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FUEL CELL CONNECTION – December 2003 Issue

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News on U.S. Government Fuel Cell Programs
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1. BNL Chemist Receives Patent for Low-Temperature Hydrogen Generation Process
A chemist at Brookhaven National Laboratory has received a patent for the development of a low-temperature (between 80 and 150 degrees C) process of producing hydrogen for use in fuel cells. In Devinder Mahajan's process, the resulting hydrogen feed contains only a few parts per million of CO and is at the correct temperature to be fed directly into a fuel cell.
http://www.bnl.gov/bnlweb/pubaf/pr/2003/bnlpr121603.htm

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2. Sulfur-Tolerant Hydrogen Membranes Evaluated at NETL
A team of researchers at the National Energy Technology Laboratory are evaluating sulfur-tolerant membranes for use in technologies to produce hydrogen from mixed-gas streams such as coal gas.
http://www.ornl.gov/info/news/pulse/pulse_v148_03.htm

3.NASA and PNNL Team on Fuel Cell Research
Pacific Northwest National Laboratory has signed a Space Act Agreement with NASA's Glenn Research Center to team in the development of sealing technologies for the stacks of solid oxide fuel cells. The objective is to develop composite materials and designs that will improve the strength and fracture toughness of composite glass and glass-ceramic-based seals.
http://www.pnl.gov/news/2003/03-46.htm

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4. Enova Builds Fuel Cell Bus for U.S. Air Force
Enova Systems has successfully integrated a fuel cell system into the U.S. Air Force's first hybrid fuel cell bus. The bus incorporates a Hydrogenics 20-kW fuel cell power generation module.
http://www.enovasystems.com/investor/pressContent/12112003.asp

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5. DOE, USAID Project to Introduce Hydrogen-Fueled 3-Wheelers in India
The U.S. Department of Energy and the U.S. Agency for International Development (USAID) are working together on a new project to introduce three-wheel hydrogen-powered vehicles into India, in order to reduce pollution in the country. The vehicles would feature internal combustion engines converted to run on hydrogen fuel.
http://www.energy.gov/engine/content.do?PUBLIC_ID=14702&BT_CODE=PR_PRESSRELEASES&TT_CODE=PRESSRELEASE

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New Government Publications Posted
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6. DOE Releases Climate Change Technology Options Report

The U.S. Department of Energy has released two reports from the Climate Change Technology Program, *Research and Current Activities* and *Technology Options for the Near- and Long-Term*. The first report details DOE's FreedomCAR Program, FutureGen Program, and Hydrogen Fuel Initiative. The second report features an entire chapter on Hydrogen, with details on research, development and demonstration goals for fuel cell and hydrogen technologies.
http://www.energy.gov/engine/content.do?PUBLIC_ID=14521&BT_CODE=PR_PRESSRELEASES&TT_CODE=PRESSRELEASE

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RFP/Solicitation News
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7. Fuel Cell Topic Featured in DOE RFP for Historically Black Colleges & Universities
"Fuel Cells" is a prime topic for DOE's solicitation titled "Support of Advanced Fossil Resource Conversion and Utilization Research by Historically Black Colleges and Universities and Other Minority Institutions." Approximately $1 million total is expected to be available for awards under this solicitation. Proposals are due January 6, 2004. https://e-center.doe.gov/iips/faopor.nsf/UNID/C591F9485589335485256DDA0051B236?OpenDocument

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8. National Science Foundation SBIR/STTR Includes Fuel Cell Subtopics
The National Science Foundation has issued its SBIR/STTR solicitation, which features two fuel cell subtopics – *Fuel Cell/Reformer Applications* and *Fuel Cell Commercialization* – within its Chemical Processes topic. Approximately $32.5 million is available for the SBIR/STTR, with 300 awards anticipated. Deadline for proposals is January 20, 2004.
http://www.eng.nsf.gov/sbir/

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9. DARPA Presolicitation Notice Issued for MEMS Technologies
The Defense Advanced Research Projects Agency has issued a presolicitation notice in the area of microelectromechanical systems (MEMS), including micro fuel cells. A total of $1 million is expected to be available for this solicitation, with proposal awards ranging from $100,000 to $200,000. Deadline for proposals is February 9, 2004.
http://www.darpa.mil/baa/baa04-10.htm

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10. Coal-Derived Hydrogen is Area of Interest in NETL Solicitation
DOE's National Energy Technology Laboratory has issued a solicitation for "Development of Technologies and Capabilities for Coal Energy Resources," which includes *Coal Fuels and Hydrogen* as a primary Area of Interest. $600,000 is expected to be available for this Area of Interest. Proposals are due February 24, 2004. https://e-center.doe.gov/iips/faopor.nsf/1be0f2271893ba198525644b006bc0be/f12725eb6242310385256de50076addc?OpenDocument

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Contract / Funding Awards
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11. Update on Hydrogen Storage Grand Challenge Awards
DOE has posted a notice in reference to the Hydrogen Storage Grand Challenge solicitation. The notice states that DOE requested $30 million for hydrogen storage in 2004, and Congress appropriated about $28 million. Approximately 50% of the 2004 hydrogen appropriation was

earmarked by Congress for specific organizations, limiting the hydrogen storage budget to about $14 million, which allows DOE to continue existing storage projects and to initiate seven new projects that were selected via a peer review process through the 2002 solicitation. The new Grand Challenge projects are expected to be announced in February 2004 as planned, but due to the lack of funds, DOE notes it is unlikely that DOE will be able to initiate the new awards during FY2004. https://e-center.doe.gov/iips/faopor.nsf/UNID/DCCFBDEFAF30CEF585256DD20023C5C3?OpenDocument

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12. Proton Energy Systems Receives SBIR Awards from NASA, U.S. Missile Defense Agency
NASA has awarded a Small Business Innovative Research, Phase II contract to Proton Energy Systems for development of lightweight unitized regenerative fuel cell technology for unmanned aerial vehicles. Proton Energy Systems received an SBIR Phase I award from the U.S. Missile Defense Agency for development of lightweight regenerative fuel cell technology for high altitude airships.
http://www.corporate-ir.net/ireye/ir_site.zhtml?ticker=prtn&script=410&layout=6&item_id=479269

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13. DOE Signs Contract with Startech Environmental for Hydrogen Production
The Department of Energy has signed a contract with Startech Environmental for production and demonstration of a commercial-size StarCell™ hydrogen generation system. The system will produce hydrogen derived from processing waste through the Startech Plasma Converter™.
http://media.prnewswire.com/en/jsp/latest.jsp?resourceid=2579427&access=EH

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14. Army Awards Fuel Processor Development Contract to InnovaTek
The U.S. Army has awarded a SBIR, Phase II contract to InnovaTek for development of a novel fuel processor for fuel cells that will provide power for individual soldiers for extended missions. The fuel processor will produce hydrogen from readily available fuels such as gasoline and diesel. http://www.tekkie.com/news/press_release_12162003.htm

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State Activities

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15. Texas Energy Planning Council Established
Texas has established an Energy Planning Council to advise the governor on a plan to meet the state's energy needs. The Council will explore a variety of technologies, including fuel cells, and will submit a full report with findings and recommendations by December 31, 2004.
http://www.governor.state.tx.us/divisions/press/exorders/rp29

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16. New York PSC Proposes Revisions to Interconnection Requirements
The New York Public Service Commission has proposed revisions to the state's Standardized Interconnection Requirements that would address new distributed generators 2 MW or less connected in parallel with utility distribution systems. Current requirements apply only to the interconnection of new distributed generation units of 300 kVA or less, and farm waste generators of 400 kW or less, connected in parallel with radial distribution lines. A technical conference on the revisions will be held January 14, 2004, in Albany, New York.
http://www.irecusa.org/articles/static/1/1071864503_987096450.html

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Legislation / Regulation
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17. DOT Proposes to Reform CAFÉ Standards
The U.S. Department of Transportation's National Highway Traffic Safety Administration has announced proposed reforms to the Corporate Average Fuel Economy standards, including the option of updating existing regulatory definitions that distinguish passenger cars from light trucks. The proposal also would look at setting fuel economy standards for some or all vehicles weighing between 8,500 and 10,000 pounds, a category that currently does not have to comply with CAFÉ standards. NHTSA will accept comments on the draft proposal until mid-March 2004.
http://www.dot.gov/affairs/nhtsa5503.htm

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University Activities
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18. Stanford Global Climate and Energy Project Awards $5.1 Million for Hydrogen Research
Stanford University's Global Climate and Energy Project has awarded four projects a total of $5.1 million to research the use of hydrogen as an energy carrier. The projects will be funded over a three-year period beginning January 2004.
http://gcep.stanford.edu/news_press_11_13_03.html

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19. Additional University Fuel Cell News
(contributed by Jacob Brouwer, PhD, National Fuel Cell Research Center/UC-Irvine) Wayne State University, Henry Ford Community College, and Macomb Community College each announced programs in which DTE Energy Technologies will install Plug Power fuel cells on their campuses (5/29/2003). Tufts University researchers announced the discovery of a new cost-effective catalyst for hydrogen production for fuel cells. The discovery is that platinum nano-particles are "mere spectators" in facilitating the water-gas-shift reaction, suggesting that other metals or metal oxides – such as titanium and iron oxide – may be effective catalyst materials (7/4/2003).

A study by Stanford University's Energy Modeling Forum concludes that natural gas supplies are likely to meet growing demand in coming decades, if policy-makers are able to strike a balance between environmental protection and the need for new energy sources (9/22/2003). Columbia University launched a program entitled "Smart Electric Grid of the Future" with Rice University, Texas Energy Center and the Texas Superconductivity Center to conduct research on how to smartly control the complex and vast electric power grid (9/24/2003). Univ. of California-Irvine's National Fuel Cell Research Center and Univ. of California-Davis' Institute for Transportation Studies announced they would each be receiving delivery of a second generation Toyota Fuel Cell Hybrid Vehicle in an independent test program sponsored by Toyota (9/24/2003).

Vanderbilt University School of Engineering signed a memorandum of understanding with PowerAvenue to undertake research and development of hydrogen fuel cell technology (10/28/2003). Lansing Community College announced a $1 million federal award for the establishment of programs to train autoworkers and technicians in fuel cell technology (11/17/2003). The University of Connecticut Global Fuel Cell Center announced a new $1.4 million research program, sponsored by the U.S. Army, to develop fuel cells that replace soldier batteries from AAA size up to 8 kW (11/30/2003). With support from FuelCell Energy and the Connecticut Clean Energy Fund, Yale University installed a 250-kW Direct FuelCell® power plant at its Environmental Science Center (12/5/2003).
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Industry Headlines
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20. Nissan FCV Approved for Public Use on Japanese Roads
Japan's Minister of Land, Infrastructure and Transport approved Nissan's X-TRAIL FCV fuel cell vehicle for public use on Japanese Roads. Nissan now plans to launch limited leasing of the hydrogen fueled FCV by the end of March 2004.
http://www.nissan-global.com/EN/STORY/0,1299,SI9-CH-LO3-TI959-CI719-IFY-MC92,00.html

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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

U.S. Fuel Cell Council -- The U.S. 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)