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FUEL CELL CONNECTION - July 2005 Issue

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News on U.S. Government Fuel Cell Programs
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1. INL Tests CPOX Diesel Reformer for Fuel Cells
Scientists at the Idaho National Laboratory have tested and successfully demonstrated the technical feasibility of directly connecting a catalytic partial oxidation (CPOX) diesel reformer to a 5-kW SOFC system. The diesel reformer unit was designed and built by SOFCo-EFS, and the tubular SOFC was designed and constructed by Acumentrics.
http://newsdesk.inel.gov/contextnews.cfm?ID=600

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2. White House OSTP, OMB Set Hydrogen Initiative as FY2007 R&D Budget Priority
The White House Office of Science and Technology Policy (OSTP) and Office of Management and Budget (OMB) have issued a memorandum for the heads of executive departments and agencies, which highlights the Administration's research and development priorities for the FY2007 budget. In the section on Energy and Environment, the memorandum lists the President's Hydrogen Fuel Initiative as a priority, stating that "agency efforts should address the critical technology barriers of on-board hydrogen storage density, hydrogen production costs, and fuel cell cost, as well as distributed production and delivery systems."
http://www.ostp.gov/html/budget07.html

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3. NETL Releases Annual Accomplishments Report
The newly-released publication, National Energy Technology Laboratory (NETL) Accomplishments FY 2004, features sections on fuel cells and hydrogen, detailing recent successes in both areas. Successes include progress made toward goals of the Solid State Energy Conversion Alliance (SECA) Program, as well as demonstrations of advanced hydrogen production methods.
http://www.fossil.energy.gov/news/techlines/2005/tl_netl_accomplishments.html

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4. IEA Launches Web Site for Energy Efficiency Policies and Measures
The International Energy Agency has launched a new web site that provides information about government actions to improve energy efficiency in member countries. The database of information can be searched by country, policy type (Infrastructure Investment, Mandates/Standards, Voluntary Agreements, etc.), and sector (residential, transport, industry, etc.). http://www.iea.org/textbase/effi/index.asp

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5. DOE Creates New Office for Grid Modernization, Security
The Department of Energy has completed the merger of the former Office of Electric Transmission and Distribution and the Office of Energy Assurance into the new Office of Electricity Delivery & Energy Reliability. The goal of the new office is to lead national efforts to modernize the electric grid, enhance security and reliability of the energy infrastructure, and facilitate recovery from disruptions to energy supply.
http://www.electricity.doe.gov/

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RFP/Solicitation News
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6. Polymer Membrane Solicitation Issued
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The Department of Energy's Golden Field Office is inviting applicants to develop high-temperature, low relative humidity polymer electrolyte-type membrane materials suitable for use in a fuel cell. Development of materials with performance at 120-degrees Centigrade and 25-50% relative humidity is desired. Approximately $2.5 million is available for awards under this solicitation. Deadline for applications is August 18, 2005.
https://e-center.doe.gov/iips/faopor.nsf/UNID/A1B4738B38518CAD852570140071FD3E?OpenDocument

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7. DARPA BAA Seeks Innovative Ideas for Power/Propulsion
The Defense Advanced Research Projects Agency (DARPA) has issued a Broad Agency Announcement seeking research and development proposals for new ideas and advanced and innovative concepts for a variety of proposal categories, including Power/Propulsion. Awards are anticipated to range from $100,000 to $5 million for the basic contract with a period of performance not to exceed 12 months. The response deadline is November 9, 2005.
http://www2.eps.gov/spg/USA/SMDC/DASG60/W9113M%2D05%2D0009/listing.html

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Contract / Funding Awards

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8. DOE Announces University Coal Research Grant Winners
DOE has announced the recipients of $3 million in funding under the University Coal Research Program. Several hydrogen and fuel cell research projects – including development of new materials for SOFCs and methods of producing hydrogen from coal – have been selected to receive funding through the program.
http://www.fossil.energy.gov/news/techlines/2005/tl_ucr_awards.html

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9. Fuel Cell Research Education at RPI Receives NSF Grant
The National Science Foundation has awarded a $3.2 million first-of-its-kind "fuel cell research education grant" to Rennsselaer Polytechnic Institute for a novel interdisciplinary program to train doctoral students in fuel cell science and engineering.
http://news.rpi.edu/update.do?artcenterkey=750&setappvar=page(1)

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10. DOE Phase II Award to Quantum for Hydrogen Storage Project
DOE has awarded Quantum Fuel Systems Technologies Worldwide a $2.6 million Phase II contract for its project to develop a next generation hydrogen storage technology. The project focuses on optimizing the storage capacity of Quantum's ultra lightweight advanced composite hydrogen storage tank.
http://media.prnewswire.com/en/jsp/search.jsp?searchtype=full&option=headlines&criteriadisplay=show&resourceid=2994410

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11. Plug Power Receives Contract Extension from DOD
Plug Power received a $943,000 contract extension from the Department of Defense as part of the Common Core Power Production Program, which will enable the start of field testing for the company's next-generation continuous-run fuel cell systems.
http://www.plugpower.com/news/press.cfm?vid=628706&liak=39452733

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Legislation / Regulation
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12. IEEE Approves Test Procedures for Equipment to Interconnect Distributed Resources
The IEEE has approved 1547.1™, "Standard for Conformance Test Procedures for Equipment Interconnecting Distributed Resources with Electric Power Systems," which includes specifications for the production and commissioning tests needed to confirm that the interconnection functions and equipment of a distribution resource meet the requirements in IEEE 1547. http://standards.ieee.org/announcements/pr_IEEE1547_1.html

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13. Vermont Includes Fuel Cells in Renewable Portfolio Goal
Vermont has enacted legislation to establish a statewide renewable portfolio goal, encouraging use of energy efficiency and renewable-energy resources, including fuel cells using renewable fuels. http://www.leg.state.vt.us/docs/legdoc.cfm?URL=/docs/2006/acts/ACT061.HTM

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Industry Headlines
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14. Honda Leases Fuel Cell Vehicle to Individual
Honda became the first automaker to lease a fuel cell vehicle to an individual. The FCX was leased to a family in Redondo Beach, California, for a period of two years.
http://world.honda.com/news/2005/4050629.html

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15. 1-MW Fuel Cell Installation Dedicated at Sierra Nevada Brewing Facility
Gov. Arnold Schwarzenegger dedicated a 1-megawatt fuel cell installation at a Sierra Nevada Brewing Company facility in Chico, California. The fuel cell system was manufactured by FuelCell Energy and will provide most of the facility's electrical demand, with waste heat being captured to produce steam for the brewery process and other heating needs.
http://www.corporate-ir.net/ireye/ir_site.zhtml?ticker=FCEL&script=402&item_id=130

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University Activities
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16. 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)

Researchers at the Texas Center for Superconductivity and Advanced Materials at the University of Houston (UH) and elsewhere are finding ways for solid oxide fuel cells, which operate at 2,000 degrees, to run at 900 degrees or lower. The findings mean that fuel cells could be housed in inexpensive materials such as stainless steel instead of pricey exotic metals or ceramics, making them much more affordable to use in products. Researchers at Northwestern University, CalTech, Georgia Tech and Siemens Westinghouse are using different methods than UH and are also bringing the heat to similar levels. [24-June-2005, *The Houston Chronicle*]

The Swiss Federal Institute of Technology — ETH Zurich — has set a new world record for fuel efficiency. Its world record-holding PAC Car operates on a hydrogen-powered fuel cell. It
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achieved the top result at the Shell Eco-marathon on the Michelin proving grounds at Ladoux, France, on June 24 to June 26. Using the lower heating values of hydrogen and gasoline as a conversion basis, this world record now stands at 5385 kilometers per liter of gasoline. This means that the PAC Car would only use the energy stored in about eight liters of gasoline to drive around the globe. PAC Car is a collaborative project of ETH Zurich and the Swiss Federal Office for Energy, the Paul Scherrer Institute, the University of Valenciennes, France, and the industrial partners ESORO, RUAG and Tribecraft. About 20 ETH students worked on the project, most of them from the Department of Mechanical and Process Engineering. The two drivers, both women, are also students at ETH Zurich. [28-June-2005, Business Wire]

The South Carolina Research Centers of Economic Excellence Board recently increased the amount of lottery-funded research grants being made available to the state's research universities by $19.5 million. The University of South Carolina will receive $3 million, which it will be required to match with private or federal funds, to enlarge its recently approved Center of Economic Excellence for the Fuel Cell Economy and create an endowed professorship in renewable fuels. The University hosts the National Science Foundation Industry/University Center for Cooperative Research for Fuel Cells. [5-July-2005, *The State*]

Charles Morgan, the namesake for Morgan sports cars, is planning to build a hydrogen-powered sports car with the research firm Qinetiq and a small group of universities. He hopes to deliver the LIFEcar in three years. Projects such as LIFEcar encourage development of fuel cells and electric motors to power them. [6-July-2005, *The Irish Times*]

The University of South Carolina recently signed an agreement with the Fraunhofer Institute for Solar Energy Systems in Freiburg, Germany. The agreement establishes a research partnership for Next Energy efforts, including fuel cells, hydrogen storage, hydrogen production, chemical-energy conversion and other electrochemical storage devices. It comes just three weeks after the University announced a fuel cell partnership with the Korean Institute for Energy Research. [11-July-2005, USC Center for Fuel Cell Research]

An international team of university researchers is investigating whether graphite films only nanometers or billionths of a meter thick could help store hydrogen in an inexpensive, easily manufactured, lightweight and nontoxic manner. Prior theoretical models suggested that graphite would not work well for storage. John Tse, a materials scientist at the University of Saskatchewan in Saskatoon, along with colleagues at the Steacie Institute for Molecular Sciences in Ottawa and the Technical University of Dresden in Germany, reinvestigated graphite via mathematical models and found the prior studies were incomplete when it came to exploring interactions between carbon and hydrogen on a quantum level. [11-July-2005, *UPI's Nano World*]

The University of California Los Angeles (UCLA) this month received two DaimlerChrysler F-Cells to be used in outreach efforts and to educate students in fuel cell technology. Through daily use, the F-Cells will supply DaimlerChrysler and UCLA with operational experience and technical data that will help improve the next generation of fuel cell vehicles. There are now 11 DaimlerChrysler fuel cell vehicles in California. [14-July-2005, *PR Newswire US*]

A team of students from the University of Tulsa in Oklahoma won top honors at the first-ever International Chem-E-Car Challenge held in Glasgow, Scotland. The team's challenge was to use a chemical reaction to move a car carrying a small bottle of water about 54 feet. The students' winning design was "the Hurricane," a foot-long experimental car that runs on electricity generated by tiny hydrogen fuel cells. Just 12 teams from seven nations were invited. [17-July-2005, National Public Radio: All Things Considered]

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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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About *Fuel Cell Connection*

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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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(http://www.netl.doe.gov)