PDF Versions of Fuel Cell Connection are posted at http://www.usfcc.com/resources/backissues.html

UNSUBSCRIBE using the link at the bottom of this email.
SUBSCRIBE at http://lb.bcentral.com/ex/manage/subscriberprefs?customerid=9927

~~~~~~

FUEL CELL CONNECTION – May 2005 Issue

~~~~~~

IN THIS ISSUE

* President Bush Tours Hydrogen Fueling Station
* DOE Announces $64 Million in Hydrogen R&D Projects
* DOD SBIR Includes Hydrogen, Fuel Cell Topics
* California Releases Hydrogen Highway Blueprint Plan Documents
* UTC Fuel Cells Sets Fuel Cell Milestone

~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~

CONTENTS

Administration
About *Fuel Cell Connection*
Subscribe at http://lb.bcentral.com/ex/manage/subscriberprefs?customerid=9927

~~~~~~
News on U.S. Government Fuel Cell Programs
~~~~~~

---
1. President Bush Tours Hydrogen Fueling Station
President Bush toured the Shell Hydrogen service station on Benning Road in Washington, DC, and reinforced his commitment to the development of fuel cell and hydrogen technologies.
http://www.whitehouse.gov/news/releases/2005/05/20050525-1.html

---
2. NIST Researchers Report Promise of "Decorated" Nanotubes for Fuel Cells
Researchers with the National Institute of Standards and Technology and Turkey's Bilkent University reported that new quantum calculations and computer models show that carbon nanotubes decorated with titanium or other transition metals can attach on to hydrogen molecules in numbers more than adequate for efficient hydrogen storage.
http://www.nist.gov/public_affairs/techbeat/tb2005_0505.htm

---
3. NETL Successfully Tests Dynamic Fuel Cell Model
Scientists at the National Energy Technology Laboratory have successfully tested a dynamic fuel cell model. The test platform provides simulation and test capabilities of advanced controls for gas turbine/fuel cell hybrid power systems.
http://www.ornl.gov/info/news/pulse/pulse_v183_05.htm

---
4. Army National Guard Armory Running on Fuel Cell Power
The Arizona Army National Guard Armory in Mesa is now receiving power from a 5-kW fuel cell, manufactured by Plug Power, which will run unattended to provide power to the facility in conjunction with the City's electrical power grid. The fuel cell will also be able to provide emergency power should the electric grid be interrupted for any reason.
http://citydoc.cityofmesa.org/stellent/groups/public/documents/news/ar_fuelcelldedication0505web.hcsp#TopOfPage

---
5. DOE & USDA Announce MOU to Advance Hydrogen from Biomass
U.S. Secretary of Energy Samuel Bodman and U.S. Agriculture Secretary Mike Johanns announced a Memorandum of Understanding (MOU) between the agencies aimed at cost-effective production of hydrogen from biomass resources. Through the MOU, agency experts will meet regularly to share information on technologies and activities.
http://www.energy.gov/engine/content.do?PUBLIC_ID=17972&BT_CODE=PR_PRESSRELEASES&TT_CODE=PRESSRELEASE

---
6. DaimlerChrysler Supplies First F-Cell Vehicles Under DOE Learning Demonstration
DaimlerChrysler delivered F-Cell fuel cell vehicles as part of the DOE Hydrogen Learning Demonstration Project. The vehicles were delivered to the California Air Resources Board, the California Department of General Services, and the California Energy Commission, where they will be put into daily use.
http://www.prnewswire.com/cgi-bin/stories.pl?ACCT=104&STORY=/www/story/05-26-2005/0003692048&EDATE=

---

7. School Teams Participate in DOE Hydrogen Fuel Cell Car Competition
Forty-six teams from seventeen Colorado schools participated in the Junior Solar Spring and Hydrogen Fuel Cell car competitions hosted by the National Renewable Energy Laboratory. Teams used either a solar cell and motor or a fuel cell and motor to design and build model vehicles. Trophies for the fastest hydrogen fuel cell cars were given to teams from The Manning School, Bell Middle School, and Fairmount Elementary.
http://www.nrel.gov/news/press/2005/1705_students_recognized.html

~~~~~~~~~~~~~~~~~~~

RFP/Solicitation News

~~~~~~~~~~~~~~~~~~~

---

8. Hydrogen from Coal Component of DOE Solicitation for Historically Black Colleges
Development of technologies related to the economical production and separation of hydrogen from coal is included in the "Clean Fuels Technology" technical topic of DOE's new solicitation for "Support of Advanced Fossil Resource Conversion and Utilization Research by Historically Black Colleges and Universities and Other Minority Institutions." Approximately $1 million is available under this solicitation. Maximum project funding for the Clean Fuels Technology topic is $200,000. Deadline for proposals is June 17, 2005. http://e-center.doe.gov/iips/faopor.nsf/1be0f2271893ba198525644b006bc0be/cb0e4496d1db52fc85256ff100704103?OpenDocument

---

9. TARDEC BAA Topic Seeks Fuel Cell APU
The Broad Agency Announcement for the U.S. Army Tank-Automotive Research and Development and Engineering Center includes as its first topic "TARDEC Mobility Fuel Cell Auxiliary Power Unit." The overall goal of the program is the development of a JP-8 operational fuel cell brass board, providing 10 to 15 kW of 28-volt DC power. The government anticipates awarding up to three contracts having a total combined value of approximately $24 million. Proposals are duel June 25, 2005.
http://contracting.tacom.army.mil/research/fuelcell/fuelcell.htm

---

10. DOD SBIR Includes Hydrogen, Fuel Cell Topics
The Department of Defense has issued its Small Business Innovation Research Solicitation, which includes hydrogen and fuel cell-related topics. Topic titles include "A Compact Borazane Hydrogen Generator for a Soldier Fuel Cell Power System" and "Low Temperature Solid Oxide Fuel Cell for Portable Power Applications." Phase I awards are typically $60,000 to $100,000 in size. Deadline for proposals is July 15, 2005.
http://www.acq.osd.mil/sadbu/sbir/solicitations/sbir052/index.htm

---

11. STAC Issues New Solicitation for Energy Projects
The State Technologies Advancement Collaborative issued its latest solicitation, Energy Efficiency Research, Development, Demonstration, Deployment, and Rebuild America Projects. The solicitation makes available a minimum of approximately $4.95 million for cost-shared energy efficiency projects. Program areas of interest include distributed energy resources and transportation technologies. Solicitations are being accepted until July 15, 2005.
http://www.stacenergy.org

~~~~~~~~~~~~~~~~~~~~
~~~~~~~~~~~~~~~~~~~~

Contract / Funding Awards
~~~~~~~~~~~~~~~~~~~~

---

12. DOE Announces $64 Million in Hydrogen R&D Projects
The Department of Energy has awarded more than $64 million to 70 hydrogen research and development projects for five technical focus areas: Novel Materials for Hydrogen Storage; Membranes for Separation, Purification, and Ion Transport; Catalyst Design at the Nanoscale; Solar Hydrogen Production; and Bio-inspired Materials and Processes.
http://www.energy.gov/engine/content.do?PUBLIC_ID=17971&BT_CODE=PR_PRESSRELEASES&TT_CODE=PRESSRELEASE

---

13. STAC Selects Science Proposals for Funding
The State Technologies Advancement Collaborative announced approval of funding for eight projects through its Energy Efficiency and Fossil Energy Science Solicitation. The project topics include “Development of a Pilot Scale Module for Hydrogen Separation” and “Energy Conversion Sciences for Operations and Security of Large-scale Systems.”
http://www.stacenergy.org/news/2005_02_07.pdf

---

14. Army CERDEC Awards Subcontract to MTI MicroFuel Cells
The U.S. Army Communications Electronic Research and Development Command has awarded a $1 million subcontract to MTI MicroFuel Cells to develop a hybrid advanced soldier power system using fuel cell technology.
http://www.house.gov/mcnulty/pr050517.htm

---

15. Army Contracts with Hydrogenics on Fuel Cell APU for Stryker LAV
The U.S. Army Tank-Automotive Command (TACOM) and Tank-Automotive Research, Development and Engineering Center (TARDEC) are working with Hydrogenics to manufacture a self-contained regenerative fuel cell power system that will be used to provide auxiliary power for a Stryker Light Armored Vehicle.
http://www.hydrogenics.com/ir_newsdetail.asp?RELEASEID=164367

~~~~~~~~~~~~~~~~~~~~
State Activities
~~~~~~~~~~~~~~~~~~~~

---

16. California Releases Hydrogen Highway Blueprint Plan Documents
The California Environmental Protection Agency has posted final Hydrogen Highway Blueprint Plan documents, including the Summary of Findings and Recommendations for the CA H2 Net, and the Consultant Report, Blueprint Plan for the CA H2 Net, as well as five topic team reports.
http://www.hydrogenhighway.ca.gov/plan/plan.htm

---

17. Ohio Governor Extends Fuel Cell Initiative for Three Years
Ohio Governor Bob Taft announced a three-year extension of the Ohio Fuel Cell Initiative, a $103 million program that aims to position the state as a national leader in the fuel cell industry and to help spur economic growth and job creation. To date, more than $38 million in Fuel Cell Initiative funds has been awarded to fuel cell projects across the state.
http://www.governor.ohio.gov/releases/051105FuelCell.htm
~~~~~~~~~~~~~~~~~~~~

~~~~~~~~~~~~~~~~
Industry Headlines
~~~~~~~~~~~~~~~~

---

18. British Company Announces Breakthrough in Fuel Cell Technology
CMR Fuel Cells says it has made a breakthrough with a new design of fuel cell which is one-tenth of the size of existing models and is small enough for use in a wide range of consumer electronic products. The company says its breakthrough also reduces fuel cell cost by up to 80 percent.
http://www.cmrfuelcells.com/article_default_view.fcm?articleid=8502&subsite=6322

---

19. UTC Fuel Cells Sets Fuel Cell Milestone
UTC Fuel Cells has accumulated more than one billion kilowatt-hours of energy with its PureCell™ 200 fuel cell power plants. When using exhaust heat recovery, the total efficiency of the PureCell system reaches levels exceeding 80 percent.
http://www.utcfuelcells.com/utcpower/news/archive/2005-05-24.shtm

~~~~~~~~~~~~~~~~~~~~
University Activities
~~~~~~~~~~~~~~~~~~~~

---

20. Midwest Schools Work on Hydrogen Projects
Several research projects are working on ways to produce hydrogen from non-fossil sources, through the Upper Midwest Hydrogen Initiative. At South Dakota State University in Brookings, scientists are working on a manure digester for hydrogen production. The University of North Dakota and the University of Minnesota are working on generating hydrogen using wind power. The University of Minnesota's Twin Cities campus and the University of North Dakota are working on generating hydrogen from ethanol.
http://www.argusleader.com/apps/pbcs.dll/article?AID=/20050501/NEWS/505010319/1001

---

21. Kettering Sets Grand Opening of Fuel Cell Center, Announces Partnership with Flint MTA
Kettering University has set the grand opening of its Center for Fuel Cell Systems and Powertrain Integration for June 15, 2005. Additionally, the University has announced a partnership with the Mass Transit Authority in Flint, Michigan. Through the partnership, MTA will fund the cost of a 40-foot hybrid electric fuel cell passenger bus and the cost of a hydrogen refueling station hear Kettering's campus.
http://fuelcells.kettering.edu/index.html

---

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)

Working hand-in-hand with Pacific Fuel Cell Corp., researchers at PFCE's new laboratory at the University of California Riverside Research Park will continue development of new technology that uses 75 percent less platinum while significantly exceeding the performance of current state-of-the-art membrane electrode assemblies for direct methanol fuel cells. Pacific Fuel Cell Corp. announced that it has acquired certain rights to the new carbon nanotube MEA for hydrogen and methanol fuel cells and has filed a provisional patent application in the name of its co-inventors. [25-April-2005, *Business Wire*] Pacific Fuel Cell Corp. has also acquired a state-of-the-art microwave plasma enhanced chemical vapor deposition system for nanotechnology research at PFCE's new laboratory at the University of California Riverside Research Park. The system is

intended for developing carbon nanotube and other nanostructures for basic research as well as commercial prototyping. [2-May-2005, *Business Wire*]

Researchers from Rutgers University have devised a way to improve fuel cells that generate hydrogen “on the fly” by increasing the amount of surface area in a cell that can host the necessary chemical reactions. The researchers make iridium surfaces that are finely textured with pyramids that range from 5 to 14 nanometers, or millionths of a millimeter, on a side, which increases the available surface area of the metal. The increased surface area speeds the catalytic reaction that breaks down ammonia to extract hydrogen. The work appeared in the March 28 issue of the *Journal of the American Chemical Society*. [26-April-05, *Technology Research News*]

Penn State University scientists say they have developed a process that enables bacteria to draw much more hydrogen from biomass materials than from the fermentation process currently used. Researchers in College Park said their electrically-assisted microbial fuel cell needs no oxygen and can theoretically produce hydrogen from just about any kind of organic matter, including wastewater. They said the process requires only a modest amount of electricity – less than is needed to power a typical cell phone. [27-April-2005, *United Press International*]

Karl Johnson, a chemical engineer at the University of Pittsburgh, and colleagues are working on metal hydrides with the hope nanotech can help metal hydrides release hydrogen at lower temperatures than currently needed. [2-May-2005, *United Press International*]

A team of students, calling itself Nanocell Power, whose technology is expected to advance the use of fuel cells in portable electronics was named first runner-up in this year’s MIT $50K Entrepreneurship Competition. Nanocell’s patented manufacturing process provides more efficient distribution of expensive catalyst and carbon nanofibers in the fuel cell membrane. The team claims this will decrease the size of fuel cells in portable electronics by 80 percent, increase the power output of military fuel cells by 400 percent, or take 20 percent off the cost of automotive fuel cells using today's technology. The team won $10,000 in the annual business plan competition. [9-May-2005, *Business Wire*]

The State University of New York's College of Environmental Science and Forestry in Syracuse will utilize a 250-kilowatt Direct FuelCell® power plant from FuelCell Energy to generate onsite electricity and provide residual heat for domestic hot water and heating. The fuel cell is expected to provide about 5 percent of the campus's power. The fuel cell was purchased on the college’s behalf by the New York Power Authority with funding from the New York State Energy Research and Development Authority, the U.S. Department of Defense Climate Change Fuel Cell Program, and the Electric Power Research Institute. [10-May-2005, *Business Wire*]

Researchers from Northwestern University have come up with a way to prevent carbon build-up in high-temperature fuel cells. According to a report in the March 31 issue of *Science*, the Northwestern team has developed a catalyst layer that can be put over a conventional anode to reform the fuel within the fuel cell. This allows hydrocarbons like gasoline to be used directly in fuel cells. The researchers' device consists of a thin layer of ruthenium-cerium dioxide sandwiched by layers of zirconia attached to the surface of the fuel cell anode. Ruthenium-cerium dioxide speeds the process of extracting hydrogen from hydrocarbon fuel. The researchers also added a small amount of air to the fuel. [11-May-2005, *Technology Research News, LLC*]

The University of Dayton Research Institute, Case Western Reserve University and Sinclair Community College will partner with Mound Technical Solutions Inc. of Miamisburg, which recently was awarded a $600,000 state grant to help spur Ohio fuel cell technology. The award, made under the $103 million Ohio Fuel Cell Initiative, will fund a project to develop, manufacture and market a comprehensive fuel cell testing system. Other partners include Cellex Power, the Edison Materials Technology Center, Mound Community Improvement Corp., and Battelle, according to an announcement by Gov. Bob Taft's office. Taft's office also announced approval of

$1.6 million in operating funds for the Wright Fuel Cell Group, Ohio's Wright Center of Innovation for fuel cells, led by Case Western. The Center's goal is to make Ohio an international leader in the emerging fuel cell industry, spurring job creation and spin-off businesses. Taft made the announcement at the 2005 Ohio Fuel Cell Coalition Symposium in Cleveland. [12-May-2005, *Dayton Daily News*]

A student research team working on reformer technology for fuel cell power systems was among the four finalists in Canada's AUTO21 Highly Qualified People Conference. The conference focuses on automotive research and development, and the development of people trained to work in the changing automotive sector. The team from Queen's University and Royal Military College received a cash prize and advances to a final round of judging at the AUTO21 Scientific Conference on June 20 in Toronto, Ontario, for a chance to win an additional $10,000 in prizes. [12-May-2005, *Canada NewsWire*]

Researchers at the University of Tennessee at Chattanooga are using a $2.5 million federal grant to create a fuel cell that runs on natural gas and produces electricity and hydrogen. The fuel cell, which is a ceramic machine the size and shape of a loaf of bread, is to be housed in what looks like a refrigerator-size residential power generator. UTC engineering professor Jim Henry said it will be on a live web camera so the community can watch the research as it is conducted. "The goal of our research is to find out how to make it cost-competitive." [15-May-2005, *Associated Press Online*]

Researchers at Newcastle University are investigating the use of substances contained in the bloodstream as a means of producing long- life, low-power fuel cells that can be implanted into the body. The "biofuel" cells could be used in devices such as pacemakers, insulin pumps and prosthetic units. The research will investigate new ways of immobilizing enzymes on to electrode substrates, as well as the development of fuel systems using nano-carbons and membrane-less fuel cells. [16-May-2005, *The Engineer*]

Ceres Power, a spin-off of Imperial College London, this month announced a series of what it characterizes as "record-breaking world-firsts" in new performance tests just completed at its Sussex operating base. The tests, conducted over periods of more than 3,000 hours, showed that Ceres' third-generation fuel cells — being prepared for use in homes and industry — dramatically exceed global industry standards of performance. The Ceres fuel cell has been more than 15 years in development and is now under test-bed manufacture at the company's Crawley headquarters. It will fit into a domestic central heating boiler instead of a pilot light, transforming boilers into mini-generators that produce both heat and electricity. [16-May-2005, Ceres Power and *The Times* of London]

~~~~~~~~~~~~
Administration
~~~~~~~~~~~~

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

Subscribe at http://lb.bcentral.com/ex/manage/subscriberprefs?customerid=9927

~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
About *Fuel Cell Connection*
~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~

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/)

National Energy Technology Laboratory -- The National Energy Technology Laboratory is federally owned and operated. Its mission is *"We Solve National Energy and Environmental Problems."* NETL performs, procures, and partners in technical research, development, and demonstration to advance technology into the commercial marketplace, thereby benefiting the environment, contributing to U.S. employment, and advancing the position of U.S. industries in the global market.
(http://www.netl.doe.gov)