Fuel Cell Technology Update – December 2, 2002

To: Reporters, editors and investors following business, energy, automotive and technology news. Let us know if you would prefer to receive the full updates via email, or if you wish to be removed from our list. For more information on stories, call (202) 785-4222.

TRANSPORTATION

Hybrid Bus Enters Passenger Service, UTC Joins with NAVC for Bus Power Plant.
A bus powered by a UTC Fuel Cells (UTCFC) 75kW power plant has become the first fuel cell hybrid bus to enter passenger service in California. The 30-foot ThunderPower bus is operated by SunLine Transit Agency, which serves the greater Palm Springs desert resort area. SunLine expects the bus to travel 100 miles a day on its Line 50 route in Rancho Mirage and Palm Desert. In other news, the U.S. Department of Transportation (DOT) has awarded a contract to UTCFC and the Northeast Advanced Vehicle Consortium (NAVC) to design a heavy-duty, zero emission, ambient-pressure fuel cell power plant for buses. The effort is being funded by $2.6 million from the U.S. Department of Transportation with a $2 million match from UTCFC.

Fuel Cell Locomotive Project Completed.
FuelCell Propulsion Institute’s fuel cell mine locomotive passed its final test procedure in Reno, Nevada, and has successfully completed the Mine-Locomotive Project, which received funding from DOE. The locomotive will continue service under the Institute’s Mine-Loader Project.
http://www.fuelcellpropulsion.org

Toyota to Lease Fuel Cell Cars to University of California.
Toyota Motor Corporation will start leasing two fuel cell-powered cars to the University of California beginning December 2. The two fuel cell cars will go to the Irvine and Davis campus under a 30-month lease for a monthly charge of US $10,000 per vehicle.
http://biz.yahoo.com/prnews/021202/nym058_1.html

Ballard Receives 1.88 Million Order from New Customer.
Ballard Power Systems has received a US $1.88 million order from a new automotive customer for Ballard’s fuel cell engine and support services. The
contract will include Ballard’s light-duty fuel cell engine, featuring the Mark 902 fuel cell module, application engineering, integration and vehicle launch support.

Palcan to Collaborate with Clean Fuel Generation.
Palcon Fuel Cells Ltd. has signed an agreement with Clean Fuel Generation, LLC. (CFG) to jointly develop fuel cell based auxiliary power units (APU). The APUs will combine Palcan’s fuel cell module with Clean Fuel’s reformer technology and hydrogen purification systems to allow the use of propane or methanol fuel storage systems. Applications include auxiliary power for recreational vehicles, marine and highway trucks.

21st Century Truck Gets Fuel Cell APU.
General Dynamics C4 Systems has delivered a fuel cell-based auxiliary power unit (APU) to SunLine Transit Agency for installation aboard a concept Class 8 tractor through the U.S. Army’s 21st Century Truck initiative. The 5-kW solid oxide fuel cell will act as a battery charger to power the air conditioning and other driver utilities when the truck is parked.
http://biz.yahoo.com/prnews/021118/dcm028_1.html

Hydrogenics Delivers Fuel Cell Auxiliary Power Unit.
Hydrogenics Corporation has delivered a regenerative fuel cell auxiliary power unit (APU) developed under contract by the U.S. Army Tank-automotive and Armaments Command (TACOM) for deployment and testing on army vehicle platforms. The PEM electrolyzer module will recharge the hydrogen supply while the vehicle engine is operating. This will supply the hydrogen storage subsystem with sufficient fuel to operate the fuel cell auxiliary power system for up to five hours with a load of 3 kW average, and peak demand of 5 kW. Hydrogenics and TACOM will undertake a joint evaluation of the system on different vehicle platforms to assess performance, full-cycle characteristics, costs and feasibilities.
http://biz.yahoo.com/prnews/021129/nyf025_1.html

Argonne Opens Advanced Powertrain Research Facility.
Argonne National Laboratory plans to open an Advanced Powertrain Research Facility, which will provide public testing for engines, fuel cells, electric drives and energy storage. Facilities will include a four-wheel-drive dynamometer system, a sophisticated emissions measurement system, data acquisition system, safety system, and state-of-the-art air handling system.
http://www.anl.gov/OPA/news02/news021115.htm

STATIONARY POWER

Plug Power Signs Deal to Acquire H Power.
Plug Power, Inc. has entered into a "definitive merger agreement" to acquire H Power Corporation in a "stock-for-stock exchange" valued at more than $50 million. The goal of the acquisition is to create a stronger company that is better positioned to achieve long-term commercial and financial success in the proton exchange membrane (PEM) fuel cell industry. 


PORTABLE/BACKUP POWER

MTI MicroFuel Cells Enters Agreement With Harris Corporation.
MTI MicroFuel Cells Inc. (MTI Micro), and the RF Communications Division of Harris Corporation announced an agreement for the development of micro fuel cell system prototypes for potential use in Harris’ Falcon® II tactical handheld radios. Under the agreement, Harris will purchase direct methanol fuel cell system prototypes from MTI Micro with delivery scheduled for early in 2003.


Medis Technologies Announces Fuel Cell Advance for First Commercial Product.
Medis Technologies Ltd. has achieved the technical level in its fuel cell performance to provide continuous power for its first planned commercial product - a Power Pack to provide uninterrupted power to users of cell phones, PDA's and certain hand-held electronic devices. The fuel cell demonstrated sufficient power to enable a laboratory tested Power Pack unit to operate the phone while at the same time fully charging a totally discharged battery. Each refueling of the Power Pack is planned to provide the user with the equivalent of six to nine hours of talk time or over two charges of the battery depending on the pattern of use.

http://biz.yahoo.com/bw/021120/202196_1.html

FUELS/REFORMERS/STORAGE

DOE Unveils Hydrogen Roadmap.
DOE Secretary Abraham unveiled the National Hydrogen Energy Roadmap, outlining the research, development, demonstration, codes and standards, and education efforts necessary to achieve the “hydrogen economy.”

http://www.energy.gov/HQPress/releases02/novpr/pr02_v.htm

Hydrogen and Electricity Co-Production Station in Las Vegas.
The world’s first hydrogen energy station featuring the co-production of hydrogen fuel and electric power was formally dedicated and is operational, generating hydrogen on-site that is utilized both to fuel vehicles and produce electricity. The project, a public-private partnership between the United States Department of Energy (DOE), the City of Las Vegas, Air Products and Chemicals, Inc. and Plug Power, Inc., will serve as a commercial demonstration of hydrogen as a safe and
clean energy alternative.  
http://biz.yahoo.com/prnews/021115/phf019a_1.html

**QuestAir’s Hydrogen Purifier Installed in Las Vegas Station.**
QuestAir Technologies Inc.’s commercial HyQuestor® hydrogen purification system has been installed as a key component of the Hydrogen Energy Station in Las Vegas, NV, the first integrated hydrogen vehicle fueling and power generation facility in North America. As deployed in the station, QuestAir’s HyQuestor® system purifies a hydrogen containing gas stream extracted or ‘reformed’ from natural gas. The purified hydrogen is then used to fuel City of Las Vegas transit buses and other vehicles, or a stationary 50kW fuel cell electricity generator.  

**PES Supplies Hydrogen Generator to BVG.**
Proton Energy Systems, Inc. (PES) has supplied a HOGEN hydrogen fuel generator to TotalFinaElf for use at a Berlin Transportation Company (BVG) hydrogen fueling station in Berlin, Germany’s Wedding District. Swiss PES distributor Diamond Lite installed the hydrogen generator, compressor and a hydrogen storage and dispensing system at the new fueling station, which will fuel hydrogen-powered buses in the city’s fleet.  

**NETL Develops Multi-Fuel Reformer.**
The Fuel Processing Team at the National Energy Technology Laboratory (NETL) has developed a concept for a reciprocating compression reformer that could convert a variety of fuels into forms suitable for use in a fuel cell. The invention does not require external heat transfer and eliminates several unit operations required in conventional fuel processing technologies.  

**Enova to Assist in the Development of Process Control Systems.**
Enova Systems has concluded an agreement with a unit of ChevronTexaco Technology Ventures to assist in the development and manufacture of a process control system for ChevronTexaco Technology Ventures’ hydrocarbon fuel processors for stationary fuel cell applications. The agreement contemplates that the initial development program may lead to manufacturing if the prototype proves to be commercially viable.  
http://biz.yahoo.com/bw/021112/120124_1.html

**Synergy Reforms High Sulfur Diesel.**
Synergy Technologies Corporation has demonstrated that its patented SynGen cold plasma reforming process can reform high sulfur, off-specification liquid fuels into hydrogen-rich synthesis gas, or syngas. The syngas has many
applications, one of which is to provide fuel for fuel cells. The ability to reform these fuels for use in fuel cells is critical for industrial and military operations in many parts of the world where off-specification (or non-standard), high sulfur fuels are the norm rather than the exception.

http://biz.yahoo.com/bw/021031/310274_1.html

Dynetek Announces New Valve Division.
Dynetek Industries Ltd. has formed a new valve division to focus on the compressed hydrogen market. Dynetek acquired the valve technology (including tangible assets, patents and patents pending) for approximately US $1.5 million.

http://micro.newswire.ca/releases/November2002/12/c0889.html/47875-0

Millennium Cell Honored With Popular Science Award.
Millennium Cell Inc. has received a 2002 Best of What's New Award from Popular Science. Together with DaimlerChrysler, Millennium Cell was recognized for its Hydrogen on Demand™ hydrogen storage and generation system, which powers the DaimlerChrysler Town and Country fuel cell minivan, the Natrium™. Calling the technology "the most imaginative solution we've seen" to power a fuel cell car, Popular Science featured the Natrium as one of its Automotive Technology winners.

http://biz.yahoo.com/bw/021108/82119_1.html

FUEL CELL COMPONENTS

Superior MicroPowders Unveils DMFC Electrocatalysts.
Superior MicroPowders, LLC (SMP) launched its latest electrocatalysts developed for use in direct methanol fuel cells (DMFCs). These latest DMFC materials extend SMP’s Dynalyst™ family of catalysts, which are produced utilizing SMP’s proprietary spray-based powder production process.


New Coating Company Formed.
BC Technologies, Inc. (BCTI) has been formed in Spartanburg, South Carolina, and will represent Coatema Coating Machinery in the U.S. and Canada. BCTI will bring Coatema’s coating and laminating equipment to various industries in North America.

PCI Joins Program to Develop MEAs.
Polymer Chemistry Innovations (PCI) is participating in a program to develop advanced membrane electrode assemblies (MEAs) for PEM fuel cells. PCI is partnering with Superior MicroPowders, LLC on an SMP-lead NIST ATP program. Other subcontractors on the team include Motorola Labs and Case Western Reserve University. The program is focused on developing novel high temperature membranes and advanced MEA manufacturing methods.

http://www.polychemistry.com/
SatCon Power Inverter Earns UL Listing.
Underwriters Laboratories Inc. (UL), announced that the SatCon Technology® Model AE-462-60-F-A power inverters for on-site power generation have been determined to comply with the "Standard for Inverters, Converters, and Controllers for Use in Independent Power Systems, UL 1741." UL tested SatCon’s power inverters for compliance with requirements addressing alternative energy, distributed, and grid parallel energy generation systems. With an output rating of 462 KVA, the SatCon power inverter is the highest power rated on-site generation inverter to comply with the UL 1741 Standard, and its UL Listed status marks an important step in gaining approval for installations in California where such compliance is a requirement.
http://biz.yahoo.com/bw/021114/142012_1.html

REPORTS/MARKET STUDIES

NASA Conducts Fuel Cell Feasibility Study.
A recent feasibility study by NASA of fuel cells for aviation propulsion found that a fuel cell-powered craft could fly a demonstration flight with current state-of-the-art components. A system model of an all-electric craft was shown capable of a 140-mile flight carrying 270 lbs.

Stationary Market Study from ABI.
Allied Business Intelligence’s (ABI) new study, “Global Stationary Fuel Cell Markets: A Detailed Analysis of an Emerging Industry” identifies early potential opportunities in markets that can see deployment from 50 Watts to 30 MW in the US and worldwide. The study also notes that quality power and industrial power supply markets are expected to see higher growth rates than residential markets. Industrial markets have already started to embrace fuel cell power systems, with the largest growth potential specifically in the small to medium sized industrial markets.
http://www.alliedworld.com/servlets/ResearchDetails?productid=FCM02

Automotive Fuel Cells.
The new ABI study "Automotive Fuel Cells: Global Market Issues, Technology Dynamics and Major Players" analyzes market opportunities for automotive fuel cell manufacturers from passenger cars to buses, and trucks. Niche market opportunities from fleet applications to airport ground support vehicles are also studied. The study details the technical challenges and opportunities from market, economic, and environmental perspectives. The major players in the industry are delineated, along with the status of their technologies and their most likely market applications in the near term, from 2002 to 2012.
http://www.alliedworld.com/servlets/ResearchDetails?productid=AFC02

Micropower.
“Micropower”, a new study from The Freedonia Group, Inc., claims that the U.S. market for micropower products and systems is projected to increase ten percent per year through 2006 to $6.5 billion. For further details, please contact Corinne Gangloff by phone 440.684.9600, fax 440.646.0484 or e-mail pr@freedoniagroup.com.

The Outlook For Fuel Cells To 2010.
“The Outlook For Fuel Cells To 2010: Commercial Opportunities in Power Generation Markets”, a new report from Reuters Business Insight, provides the details of the technologies, which are going to be competitive in what environments, predicted costs and the future trajectory for fuel cell development. http://www.energycentral.com/sections/research/default.cfm?cpane=23006&rid=101350

CRC Press has recently published the Fuel Cell Technology Handbook, which covers both technological background and recent commercial developments in the field of stationary, automotive and portable fuel cells. The group of industrial and academic authors covers all types of fuel cells and gives a historic outline of the development of the technology. http://www.crcpress.com/us/promotions/dynamic_data/2125_1022_0877%20FL.pdf

The Electric Vehicle Division of Electric Fuel Corporation announced the results of a TIAX (formerly Arthur D. Little) report that projects significant life cycle cost benefits for zinc-air when compared with hydrogen fuel cell technology over a five to ten year period. The report, an update of a previous study performed by Arthur D. Little, was set to reevaluate the life cycle cost of operating zinc-air fuel cell transit bus in a California public transit fleet. http://biz.yahoo.com/bw/021118/182588_1.html

MISCELLANEOUS

GE, ExxonMobil, Stanford to Invest $225 Million in Alternative Energy Sources.
General Electric, ExxonMobil and Stanford University are forming the Global Climate and Energy Project (G-CEP), to identify and develop alternative and next-generation energy technologies including fuel cells. The total investment for the project is up to $225 million over the next 10 years. http://biz.yahoo.com/bw/021120/202128_1.html

Astris Energi Inc. reported that the prototype of its first commercial fuel cell has been completed. The power generator, known as the POWERSTACK MC250,
in its various sizes is suitable for use in a wide variety of portable, stationary and mobile applications. It is nearly twice as powerful yet lower in weight than the company's LABCELL energy source, which it succeeds.
http://www.astrisfuelcell.com/company.htm

Greenlight Power Technologies, Inc announced the opening of its new Burnaby, British Columbia facilities and the launch of its new Fuel Cell Testing Services division. The new 54,000 square foot facility significantly increases the company's manufacturing capability and supports the growth of the company's fuel cell diagnostics and fuel cell testing services divisions.
http://biz.yahoo.com/prnews/021119/va045_1.html

REQUESTS FOR PROPOSALS

The International Finance Corporation (IFC), the private sector affiliate of the World Bank Group, is taking the lead in introducing stationary fuel cells as a preferred technology for distributed power in a number of developing countries. IFC acts as an executing agency for the Global Environment Facility (GEF), and will use funds from the GEF to assist the development of the market for fuel cell technologies in privately-financed, distributed, stationary power applications in selected GEF-eligible countries. The GEF Secretariat in May 2002 agreed to consider providing up to $54 million in two stages for this program. The first stage of the project is expected to include up to three fuel cell DG commercial demonstration projects in at least two countries. These projects will involve various stakeholders and are expected to result in a total installation of 5-7 MW of fuel cells by 2005. There will be a forthcoming announcement of a presubmittal conference call for the purpose of addressing vendor questions regarding submittals. Those who wish to participate in the conference call are requested to notify IFC no later than the close of business December 7, 2002. Please direct all questions to Mr. Dana Younger, IFC's GEF Coordinator, dyounger@ifc.org, Ph. 202-473-4779, or to Mr. Byron Washom, interim program manager for IFC, spencermgt@aol.com, Ph. 925-743-9196.

CONFERENCES/CALL FOR PAPERS

SAE World Congress.
The 2003 SAE World Congress will be held March 3-6, 2003, in Detroit Michigan. For more information, please go to www.sae.org/congress.

Fuel Cell Investment Summit.
ICIM2003.
The 2003 International Conference on Innovative Materials---Business & Investment will be March 18, 2003, at Shanghai Mart, in Shanghai, China. Interested parties should mention Fuel Cells 2000 to receive 50% off registration. Please contact Chen Qian at qchen@materials.gov.cn.

Fuel Cell Fundamentals.
A short course on Fuel Cell Fundamentals will be offered May 8-9, 2003, at Worcester Polytechnic Institute. For more information, go to http://www.wpi.edu/Academics/Depts/ChemEng/.

Clean Cities Conference.
The 9th National Clean Cities Conference and Exposition will be May 18-21, 2003, at the Palm Springs Convention Center in Palm Springs, California. For registration information, check out www.ccities.gov/conference/.

1st European Hydrogen Energy Conference.
The 1st European Hydrogen Energy Conference will be held September 2-5, 2003, at Alpexpo in Grenoble, France. For more information, visit www.afh2.org.

Grove Fuel Cell Symposium.

f-cell 2003.
f-cell 2003 will be held September 29-30, 2003, in Stuttgart, Germany. For information, go to www.messe.sauber.de.

EVS-20.
The 20th International Electric Vehicle Symposium and Exposition will be held November 15-19, 2003, in Long Beach, California. For more information, go to www.EVS20.org.

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Fuel cells generate electricity without combustion by harnessing the energy created when hydrogen and oxygen are chemically combined. Fuel Cells 2000 is an independent, nonprofit activity dedicated to the commercialization of fuel cell technologies.