

Fuel Cell Connection

July 2000 – Special Inaugural Issue

IN THIS ISSUE

- * Solid State Energy Conversion Alliance Formed
- * GM Fuel Cell Engine Starts at -40°C
- * NFPA to Issue Standard in July
- * DCX to Show “Fuel Flexible” Jeep Commander this Fall
- * Coast Guard Seeks Fuel Cell for Lighthouse (USCG)

CONTENTS

Welcome

News on U.S. Government Fuel Cell Programs

- * Solid State Energy Conversion Alliance Formed
- * NREL Offers Report on Hydrogen Infrastructure
- * DOE Selects Natural Gas Supply/Use Projects
- * DOE Awards Contract to Unique Mobility for HEV and FCEV Motors

RFP / Solicitation News

- * Lawrence Livermore National Lab Seeks Industrial Partners (DOE)
- * DOD Begins Accepting Proposals for SBIR Solicitation (DOD)
- * Undersea Weapons Science and Technology (Office of Naval Research)
- * Vision 21 Solicitation Amended – Rounds 3 & 4 Combined (DOE)
- * Third Annual Inventions and Innovation Competitive Solicitation (DOE)
- * NASA Seeks Energy Conversion, Power Technologies (NASA)
- * Coast Guard Seeks Fuel Cell for Lighthouse (USCG)

Environmental/Energy Legislation

- * New York State Considers Bill to Help Consumers Install Energy-Saving Technologies

Industry Headlines

- * GM Announces Progress in Fuel Cell Development
- * Humboldt and Teledyne Join on Fuel Cell Commercialization
- * Ballard Concludes Bus Demonstration
- * Reliant Energy to Get Rights to Texas A&M PEM Technology
- * Energy Ventures Completes Phase 1 of DMFC Research Program
- * NFPA Standard for Installation of FC Power Plants to be Issued
- * Fuel Cell Boat Launched
- * Hyundai Chooses IFC Fuel Cells for SUV Demonstration
- * California Fuel Cell Partnership Picks Up Two New Members
- * DCX to Show Next Version Jeep Commander This Fall
- * Fuel Cell Evaluation Protocol White Paper to be Posted Soon
- * IdaTech Delivers First Fuel Cell System to Bonneville Power Administration

About *Fuel Cell Connection*

Welcome

Welcome to the first issue of the **Fuel Cell Connection**, a new newsletter sponsored by the U.S. Department of Energy's National Energy Technology Laboratory and published by the U.S. Fuel Cell Council and the National Fuel Cell Research Center, located at the University of California, Irvine. This electronic newsletter will be a roundup of stories on fuel cell programs in government agencies along with fuel cell industry headlines, and information on current and upcoming government research solicitations on fuel cells. **Fuel Cell Connection** will be published monthly for electronic distribution.

News on U.S. Government Fuel Cell Programs

Solid State Energy Conversion Alliance Formed

Two U.S. Department of Energy national laboratories, the National Energy Technology Laboratory (NETL) and the Pacific Northwest National Laboratory (PNNL), officially announced the formation of a new public/private fuel cell partnership, the Solid State Energy Conversion Alliance (SECA), on July 15, 2000. The program includes government, commercial developers, universities, and national labs, with a mission focused on developing low-cost, high power density, solid state fuel cells. The basic building block will be a 5-kW solid state fuel cell module that can be mass-produced and used for residential or auxiliary power unit applications. The mass-produced 5-kW core modules will be combined like batteries for applications with larger power needs, thus eliminating the need for custom designed fuel cell stacks to meet a specific power rating. SECA technology will ultimately lead to megawatt size configurations for commercial and light industrial packages and Vision 21 central power station applications. (http://www.netl.doe.gov/newsroom/media_rel/mr_oxide.html)

NREL Offers Report on Hydrogen Infrastructure

The National Renewable Energy Laboratory (NREL) has released a report covering the findings of a Department of Energy (DOE) sponsored workshop intended to develop a strategy to boost hydrogen-fueling infrastructure in the U.S. The report, titled "Blueprint for Hydrogen Fuel Cell Infrastructure Development", includes information on future markets for hydrogen-powered vehicles, predicting that nearly 10,000 light-duty hydrogen vehicles will be produced in 2003. (<http://www.eren.doe.gov/hydrogen>)

DOE Selects Natural Gas Supply/Use Projects

In an effort to boost usage of natural gas in the energy future of the United States, the U.S. Department of Energy has chosen nine new projects to be managed by the newly created Strategic Center for Natural Gas, part of the

National Renewable Energy Laboratory. One of the nine projects will focus on the development of a conceptual design for a fuel-flexible turbine system that could be integrated into fuel cell/hybrid modules. The \$243K award for this project went to Rolls-Royce Allison Engine, Co., of Indianapolis, Indiana. (www.netl.doe.gov/publications/press/2000/tl_baa00_gas.html)

DOE Awards Contract to Unique Mobility for HEV and FCEV Motors

The U.S. Department of Energy has awarded a two-year, \$750,000 contract to Unique Mobility for the continued development of a modular line of high-performance motors for hybrid electric and fuel cell electric vehicles. The award was made through the Small Business Innovation Research (SBIR) program. (<http://www.ugm.com/news/01-08.html>)

RFP/Solicitation News

Lawrence Livermore National Lab Seeks Industrial Partners (DOE)

Lawrence Livermore National Lab is seeking collaborators in the commercialization and further development of miniature fuel cell devices for battery replacement in the 0.5-50 watt range.

(<http://frwebgate3.access.gpo.gov/cgi-bin/waisgate.cgi?WAISdocID=0899114461+0+0+0&WALSaction=retrieve>)

DOD Begins Accepting Proposals for SBIR Solicitation (DOD)

The U.S. Department of Defense's Small Business Innovation Research (SBIR) program is accepting proposals for research in four areas with a fuel cell connection, including fuel cell membrane materials. Its latest solicitation, published July 3, includes these topics related to fuel cell technology: A00-008 "Lightweight, Low Cost, Low Collateral Damage Mortar Fuzing Utilizing MicroElectroMechanical Systems (MEMS)"; A00-073 "Cogeneration of Heat and Electricity for Military Equipment"; A00-113 "Alternative Energy Storage System"; and A00-116 "Proton-Conducting Inorganic Membranes for Fuel Cells".

(http://www.acq.osd.mil/sadbu/sbir/002/dod_sbir002.htm)

Undersea Weapons Science and Technology (Office of Naval Research)

The U.S. Office of Naval Research is interested in receiving white papers for new Science & Technology concepts supporting undersea weapons systems and unmanned undersea vehicles. One of the Topics of Interest is "Propulsion Improvements in electric and thermal power sources, needed to achieve enhanced performance for future low-rate and high-rate undersea vehicles," and includes fuel cells as one of the energy conversion technologies that could be considered. (<http://www.onr.navy.mil/02/baa/baa00016.htm>)

Vision 21 Solicitation Amended – Rounds 3 & 4 Combined (DOE)

The pending DOE “Vision 21” solicitation has been modified, with Rounds 3 and 4 combined. An Amendment, issued June 23, 2000, extends the deadline for Round 3 applications from July 31, 2000 to September 29, 2000, and thereby becomes the final application period. Round 4 is deleted. (The U.S. Department of Energy’s National Energy Technology Laboratory’s solicitation for “Development of Technologies for Analytical Capabilities for Vision 21 Energy Plants” was originally issued September 30, 1999, and was to be conducted in four rounds.)

(amendment http://www.netl.doe.gov/business/solicit/99pdf/40578/40578_a1.pdf)

(original solicitation

<http://www.netl.doe.gov/business/solicit/99pdf/40578/40578a.pdf>)

Third Annual Inventions and Innovation Competitive Solicitation (DOE)

The closing deadline for the DOE’s Office of Industrial Technologies’ Inventions and Innovation Competitive Solicitation is August 11, 2000. Industry topics include catalysts for selective synthesis of chemicals from CO and CO₂ and energy performance technologies for forest products industry (fuel production, conversion, and utilization).

(<http://www.oit.doe.gov/inventions/apply2.shtml>)

NASA Seeks Energy Conversion, Power Technologies (NASA)

NASA is seeking innovative concepts utilizing advanced technology in the areas of energy conversion, storage, power electronics, and power control. Power levels of interest range from tens of milliwatts to many kilowatts. NASA programs require energy systems with high energy density, cycle life, and reliability and that reduce overall costs.

(<http://sbir.nasa.gov/SBIR/sbir2000/phase1/solicitation/>)

Coast Guard Seeks Fuel Cell for Lighthouse (USCG)

The U.S. Coast Guard is looking to procure a 1.5kW to 4kW size fuel cell system using hydrogen or direct methanol as fuel for a “remote site lighthouse project.” Due date for response is August 17, 2000. (<http://www.eps.gov/cgi-bin/WebObjects/EPS?ACode=P&ProjID=DTCG39-00-R-R00015&LocID=101>)

Environmental/Energy Legislation

New York State May Help Consumers Install Energy-Saving Technologies

The New York Assembly has passed and sent to the state Senate a \$285-million energy conservation bill to encourage the use of new clean technologies

by the public and private sectors and to encourage development of the technologies. (<http://assembly.state.ny.us/cgi-bin/showbill?billnum=a6099>)

Industry Headlines

GM Announces Progress in Fuel Cell Development

General Motors says it has made great strides in decreasing the size and cost of its fuel cell. The new prototype, called HydroGen1, is two-thirds smaller than previous GM models. It provides 80 kW of power with a thermal efficiency between 53 and 67 percent. Also, GM says the fuel cell can start a car in temperatures as low as -40° Celsius. (www.gm.com)

Humboldt and Teledyne Join on Fuel Cell Commercialization

Humboldt State University and Teledyne Energy Systems are joining together to speed commercial development of fuel cell technology, based on the fuel cell systems developed at Humboldt's Schatz Energy Research Center. (<http://www.humboldt.edu/~news/00releases/000622a.shtml>)

Ballard Concludes Bus Demonstration in Vancouver; Plans Pilot Fleets in California

Ballard Power Systems and XCELLSIS Fuel Cell Engines announced the successful conclusion of their fuel cell bus demonstration program with TransLink, in British Columbia, Canada. Ballard's Phase 4 engine, the next generation fuel cell engine, will be tested in upcoming demonstrations through the California Fuel Cell Partnership. (<http://www.ballard.com/viewpressrelease.asp?sPrID=152>)

Reliant Energy to Get Rights to Texas A&M PEM Technology

Reliant Energy has signed a licensing agreement with Texas A&M University, granting the company the exclusive rights to develop and market important improvements in PEM fuel cell technology. (<http://www.reliantenergy.com/newsroom/pressrelease.asp?releaseid=142>)

Energy Ventures Completes Phase 1 of DMFC Research Program

Energy Ventures Inc. has completed the initial phase of its direct-methanol fuel cell RD&D program. EVI is now moving to a phase two program that will include the construction of prototypes of fuel cells of 150W and 2.5kW size. (<http://www.evi.on.ca/investor/060500.html>)

NFPA Standard for Installation of FC Power Plants to be Issued

In July, the National Fire Protection Association (NFPA) will issue its new standard called NFPA 853, "Standard for the Installation of Stationary Fuel Cell Power Plants." The scope of the standard is "the design, construction, and installation of stationary fuel cell power plants exceeding 50kW, including: 1) a singular package, self-contained power plant; 2) any combination of pre-packaged, self-contained power plants; 3) power plants comprising two or more factory matched modular components intended to be assembled in the field; and 4) engineered or field-constructed power plants that employ fuel cells." For more information, contact Richard Bielen, NFPA, Ph. 617-770-3000, extension 7950, or via email at "rbielen@nfpa.org".

Fuel Cell Boat Launched

ZeTek Power has launched "Hydra", a boat driven by alkaline fuel cells running on hydrogen. Deutsche Zentrum für Luft und Raumfahrt is currently building a production plant for the automated series production of ZeTek fuel cells in Cologne, Germany. (<http://www.zevco.com/press/bonn.html>)

Hyundai Chooses IFC Fuel Cells for SUV Demonstration

Hyundai has signed an agreement with International Fuel Cells to incorporate IFC's PEM fuel cell power plant in its Santa Fe Sport Utility Vehicle demonstrator program. The 75kW system will run on hydrogen. (<http://www.internationalfuelcells.com/library/archive/052400.htm>)

California Fuel Cell Partnership Picks Up Two New Members

The California Fuel Cell Partnership picked up two new members in June: International Fuel Cells and the U.S. Department of Transportation. (http://www.drivingthefuture.org/releases/2000-06-30_international.html, http://www.drivingthefuture.org/releases/2000-06-15_news_release.html)

DCX to Show "Fuel Flexible" Jeep Commander This Fall

Automotive News (July 3, 2000), reports DaimlerChrysler will show the "next version" of its fuel cell powered Jeep Commander this fall at a technology conference in Washington, DC. The new version will feature an onboard reformer to convert methanol or gasoline to hydrogen.

Fuel Cell Evaluation Protocol White Paper to be Posted Soon

The National Evaluation Service is working to develop an "evaluation protocol for stationary fuel cell power plants," similar to other codes and standards activities that apply to fuel cells. A draft "white paper" was issued earlier this year, and the period for comments closed on June 30, 2000. The final version of the "white paper" along with the draft of the evaluation protocol will be

posted on the NES web site later this summer.
(<http://www.nateval.org/fuelcells/panel.html>)

IdaTech Delivers First Fuel Cell System to Bonneville Power Administration

In June, IdaTech delivered the first of 110 fuel cell system units slated for sale to the Bonneville Power Administration, an agency of the U.S. Department of Energy. The unit generates 6 kW of combined heat and energy, and is the first of 10 that will be installed over the next three months.
(<http://www.idacorpinc.com/news/pr/pr20000614.html>)

About *Fuel Cell Connection*

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/>)

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>