.
Nuvera	5 kW Natural Gas System	In testing			Since May 2001, it has been working with European utility RWE on the development and distribution of these systems in Europe. RWE has so far received one prototype. Work on a second-generation prototype designed for cost reduction and manufacturability is underway.	Nuvera is developing 5 kW fuel cell power modules that can provide primary and/or auxiliary backup power to residential homes where power quality and reliability are a premium and to remote locations that are not accessible to power lines. These units are suitable for manufacturers of home power generators and backup power equipment.
Phocos	Hybrid Fuel Cell System (FC1000)	In Testing				The FC1000 Hybrid Fuel Cell - Solar Demonstration System is based on a 1 kW PEM Fuel Cell Power Module. Advantage compared to a diesel system is the low-noise, emission-free operation. The System control unit controls the battery charging from solar, from the fuel cell and protects the battery from excessive discharge. The control unit provides sophisticated data logging and remote access. Control parameters can be widely adapted.

						A typical configuration of such a system is appropriate for loads that have a constant energy consumption all over the year and need to have a guaranteed power supply, like in telecom or traffic control systems.
Plug Power Inc.	GenSys™5C – new CHP unit	In development/ testing			6 were delivered for demonstration in 2001	This is a Combined Heat and Power Unit Certified by CSA International and is certified as compliant with the American National Standards Institute (ANSI) standard for fuel cell power plants.
Plug Power Inc.	SU-1 System (residential)	In testing – commercially available in 2003 as back up power			Almost 250 units have so far been built and operated (75 currently being installed at Long Island Power Authority) and 125 were delivered for demonstration in 2001. In February 2002, they indicated that its first commercial system, which will be available from 2003, will be designed for the back-up power rather than residential markets.	This unit is for grid connected operation (grid parallel) and outdoors.
Plug Power Inc.	50 kW system	In Development / testing			1 was delivered for demonstration in 2001	
Plug Power Inc	5 kW UPS system	In testing			First 3 delivered to LIPA to install at US Merchant Marine Academy in Kings point, NY.	The new system marks Plug Power's first shipment into the backup/UPS markets. LIPA will install the units.
Proton Energy Systems	HOGEN RFC reversible fuel cell system	In development			Proton's UNIGEN® RFC systems may initially be applied to serve the demanding backup needs of today's telecom systems - wireless and wired telephone, CATV and data networks. These systems require high quality power, 100% of the time, impossible to achieve without backing up grid power.	Proton's electrolytic hydrogen generators can be teamed with Proton's fuel cells (as a UNIGEN® regenerative fuel cell system), or other fuel cells to provide an energy storage capability which can be used with solar or wind in place of grid connections, or to reinforce the grid.
Protonetics International, Inc.		In development				
Rolls-Royce	Integrated Planar Solid Oxide Fuel Cell (IP-SOFC)	Testing				Rolls-Royce is a global company providing power on land, sea and air. It is no longer related to the car manufacturer. Rolls-Royce established a solid oxide fuel cell (SOFC) program in 1992 and since then has largely concentrated on developing fundamental aspects of that technology. It has developed a novel stack, termed an Integrated Planar Solid Oxide Fuel Cell (IP-SOFC). Rolls-Royce is now satisfied that its IP-SOFC possesses the necessary performance characteristics for commercialization, and is starting to bring the technology out of the lab
Rolls-Royce	Hybrid 1MW power plant	In development				. It is developing a low cost production process, and has designed a hybrid 1MW power plant, which combines an 800kW SOFC with a 200kW Rolls-Royce Gas Turbine. It expects to have prototype systems in place in 2004-5, and to begin selling units in 2005-6.
Sanyo Electric Co.	PEM Residential System	In Testing				
Schatz Energy Research Center (SERC)	Telecommunic -ations Tower System	Testing			Being Tested at Schoolhouse Peak in Redwood National Park.	
Siemens Power Generation	SOFC 250 kW system CHP	2004				

Siemens Power Generation	SOFC 100 kW system	In testing			100 kW SOFC Cogeneration System at Westervoort, the Netherlands (over 14000 hours). A unit is being tested at the EDB/ELSAM, a consortium of Dutch and Danish utilities. It began 12/97 in Westervoort, Netherlands. It has operated for over 16,000 hours by 1/2001	Gives out 63 kW of thermal energy in hot water
Siemens Power Generation	SOFC 1 MW system	In development				
Siemens Power Generation	SOFC/gas turbine hybrid 300 kW system (PH class)	2004			220 kW SOFC/Gas Turbine hybrid System at National Fuel Cell Research Center, Irvine, CA (World's first!); 25 kW SOFC System at National Fuel Cell Research Center, Irvine, CA (over 9000 hours on variety of fuels)	
Siemens Power Generation	SOFC/gas turbine hybrid 1 MW system (PH class)	In development			Ft. Meade EPA site outside Washington DC with Cinergy as the Project Manager. This will start around 9/02. A second demonstration is scheduled to start in May 2002. This one is sponsored by EC and the US DOE and the unit will be demonstrated at ENERGIE's site on Marbach, Germany.	
Sultzer Hexis	Residential Fuel Cell System	Hundreds of units offered to energy supply firms in 2001 (Europe). Commercially available to European public in 2003-5 and US in 2005			In field tests, 65,000 hours have been reached since 1998. From 2001 to 2003, several hundreds will be sold to energy supply firms in Germany, Austria, and Switzerland.	First company to commercially offer a residential fuel cell system. Budgeted pre-series sales and installations of Sulzer Hexis fuel cell systems – 400 units by the end of 2003 – are already largely secured. Contracts have so far been closed for 370 of these systems, lately with the three German utilities E.ON Energie AG, Thyssengas GmbH and VNG – Verbundnetz Gas AG.
Toshiba International Fuel Cell Corporation (w/ UTC)	PC25 ™ series **(see UTC)**				Kaiser Hospital in CA, USA; Germany Heag; Osaka Gas FC R&D Center; Tokyo Gas; Toshiba Fuchu Works	
Toshiba International Fuel Cell Corporation (w/ UTC)	Residential PEM fuel cell (for Japanese market)	In Testing				
Toyota	1 kW residential fuel cell system	In Testing – target commercialization date of 2008			A prototype is currently being tested by the Japan Gas Association as part of its residential fuel cell program. In June 2001, it was reported that Toyota has a target date of 2008 for the commercialization of such a system	
UTC Fuel Cells	PC25 200 kW PAFC system	Available - world's first commercially available fuel cell power system	Approx. $900,000 installed (they sell approx. 30 per year)		UTC Fuel Cells is also the only company in the world producing commercial stationary fuel cell systems. UTC Fuel Cells' PC25™ fuel cell power plant produces 200 kW of electricity and 700,000 BTUs of usable heat. UTC Fuel Cells has delivered more than 200 PC25 systems and has installed units in 15 countries on four continents. PC25 systems provide clean, reliable power at a range of locations from a New York City police station to a major postal facility in Alaska to a credit card processing system facility in Nebraska to a science center in Japan.	These units produce computer grade electrical output. Can operate in outside temp.s of -20 to 110 degrees Fahrenheit. Can be grid parallel or independent or both

UTC Fuel Cells	Energy Center fuel cell system PEMFC	Testing			<= 5 kW NG reforming pictured.	Geared towards light commercial and residential applications. This product can be used in conjunction with the electrical grid or with additional power plants for remote applications.
UTC Fuel Cells	100 kW PEMFC	In Development			One alpha has been built and is being tested in house.	UTC's next generation stationary fuel cell system
ZTEK Corp.	200 kW Gas Turbine/SOFC system	Testing	Cost target of $1200/kW		In March 2002 ZTEK announced that it had been selected by the Connecticut Clean Energy Fund to team with The Renewable Resources Group, LLC of Newington, CT to receive funding for a demonstration of ZTEK's 25kW solid oxide fuel cell (SOFC) system at Dinosaur State Park in Rocky Hill, CT. ZTEK previously demonstrated the 25kW unit at the Tennessee Valley Authority's Huntsville, AL site from 1998 to 2000.	Uses no precious metals or toxic materials scalable to half megawatt and megawatt versions
	EHVAC™	In Development			ZTEK continues the process of constructing our 200 kW SOFC/Gas turbine system and SOFC and absorption chiller/heater cogeneration system.	SOFC system mated to a double effect absorption chiller to efficiently produce electricity, heating, ventilation, and air conditioning

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