

# *news from* **FUEL CELLS 2000**

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## **Fuel Cell Technology Update – August 1, 2001**

**To: Reporters, editors and investors following business, energy, automotive and technology news.**

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### **LEGISLATION**

**Energy Tax Policy Act to Provide Fuel Cell Credits.** The House Ways and Means Committee passed HR 2511, the “Energy Tax Policy Act of 2001,” which would provide over \$33 billion over ten years in tax credits and incentives to “stabilize current energy sources and supply as well as long-term solutions for energy sources and supply.” The bill would allow a credit of up to \$1,000 per kilowatt for the purchase of qualified fuel cell power plants, and would allow a credit for the purchase of qualified fuel cell motor vehicles.

<http://waysandmeans.house.gov/fullcomm/107cong/energy/hr2511sub.pdf>

### **TRANSPORTATION**

**FASTec Unveils World’s First Fuel Cell Powered Aircraft.** The Foundation for Advancing Science and Technology Education (FASTec) unveiled the world’s first piloted fuel cell powered aircraft, the E-Plane. The plane is a high-speed, all carbon French DynAero Lafayette III that is being converted from a combustion engine to electric propulsion in three stages. The first flights, planned for next year, will be on lithium ion batteries; the next flights will be powered by a combination of lithium ion batteries augmented by a fuel cell; and finally, the aircraft will be powered totally by a hydrogen fuel cell, with a range of over 500 miles.

**DaimlerChrysler to Field Test Fuel Cell Van.** DaimlerChrysler is teaming up with Hermes Versand Service, a Hamburg-based delivery company, to run a two-year field test on a fuel cell vehicle. The hydrogen-powered Mercedes-Benz Sprinter van will go into operation in the Stuttgart metropolitan area before being transferred to Hamburg. <http://www.daimlerchrysler.com>

**Japanese Government Plans to Use 50,000 FCVs.** The Japanese government announced plans to place nearly 10 million environmentally sound vehicles on its roadways over the next decade. Under the plan, the government hopes to implement the use of 50,000 fuel cell vehicles by 2010.

**Startech Environmental Demonstrates Hydrogen Vehicle.** Startech Environmental Corp. has demonstrated the successful operation of its hydrogen vehicle in Bristol, Connecticut. The vehicle is a white Ford pickup with a 4-cylinder engine and a standard transmission.

<http://ens.lycos.com/e-wire/July01/10July0102.html>

## **STATIONARY POWER**

**Ballard Completes 10 kW Engineering Prototype.** Ballard Generation Systems has completed construction and commenced in-house testing of its 10 kW natural gas fueled engineering prototype stationary fuel cell power generator. The unit is being designed for backup, light industrial and standby applications for telecom and other applications, and will undergo extensive in-house testing throughout 2001. <http://www.ballard.com>

**FuelCell Energy Delivers Direct FuelCell to LADWP, Mercedes-Benz.** FuelCell Energy has shipped a 250 kW Direct FuelCell (DFC) power plant to the Los Angeles Department of Water and Power for installation at LADWP's downtown headquarters. FuelCell Energy currently has a field trial backlog of approximately 10 MW, including two additional 250 kW DFC power plants for LADWP. FuelCell Energy also shipped a 250 kW DFC power plant to the Mercedes-Benz manufacturing facility in Tuscaloosa, Alabama, to tie in with the existing power distribution system.  
[http://www.fce.com/site/investor/press/releases/2001/07\\_26\\_01.html](http://www.fce.com/site/investor/press/releases/2001/07_26_01.html)  
[http://www.fce.com/site/investor/press/releases/2001/06\\_28\\_01.html](http://www.fce.com/site/investor/press/releases/2001/06_28_01.html)

**Caterpillar Receives \$2.5 Million for Ethanol Powered Fuel Cell.** The U.S. Department of Energy (DOE) has awarded Caterpillar, Inc. with \$2.5 million for the design, fabrication and demonstration of a commercial ethanol powered fuel cell. Caterpillar, working with Nuvera Fuel Cells and Williams Bio-Energy, will develop a 13 kW ethanol fueled proton exchange membrane (PEM) stationary fuel cell system. <http://www.ethanolrfa.org/pr010628b.html>

**Nippon Mitsubishi to Test Naphtha Fuel Cell.** Nippon Mitsubishi Oil Corp. will test a naphtha-based fuel cell system at a gas station in Yokohama, Japan. The fuel cell system is capable of generating 5 kW of electricity and will power the gas station in combination with electricity supplied by a power company. Nippon Mitsubishi is looking to introduce a practical system sometime between 2004 and 2005.

**H Power Announces Distribution Agreement With Naps Systems.** H Power announced a multi-tier distribution and development agreement with Naps Systems, a solar power system company. Under the agreement, H Power will deliver fuel cells for Naps Systems' products and both companies will work toward the distribution of H Power's fuel cells throughout selected European and Asian countries.  
<http://biz.yahoo.com/bw/010705/2159.html>

## **PORTABLE POWER**

**Manhattan Scientifics Unveils 3 kW Portable Fuel Cell.** Manhattan Scientifics announced that its German-based NovArs unit has successfully developed and tested a 3 kW fuel cell system, operating on hydrogen, that will be ideal for electric scooters, golf carts, emergency home generators, RVs and other recreational uses. The total system weighs about 13 pounds, and can be scaled down from 3 kW to 1kW. [http://www.manhattsci.com/media\\_center/pressrelease36.htm](http://www.manhattsci.com/media_center/pressrelease36.htm)

**DCH Announces Contract for Remote Fuel Cells, Receives Order for 5 kW.** DCH Technology has received a contract for 10 new-model DCH/Enable remote fuel cell power systems from the Texas Natural Resource Conservation Commission (TRNCC). The 15-watt, 12-volt fuel cells will provide

electricity on demand to air and water sampling equipment as well as to communication equipment providing real-time data feedback. DCH also received an order from the Houston Advanced Research Center (HARC) for a 5kW DCH Enable fuel cell power system with a natural gas reformer for testing and demonstration.

[http://www.dcht.com/press\\_releases/press\\_release.asp?release=210&caller=news](http://www.dcht.com/press_releases/press_release.asp?release=210&caller=news)  
[http://www.dcht.com/press\\_releases/press\\_release.asp?release=209&caller=news](http://www.dcht.com/press_releases/press_release.asp?release=209&caller=news)

**Medis Announces Ethanol Fuel Cell Test Results.** Medis Technologies announced that it has successfully demonstrated that its direct liquid methanol (DLM) fuel cell can utilize a broad range of alcohols, or mixture of alcohols, as fuel without affecting the performance or longevity of the fuel cell. Medis presented fuel cells operating on ethanol that performed at the highest levels of its DLM fuel cells, operating for more than 40 continuous hours after an initial fueling with methanol.

<http://www.medistechnologies.com/index.cfm>

**Trimol Enters Into Cooperation Agreement with Hitachi Maxell.** Trimol Group, Inc. has entered into a Cooperation Agreement with Hitachi Maxell Ltd. to work on an aluminum-air fuel cell power source for portable consumer electronics. <http://ens.lycos.com/e-wire/July01/09July0110.html>

## **FUELS/REFORMERS/STORAGE**

**New Project to Generate Hydrogen.** H2fuel and Argonne National Laboratory have joined on a project to develop a small, low-cost hydrogen generator that would convert fuels such as gasoline, natural gas, propane, and methanol into hydrogen for powering fuel cells. As part of the agreement, H2fuel has built a fuel processor designed by Argonne's Chemical Technology Division. Over the next two years, the organizations will work to further improve this processor to the point where it is ready to enter the marketplace. <http://www.anl.gov/OPA/news01/news010720.htm>

**Companies to Form Hydrogen Storage Firm.** Hydro-Quebec, Shell Hydrogen and German alloy company Gesellschaft fur Elektrometallurgie (GfE) will form a common company to develop, manufacture and market hydride-based hydrogen storage systems for use in fuel cell vehicles and other applications. The new company will be based in Montreal, Canada.

**Honda Motor To Test Solar Energy For Hydrogen Production.** Honda Motor Co. will test the use of solar energy, along with ordinary electricity, to extract hydrogen from water. Honda has set up a hydrogen production and fueling station in Los Angeles, California, with the capacity to produce up to 7,600 liters of hydrogen per year using solar energy alone and 36,500 liters by using both solar energy and ordinary electricity.

**Avista Introduces New Hydrogen Sensor Product.** Avista Labs has introduced a hydrogen sensor product for fuel cell developers and other hydrogen users. The product features a self-monitoring capability that provides an alert when the sensor is not fully operational. <http://www.avistacorp.com>

**Nuvera Receives \$17 Million for Research.** Nuvera Fuel Cells, Inc. has been awarded approximately \$17 million from the U.S. Department of Energy (DOE) to fund new research and development of an advanced high-efficiency quick-start fuel processor for transportation applications. The company intends to combine an advanced low thermal mass catalytic fuel processor and an advanced integrated balance of plant in order to obtain instantaneous power. [http://www.nuvera.com/press/nv\\_doe.pdf](http://www.nuvera.com/press/nv_doe.pdf)

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1625 K Street, NW, #725, Washington, DC 20006  
Phone: 202/785-4222 Fax: 202/785-4313  
<http://www.fuelcells.org>

**Catalytica Receives \$11.2 Million for Fuel Cell Work.** The U.S. Department of Energy (DOE) has awarded Catalytica Energy Systems with an \$11.2 million contract for research and development of fuel cell processing technology. Work under the contract will focus on a flexible-fuel processor for proton exchange membrane (PEM) fuel cells in automotive applications.

<http://www.catalyticaenergy.com/news/news010702.html>

**QUANTUM Ships Hydrogen Storage System for Fuel Cell Bus, Forms Alliance with Pinnacle.**

QUANTUM Technologies has shipped its advanced hydrogen storage system for the first ThunderPower fuel cell bus, which is being built via a partnership between Thor Industries and ISE Research Corporation. The bus will go into commercial service at SunLine Transit in California later this year. QUANTUM also formed a strategic alliance with Pinnacle West to pursue development of the infrastructure required to support hydrogen-fueled vehicles. QUANTUM will also support Pinnacle's application of stationary fuel cell distributed power generation to its customer base.

[http://168.143.68.94/press\\_releases/pr\\_jul\\_02\\_2001\\_c.shtml](http://168.143.68.94/press_releases/pr_jul_02_2001_c.shtml)

[http://168.143.68.94/press\\_releases/pr\\_jul\\_09\\_2001.shtml](http://168.143.68.94/press_releases/pr_jul_09_2001.shtml)

**FUEL CELL COMPONENTS**

**Secretary of Energy Awards \$6.1 Million to Porvair.** Porvair Fuel Cell Technology will receive \$6.1 million for fuel cell research from the U.S. Department of Energy. Porvair will develop carbon/carbon composite bipolar plates for proton exchange membrane (PEM) fuel cells.

<http://www.porvair.com/news.htm#top>

**SET Ships 5 kW Power Inverter Test Units.** Sustainable Energy Technologies, Ltd. (SET) has shipped test units of its 5 kW universal power inverter to fuel cell interests to evaluate the inverter's performance. <http://www.sustainableenergy.com/home/home.asp>

**RPI, Plug Power Receive Grant for Fuel Cell Research.** The State of New York will contribute \$500,000 to support a major initiative in fuel cell research at the New York State Center for Polymer Synthesis at Rensselaer Polytechnic Institute (RPI). Plug Power, Celanese Ventures and RPI will develop and produce new polymer membranes to help advance the fuel cell industry.

<http://www.rpi.edu>

**Altair Announces Fuel Cell Breakthrough.** Altair International announces that it appears to have solved the material mismatch problem for solid oxide fuel cells (SOFC). The company can use its 20-nanometer Yttria Stabilized Zirconia (YSZ) to form the electrolyte, solving the mismatch between the anode and cathode substrate material.

**Hydrogenics Signs Agreement with Hankook BEP.** Hydrogenics Corporation has signed an agreement with Hankook BEP Co. Ltd., to market and sell Hydrogenics' automated, industrial systems for testing and controlling fuel cells and fuel cell stacks in the Korean market.

<http://www.hydrogenics.com>

**REPORTS/MARKET STUDIES**

**ABI Predicts 2.4 Million Fuel Cell Vehicles in 2011.** A new report by Allied Business Intelligence (ABI), "US and Global Automotive Fuel Cell Markets," predicts there will be 2.4 million vehicles

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running on fuel cells in 2011. ABI expects global automotive fuel cell market penetration will begin with thousands of units in the US and Japan in 2003 and 2004, with a large ramp-up occurring globally in 2007 and 2008. <http://www.alliedworld.com/energy/product/AFC01.html>

**SAE, AEI Publish Auto Report.** The Society of Automotive Engineers and Automotive Engineering International magazine have teamed to publish “Fuel Cell Powered Vehicles: Automotive Technology of the Future.” To order the report (Order No. RR-013), go to [www.sae.org](http://www.sae.org).

**EPRI Study Shows Electricity System Improvements are Necessary.** “The Cost of Power Disturbances to Industrial & Digital Economy Companies,” a new study by the Electric Power Research Institute’s (EPRI) Consortium for Electric Infrastructure to Support a Digital Society (CEIDS), shows that power outages and other power quality disturbances are costing the U.S. economy more than \$119 billion annually. The study emphasizes the need for the energy industry to maximize power reliability and quality. <http://www.epri.com/ceids>.

## **MISCELLANEOUS**

**Ballard, Shell, and Westcoast Establish Private Capital Joint Venture.** Ballard Power Systems, Shell Hydrogen and Westcoast Energy have created Chrysalix Energy Limited Partnership, a new private capital joint venture focused on promoting early stage companies with high growth potential in fuel cells and related systems, hydrogen infrastructure, maintenance and support techniques. <http://biz.yahoo.com/prnews/010725/nyw050.html>

**Superior MicroPowders Joins U.S. Fuel Cell Council.** Superior MicroPowders (SMP), a manufacture of low platinum electrocatalysts for proton exchange membrane (PEM), direct methanol and alkaline fuel cells, has joined the U.S. Fuel Cell Council. SMP was just awarded a \$3.65 million award from the U.S. Department of Energy for their electrocatalyst research and development. [www.smpl.com](http://www.smpl.com)

**H Power Opens New Manufacturing and Testing Facility.** H Power Corp. has opened a new manufacturing and testing facility in Monroe, North Carolina. The company intends to use the 90,000 square foot facility to manufacture stationary, portable and mobile fuel cell products. <http://biz.yahoo.com/bw/010720/2104.html>

**Dynetek Establishes Production Plant in Germany.** Dynetek Industries Ltd. has incorporated a wholly owned subsidiary, Dynetek Europe GmbH. Located in Germany, the plant is expected to be fully operational in the latter part of 2001. <http://www.newswire.ca/releases/July2001/05/c9887.html>

**Millennium Cell Announces Alliances.** Millennium Cell has joined with System Consulting Rt., of Budapest, Hungary, to investigate means of cost-effectively manufacturing sodium borohydride, the chemical central to Millennium’s hydrogen generation technology. Millennium also agreed to work with U.S. Borax, Inc. to combine expertise and patent new methods for converting sodium borates to sodium borohydride. <http://biz.yahoo.com/bw/010717/2691.html>

**Hydrogen Fuel Cell Institute Launches Site.** The Hydrogen Fuel Cell Institute introduces its new web site – <http://h2fuelcells.org> - a portal to today’s news, stocks and original commentary on the fuel cell and hydrogen industry.

**Teledyne Forms New Company.** Teledyne Technologies Inc. combined its Energy Systems business

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unit with Energy Partners Inc. to create Teledyne Energy Systems Inc. The new company will continue focusing on hydrogen gas generators and thermoelectric power systems as well as proton exchange membrane (PEM) fuel cell stacks, test stands and systems.

**Energy Ventures Changes Names.** Energy Ventures Inc. has changed its name to Energy Visions Inc. <http://www.newswire.ca/releases/July2001/25/c5196.html>

**Snow Leopard Gets U.S. Patent for Fuel Cell.** Snow Leopard Resources, Inc. has received a U.S. Patent for its Ethyl Tech Hydrogen Sulphide fuel cell. <http://www.snow-leopard.com>

## **REQUESTS FOR PROPOSALS**

**Presidio Trust Seeks Megawatt-Size SOFC Cogeneration Plants.** The Presidio Trust is soliciting bids for up to four 1-MW solid oxide fuel cell cogeneration plants. Each plant may be comprised of multiple units, and should utilize natural gas in a combined heat and power system. The official solicitation will be posted on or around August 13, 2001, with bids due September 3, 2001. <http://www.presidiotrust.gov/trust/contracts.asp>

**AQMD to Fund Pilot Demonstrations of Residential Fuel Cells.** The South Coast Air Quality Management District (AQMD) is requesting proposals for the design, development, and installation of residential fuel cells within the District. There are two categories of proposals sought: Stand-Alone Natural Gas Fuel Cells and Reformer-Based Energy Station with Hydrogen Fuel Cells. Total funding available for this RFP is \$1 million. The deadline for proposals is September 7, 2001. <http://www.aqmd.gov/hb/attachments/01079b.doc>

**Stockholm Seeks Residential Fuel Cells.** The City of Stockholm is inviting fuel cell manufacturers to participate in a technology procurement for residential fuel cells in the 2-6 kW range. The pilot installations concern fuel cells for the new residential construction in a new city district in central Stockholm. The fuel cells will be fueled with biogas from a nearby sewage treatment plant. <http://www.stockholm.se/lip/english/index.asp?a=18&b=2>

**Fuel Cells for Underwater Vehicles.** The Naval Undersea Warfare Center has issued a Broad Agency Announcement (BAA) for New and Innovative R&D Technological Solutions. One of the topics in the solicitation is for "Thermal and Electric Propulsion", which includes projects on fuel cells for high-speed underwater vehicles, novel liquid phase fuels for use as a source of hydrogen for fuel cells, and micro electro magnetic system (MEMS) devices for energy conversion. <http://www.npt.nuwc.navy.mil/contract/announce/baa/2001-01/>

## **CONFERENCES/CALL FOR PAPERS**

**ABI's Fuel Cell Dynamics 2001.** Allied Business Intelligence (ABI) is sponsoring "Fuel Cell Dynamics 2001: Reality, Not Hype," October 10-11, 2001, at the Marriott Marquis in New York City, New York. Leading fuel cell companies will be presenting their views on the fuel cell industry, including future directions and opportunities. For more information, go to <http://www.alliedworld.com/energy/home.html>.

**Conservation or Crisis.** "Conservation or Crisis: A Northwest Choice," will be at the DoubleTree

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Hotel, Jantzen Beach, in Portland, Oregon on September 24-26, 2001. For more information, visit <http://www.bpa.gov/Energy/N/news/crisis.shtml>.

**Powering the Future.** The 5<sup>th</sup> International Distributed Power Conference, “Powering the Future,” will be September 24-26, 2001, at the Hotel Sofitel in Chicago, Illinois. Go to <http://www.intertechusa.com> for conference details.

**Fuels & Lubricants.** The 2001 SAE International “Fall Fuels & Lubricants” meeting and exhibition will be September 24-27, 2001, at the Marriott Rivercenter in San Antonio, Texas. For more information, go to <http://www.sae.org/ffl>.

**The Grassroots Climate Education Project.** The Green House Network is seeking individuals to participate in the Grassroots Climate Education Project on October 5-7, 2001. Visit <http://www.greenhousenet.org> for more information.

**forum f-cell 2001.** forum f-cell 2001 will be October 15-17, 2001, in Stuttgart, Germany. For more information, go to <http://www.f-cell.de>.

**EVS 18.** The 18<sup>th</sup> International Electric Vehicle Symposium takes place October 21-24, 2001, in Berlin, Germany. For conference details, go to <http://evs18.tu-berlin.de>.

**Fuel Cells for Portable Devices.** “Fuel Cells for Portable Devices” will be held October 22-23, 2001, at the Hotel Nikko in San Francisco, California. For more information, go to [www.f-cellsnetwork.com/NA-1660-01](http://www.f-cellsnetwork.com/NA-1660-01).

**Fuel Cell Technology.** “Fuel Cell Technology – Application & Opportunities,” will be at the Indianoil Institute of Petroleum Management, in Gurgaon, India, from November 26-27, 2001. For more information, email Dr. P.K. Sen at [pks@eil.co.in](mailto:pks@eil.co.in).

**Distributed Energy Resources.** “The Power to Choose: Creating an Expanded DER Industry,” will be November 28-30, 2001, at the Loews L’Enfant Plaza Hotel in Washington, DC. Email [cs@energetics.com](mailto:cs@energetics.com) for registration details.

**4<sup>th</sup> Business Case for Opportunity and Investment in Fuel Cells.** The Center for Business Intelligence (CBI) presents the “4<sup>th</sup> Business Case for Opportunity and Investment in Fuel Cells: Emerging Fuel Cell Technologies, Applications and Markets,” to be held December 3-4, 2001, at the Omni Colonnade in Miami, Florida. <http://www.cbINET.com>

**Ceramics in the New Millennium.** “Material Technologies for Fuel Cells and Power Electronics” will be held at the Hilton Hotel in Cocoa Beach, Florida, on January 14-15, 2002. Check out <http://www.ceramics.org/meetings/ECD2002/expo.asp> for more information.

**Ethanol Conference.** The “7<sup>th</sup> Annual National Ethanol Conference: Policy and Marketing” will be February 27 - March 1, 2002, at the Loews Coronado Bay Resort in San Diego, California. For more information, go to <http://www.ethanolRFA.org>.

*Fuel cells generate electricity without combustion by harnessing the energy created when hydrogen and oxygen are chemically combined. Fuel Cells 2000 is an independent, nonprofit activity dedicated to the commercialization of fuel cell technologies.*