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

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FUEL CELL CONNECTION - August 2005 Issue

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News on U.S. Government Fuel Cell Programs
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1. SECA Project Sets Fuel Cell Performance Benchmarks
Recent advancements by General Electric Hybrid Power Generation Systems, through the Department of Energy's Solid-State Energy Conversion Alliance (SECA) program, have improved baseline cell performance to increase power density and fuel utilization. GE's full-size single-cell SOFC modules have consistently achieved a power density of 404 milliwatts per square centimeter at 88 percent fuel utilization, which surpasses the company's SECA Phase I goal of 300 milliwatts per square centimeter. The modules have also demonstrated stable operation at 95 percent fuel utilization.
http://www.netl.doe.gov/publications/TechNews/tn_ge_benchmark.html

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2. DOE Posts New Hydrogen Cost Goal for Program
The Department of Energy has developed a new hydrogen cost goal of $2.00-3.00/gasoline gallon equivalent, or gge, (delivered, untaxed, in 2005 dollars, by 2015). The previous hydrogen cost goal of $1.50/gge, developed in 2002, was based on hydrogen produced from distributed natural gas reforming. The new cost goal is independent of the pathway used to produce and deliver hydrogen and reflects a new methodology that accounts for the energy efficiency of the gasoline hybrid vehicle and the fuel cell vehicle on a cost-per-mile basis.
http://www.hydrogen.energy.gov/pdfs/h2_cost_goal.pdf

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3. DOD Fuel Cell Program Issues Reports on Demonstrations
The Department of Defense Fuel Cell Program has posted recent reports on fuel cell demonstrations conducted through the program, including a final report on a fuel cell demonstration at West Point.
http://dodfuelcell.cecer.army.mil/whats_new.php4

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4. Advanced Vehicle Testing Facility Reports on Hydrogen Pilot Plant Monitoring System
The Advanced Vehicle Testing Activity (AVTA) of the DOE FreedomCAR & Vehicle Technologies Program has issued a report on the status of a project to demonstrate an APS Alternative Fuel (Hydrogen) Pilot Plant Monitoring System. During a recent eight-month period when 1,200 kg of hydrogen was produced, and the plant capacity factor was 26%, the electricity cost to produce the hydrogen was $3.43/kg. The AVTA report projects that if "a plant capacity factor of 70% can be achieved with the present equipment, the cost … would drop to $2.39/kg of hydrogen."
http://avt.inel.gov/pdf/hydrogen/h2monitoringsystem.pdf

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5. National Research Council Releases Annual Report on FreedomCAR and Fuel Partnership
The National Research Council of the National Academies (NRC) has released its annual report on the FreedomCAR and Fuel Partnership, highlighting technical and non-technical achievements in many areas, including fuel cells, hydrogen infrastructure, and vehicle development.
http://www.nap.edu/books/0309097304/html/

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6. Papers & Presentations from Hydrogen Manufacturing R&D Workshop Online
Papers and presentations from the Hydrogen Manufacturing R&D Workshop, sponsored by the Department of Energy in collaboration with the Department of Commerce, are now available online. Presentations include examples of public-private R&D partnerships.
http://www.eere.energy.gov/hydrogenandfuelcells/wkshp_h2_manufacturing.html

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7. ANL Senior Scientist Testifies Before Congress on Role of Basic Hydrogen Research
The testimony of the Argonne National Laboratory Materials Science Division's Senior Scientist and Director, Dr. George W. Crabtree, before the House Science Committee's Subcommittees on Energy and Research, is now available online. Dr. Crabtree spoke on the role of basic research for the hydrogen economy during the House Science Committee's July 20, 2005, hearing on "Fueling the Future: On the Road to the Hydrogen Economy."
http://www.anl.gov/Media_Center/News/2005/testimony050720.html

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RFP/Solicitation News

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8. Ohio's Third Frontier Fuel Cell Program Issues Request for Proposals
Ohio's Third Frontier Fuel Cell Program released its 2006 Request for Proposals, for projects that involve Ohio higher education institutions, non-profit research organizations and companies. A workshop for prospective respondents will be held September 8, 2005, at the Business Technology Center in Columbus, Ohio. Letters of Intent to file a full proposal are due by 5:00 pm ET, September 15, 2005. http://thirdfrontier.com/open_rfps.asp

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9. California EISG Program Seeks Energy R&D Concepts for PIER Program
The California Energy Commission is offering grant funding to projects that determine the feasibility of energy research and development concepts relating to the Public Interest Energy Research (PIER) Program. The Energy Innovations Small Grant (EISG) Program provides $75,000 per grant project, with a total of approximately $2.4 million funding available for this year's solicitation. Deadline for grant applications is September 30, 2005.
http://www.energy.ca.gov/contracts/smallgrant/index.html

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10. DOD SBIR Solicitation Includes Fuel Cell Topic
The 2005.3 Department of Defense 2005.3 Small Business Innovation Research (SBIR) Solicitation includes "Fuel Cell Energy Recovery" in the Ground/Sea Vehicles Technology Area of the Navy's solicitation topics. The objective of the topic is to develop a system, scalable to high-kW levels, to convert the available energy from a fuel cell system into a usable form, including electricity or water recovery to improve overall efficiency. Technical questions about the topics will be accepted until September 13, 2005. Deadline for proposals is October 14, 2005.
http://www.acq.osd.mil/sadbu/sbir/solicitations/sbir053/

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Contract / Funding Awards

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11. DOE Awards $1.4 Million to Five SOFC Projects

The DOE, through its High Temperature Electrochemistry Center (HiTEC), has awarded $1.4 million to support five SOFC research projects to foster “novel electrochemical-based power generation and energy storage technologies for use in large, central coal-fired power plants.” The projects will be managed for DOE by the National Energy Technology Laboratory.
http://www.netl.doe.gov/publications/TechNews/tn_electro_chem.html

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12. Fuel Cell Coal-Based Systems Program Announces Two New Projects
The DOE announced the first two projects selected under the Department’s new Fuel Cell Coal-Based Systems program. The projects will be conducted by two research teams: one led by General Electric Hybrid Power Generation System, and the other led by SiemensWestinghouse Power Corporation. The new program will leverage knowledge gained in DOE’s SECA program, and will extend coal-based SOFC technology to large central power generation stations.
http://www.fossil.energy.gov/news/techlines/2005/PrintVersion_1_24361_24361.html?print

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13. Army CERDEC Initiates Work on 25-Watt Reformed Methanol Fuel Cell
The U.S. Army’s Communications-Electronics Research, Development and Engineering Center’s Army Power Division has initiated work on the development of a 25-Watt reformed methanol fuel cell to provide soldier power in the field. The fuel cell prototypes will be developed by UltraCell.
http://www.rdecom.army.mil/rdemagazine/Current/itl_fuelcell.html

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14. Millennium Cell Receives Phase II Funding for Common Core Power Production Program
Millennium Cell received Phase II funding to continue its program with the U.S. Air Force’s Advanced Power Technology Office and the DOD Fuel Cell Test and Evaluation Center, through which it will develop an advanced solid borohydride fuel module for the 5-kW fuel cell system successfully demonstrated in the program’s first phase.
http://www.millenniumcell.com

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15. Startech Receives Phase II Funding for Hydrogen Generation Project
Startech Environmental Corporation has received $500,000 in Phase II funding from the Department of Energy to demonstrate the production of hydrogen from Municipal Solid Waste and coal, processed through the company’s Plasma Converter System™.
http://www.startech.net

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16. ECD Ovonics Receives Grant from Michigan PSC
Energy Conversion Devices’ wholly-owned subsidiary, Ovonic Fuel Cell Company, has received a $400,000 grant from Michigan Public Service Commission in support of development of a prototype fuel cell system for uninterruptible power supply and emergency power applications.
http://ovonic.com/news_events/5_2_press_releases/20050824.htm

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Legislation / Regulation
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17. DOT Secretary Unveils CAFÉ Reform Plans
Department of Transportation Secretary Norman Mineta announced a new plan to reform the government’s Corporate Average Fuel Economy program for light trucks, which would create six size categories for vehicles, each with its own improved fuel economy target. The National Highway and Transportation Safety Administration is currently taking comments on the proposal, with a final rule planned by April 2006.

http://www.nhtsa.dot.gov/cars/rules/CAFE/rulemaking/CAFEReformdata.html

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18. MD Expands Net Metering Program to Include Biomass
Maryland has enacted legislation to expand the state's net metering law to include biomass as an eligible resource, and to increase the maximum eligible system capacity from 80 kW to 200 kW. Generators may also petition the Maryland Public Service Commission to allow net metering for systems up to 500 kW. The revisions will take effect on October 1, 2005.
http://www.irecusa.org/connect/enewsletter.html

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19. IREC Updates Interconnection, Net Metering Tables
The Interstate Renewable Energy Council (IREC) has issued updated versions of its state-by-state net metering and interconnection tables. The tables are available free of charge on the IREC web site. http://www.irecusa.org/connect/statebystate.html

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Industry Headlines
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20. MARCON-DDM Releases Study of Fuel Cell Opportunities in Canadian Transit System
MARCON-DDM has released an in-depth study, commissioned by Natural Resources Canada, about fuel cell-powered opportunities in Canadian urban transit systems.
http://www.nrcan.gc.ca/es/etb/ctfca/PDFs/english/Transit_Study_e_final.pdf

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21. Fuel Cell Power Pack Design Contest
Medis Technologies is soliciting design ideas for its fuel cell Power Pack design. The design winner will receive a paid trip to view production of the Fuel Cell Power Pack. Applications and design illustrations must be submitted to and received by Medis by September 20, 2005.
http://www.medistechnologies.com/show-news.asp?id=236

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22. MRS Bulletin Features Fuel Cell Article Series
The August 2005 issue of the Materials Research Society's *MRS Bulletin* features a significant section titled "Fuel Cells: The Next Evolution," which includes several articles on technical fuel cell topics. http://www.mrs.org/publications/bulletin/2005/aug/

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University Activities
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23. 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)

Thomas Vogt, who has conducted research in chemistry, physics and hydrogen storage materials at Brookhaven National Laboratory in New York, has been named head of the University of South Carolina's (USC) NanoCenter. Vogt will also join the faculty of the Department of Chemistry and Biochemistry as a tenured professor. He joins USC with a strong research background in chemistry and physics, and has conducted research on hydrogen storage materials that might

have practical application in renewable hydrogen fuel cells and batteries. [5-Jul-05, *University of South Carolina*]

A University of Wyoming (UW) chemistry professor has received a $300,000 grant as part of a U.S. Department of Energy effort to make hydrogen vehicles and refueling stations available and affordable for American consumers by 2020. Dan Buttry will lead UW efforts to identify and test nanoscale catalysts that are essential for the chemical reactions needed to produce electricity from hydrogen in fuel cells. The new project applies to Buttry's ongoing research with UW Chemistry Professor Jeff Yarger to develop new measuring instruments and techniques related to battery and fuel cell technologies. That research, based on electrochemistry and nuclear magnetic resonance, is funded with an $800,000 grant from the W.K. Keck Foundation of Los Angeles. [17-Jul-2005, *BusinessNews*]

A group of Japanese researchers led by Professor Masafumi Katsuta at Waseda University is spending 400 million yen ($3.6 million) a year to develop technologies to extract hydrogen from industrial waste, such as scrap aluminum and silicon, and household waste, such as food scraps. The group is working with several companies in an effort to develop ways to supply hydrogen for fuel cells without using fossil fuels. The Waseda team also is developing a special storage alloy capable of absorbing and releasing hydrogen at normal temperature and pressure. The metal would also help to raise the purity of hydrogen. The prototype made by the researchers is a cylindrical alloy of lanthanum, nickel and aluminum that is 10 centimeters thick and weighs 5-6 kilograms. It is sandwiched between layers of silicon resin to prevent degradation by other gases. [1-Aug-2005, *The Nikkei Weekly*]

Working with the Seattle-based company Hydrogen Power, Inc., scientists from the University of British Columbia and the University of Washington have found a new way to produce hydrogen power onsite and on demand. The process, discovered at UBC five years ago, produces hydrogen energy without any toxic byproducts by combining aluminum and water, says Ricky Gujral, chief executive officer of Hydrogen Power in Seattle. The company will soon be going to market with its first prototype called H24U™, a portable hydrogen generator that eliminates the need for storing hydrogen power. [4-Aug-05, *Business Wire*]

Several Chinese universities will participate in a group effort to provide power to the 2010 Shanghai Expo using a molten carbonate fuel cell (MCFC) system. It is expected that the Expo's energy center will utilize an MCFC system jointly developed by experts from China and Italy. The China-Italy Hydrogen Energy Research Center opened on Aug. 3. The Chinese participants include Shanghai Jiaotong University, Tongji University, Shanghai Huayi (Group) Company, and Shanghai Electric Power Company Limited. [9-Aug-05, *Comtex News Network, Inc.*]

Researchers from the Chinese Academy of Sciences' Dalian Institute of Chemical Physics have made what is being characterized as "remarkable progress" in producing hydrogen for 75-kW fuel cells via methanol reformation. On the basis of the advances made last year, a research team led by Professor Wang Shudong has further increased hydrogen productivity of the cells by more than 13 percent, attaining 70.5 Nm3 H2/h. The volume specific power reached 449 W/L, and the weight specific power was 254 W/kg. Hydrogen concentration in the reformed gas was as high as 53 percent, with a CO content of 26~28 ppm. [15-Aug-05, *FuelCellWorks*]

The first Austrian research center for hydrogen is being created at Graz University of Technology. The new center, which is being developed in cooperation with prominent partners from industry and government, will have test stands and its own hydrogen filling station, Austria's first, called the HyCentA. [17-Aug-05, *Die Presse*]

Elected officials at the city of Irvine will be driving a Toyota FCHV as part of a fuel cell vehicle deployment program managed by the National Fuel Cell Research Center at the University of California, Irvine. The city is the first municipality in the nation to use a Toyota FCHV. The

program, which began in 2002, stems from a research partnership involving Toyota and the NFCRC. Two Irvine-based businesses also are participating in the program. [24-Aug-05, NFCRC]

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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/)

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)