

news from **FUEL CELLS 2000**

Fuel Cell Technology Update – October 1, 2005

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

Ford Delivers Fuel Cell Vehicles to California and Michigan.

Ford Motor Company has delivered three hybrid hydrogen Ford Focus fuel cell vehicles to the California Air Resources Board (CARB), the California Energy Commission (CEC), and the California Department of General Services (DGS) in addition to five already delivered to the Sacramento Municipal Utility District. Five Focus fuel cell vehicles also arrived at the cities of Taylor and Ann Arbor in Michigan. Both vehicle deliveries are part of a five-city, 30-car program to conduct real-world testing of fuel cell vehicles.

http://media.ford.com/article_display.cfm?article_id=21862&make_id=trust

Westport Participating in Canadian Hydrogen Project.

Westport Innovations Inc. announced its participation in the launch of a CAN\$18.3 million hydrogen technologies project supported by the Government of Canada, Sustainable Development Technology Canada (SDTC), and a consortium of Vancouver-based industry partners. The demonstration will initially involve the operation of eight light-duty trucks running on hydrogen; a fuel cell system operating on hydrogen and providing electrical power and heat to a car wash, and four public transit buses converted by Westport for Vancouver's TransLink fleet to run on a blend of hydrogen and compressed natural gas (HCNG).

http://www.westport.com/news/newsdetail.php?id=288&return_to=index.php

Fuel Cell Buses Surpass One Million Kilometers.

The fleet of 33 Mercedes-Benz Citaro fuel cell buses currently operating in Europe, Iceland and Australia has surpassed one million kilometers of service. The buses, which are powered by Ballard fuel cells, have been on the road since late 2003 as part of the Clean Urban Transport for Europe (CUTE), Ecological City Transport System (ECTOS) and STEP (Sustainable Transport Energy for Perth (STEP) programs.

http://www.ballard.com/be_informed/about_ballard/news/2005/10/20/22_Citarobusmilestone

APFCT Aiming for Fuel Cell Scooters in 2007.

Asia Pacific Fuel Cell Technologies Ltd. (APFCT) is scheduled to unveil the world's first commercialized fuel cell scooter model in 2007. APFCT has assembled six fourth-generation fuel cell scooter prototypes and is working on a fifth-generation scooter model.

<http://english.www.gov.tw/TaiwanHeadlines/index.jsp?catid=9&recordid=86556>

STATIONARY APPLICATIONS

Plug Power Commissions Ten Fuel Cells at Robins Air Force Base.

Plug Power Inc. has commissioned ten 5-kilowatt, grid-independent, prime-power, LPG (liquefied petroleum gas) fueled GenSys® fuel cell systems at the Robins Air Force Base in Georgia. The systems have been configured to supplement the electrical grid and for testing of various load profiles to simulate real-world demands.

<http://www.plugpower.com/news/press.cfm>

FuelCell Energy Sells DFC for Camp Pendleton, Installs DFC at Starwood Hotel.

FuelCell Energy, Inc. has sold a 500-kW Direct FuelCell® (DFC®) power plant to LOGANEnergy for the U.S. Navy for anticipated use at the U.S. Marine Corps Base, Camp Pendleton, in California. After compliance with all pertinent environmental requirements, LOGANEnergy will install the power plant, consisting of two 250-kW DFC300MA™ units, to provide base load electricity and heat energy for a Bachelor Enlisted Quarters (BEQ) that houses over 200 Marines and a Mess Hall that serves over 400 personnel daily at Camp Pendleton. Also, FuelCell Energy and Starwood Hotels and Resorts Worldwide, Inc. have completed the installation of a 500-kW DFC® power plant at the 390-room Westin San Francisco Airport Hotel.

<http://www.fce.com>

FCE's POSCO Forms Partnership with Korean Utility.

FuelCell Energy, Inc. announced that its Korean strategic alliance distribution partner POSCO has formed a partnership with one of the country's six electric utilities to market and sell fuel cell products for grid support applications. As part of this arrangement, POSCO will install and operate a 250-kilowatt kW Direct FuelCell® (DFC®) power plant from FuelCell Energy at the Bundang plant of Korea-South East Power (KOSEP), located in Gyeonggi province, South Korea. The companies also have agreed to co-develop and market fuel cells as part of an effort to enhance the competitiveness of this ultra-clean energy source in the global market.

<http://www.fce.com>

Acumentrics Ships SOFC to NETL.

Acumentrics Corporation has shipped a 5-kW Tubular Solid Oxide Fuel Cell (SOFC) System to the National Energy Technology Laboratory (NETL) in Morgantown, West Virginia, as part of the U.S. Department of Energy's Solid-State Energy Conversion Alliance (SECA) industry program. Over the next 6 to 12 months, the Acumentrics SOFC system will be tested at NETL.

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

PORTABLE/BACKUP POWER

MTI Micro Delivers DMFCs to Military, Test Unit Achieves Milestone.

MTI MicroFuel Cells Inc. (MTI Micro) has delivered five prototypes for sensor applications to the United States Special Operations Command (SOCOM). The delivery is part of a contract awarded to MTI Micro by SOCOM in 2004 to evaluate new technologies for field readiness. In addition, MTI Micro delivered, for evaluation, an integrated Mobion® prototype powering a Harris Falcon® II radio to SOCOM. The unit has achieved two times the energy of a BA5590 battery — one of the most frequently used military batteries — in a Mobion® laboratory test unit, achieving 200% of the energy in the same size package.

<http://www.mechtech.com/newsandevents/article.asp?id=221>

<http://www.mtimicrofuelcells.com/news/article.asp?id=223>

Protonex to Receive Dual Funding for Soldier Power System.

Protonex Technology Corporation has been selected for contract award by the U.S. Army Research Office (ARO) to accelerate development of a 30-watt soldier power system. The ARO joins the Air Force Research Laboratory in funding the program, which began under a two-year Dual Use Science and Technology (DUST) Program awarded in April 2004. Protonex will continue to work in close partnership with Millennium Cell Inc. as a subcontractor on this program.

<http://www.protonex.com/ARO%20Award%20FINAL.pdf>

Voller Announces Software Upgrade for VE100 Fuel Cell System.

Voller Energy Group PLC announced the release of a software upgrade, known as Service Pack 1, designed to improve the functionality of its VE100 v3 portable fuel cell system. The new software also adds a number of new features, including remote access to, and improved diagnostic controls of, the system via the Internet or a wireless link such as a mobile phone; automatic battery charging to allow the unit to be integrated into existing battery installations such as remote powering of surveillance, CCTV or remote monitoring equipment; and system enhancements to protect internal components and improve operational life of the system.

<http://production.investis.com/vlr/rns/rnsitem?id=1128319240nRNSC0677S>

Manhattan Scientifics Receives Fuel Cell Patent in Japan.

Manhattan Scientifics, Inc. has received its first miniature fuel cell patent in Japan. The patent is a result of work by micro fuel cell scientist Robert G. Hockaday and is a significant addition to Manhattan Scientifics' micro fuel cell patent portfolio.

http://www.mhtx.com/media_center/pressrelease57.htm

FUELS/REFORMERS/STORAGE

India's First Hydrogen Fueling Station Opened.

India's first hydrogen fuelling station was officially opened as the first phase of India's development of its Hydrogen Economy. The facility, a hydrogen/compressed natural gas (HCNG) blend and pure hydrogen dispensing station, is located at the Indian Oil Corporation Limited's R&D centre, in Faridabad, just north of New Delhi. The fuelling station, owned by the Indian Oil Corporation Limited (IOCL), has been supplied by Air Products and its Indian joint venture company INOX Air Products Ltd. The equipment consists of a HCNG mixing unit, and dual dispensing unit which can fuel vehicles with either a HCNG blend or with pure hydrogen.

<http://www.airproducts.com/PressRoom/CompanyNews/Archived/2005/11Oct05uk.htm>

General Hydrogen Receives Order from Bridgestone/Firestone, Sells Hydricity to ePower Synergies.

General Hydrogen Corporation has received an order from Bridgestone/Firestone Tire Company's Warren County manufacturing plant in Tennessee. Delivery of the hydrogen-powered Hydricity Packs®, utilizing Ballard fuel cells, is scheduled for January 2006. The Hydricity Packs® have shown excellent performance as a replacement for conventional lead-acid batteries and yield surprisingly short payback periods. General Hydrogen has also sold a hydrogen-powered Hydricity® Pack to ePower Synergies, Inc.

http://www.generalhydrogen.com/news_company_2005_10_31.shtml

http://www.generalhydrogen.com/news_company_2005_10_11.shtml

Chevron Signs Agreement with U.S. Army.

Chevron Technology Ventures LLC has signed its first Cooperative Research and Development Agreement (CRADA) with the U.S. Army's Tank and Automotive Research, Development and Engineering Center (TARDEC) to further hydrogen fueling technologies. This agreement is the first CRADA for the development of hydrogen infrastructure technologies between a major international integrated energy company or its subsidiary and TARDEC.

<http://www.chevron.com/news/press/2005/2005-09-29.asp>

GTI to Develop Hydrogen Fueling Station Technology for Texas, Receives Patent.

Gas Technology Institute (GTI) and the State of Texas Commission on Environmental Quality (TCEQ) have signed an agreement for the development of hydrogen fueling station technology as part of the TCEQ's New Technology Research and Development Program to reduce emission sources in Texas. The natural gas-to-hydrogen fueling stations will use GTI-developed steam methane reforming technology as well as GTI's Hydrofill™ dispenser control algorithm for accurately filling hydrogen-powered vehicles. In other news, GTI was recently awarded a U.S. patent for a novel technology for direct splitting of water to produce hydrogen from solar energy. Significantly, all twenty-six of the technical claims were allowed.

<http://www.gastechnology.org/webroot/app/xn/xd.aspx?it=enweb&xd=6newsroom\texashydrogenfuelingstation.xml>

<http://www.gastechnology.org/webroot/app/xn/xd.aspx?it=enweb&xd=6newsroom\gtigranteddirectsolarhydrogenpatent.xml>

Hydrogen Solar Receives Grant from BOC Foundation.

The BOC Foundation has awarded Hydrogen Solar Ltd funds to develop and demonstrate a system to produce hydrogen directly from sunlight and water using the Hydrogen Solar Tandem Cell™. In the first phase of the project, Hydrogen Solar will design, build and install a 100 m² array of Tandem Cells to

generate high-purity hydrogen. The BOC Group will provide engineering safety expertise, compression units and engineering support during the installation.

<http://www.hydrogensolar.com/October5.html>

Dynetek Delivers Storage Systems to Tsinghua University.

Dynetek Industries Ltd. has delivered three Advanced Lightweight Fuel Storage Systems to Tsinghua University located in Beijing, the People's Republic of China. The delivery of the roof mount hydrogen fuel storage systems to Tsinghua University is in direct response to the Chinese governments clean air initiatives, aimed to improve the country's air quality by 2008 when China will be host to the summer Olympic Games.

<http://www.kentrygiel.com/dyn2/uploads/Tsinghua%20University.pdf>

Quantum Awarded Contract from Lockheed-Martin.

Quantum Fuel Systems Technologies Worldwide, Inc. has been awarded a contract by Lockheed-Martin to develop a hydrogen and oxygen fuel storage module for a regenerative power supply system for space exploration.

http://www.qttww.com/files/qttww_press/051024%20QT%20Awarded%20Contract%20Develop%20Aerospace%20Hydrogen%20Oxygen%20Storage.pdf

QuestAir Receives Order for Hydrogen Purifier.

QuestAir Technologies Inc. has received a CAN\$165,000 order for an H-3200 hydrogen purifier to be included in the Integrated Waste Hydrogen Utilization Project (IWHUP). The H-3200 system will recover and purify hydrogen from a by-product stream emitted by a sodium chlorate manufacturing plant in the North Vancouver area.

http://www.questairinc.com/investor_relations/press_releases/archived_releases/2005/10-13_1pm.htm

FUEL CELL COMPONENTS

DuPont Increases Durability of MEAs.

DuPont Fuel Cells has achieved product improvements that dramatically increase the durability and lifetime of fuel cell membranes, dispersions and Membrane Electrode Assembly (MEA) components for hydrogen based fuel cells. Further developments are focused on providing additional mechanical stability, longer life and more power from our membrane and MEA offerings, and doing so even more cost effectively

http://www.dupont.com/fuelcells/pdf/pressrel_10262005.pdf

Franklin Fuel Cells Receives SECA Grant.

Franklin Fuel Cells, Inc. has been awarded a grant from the U.S. Department of Energy's Solid State Energy Conversion Alliance (SECA) program. The grant pertains specifically to the company's novel, patented cathode technology that impregnates the cathode in the same way that its patented process impregnates the anode with copper and ceria. The unique Copper-based SOFC technology was initially developed by a team of scientists at the University of Pennsylvania.

http://www.franklinfuelcells.com/press_release_10.17.05.htm

REPORTS/MARKET STUDIES

Energy Security and Emergency Preparedness.

The Clean Energy Group has released "Energy Security & Emergency Preparedness: How Clean Energy Can Deliver More Reliable Power for Critical Infrastructure and Emergency Response Missions-An Overview for Federal, State and Local Officials". The report identifies many opportunities for federal, state and local governments to greatly improve power reliability at their critical facilities.

http://www.cleanenergystates.org/library/Reports/CEG_Clean_Energy_Security_Oct05.pdf

2005 Fuel Cell Industry Survey.

PricewaterhouseCoopers has released its 2005 Fuel Cell Industry Survey, which focuses on the 2004 year-on-year financial results of the world's 20 publicly traded companies whose primary business is in the areas of fuel cell production, system integration, and/or related fuelling infrastructure.

<http://www.pwc.com/extweb/ncsurvres.nsf/docid/0156308D26DD0F3E85256DA9005897C2>

Micro Fuel Cells.

Research Reports International has released the first Edition of its "Micro Fuel Cells: Challenges and Opportunities" report. The report is a 100-page overview of the development of micro fuel cells for portable consumer and military electronics.

http://www.researchreportsintl.com/products/product.cfm?report_ID=76

Hydrogen Economy.

Research Reports International has released the second edition of its "Towards a Hydrogen Economy" report, a 150-page study of the movement towards using hydrogen as a key energy carrier.

http://www.researchreportsintl.com/products/product.cfm?report_ID=62

REQUESTS FOR PROPOSALS

New Mexico Issues RFP for Hydrogen Fuel Projects.

The Energy, Minerals and Natural Resources Department (EMNRD), through its Energy Conservation and Management Division (ECMD), and the New Mexico Economic Development Department (EDD), working jointly, are requesting proposals for hydrogen fuel projects to be conducted in New Mexico. EMNRD and EDD are seeking proposals for projects that advance hydrogen fuel use including: Hydrogen research and development; production of hydrogen incorporating clean energy inputs as indicated below; use of hydrogen in mobile or stationary end-use applications (such as fuel cells and internal combustion engines); or any combination of the preceding types of hydrogen projects. End-use hydrogen applications to be considered include electricity generation applications, thermal applications, transportation applications, or any combination of the preceding applications.

<http://www.newmexicohydrogen.org/pressrelease/PUBLIC%20NOTICE.htm>

CCEF's On-Site Renewable DG Program.

The Connecticut Clean Energy Fund (CCEF) announced the On-site Renewable DG Program, a \$21 million flexible, integrated-technology financial support program designed to stimulate demand for behind-the-meter installations of renewable energy at Connecticut Commercial, Industrial and Institutional (CI&I) buildings. Through the On-site Renewable DG Program, CCEF will offer financial support to buy down the cost of renewable energy generating equipment. The level of support for individual awards will vary based on the specific economics of the installation. Funding is available under this Program for installations of renewable energy generation resources including wind, solar, fuel cells, biomass, landfill gas, and certain types of hydropower.

http://www.ctcleanenergy.com/funding/onsite_renewable_dg_program.html

MISCELLANEOUS

GM Opening New R&D Office in Moscow.

General Motors will open a new R&D science office in Moscow in order to leverage Russian science institutes and universities on a broad array of technologies, including fuel cells, hybrid and electronic controls, and battery research. The initial project work will include materials, emissions control catalyst development, lightweight metal processing, hydrogen storage for fuel cell applications and engine control technology.

<http://media.gm.com/servlet/GatewayServlet?target=http://image.emerald.gm.com/gmnews/viewmonthlyreleasedetail.do?domain=74&docid=19972>

University of North Dakota Awarded Funding for New Hydrogen Facility.

The University of North Dakota's Energy & Environmental Research Center (EERC) has been approved for a \$2.5-million award from the North Dakota Centers of Excellence Commission to build a new facility

for EERC's National Center for Hydrogen Technology. The \$3-million facility is expected to be completed by next fall and is expected to create between 50 and 100 new high-paying technical jobs and attract \$50 million in research contracts in the short term. The Grand Forks Growth Fund will also contribute \$500,000 to the new facility.

<http://www.eerc.und.nodak.edu/newsroom/newsitem.asp?id=238>

CONFERENCES

For a complete list of conferences, please go to <http://www.fuelcells.org/news/conf.html>

Fuel Cells Durability.

Fuel Cells Durability will take place December 8-9, 2005, at the Omni Shoreham Hotel in Washington, DC. For more information, please go to <http://www.knowledgefoundation.com/>.

FC Expo 2006.

The International Hydrogen & Fuel Cell Expo (FC EXPO 2006) will take place January 25-27, 2006, at Tokyo Big Sight, Tokyo, Japan. For conference details, check out <http://www.fcexpo.jp>.

Clean Heavy Duty Vehicle Conference 2006.

Clean Heavy Duty Vehicle Conference 2006: Clean Technologies and Fuels - Are We There Yet? Will take place February 22-24, 2006, at the San Diego Hilton, in San Diego, California. For conference information, go to

http://www.calstart.org/programs/chdvc/CHDV05/2006CHDV_save_the_date.php.

8th Small Fuel Cells.

The 8th Annual Small Fuel Cells conference will be held April 2-4, 2006, at the L'Enfant Plaza Hotel in Washington, DC. For details, go to <http://www.knowledgefoundation.com/>.

Fuel Cell 2006.

Fuel Cell 2006 will be held June 6-7, 2006, at the Sheraton Imperial Hotel and Convention Center in Raleigh-Durham, North Carolina. For details, go to http://www.fuelcell-magazine.com/fc_conf_index.htm.

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.