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FUEL CELL CONNECTION - October 2005 Issue

IN THIS ISSUE

- * Air Force Academy Chemistry Department Meets First Hydrogen Production Goal
- * Comments Invited for Climate Change Technology Program Draft Strategic Plan
- * New York Awards \$15.5 Million for Clean Energy Projects
- * IREC Invites Comments on Model Interconnection Standards
- * Ford Delivers Fuel Cell Vehicles to California and Michigan

CONTENTS

News on U.S. Government Fuel Cell Programs

1. Air Force Academy Chemistry Department Meets First Hydrogen Production Goal
2. U.S. Special Operations Command Takes Delivery of Five Fuel Cell Prototypes
3. Comments Invited for Climate Change Technology Program Draft Strategic Plan
4. Portable Fuel Cell Successfully Demonstrated at U.A. Air Force's Team Patriot Event
5. Army CERDEC Takes Delivery of DMFC for Soldier Applications
6. National Academies Report Calls for DARPA-Like DOE Agency
7. FutureGen "Road Ahead" Discussed on E&ETV News
8. Bauer Named New Director of NETL

RFP / Solicitation News

9. PEDAs Offers Funding for Advanced Energy Research and Deployment Projects
10. BAA Seeks Projects for Naval Integrated Power Systems

Contract / Funding Awards

11. New York Awards \$15.5 Million for Clean Energy Projects
12. California Awards EISG Funding to Fuel Cell Project
13. DOE Selects Prime Research for Fuel Cell Fiber Optic Sensor Systems
14. DOE Awards Cooperative Agreement to Siemens Power Generation
15. Army Teams with Chevron to Develop Hydrogen Fueling Technologies
16. Army Research Office Awards Funding for 30-Watt Fuel Cell Soldier Power System

Legislation / Regulation

17. IREC Invites Comments on Model Interconnection Standards

Industry Headlines

18. Ford Delivers Fuel Cell Vehicles to California and Michigan
19. FuelCell Energy Sells 500-kW Fuel Cell for Use at Marine Corps Base
20. Citaro Fuel Cell Buses Surpass One Million Kilometers of Service

University Activities

21. Texas State Tech Offers Fuel Cell Curriculum
22. University Fuel Cell Roundup

Administration

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News on U.S. Government Fuel Cell Programs

1. Air Force Academy Chemistry Department Meets First Hydrogen Production Goal

A research group at the U.S. Air Force Academy has met its first goal, developing a chemical hydrogen source that stores and releases 6 percent by weight hydrogen. Researchers say they are currently doing experiments to double that percentage.

<http://www.af.mil/news/story.asp?storyID=123011999>

2. U.S. Special Operations Command Takes Delivery of Five Fuel Cell Prototypes

The U.S. Special Operations Command (SOCOM) took delivery of five prototype fuel cells for sensor applications from MTI MicroFuel Cells. The fuel cell power pack prototypes delivered are in the same form factor as the BA5590 – one of the most commonly used batteries in the military. MTI Micro also delivered to SOCOM, for evaluation, an integrated Mobion™ fuel cell prototype powering a Harris Falcon® II radio.

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

3. Comments Invited for Climate Change Technology Program Draft Strategic Plan

November 2 is the deadline for comments on the U.S. Climate Change Technology Program's Draft Strategic Plan, which features an entire section addressing hydrogen as an energy carrier. Future research directions recommended in the Strategic Plan include enhancing the hydrogen production technology effort; integration of electricity and hydrogen transportation sectors; and developing fundamental understanding of the physical limits to efficiency of the hydrogen economy. <http://www.climatechange.gov/stratplan/draft/invitation.htm>

4. Portable Fuel Cell Successfully Demonstrated at U.S. Air Force's Team Patriot Event

Protonex successfully demonstrated its portable power fuel cell system at Team Patriot, an exercise hosted by the U.S. Air Force at Volk Field Air Base in Wisconsin. The fuel cell power system was integrated with battery and power management components to operate military radios, laptop computers and other specialty military electronics.

<http://www.protonex.com/Team%20Patriot%20Release%20FINAL.pdf>

5. Army CERDEC Takes Delivery of DMFC for Soldier Applications

The U.S. Army Communications-Electronics Research Development and Engineering Center (CERDEC) took delivery of a portable SFC Smart Fuel Cell DMFC system, which will be evaluated as a potential power source for soldier applications.

<http://www.fuelcelltoday.com/FuelCellToday/IndustryInformation/IndustryInformationExternal/NewsDisplayArticle/0,1602,6514,00.html>

6. National Academies Report Calls for DARPA-Like DOE Agency

The National Academies recently released a report on "Energizing and Employing America for a Brighter Economic Future" which calls for an agency at the Department of Energy similar to the Defense Advanced Research Projects Agency, which would sponsor "out-of-the-box" energy research to meet the nation's long-term energy challenges. The report states that ARPA-E

(Advanced Research Project Agency—Energy) could provide a national benefit by fostering consortia “to work on critical research problems, such as the development of fuel cells.”
<http://www4.nationalacademies.org/news.nsf/isbn/0309100399?OpenDocument>

7. FutureGen “Road Ahead” Discussed on E&ETV News

On Energy & Environment TV's Onpoint program, Victor Der, director of the Office of Power Systems at DOE discussed the road ahead for the FutureGen program, which seeks to develop an advanced power generation system that produces both electricity and hydrogen from coal.
<http://www.eande.tv/main/?date=092305&page=1>

8. Bauer Named New Director of NETL

The Department of Energy has named Carl O. Bauer as director of the National Energy Technology Laboratory (NETL). Bauer has served as acting director of NETL since February 2005, after serving as deputy director since October 2003.
http://www.fossil.energy.gov/news/techlines/2005/tl_bauerappointment.html

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**RFP/Solicitation News**  
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9. PEDAs Offers Funding for Advanced Energy Research and Deployment Projects

The Pennsylvania Energy Development Authority (PEDA) is offering a limited reopening of its April 2005 funding solicitation and is seeking applications for innovative, advanced energy research and deployment projects, and for businesses interested in locating or expanding their operations in the Commonwealth. A total of \$3.5 million in funds – for loans or grants – is available under this solicitation. Fuel cells are included within the types of projects eligible for funding. Deadline for applications is November 15, 2005.
http://www.dep.state.pa.us/dep/deputate/pollprev/PA_Energy/PAENERGY/PEDA_home.htm

10. BAA Seeks Projects for Naval Integrated Power Systems

Fuel cells are included among emerging technologies the Navy wishes to evaluate through a Broad Agency Announcement on “Advanced Research and Development in Naval Integrated Power Systems.” Specific design issues to be considered include fuel efficiency, size, weight, cost, maintainability, availability, and interface to main or ship service buss. The announcement is open until December 10, 2005, or until replaced by a successor BAA.
<http://www.fbo.gov/spg/DON/NAVSEA/NAVSEAHQ/N0002405R4201/SynopsisP.html>

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**Contract / Funding Awards**  
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11. New York Awards \$15.5 Million for Clean Energy Projects

Installation of a fuel cell at the Hilton Hotel in Manhattan is one of 32 projects to receive funding from the New York State Energy Research and Development Authority (NYSERDA) under its Distributed Generation/Combined Heat and Power (DG/CHP) program.
http://www.ny.gov/governor/press/05/aug22_05.htm

12. California Awards EISG Funding to Fuel Cell Project

The California Energy Commission will award \$75,000 in funding to a project to research improved durability and reduced contact resistance of metallic interconnects for SOFC systems. The funding is being awarded through the state's Energy Innovations Small Grant Program.
http://www.energy.ca.gov/contracts/smallgrant/2005-09-28_awards_04-02.html

13. DOE Selects Prime Research for Fuel Cell Fiber Optic Sensor Systems

The Department of Energy's Office of Fossil Energy has selected Prime Research for a \$350,000, multi-year program to develop advanced fiber optic sensor systems for fuel cells.
http://www.primephotonics.com/prime_news/news_0032.html

14. DOE Awards Cooperative Agreement to Siemens Power Generation

Siemens Power Generation has signed a new 10-year, \$85-million cooperative agreement with the DOE under its new Fuel Cell Coal-Based Systems program. Under the agreement, Siemens will develop fuel cell technology for large power stations that will produce electric power using coal-based fuel.
www.powergeneration.siemens.com/en/press/pg200510005e/index.cfm

15. Army Teams with Chevron to Develop Hydrogen Fueling Technologies

Chevron Technology Ventures has signed a Cooperative Research and Development Agreement with the U.S. Army's Tank and Automotive Research, Development and Engineering Center (TARDEC) to further hydrogen fueling technologies.
<http://www.chevron.com/news/press/2005/2005-09-29.asp>

16. Army Research Office Awards Funding for 30-Watt Fuel Cell Soldier Power System

Protonex was selected for a contract award by the U.S. Army Research Office to accelerate development of a 30-watt soldier power system. The project, which will focus on advanced fuel cartridge design and manufacturing, is also receiving funding from the Dual Use Science and Technology (DUST) program.
<http://www.protonex.com/ARO%20Award%20FINAL.pdf>

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**Legislation / Regulation**  
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17. IREC Invites Comments on Model Interconnection Standards

The Interstate Renewable Energy Council (IREC) has published an updated version of its model interconnection standards and procedures for small generator facilities, and is inviting comments from the public. Comments should be sent to Steve Kalland of the North Carolina Solar Center at steve_kalland@ncsu.edu. No deadline for comments is specified by IREC.
http://www.irecusa.org/articles/static/1/1129143142_987096450.html

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**Industry Headlines**  
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18. Ford Delivers Fuel Cell Vehicles to California and Michigan

Ford Motor Company has delivered three hybrid hydrogen Ford Focus fuel cell vehicles to three California state agencies: the California Air Resources Board, the California Energy Commission,

and the California Department of General Services. Ford also delivered five Focus fuel cell vehicles to the cities of Taylor and Ann Arbor, 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>

19. FuelCell Energy Sells 500-kW Fuel Cell for Use at Marine Corps Base

FuelCell Energy has sold a 500-kW Direct FuelCell® power plant to LOGANEnergy, which will install the power plant to provide base load electricity and heat energy for a Bachelor Enlisted Quarters that houses over 200 Marines and a Mess Hall that serves over 400 personnel daily at Camp Pendleton in California.

http://www.corporate-ir.net/ireye/ir_site.zhtml?ticker=FCEL&script=410&item_id=770482&layout=23

20. Citaro Fuel Cell Buses Surpass One Million Kilometers of Service

Ballard Power Systems announced that the fleet of 33 Mercedes-Benz Citaro fuel cell buses currently operating in Europe, Iceland and Australia has surpassed one million kilometers (approx. 621,371 miles) of service.

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

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**University Activities**  
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21. Texas State Tech Offers Fuel Cell Curriculum

The Texas State Technical College in Waco now offers a Fuel Cell Technology Curriculum, which was developed under the auspices of the Texas State Leadership Consortium for Curriculum Development and uses some funding from the Texas State Energy Conservation Office.

http://www.waco.tstc.edu/ecr/ecr_fuelcell/index.php

22. University Fuel Cell Roundup

(summaries contributed by Kathy Haq, Dir. of Outreach and Communications, National Fuel Cell Research Center, UC Irvine, khaq@nfcrc.uci.edu)

Anthony Kucernak, head of the Solid Polymer Electrolyte Fuel Cell Research Group and Reader in Physical Chemistry in the Department of Chemistry at Imperial College London, has been appointed to PolyFuel's Technical Advisory Board. He joins John Appleby, professor of Applied Electrochemistry at Texas A&M University, and Robert Savinell, dean of Engineering at Case Western University. The board is focused on developing technical insights about fuel cells, the role of the fuel cell membranes and systems, and how PolyFuel can optimally contribute to moving the industry forward. [26-Sept-05, *Business Wire*]

John Jostins, a senior lecturer in design and digital media at Coventry University in the United Kingdom, has produced a taxi-type vehicle called Microcab which is designed for inner-city use. The vehicle can hold a driver and three passengers, has a maximum speed of 30 mph and does around 150 miles to the gallon of hydrogen. Jostins has been working on the ultra-light taxi-type vehicle for eight years. "My passion is developing alternative fuels to reduce noise pollution and improve air quality in cities. Microcab is completely silent and its only emission is water vapor. It could be the answer to the environmental and cost problems associated with oil," he said. Microcab has been developed with support from Coventry University Enterprises, the university's commercial arm. [30-Sept-05, *Press Association*]

Ford Motor Company, The Boeing Company and Northwestern University have announced their intent to form a new alliance to research commercial applications of nanotechnology, the branch of engineering that deals with things smaller than 100 nanometers and at the molecular level. The agreement is designed to pave the way for future advancements in transportation, including cars that could someday be powered by clean hydrogen rather than gasoline. For automobiles, nanotechnology could help Ford find ways to boost power in hybrid vehicle batteries using nanoscale materials that create more energy from traditional materials today. In the hydrogen arena, nanotechnology could help researchers develop higher capacity hydrogen storage tanks for cars, which would help make the fuel more practical for the future. [6-Oct-05, *PR Newswire US*]

A Hamilton College professor has applied for the New York State college's first patent for a scientific invention. Chemistry professor Tim Elgren wants to patent a new material that keeps certain enzymes from breaking down. Those enzymes help speed up the reaction that turns hydrogen gas into electrons and protons. That reaction is the heart of the hydrogen fuel cell, which could become an important energy source, Elgren said. Elgren did much of the work during a recent sabbatical at Montana State University. [6-Oct-05, *The Post-Standard* (Syracuse, New York)]

Japan's Natural Resources and Energy Agency has decided to establish the world's first hydrogen-fuel research institution at Kyushu University in fiscal 2006. To promote hydrogen energy, the Ministry of Economy, Trade and Industry will invite 20 researchers from around the world to make the facility the primary institution for basic study in the field. Kyushu University Professor Yukitaka Murakami will head the facility, which also will accept sponsorship and researchers from private companies. The ministry included 1.7 billion Yen for the project in its budgetary request for next fiscal year. Hydrogen energy is seen as one of the best alternative energy resources because it does not emit carbon dioxide and has an inexhaustible supply. However, further research is needed for it to be applied commercially due to such problems as creating durable storage facilities in fuel cell cars as hydrogen deteriorates metals, including stainless steel. At the institution, metal fatigue caused by hydrogen will be the main area of research, but researchers also will collect basic data in other areas. [10-Oct-05, *The Daily Yomiuri* (Tokyo)]

The United Kingdom's Newcastle University and Nanyang Technological University have signed a Letter of Intent to establish the first energy research center in Singapore. NTU's energy researchers in the various engineering schools and research centers are at the forefront of emerging and advanced technologies such as fuel cells, bio-energy and biofuels, advanced power electronics, and hydrogen energy technologies, as well as in more established areas such as energy efficiency and management and power systems. Newcastle is known as one of the UK's top universities for technology transfer. [12-Oct-05, *The Journal* (Newcastle, UK)]

Two Oregon State University researchers are guiding an effort in Corvallis to harness photosynthetic microbes that use solar energy to split water molecules and produce hydrogen fuel. Roger Ely and Frank Chaplen, professors in the university's Department of Bioengineering at both the College of Agricultural Sciences and College of Engineering, are intrigued by the hydrogen-generating potential of a large group of photosynthetic microorganisms called cyanobacteria. Ely believes cyanobacteria, which naturally generate energy from sunlight and under some conditions can produce hydrogen rather than sugars, may be a perfect source for the sustainable production of hydrogen for fuel. Ely and Chaplen received a \$900,000 grant from the U.S. Department of Energy to help fund their research. [14-Oct-05, *Daily Journal of Commerce* (Portland, OR)]

Progress Energy Florida and the Florida Solar Energy Center are partnering with public schools to educate students about the possibilities of hydrogen as an alternative energy source. "Hydrogen: The Power and the Potential" is a student curriculum initiative that envisions the use of a variety of energy alternatives, such as hydrogen, while understanding the importance of

energy conservation. Guided by teachers and presented by the FSEC, "Hydrogen: The Power and the Potential" will help students learn more about the world of alternative energy, said Bill Habermeyer, president and CEO of Progress Energy Florida. Progress Energy will donate \$49,000 to the FSEC, a research institute of the University of Central Florida, to sponsor the program. [20-Oct-05, *PR Newswire US*]

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**Administration**  
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Press releases and story ideas may be forwarded to Bernadette Geyer, editor, for consideration at bernie@usfcc.com.

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The Sponsors

US Fuel Cell Council -- The US Fuel Cell Council is the business association for anyone seeking to foster the commercialization of fuel cells in the United States. Our membership includes producers of all types of fuel cells, as well as major suppliers and customers. The Council is member driven, with eight active Working Groups focusing on: Codes & Standards; Transportation; Power Generation; Portable Power; Stack Materials and Components; Sustainability; Government Affairs; and Education & Marketing. The Council provides its members with an opportunity to develop policies and directions for the fuel cell industry, and also gives every member the chance to benefit from one-on-one interaction with colleagues and opinion leaders important to the industry. Members also have access to exclusive data, studies, reports and analyses prepared by the Council, and access to the "Members Only" section of its web site. (<http://www.usfcc.com/>)

National Fuel Cell Research Center -- The mission of the NFCRC is to promote and support the genesis of a fuel cell industry by providing technological leadership within a vigorous program of research, development and demonstration. By serving as a locus for academic talent of the highest caliber and a non-profit site for the objective evaluation and improvement of industrial products, NFCRC's goal is to become a focal point for advancing fuel cell technology. By supporting industrial research and development, creating partnerships with State and Federal agencies, including the U.S. Department of Energy (DOE) and California Energy Commission (CEC), and overcoming key technical obstacles to fuel cell utilization, the NFCRC can become an invaluable technological incubator for the fuel cell industry. (<http://www.nfcrc.uci.edu/>)

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