

news from **FUEL CELLS 2000**

Fuel Cell Technology Update – January 5, 2004

To: Reporters, editors and investors following business, energy, automotive and technology news.
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TRANSPORTATION APPLICATIONS

Ballard to Provide Fuel Cell Engines to Australia, Delivers Fuel Cell Buses to London.

Ballard Power Systems will provide three of its latest generation heavy-duty fuel cell engines to EvoBus for integration into Mercedes-Benz Citaro buses for the public transport system in Perth, Western Australia. Ballard will deliver the 205 kW heavy-duty fuel cell engines in the first half of 2004 and the buses will be placed in routine transit operation in the second half of 2004 as part of a two-year demonstration program. Ballard also delivered three Mercedes-Benz Citaro buses, powered with Ballard® fuel cell engines, to the public transport authorities in London. The City of London will operate the Ballard powered fuel cell buses on a central London bus route, beginning in January 2004, as part of the Clean Urban Transport for Europe (CUTE) project.

<http://www.ballard.com>

U.S. Air Force Fuel Cell Bus a Success.

Enova Systems has successfully integrated a fuel cell system into the U.S. Air Force's first hybrid fuel cell bus at Enova's facilities in Honolulu, Hawaii. The partners on the bus project include Enova, the U.S. Air Force, the State of Hawaii's High Technology Development Corporation (HTDC) and Hydrogenics.

<http://www.enovasystems.com/investor/pressContent/12112003.asp>

GVB Begins Hydrogen Bus Operation.

GVB, the transit authority of Amsterdam, The Netherlands, began operating four hydrogen-fueled buses on two routes in the northern part of the city. The buses extract hydrogen from nine roof-mounted water tanks, each capable of supplying enough fuel to power the bus for 250 kilometers (155 miles). The two-year project will cost 7 million euros (US\$8.6 million), with funding supplied by the European Union, the Dutch Transport Ministry and the Amsterdam Council. Also involved in the project are DaimlerChrysler, Hoek Loos, Nuon, Shell and the Netherlands Agency for Energy and the Environment.

Proton Energy Wins Two SBIR Awards.

Proton Energy Systems, Inc. was awarded a Small Business Innovative Research (SBIR) Phase II contract from NASA for development of lightweight unitized regenerative fuel cell technology for unmanned aerial vehicles. Proton also received a SBIR Phase I contract from the U.S. Army Missile Defense Agency (MDA) for development of lightweight regenerative fuel cell technology for high altitude airships.

<http://www.protonenergy.com>

STATIONARY POWER

Yale Fuel Cell Dedicated.

FuelCell Energy, Inc., the Connecticut Clean Energy Fund and Yale University dedicated a high-efficiency Direct FuelCell® power plant at the Environmental Science Center (ESC) near Yale University's Peabody Museum. The 250 kilowatt fuel cell will provide approximately 25 percent of the building's electricity needs, with the heat being used primarily to maintain tight temperature and humidity controls at the ESC.

<http://www.fce.com/#>

PORTABLE/BACKUP POWER

Astris Launches New Fuel Cell Generator.

Astris Energi Inc. has unveiled the 2.4 kW model E8 alkaline fuel cell generator. The E8 is a completely self-contained portable unit, powered by Astris' new POWERSTACK MC250 fuel cell, which performs 30%-60% better than previous units. Astris Energi plans to place the POWERSTACK MC250 into pilot production in its Vlasim, Czech Republic facility in the first half of 2004.

<http://www.astris.ca/news/index.php>

Plug Power Begins Product Shipments.

Plug Power has shipped fifteen GenCore™ 5T 5kW hydrogen fueled back-up power system to customers in the United States, the United Kingdom and Japan to support a variety of applications in the telecommunication, industrial, research, and government sectors.

<http://www.plugpower.com>

Hitachi and Tokai Develop DMFC Prototype.

Hitachi, Ltd. and Tokai Corporation have developed a prototype direct methanol fuel cell for use in handheld electronic devices. The DMFC has a methanol concentration of approximately 20 percent, which is expected to be increased by 10 percent once the units are commercially available. Hitachi plans to introduce the DMFC by 2005 for use in a compatible personal digital assistant.

ERD and Manhattan Scientifics Sign Licensing Agreement.

Energy Related Devices (ERD) has entered into an agreement with Manhattan Scientifics for a worldwide non-exclusive license of Manhattan's MicroFuel Cell technology. Under the agreement, ERD is allowed to sublicense to any number of companies to produce and sell MicroFuel Cells.

<http://www.energyrelateddevices.com>

FUELS/REFORMERS/STORAGE

New York to Build Hydrogen HI WAY.

\$2 million in federal support has been awarded to establish the Hydrogen "HI WAY" Initiative in New York State. Funding for the project, which will create a hydrogen energy infrastructure validation platform across the state, is included in the Conference Report for Fiscal Year 2004 Energy and Water Appropriations. Reps. John M. McHugh (R-NY), James T. Walsh (R-NY), and John E. Sweeney (R-NY) spearheaded the effort, which will bring together a team of industry, academic, state and federal partners to create the infrastructure and end-use technology to support production of hydrogen energy.

http://mchugh.house.gov/pr2003/111803_hiway.html

Proton Unveils New Hydrogen Generator.

Proton Energy Systems, Inc. unveiled its HOGEN H Series hydrogen generators at the POWER-GEN International convention in December. The H Series hydrogen produces ultra-pure hydrogen 24/7 at an output capacity of 80-240 standard cubic feet per hour at a fraction of the cost of cylinder or tube trailer gas.

<http://www.protonenergy.com>

Dynetek to Deliver Storage Systems to Ford.

Dynetek Industries Ltd. will deliver on-board complete hydrogen fuel storage systems for Ford Motor Company's 2004 Ford Focus FCV zero emission automobiles. Dynetek will provide complete fuel storage and components solution using its certified 350 bar (5000 psi) hydrogen fuel storage system.

<http://www.dynetek.com>

QuestAir and Iwatani Sign Marketing Agreement.

QuestAir Technologies Inc. has signed an agreement with Iwatani International Corporation to market QuestAir's hydrogen purification systems in Japan and other parts of Asia. Under the terms of the three-year, non-exclusive agreement, Iwatani received the right to market QuestAir's HyQuestor® and QuestAir

H- 3200 pressure swing adsorption (PSA) products in Japan, China and nine other Asian countries.
<http://www.newswire.ca/en/releases/archive/December2003/22/c5062.html>

Innovatek Wins Army Contract.

Innovatek, Inc. has received a \$780,000 contract with the U.S. Army to develop a new fuel processor that will generate hydrogen for use in portable fuel cells. The technology is built on InnovaTek's proprietary compact microchannel architecture that produces hydrogen from readily available fuels such as gasoline and diesel.

http://www.tekkie.com/news/press_release_12162003.htm

FUEL CELL COMPONENTS

UQM Delivers Motor to Eaton, Receives Order from Caterpillar.

UQM Technologies has developed and delivered a UQM® compressor drive motor to Eaton Corporation for use as part of the air handling system in a fuel cell. The highly efficient UQM® motor operates at 24,000 revolutions per minute and is lightweight and compact. UQM also received an order from Caterpillar Inc. for its permanent magnet motors that will be installed on a fuel cell powered Caterpillar-Elphinstone R1300 mine loader. The mine loader is under development by a consortium of companies led by Vehicle Projects LLC. and includes Caterpillar Inc., Natural Resources Canada, and the U.S. Department of Energy. The zero emission fuel cell powered mine loader is expected to be placed in demonstration at a mine in Nevada in early 2005 to evaluate the operability, and productivity of the system.

<http://www.uqm.com/press/news/04-28.html>

<http://www.uqm.com/p-ress/news/0427.html>

REPORTS/MARKET STUDIES

Solid Oxide Fuel Cells.

Business Communications Company, Inc. (BCC) has released a new report, "RGB-282 Solid Oxide Fuel Cells," which reveals that the global market for solid oxide fuel cells (SOFCs) is currently estimated at \$123 million, of which the North American market is estimated to be approximately \$67 million.

<http://www.bccresearch.com/>

North American Stationary Fuel Cell Market.

Frost & Sullivan has released a new report, "North American Stationary Fuel Cell Markets," which claims that revenues in the stationary fuel cell market totaled \$21.4 million in 2002 and are projected to reach \$1.27 billion by 2009.

<http://www.frost.com/prod/servlet/frost-home.pag>

MISCELLANEOUS

Palcan Joins With Shanghai Mingliang Plastic.

Palcan Fuel Cells Ltd. has signed a joint venture agreement with Shanghai Mingliang Plastic Co. Ltd. to establish a commercial manufacturing facility in Shanghai to produce PEM fuel cell stacks for the global fuel cell marketplace. Palcan will have full managerial control of the facility, which is expected to be operational within six months. When fully operational, the manufacturing facility will manufacture 20,000 PEM fuel cell stacks units per year. The units will be sold at substantially less than the current world market prices.

<http://www.palcan.com>

FuelCon Selects Illies as Asia Sales Partner.

FuelCon has selected Illies & Co. as its sales partner for the Asia region. Illies & Co. will market FuelCon's fuel cell test systems in Japan, China, Taiwan and Korea.

<http://www.fuelcon.com/en/news/index.html#>

CONFERENCES

Micro Fuel Cell Regulations & Compliance.

Micro Fuel Cell Regulations & Compliance will be held on four different dates on four different locations. February 23-24, 2004 in Irvine, California; March 25-26, 2004 in Washington, DC; May 13-14, 2004 in Hartford, Connecticut; and June 17-18, 2004 in Vancouver, British Columbia. For more information, go to <http://www.cbnet.com/events/HS411/index.html>.

2nd Fuel Cell Investment Summit.

The Connecticut Clean Energy Fund is holding the Second Annual Fuel Cell Investment Summit, March 14-16, 2004, at the Mohegan Sun Casino in Uncasville, Connecticut. For registration, exhibitor and sponsor information, visit <http://www.fuelcellis.com>.

2004 Hydrogen Infrastructure Investment Roundtable.

The 2004 Hydrogen Infrastructure Investment Roundtable, "Building the Hydrogen Economy: Overcoming Challenges and Complexity" will be held March 17-19, 2004, at the Westfields Marriott Hotel in Chantilly, Virginia. For details, go to <http://www.montreuxenergy.com/hydrogen.htm>.

4th Annual Fuel Cell Investor.

The 4th Annual Fuel Cell Investor will be held March 25-26, 2004, at the Sheraton Society Hill in Philadelphia, Pennsylvania. For conference information, please visit http://www.srinstitute.com/ApplicationFiles/web/WebFrame.cfm?web_id=207.

Hannover Fair 2004.

The Hannover Fair takes place April 19-24, 2004, in Hannover Germany. Join more than 100 Exhibitors and Forum participants from all over the world presenting their latest H2/FC developments and products. Visit <http://www.fair-pr.com/> or contact arno@fair-pr.com for more information. Click on www.virtual-fair.com to visit the virtual exhibits.

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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.