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FUEL CELL CONNECTION - September 2007 Issue

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1. ANL Scientists Create New Class of Hydrogen Catalysts
Scientists at Argonne National Laboratory have created a new class of catalysts they believe may help overcome hydrogen generation hurdles. The “single-site” catalysts are based on ceria or lanthanum chromite doped with either platinum or ruthenium, boosting hydrogen production at lower temperatures during the reformation process.
http://www.anl.gov/Media_Center/News/2007/news070820.html

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2. New Nanotubes Could Lead to Improved Hydrogen Production Catalysts
Brookhaven National Laboratory researchers have found new ways of making or modifying titanium oxide nanorods and nanotubes, which they say could lead to improved catalysts for hydrogen production. By introducing “nanocavities” to titanium oxide, doped with other metals, the researchers improved the nanorods’ light-absorption capabilities, which they believe could be useful for extracting hydrogen from water.
http://www.bnl.gov/bnlweb/pubaf/pr/PR_display.asp?prID=07-92

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3. Fuel Cell Learning Demonstration Progress Report is Positive
The National Renewable Energy Laboratory (NREL) has published an Interim Progress Report on the Department of Energy’s Controlled Hydrogen Fleet and Infrastructure Demonstration and Validation Project. The report finds that results to date indicate the fuel cell vehicles are performing at levels close to DOE baseline targets. Fuel cell system efficiencies ranged from 52.5% to 58.1%, compared to DOE’s long-term target of 60%. The 5-year project will assess technology readiness and provide data on the status of hydrogen and fuel cell research and development.
http://www1.eere.energy.gov/hydrogenandfuelcells/news_detail.html?news_id=11146

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4. DOE Partners with Computer Data Centers to Reduce Electricity Consumption
The U.S. Department of Energy (DOE) signed a Memorandum of Understanding (MOU) with The Green Grid, a consortium of information technology companies, to increase energy efficiency and reduce energy consumption by data centers around the world. DOE says data centers were estimated to have used 61 billion kilowatt-hours of electricity in the U.S., and that consumption is expected to grow 12 percent per year through 2011. Future activities under the MOU may include metrics and tools for data center operators and facility managers; training of company personnel in conducting energy savings assessments; and defining areas of pre-competitive R&D for data center operations. http://www.energy.gov/news/5504.htm

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5. Goodbye to DOC Technology Administration

The Department of Commerce's Technology Administration (TA) will cease operations on September 30, 2007, due to a Congressional decision to eliminate funding for the administrative unit, which was established in 1980. TA handled oversight of the National Institute of Standards and Technology (NIST), the National Technical Information Service (NTIS) and the Office of Technology Policy (OTP). NIST and NTIS will now operate as stand-alone units within the Commerce Department. http://www.ssti.org/Digest/2007/092607.htm#TA

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RFP/Solicitation News

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6. Pre-Solicitation Meeting for New Hydrogen Storage Center of Excellence

The DOE Hydrogen Program plans to issue a solicitation for a new Center of Excellence in Hydrogen Storage Engineering Science. A pre-solicitation meeting is scheduled for October 15, 2007, in conjunction with the Fuel Cell Seminar in San Antonio, Texas. A webcast is also planned.

http://www1.eere.energy.gov/hydrogenandfuelcells/news_detail.html?news_id=11269

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7. California CHP Solicitation Includes Fuel Cell Systems

The California Energy Commission (CEC) Public Interest Energy Research Program issued a grant solicitation for Combined Heat and Power Systems, including fuel cells and turbines in the size range of 50 kW to 10 MW. CEC anticipates selecting four to ten projects for funding, with no individual award exceeding $1.5 million. A total of $5.87 million is available for this solicitation. Deadline for proposals is November 15, 2007.

http://www.energy.ca.gov/contracts/EPAG_CHP/

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8. DOE SBIR/STTR Includes Fuel Cell, Hydrogen Technical Topics

DOE released its 2008 Small Business Innovation Research/Small Business Technology Transfer (SBIR/STTR) solicitation, which includes technical topics related to hydrogen and fuel cell technology. Phase I grants are a maximum $100,000 per project. Approximately $36 million is expected to be available for Phase I awards under this solicitation. DOE anticipates making up to 360 awards through this solicitation. Deadline for proposals is November 27, 2007.

http://www.science.doe.gov/sbir/solicitations/FY%202008/C26_Notice.htm

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Contract / Funding Awards

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9. FTA Awards $26.9 Million to NAVC for Fuel Cell Bus Projects

The Federal Transit Authority (FTA) awarded $26.9 million to the Northeast Advanced Vehicle Consortium (NAVC) for the start of six new projects as part of the National Fuel Cell Bus Program. Under the new projects, fuel cell-powered buses will be built and demonstrated in transit areas including Hartford, Connecticut, and Niagara Falls, New York.

http://home.businesswire.com/portal/site/home/?epi_menuItemID=989a6827590d7dda9cdf6023a0908a0c&epi_menuID=c791260db682611740b28e347a808a0c&epi_baseMenuID=384979e8cc48c441ef0130f5c6908a0c&ndmViewId=news_view&newsLang=en&div=973078938&newsId=20070917005918

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10. DOE to Fund Hydrogen and Fuel Cell Analysis Projects

DOE will provide up to $1.5 million over two years for three new hydrogen and fuel cell analysis projects. Two projects will focus on the environmental effects of hydrogen use in transportation and stationary applications. The third project will identify and analyze lessons learned from experiences with alternative fuels for stationary power generation as well as opportunities for using PEMFCs in stationary applications.
http://www1.eere.energy.gov/hydrogenandfuelcells/news_detail.html?news_id=11268

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11. DOD Awards Funding for "Continuity of Operations" Initiative Fuel Cell Project
The U.S. Department of Defense (DOD) has awarded $3.5 million to Plug Power and Ballard Power Systems for fuel cell system development to support DOD's Continuity of Operations (COOP) initiative. The project will develop a modular and scalable fuel cell system for use in telecommunication and other mission-critical backup applications.
http://www.b2i.us/View.asp?b=604&ID=44376&I=204573

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12. DOE Contracts Fuel Cell Store to Supply Kits for National Science Bowl®
DOE has awarded up to $138,000 to Fuel Cell Store to provide technical support and hydrogen fuel cell kits for the 2007 U.S. DOE National Science Bowl®, an annual competition for middle and high school students. The featured event at the National Finals of the competition is a Hydrogen Fuel Cell Model Car Challenge.
http://www.ecotality.com/newsletter/doe-grant-etly.html

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State Activities
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13. Governors Launch Bi-Partisan Clean Energy Initiative
The National Governors Association (NGA) has launched the "Securing a Clean Energy Future" initiative, a bi-partisan effort to "wean the country from imported oil, reduce our contribution to global CO2 emissions, and promote energy efficiency measures. The Department of Energy has said it will provide $610,000 to support NGA's work, including $550,000 specifically for the "Securing a Clean Energy Future" initiative.
http://www.nga.org/portal/site/nga/menuitem.6c9a8a9ebc6ae07eee28aca9501010a0/?vgnextoid=d950239df46f4110VgnVCM1000001a01010aRCRD

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14. Fuel Cells Provide Backup Power for New York State Fair, Police Communications
Four GenCore® fuel cell systems by Plug Power Inc. were installed at and provided backup power for the public address system and other communications equipment at the New York State Fairgrounds during the 161st Annual New York State Fair. Plug Power's fuel cell systems have also been installed to provide backup power for a New York State Police radio tower. The latter system can provide up to 72 hours of backup power without refueling.
http://www.plugpower.com

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15. Incentives for Biofuels and Renewable Energy in Kentucky
New legislation in Kentucky creates incentives of up to half the capital investment in projects that create alternative fuel from biomass, or that create electricity from renewable energy sources. The bill also includes efforts to shift half the state-owned passenger vehicles to hybrids, alternative fuel vehicles or fuel cell vehicles.
http://www.lrc.ky.gov/record/07S2/HB1.htm

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16. North Carolina and Illinois Set Renewable Power Requirements
Hydrogen derived from renewable sources is eligible under North Carolina's new law requiring the state's electric utilities to draw on renewable energy for 12.5% of their electricity supply by 2021. The first step for utilities will be 3% starting in 2012. Illinois Governor Rod Blagojevich signed a law requiring his state's electric utilities to draw on renewable energy, including landfill gas and biomass, for 25% of their electricity needs by 2025, starting at 2% on June 1, 2008.
http://www.ncga.state.nc.us/Sessions/2007/Bills/Senate/PDF/S3v6.pdf
http://www.ilga.gov/legislation/publicacts/95/PDF/095-0481.pdf

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Legislation / Regulation

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17. DOT Moves Closer to Allowing Fuel Cell-Powered Devices on Passenger Airplanes
The U.S. Department of Transportation (DOT) issued a proposed rulemaking to allow the transport of micro fuel cells and methanol fuel cartridges on board passenger airplanes. This would allow passengers to carry portable electronic devices powered by fuel cells – such as laptop computers or MP3 players – onto passenger airplanes, along with up to two spare fuel cartridges per person. This move brings U.S. transportation regulations into agreement with global regulations adopted by the International Civil Aviation Organization (ICAO), which went into effect January 1, 2007. Several other countries have already incorporated the ICAO allowance into their national standards.
http://www.newsandearnings.com/ViewFile.asp?ID1=25936&ID2=127680914&ssid=3&directory=4935&bm=0&filename=20070920_DOT_preapproval.pdf

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Industry Headlines

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18. Hyundai Unveils i-Blue Fuel Cell EV at Frankfurt International Motor Show
Hyundai unveiled its hydrogen-fueled i-Blue Fuel Cell Electric Vehicle, which features an all-new platform – the D segment 2+2 crossover utility vehicle (CUV) body type – tailored to incorporate the fuel cell system. The vehicle has a 100-kW electrical engine and is fueled with compressed hydrogen stored in a 115-liter tank. The i-Blue is able to travel more than 370 miles (600 km) per refueling, with a maximum speed of approximately 103 mph (165 km).
http://worldwide.hyundai-motor.com/common/html/about/news_event/press_read_2007_22.html

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19. Hydrogen, Fuel Cell Technologies Named in 2007 R&D 100 Awards List
Hydrogen recovery technology by QuestAir and fuel cell flow field plates by GRAFCELL were two of the technologies honored by *R&D Magazine*'s 2007 R&D 100 Awards. Each year, a panel of almost 50 independent technical experts select the 100 products they believe will have a definitive impact in research, industry and daily life. *R&D Magazine* honors the winners at a black tie awards gala.
http://www.rdmag.com/ShowPR.aspx?PUBCODE=014&ACCT=1400000100&ISSUE=0709&RELTYPE=CVS&PRODCODE=00000000&PRODLETT=A&CommonCount=0

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University Activities

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20. P3 Student Competition Seeks Creative Sustainability Design Ideas
Energy is a specific area of interest in the 5th Annual P3 Awards: A National Student Design Competition for Sustainability Focusing on People, Prosperity and the Planet. The competition is sponsored by the U.S. Environmental Protection Agency Office of Research and Development, through its National Center for Environmental Research. Interdisciplinary collegiate student teams are eligible to compete for Phase I Awards, worth up to $10,000 each. Approximately $1 million total is available for awards under this competition. Phase I grant recipients will have the opportunity to apply for Phase II funding of up to $75,000 for two additional years. Deadline for applications is December 20, 2007.
http://es.epa.gov/ncer/rfa/2008/2008_p3.html

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21. University of Missouri-Rolla Students Ride Hydrogen-Powered Buses to Class
Students at the University of Missouri-Rolla will be able to ride hydrogen-powered shuttle buses on campus as part of a new demonstration program. The two buses – which will operate daily under the university's "Show Me the Road to Hydrogen" initiative – will be fueled at nearby HyPoint Industrial Park, where Air Products has installed its mobile hydrogen fueling technology. Plans for a permanent hydrogen fueling station are being finalized for installation in St. Robert, Missouri, by 2008.
http://www.airproducts.com/PressRoom/CompanyNews/Archived/2007/19Sep2007b.htm

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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)

On Aug. 28, U.S. Patent No. 7,262,979 was issued to Yuan Ze University in Taoyuan, Taiwan, for a current-source sine-wave voltage inverter developed by Rong-Jong Wai of Tainan County and Rou-Yong Duan of Nantou County. An abstract of the invention, released by the U.S. Patent Office, said: "The clamping circuit includes a first switch cascaded with a first diode, a second diode cascaded with a second switch, a first capacitor connected between an anode of the first diode and a cathode of the second diode, a secondary side inductance of the transformer cascaded with a third diode, the secondary side inductance of the transformer and the third diode connected to two ends of the DC source, and a cathode of the third diode connected to an anode of the DC source. The present invention also provides a fuel cell system."
http://patft.uspto.gov/netacgi/nph-Parser?Sect1=PTO1&Sect2=HITOFF&d=PALL&p=1&u=%2Fnetahtml%2FPTO%2Fsrchnum.htm&r=1&f=G&l=50&s1=7,262,979.PN.&OS=PN/7,262,979&RS=PN/7,262,979

Three undergraduate students at Montana State University spent their senior year helping a company find new ways to get more energy out of diesel fuel and Montana-grown vegetable oils. Mechanical engineering students Kylan Engelke, Scott Dent and Jeffrey Larsen spent the previous academic year working on a fuel delivery system for a reformer, a device that breaks vegetable oil or diesel fuel into hydrogen gas and carbon monoxide. The hydrogen and carbon monoxide from "reformed" vegetable oil or diesel fuel can be used in fuel cells, or other technologies, where energy efficiencies can exceed 40 percent, said Stephen Sofie, the students' faculty advisor. The project was sponsored by Leonardo Technologies, Inc., an Ohio-based company with a research lab in Bozeman. [31-Aug-2007, http://www.montana.edu/cpa/news/nwview.php?article=5083]

James E. McGrath, a University Distinguished Professor at Virginia Tech's College of Science, was selected to receive the American Chemical Society's prestigious Award in Polymer Chemistry for his synthesis and characterization of high-performance matrix polymers and structural adhesives, fire-resistant polymers and composites, and high-temperature polymers for computers. McGrath is internationally known for his work in developing fuel cell materials and is

currently conducting fuel cell research with a $1.5 million grant from the Department of Energy. [5-Sept-2007, http://www.vtnews.vt.edu/story.php?relyear=2007&itemno=479]

FuelCell Energy hosted a celebratory summit at the Connecticut Global Fuel Cell Center on Sept.6 to announce its successful demonstration of a novel distributed generation hydrogen production technology called Electrochemical Hydrogen Separator (EHS). The successful demonstration offers promise that hydrogen-powered automobiles may become a reality. The summit featured remarks by various energy leaders, a round-table discussion, a ribbon-cutting ceremony and demonstration of the EHS unit. The event capped a successful industry/university/government collaboration involving FuelCell Energy, the Connecticut Clean Energy Fund, the U.S. Department of Defense and the University of Connecticut School of Engineering, aimed at refining and testing the novel EHS technology and propelling it toward commercialization. http://www.ctfuelcell.uconn.edu/cgfcc_center_news_luncheonsept07new.htm

Korea's Ministry of Commerce, Industry and Energy (MOCIE) announced the opening of a hydrogen fueling station at Yonsei University's Shinchon Campus this month. SK Energy and GS Caltex, the country's major refiners, are also engaged in the hydrogen project, managed by the National RD&D Organization for Hydrogen & Fuel Cell and supported by the MOCIE and the Korea Energy Management Corporation. South Korea's first hydrogen fueling station opened in August last year at the Korea Institute of Energy Research in Daejeon. The newly opened station is the first located in the urban center of Seoul. [13-Sept-2007, *Korea Times*]

Professor Charles Malmborg, a 22-year veteran of Rensselaer Polytechnic Institute's School of Engineering, recently was named the new head of the university's Department of Decision Sciences and Engineering Systems (DSES). DSES faculty at Rensselaer are involved in a broad spectrum of research, from areas related to homeland security, including threat detection, disaster response, text mining, and social network modeling, to self- reconfigurable power grids, fuel cell manufacturing, and other energy systems. [13-Sept-2007 http://news.rpi.edu/update.do?artcenterkey=2308]

Gizmag reports that industrial designer Tal Ofir, a recent graduate of the School of Practical Engineering at Hadassah College in Jerusalem, has designed a prototype hydrogen fuel cell-powered urban skate board called the iSlide. [18-Sept-2007 http://www.gizmag.com/go/8034/]

The University of Connecticut has raised more than $2 million in funding from three leading state energy companies for a new alternative energy research initiative. The donating companies are FuelCell Energy of Danbury, the Northeast Utilities Foundation and UTC Power of South Windsor. Hitting this benchmark will trigger the release of an additional $2 million pledged by the state for the university's Eminent Faculty program, a public-private partnership backed by the legislature. UConn's School of Engineering has a number of energy-focused units under its wing, including the Connecticut Global Fuel Cell Center and the Biofuels Consortium, whose scope of research and development activities will complement the broader mission of sustainable energy initiative. [18-Sept-2007, http://news.uconn.edu/2007/September/rel07077.html]

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Administration
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Press releases and story ideas may be forwarded to Bernadette Geyer, editor, for consideration at fuelcellconnection @ yahoo.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)
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