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Fuel Cell Connection  
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Special Feature – DOE's Office of Power Technologies

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The DOE Energy Efficiency & Renewable Energy Office of Power Technologies (OPT), formerly the Office of Utility Technologies, is home to both the Hydrogen Research Program and the Distributed Energy Resources Program – two important sources of support for fuel cell related R&D. Dr. Robert K. Dixon was recently appointed Deputy Assistant Secretary for OPT. The following is a brief description of OPT's fuel cell related programs, and links to the program web sites.

The Hydrogen Research Program's mission is to enhance and support the development of cost-competitive hydrogen technologies and systems. Its focus is on technologies for hydrogen generation, storage, transportation, and infrastructure. The efforts of the Hydrogen Program are complemented by concurrent research on fuel cells in the DOE fossil and transportation programs, by coal gasification in the fossil program, and by fundamental studies in the DOE energy research program.

The Distributed Energy Resources (DER) Program is focused on research and development of small, modular power and combined heat and power systems, such as fuel cells, solar, wind, and microturbines. In January 2000, the Distributed Energy Resources Taskforce was launched specifically to combine the DER-related programs of the Office of Energy Efficiency & Renewable Energy (EERE) in one office. The Taskforce's goal is to meet 20% of the U.S. generating capacity additions with DER by the year 2010. To reach this goal, the Taskforce is soliciting input, guidance, and new partners through its Industrial Power Communications Network Registry.

Office of Power Technologies, <http://www.eren.doe.gov/power>

Hydrogen Research Program, <http://www.eren.doe.gov/power/hydrogen.html>

Distributed Energy Resources, <http://www.eren.doe.gov/der>

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FEDERAL FUEL CELL PROGRAM NEWS

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U.S. Defense Budget Signed by President

On August 9, President Clinton signed into law the FY2001 Defense Appropriations bill, which contains more than \$35 million in funding for fuel cell RD&D and related programs. The following are a few of the major programs funded:

* Army Research, Development, Test & Eval -- \$4 million for PEM fuel cell demonstration under "Environmental Quality Technology" and \$5 million for fuel cell development under "Military Engineering Technology." Also, in "Combat Vehicle and Automotive Advance Technology," \$3 million for fuel cell auxiliary power units.

* Navy Research, Development, Test & Eval -- \$2 million for ship service fuel cells under "Surface Ship & Submarine HM&E Advanced Technology," and in the "Navy Energy Program," \$3 million to demonstrate domestically produced PEM fuel cells at the Marine Corps Air Ground Combat Center.

http://frwebgate.access.gpo.gov/cgi-bin/getdoc.cgi?dbname=106_cong_reports&docid=f:hr754.106.pdf

PNGV Budget Status Report

When Congress reconvenes on September 5th, it will have to resolve in conference the difference between the proposed House and Senate FY2001 budget numbers for the Partnership for a New Generation of Vehicles (PNGV) program. The House of Representatives voted to cut the PNGV budget by \$126.5 million, essentially wiping out the program, which contains the DOE Fuel

Cells in Transportation program funding. The Senate, however, has proposed to increase funding for many of DOE's transportation R&D programs – including an increase of \$4.5 million over FY2000 levels for transportation fuel cells, bringing the program's funding level up to \$41.5 million, the DOE request for FY2001.

So far, only two of the 13 Appropriations bills have actually been approved by Congress and the President – the DOD and the Military Construction bills. With the exception of the District of Columbia Appropriations bill, the House has acted on all of the remaining bills, and the Senate has acted on six of the remaining bills. Congress will have to act quickly when it returns, as October marks the beginning of FY2001. Congress expects to adjourn by mid-October. One thing is for certain: no one in Congress wants to see a government shut-down due to unapproved appropriations, especially right before the elections. According to the August 21, 2000, edition of *Roll Call*, "Senior House and Senate Republicans privately acknowledge that Congress will pass either a giant omnibus spending bill encompassing several of the most controversial appropriations bills, or a continuing resolution funding the government at current levels until next year."

TACOM Builds Scale Model of Fuel Cell 'Line-Haul' Vehicle

The U.S. Army Tank, Automotive, and Armaments Command (TACOM) has built a 1/10-scale model of a line-haul vehicle powered by a fuel cell, which will be used to present TACOM's concepts for a "21st Century Truck." The model's fuel cell is a 12-watt PEM fuel cell, built by Enable Fuel Cells Corporation.

<http://www.tacom.army.mil/tardec/nac/index.htm>

http://www.dcht.com/press_releases/index.asp?caller=news

NASA Grows Bigger 'Crystals' with Hydrogen Storage Potential

Experiments by the National Aeronautics and Space Administration (NASA) have shown that larger and better quality zeolite crystals – which could potentially be used for storing hydrogen for fuel cells – can be grown in microgravity.

<http://ens.lycos.com/ens/aug2000/2000L-08-15-07.html>

ANL To Look at Nuclear-Powered Hydrogen Generation

Under DOE's Nuclear Energy Research Initiative, Argonne National Laboratory will lead a team (including Texas A&M University and General Electric) that will look at using nuclear energy as the heat source for manufacturing hydrogen.

http://www.ornl.gov/news/pulse/pulse_v61_00.htm

<http://neri.ne.doe.gov/abstracts/060.pdf>

CECOM Gets Portable Fuel Cell for Testing

Enable Fuel Cell Corporation has delivered a small portable fuel cell to the U.S. Army Communications-Electronics Command (CECOM) for testing. The Army is looking at using fuel cells as replacements for batteries carried by soldiers.

http://www.dcht.com/press_releases/press_release.asp?release=181&caller=news

NETL Sponsors Fuel Cell Training Workshop

National Energy Technology Laboratory is sponsoring a two-day training workshop on "High-Temperature Fuel Cell Power Plant Systems" in Denver, Colorado. The workshop is scheduled for October 4&5, 2000.

<http://www.mountain.net/~training/testform.html>

NREL and ATI Team to Support Energy Start-Ups

National Renewable Energy Laboratory and the Austin Technology Incubator have teamed up to support the growth and development of technology-based start-up companies (including fuel cells) in the energy sector. NREL and ATI are specifically looking for companies that are technology based, poised for strong growth, and less than 24 months from market entry.

<http://www.nrel.gov/hot-stuff/press/01100texas.html>

Battelle Forecasts Top 10 Energy Innovations for 2010

Fuel cells are number five on a list of the Top Ten most economically impactful energy innovations expected by the year 2010, as forecast by a panel of energy experts from Battelle and the national laboratories it manages.

<http://www.battelle.org/News/00/07-26-00ENERGY.stm>

FutureTruck Results Announced

Virginia Tech's hybrid electric fuel cell SUV concept took third place overall in the FutureTruck competition, and won awards for "Best Consumer Acceptability," "Best Dynamic Handling," and "Best Appearing Vehicle."

<http://futuretruck.home.att.net/results.html>

CONTRACT AWARDS

Navy to Fund Development of Electric Ships

The Office of Naval Research will give Florida State University's Center for Advanced Power Systems \$10.9 million over three years to research and develop ships featuring electric drives and integrated power systems. The new class of ship will be known as the 21st Century Land Attack Destroyer (DD-21), and could eventually utilize fuel cells.

http://www.defenselink.mil/news/Jul2000/b07252000_bt445-00.html

DOE Extends Agreement With FuelCell Energy

The DOE Office of Fossil Energy's Carbonate Fuel Cell Cooperative Program has awarded to FuelCell Energy a \$40 million increase and three-year extension of the company's agreement to develop a molten carbonate fuel cell power plant. The increase and extension will provide funding to improve FuelCell Energy's Direct FuelCell™ power plants.

<http://www.fuelcellenergy.com/prs/doeaward.html>

Second Round of Vision 21 Projects Announced

DOE has selected another seven projects for its Vision 21 power plant program, including two fuel cell related projects. \$2.33 million was awarded to ITN Energy Systems for development of a ceramic membrane to separate hydrogen from fossil fuel gas streams. \$1.49 million was awarded to Reaction Engineering International for development of a computational "virtual workbench" that simulates the performance of Vision 21 energy plant boilers, fuel cells, advanced combustors, and gasifiers.

<http://www.doe.gov/news/releases00/augpr/pr00207.htm>

NASA to Purchase H Power Fuel Cell for Testing

NASA's Glenn Research Center intends to purchase a 5kW air-cooled fuel cell built by H Power in order to test and evaluate the stack technology.

<http://nais.msfc.nasa.gov/cgi-bin/EPS/synopsis.cgi?acqid=66061>

Army to Purchase Fuel Cells as Battery Chargers

The U.S. Army Material Command Acquisition Center's Natick Contracting Division will purchase a 100-watt and a 50-watt portable fuel cell power system from Ball Aerospace & Technologies, for use as battery chargers.

<http://frwebgate2.access.gpo.gov/cgi-bin/waisgate.cgi?WALSdocID=4581121640+1+0+0&WALSaction=retrieve>

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RFP / SOLICITATION NEWS
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Army Seeks 'Novel Power Supplies' for Field Operations

"Technical Areas of Interest" in the U.S. Army Natick Soldier Center's 2000 Broad Agency Announcement include "novel power supplies" for operation of field feeding equipment, heaters, showers, and laundries in 'remote/isolated locations.' Concept papers will be accepted up until COB January 31, 2001.

<http://www3.natick.army.mil/ssbaa.htm>

Army Research Laboratory BAA Includes Fuel Cells

The U.S. Army Research Laboratory's new Broad Agency Announcement includes an "Electrochemistry and Advanced Energy Conversion" program, which supports fundamental chemical studies of materials and processes that limit the performance of current power sources or enable future power sources, including fuel cells. Topics include electrolytes, electrocatalysis, fuel processing, and polymer electrolytes. The BAA is valid through September 30, 2003.

<http://www.aro.army.mil/research/ArLBAA00/finalarlbaa1.htm>

Ultra-Clean Transportation Fuels Deadline Moved up to Nov. 1

The final date for submission of proposals for the DOE National Energy Technology Laboratory's "Ultra-Clean Transportation Fuels" solicitation has been moved up from December 1, 2000 to November 1, 2000. The solicitation seeks cost-shared applications for R&D that will lead to the production of ultra-clean transportation fuels from fossil resources, alone or in combination with other hydrocarbon materials.

<http://www.netl.doe.gov/business/solicit/main.html#40758>

DEPSCoR Seeks Proposals for DOD BAA Technical Areas

Universities in 17 states and Puerto Rico are eligible to submit proposals for the DOD Experimental Program to Stimulate Competitive Research (DEPSCoR). DEPSCoR research projects may address any of the technical areas listed in the Broad Agency Announcements of the Army, Navy, Air Force, and Ballistic Missile

Defense Organization. Deadline for DEPSCoR proposals is September 14, 2000.

<http://www.aro.army.mil/research/dep01baa.htm>

Call for Papers on DMFCs

Los Alamos National Laboratory has put out a call for papers for next Spring's Electrochemical Society meeting in Washington, DC, in particular, two symposia focusing on "Direct Methanol Fuel Cells" and "Polymer Electrolytes for Batteries and Fuel Cells." The deadline for abstracts is October 1, 2000.

<http://www.electrochem.org/meetings/199/cfp.html>

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INDUSTRY HEADLINES

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GM and ExxonMobil Develop Gasoline Processor

General Motors and ExxonMobil announced that their collaboration has resulted in the development of a gasoline processor for fuel cell vehicles. GM plans a vehicle demonstration using the technology within 18 months.

<http://media.gm.com/corpcor/00news/g000810a.htm>

HARC Receives Funding for Marine FC Demonstration

The Texas Alternative Fuels Council has awarded the Houston Advanced Research Center (HARC) a \$200,000 grant to manage a test of fuel cells at the Port of Houston. For the demonstration, a 250kW fuel cell from FuelCell Energy will be installed on the dock, to provide supplemental power to cruise ships docking there.

http://www.harc.edu/pressroom/00_0724.html

Freightliner Truck Gets Fuel Cell APU

A Class 8 Freightliner Century Class S/T is now being demonstrated with a hydrogen-fed 1.4kW PEM fuel cell auxiliary power unit developed by XCELLSIS. The fuel cell will allow the truck driver to run air conditioning, a television, or other appliances without having to idle the diesel engine or drain the battery.

http://www.freightliner.com/corp/press_release.asp?id=215

Nuvera Ships Gasoline Fuel Processing Systems to Automakers

Nuvera Fuel Cells is delivering complete gasoline fuel processing systems for fuel cell vehicles to four major automotive companies, and to Plug Power, LLC. Nuvera says it has developed a successful technique for removing sulfur from fuels such as gasoline, natural gas, and propane.

http://www.nuvera.com/press/nv_719.pdf

Ballard, XCELLSIS Deliver First Fuel Cell Bus to CFCP

Ballard and XCELLSIS delivered a fuel cell bus to Sunline Transit Agency, as part of the California Fuel Cell Project (CFCP). The bus is the first of 25 expected to operate as part of the CFCP.

<http://www.ballard.com/viewpressrelease.asp?sPrID=153>

Florida Solar Energy Center Opens Hydrogen Center

The Florida Solar Energy Center has opened a Hydrogen Research and Applications Center, which will work with the U.S. DOE to research and develop hydrogen both for NASA purposes, and as an alternative fuel for transportation applications.

<http://alpha.fsec.ucf.edu/hydrogen>

New Fuel Cell Research Center at Georgia Tech

The Georgia Institute of Technology has opened The Center for Innovative Fuel Cell and Battery Technologies, which will undertake projects ranging from basic science to testing of fuel cell prototypes.

<http://www.sciencedaily.com/releases/2000/08/000807065212.htm>

Residential Fuel Cell News

There were three major announcements regarding residential fuel cells in the past month:

* IdaTech has unveiled the alpha prototype of its 3kW residential fuel cell system at the Riviera Hotel Convention Center in Las Vegas. The system can produce up to 6kW when using co-generation applications, and is able to utilize methanol, natural gas, and propane fuels.

<http://www.idatech.com/press21.html>

* Electric Power Research Institute (EPRI) PEAC Corporation purchased a 3kW fuel cell from Enable Fuel Cells Corporation and incorporated it into a residential fuel cell system running on hydrogen. EPRI PEAC will continue testing the system over the next several months, and will develop a similar system that can use natural gas.

http://www.dcht.com/press_releases/press_release.asp?release=191

* Johnson Matthey is teaming up with Energy Partners and TXU Europe to construct a micro combined heat and power fuel cell system for use in the home. The project is being partly supported by the UK Department of Trade and Industry's fuel cell program.

<http://www.energypartners.org/new%20releases/Energy%20Partners%20Teams%20with%20Johnson%20Matthey%20and%20TXU%20Europe.htm>

IMPCO to Provide Fuel System for Hyundai Fuel Cell SUV

Hyundai has selected IMPCO to develop hydrogen storage and fuel delivery systems for its prototype fuel cell powered Santa Fe SUV, as part of the California Fuel Cell Project.

<http://www.prnewswire.com/cgi-bin/stories.pl?ACCT=105&STORY=/www/story/08-07-2000/0001284634>

Texaco Establishes Business Unit for Energy Technologies

Texaco has established a new business unit, Texaco Technology Ventures, to manage the company's 20 percent equity interest in Energy Conversion Devices and lead efforts to commercialize ECD's energy-related technologies – including fuel cells.

http://www.businesswire.com/cgi-bin/f_headline.cgi?bw.081000/202232629&ticker=TX

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Press releases and story ideas may be forwarded to Bernadette Geyer, editor, for consideration at <<mailto:bernie@fuelcells.org>>.

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About *Fuel Cell Connection*

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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 five active Working Groups focusing on: Codes & Standards; Transportation; Power Generation; Portable Power; and Education & Outreach. 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.

[\(http://www.usfcc.com/\)](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.

[\(http://www.nfcrc.uci.edu/\)](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>