

news from **FUEL CELLS 2000**

Fuel Cell Technology Update – January 2014

Happy New Year! I hope everyone had a wonderful holiday. I know I say it every year, but 2014 is definitely the Year of the Fuel Cell!

Also, it's not too late to sign up for the U.S. Pavilion at the 10th International Hydrogen and Fuel Cell Expo that will take place February 26-28, 2014, at Tokyo Big Sight in Tokyo, Japan. It is a huge show and a great way to showcase your products to or find partners with international companies. There are also several other concurrent shows that week focused on PV, Wind, Batteries and Smart Grid and attendees/exhibitors can freely go to any and all expositions, increasing networking and business opportunities. Best of all, you don't have to pay anything up front, but can wait until right up to the show! For more information, please go to <http://www.fcexpo.jp/en>, check out <http://image.email-reedexpo.com/lib/fe6d15707560007f7117/m/1/FuelCellExpo2014Ver4.pdf> or email me (jennifer@fuelcells.org) for more details.

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DOE Awards \$7 Million to Four Fuel Cell Projects.

The U.S. Department of Energy (DOE) awarded more than \$7 million for four fuel cell and hydrogen projects. These projects include:

- \$3 million to the Center for Transportation and the Environment (CTE) to develop a fuel cell hybrid electric walk-in delivery van with a 150-mile range per fueling. The project will also retrofit 15 UPS delivery vans with fuel cell hybrid power trains and test them at UPS distribution facilities across California. Partners include the University of Texas Center for Electromechanics, Electric Vehicles International, Hydrogenics USA and Valence Technology;
- \$3 million to FedEx Express to develop a hydrogen fuel cell delivery truck also with a range of up to 150 miles per fueling and to test 20 of these trucks at FedEx facilities in Tennessee and California. FedEx will work with Plug Power and Smith Electric Vehicles on the project;
- \$900,000 to Air Products and Chemicals, Inc. to develop a cost-effective tube trailer with Structural Composites Industries for hydrogen delivery and storage that can withstand high pressures. Air Products will test this new technology under real-world operating conditions at hydrogen fueling stations in southern California;
- \$250,000 to Sprint to deploy fuel cell-powered backup power systems for rooftop telecommunications equipment. Sprint will be working with fuel cell manufacturers Alteryg Systems, CommScope Inc., First Element Energy LLC, and ReliOn Inc. as well as hydrogen providers IGX Group and Air Products and Burns & McDonnell Engineering Inc.

[http://energy.gov/articles/energy-department-invests-over-7-million-commercialize-cost-effective-hydrogen-and-fuel?_utma=1.149180959.1327338960.1388070368.1388075394.315&_utmb=1.2.10.1388075394&_utmc=1&_utmz=1.1383312307.275.71.utmcsr=links.govdelivery.com|utmccn=\(referral\)|utmcmd=referral|utmct=/track&_utmv=-&_utmh=33315390](http://energy.gov/articles/energy-department-invests-over-7-million-commercialize-cost-effective-hydrogen-and-fuel?_utma=1.149180959.1327338960.1388070368.1388075394.315&_utmb=1.2.10.1388075394&_utmc=1&_utmz=1.1383312307.275.71.utmcsr=links.govdelivery.com|utmccn=(referral)|utmcmd=referral|utmct=/track&_utmv=-&_utmh=33315390)

TRANSPORTATION APPLICATIONS

First Two FCEVs Arrive in France.

Hyundai Motor France and Air Liquide have delivered the two first fuel cell electric vehicles (FCEV) to be registered in France, deployed in Sassenage, near Grenoble.

The two ix35 cars are part of a series of 1,000 FCEVs that the Hyundai plans to build by 2015 at its factory in Ulsan, South Korea.

<http://airliquide.com/en/rss/air-liquide-gets-the-keys-to-the-two-first-fuel-cell-electric-vehicles-registered-in-france.html>

Fuel Cell Special Delivery.

Also in France, residents in the Franche-Comté region, in the eastern part of the country, will start receiving their mail delivered via a vehicle using a fuel cell as a battery range extender. La Poste (the French postal service) will be testing three Renault Kangoo Z.E. electric mail delivery vehicles fitted with fuel cells from French fuel cell manufacturer, Symbio FCell. The fuel cells will be used to extend the range (doubling it!) of the battery vehicles for the long, cold and sometimes treacherous routes. Testing will also be expanded to include vans, light trucks and heavy trucks.

<http://symbiofcell.com/live-news.html>

Ballard Signs MOU with Van Hool.

Ballard Power Systems has signed a non-binding Memorandum of Understanding (MOU) with Van Hool NV in support of the manufacture and further deployment of fuel cell buses. The two companies plan to respond to the EU Hydrogen Fuel Cell Joint Undertaking request for proposals as well as future ones springing from the EU's Horizon 2020 program. In 2014, there will be 27 Van Hool fuel cell buses in public transit operation in Europe, powered by Ballard FCvelocity®-HD6 fuel cell power modules. For the newly funded buses, Ballard will deliver the next-generation FCvelocity®-HD7 power module. The MOU also provides for the establishment of a dedicated service and parts center at Van Hool facilities in Belgium.

<http://www.ballard.com/about-ballard/newsroom/news-releases/news12051301.aspx>

BMW Testing Nine Fuel Cell Material Handling Vehicles from Linde.

As part of H2IntraDrive, a €2.9 million (US\$3.9 million) research project funded by the German Federal Ministry of Transport, Building and Urban Development under the National Innovation Program for Hydrogen and Fuel Cell Technology, Linde Material Handling has delivered a fleet of nine fuel cell hybrid vehicles (four tow trucks and five industrial trucks) to BMW's plant in Leipzig, Germany. The vehicles are powered by renewable hydrogen and will be evaluated by the Chair for Material Handling, Material Flow and Logistics at the Munich Technical University.

http://www.linde-mh.com/en/main_page/news/pressreleases/pressreleases_1_4032.jsp

Viessmann Using Fuel Cell Forklift at Warehouse.

After a successful trial with the state of Hesse's H2BZ Hydrogen and Fuel Cell Initiative, Viessmann is now using a fuel cell-powered forklift truck from Still at its Allendorf factory in Germany. Viessmann plans to produce its own renewable hydrogen from methane via excess wind or solar power on site with a new electrolyzer that will be built next to the company's two biogas plants.

<http://www.still.de/589+M5f84658b548.0.30.html>

STATIONARY APPLICATIONS

FuelCell Energy Surpasses Two Billion kWh.

FuelCell Energy reached a significant milestone last month with its fleet of Direct FuelCell® (DFC)® power plants, generating more than two billion kilowatt hours (kWh) since the first commercial installation in 2003. There are now more than 110 DFC plants installed at more than 50 locations globally.

<http://fcel.client.shareholder.com/releasedetail.cfm?ReleaseID=812803>

PORTABLE/BACKUP POWER

Ballard Participating in Indian Telecom Project.

Ballard Power is supplying its ElectraGen™-ME fuel cell systems for a pilot project in Idea Cellular's India telecom network. The fuel cell systems will be utilized in combination with solar technology to generate continuous power at five wireless base station sites. Funding for the project and a feasibility study has

been made available through a grant from the United States Trade and Development Agency (USTDA). The trial is scheduled to take place in early 2014.

<http://www.ballard.com/about-ballard/newsroom/news-releases/news12101301.aspx>

ReliOn Introduces Upgraded E-200.

ReliOn has launched its newly enhanced E-200 fuel cell system, fueled by hydrogen and boasting a net power output improvement of 14% over the rated power of the earlier version. The E-200 fuel cell also offers an industry first field selectable 12, 24, 36 and 48 volt DC output.

<http://www.relion-inc.com/news.asp#51>

MICRO FUEL CELLS

Neah Power Systems Buzzing About BuzzBar.

Neah Power Systems, Inc. completed its BuzzBar test site and provided a video update about the new suite of products.

<http://www.fuelcelltoday.com/news-events/news-archive/2013/december/neh-power-provides-video-update-on-new-buzzbar%E2%84%A2-suite-of-products>

<http://www.neahpower.com/assets/neh-power-completes-buzzbar-site-test.pdf>

MILITARY APPLICATIONS

GSPEL Fuel Cell Lab Ribbon Cutting Kicks off GM Collaboration.

The U.S. Army Tank Automotive Research, Development and Engineering Center (TARDEC) held a ribbon cutting ceremony at its new Ground System Power and Energy Laboratory (GSPEL) Fuel Cell Lab, initiating the beginning of fuel cell testing and collaboration with General Motors.

<http://tardec.army.mil/Documents/2013/TARDEC-Press-Release-120413.pdf>

FUELS/REFORMERS/STORAGE

New Station Opens in Netherlands.

A new hydrogen fueling station opened in Helmond, the Netherlands as part of the AutomotiveCampusNL, owned by WaterstofNet with support from the European Interreg IV Flanders-Netherlands program. The hydrogen fueling station, built by Ballast Nedam, features a Hydrogenics HySTAT™ electrolyzer and can supply up to 65 kg of hydrogen per day. The station will be used to fuel new prototypes of hydrogen buses and a small fleet of hydrogen-powered garbage trucks. Within the next few months the station will be expanded to include a 700 bar dispenser.

<http://www.hydrogenics.com/about-the-company/news-updates/2013/12/04/new-hydrogen-fueling-station-and-bus-launched-in-the-netherlands-with-hydrogenics-technology>

Air Products Receives PA Grant for Pilot Demonstration.

Pennsylvania awarded a \$209,046 Alternative Fuel Incentive Grant (AFIG) to Air Products to deploy a next phase pilot demonstration of its hydrogen fueling technology in Lehigh County.

http://www.portal.state.pa.us/portal/server.pt/community/news_releases/14288

ITM Power Begins Injecting Hydrogen into German Gas Pipeline.

ITM Power, with its partners Mainova Aktiengesellschaft and NRM Netzdienste Rhein-Main GmbH, has begun injecting hydrogen into the German gas distribution network. The ITM Power rapid response electrolyzer plant has been delivered and commissioned ahead of schedule and the compliance and permitting work has been completed to enable the incorporation of hydrogen via the compliant mixing plant.

<http://www.itm-power.com/news-item/injection-of-hydrogen-into-the-german-gas-distribution-grid/>

2014 Hydrogen Student Design Contest.

The theme of the 2014 Hydrogen Student Design Contest is "Development of a Drop-in Hydrogen Fueling Station," challenging university-level students to plan and design a fueling station module that combines mass-production, standardized equipment with highly automated usability, producing a low-cost,

transportable module in an ISO container that can be dropped-in and be operational within hours, providing enough fuel for 50 fuelings a day without the need for hydrogen delivery for at least three days.
<http://www.hydrogencontest.org/theme.asp>

There will be a free webinar featuring last year's winners and information about the 2014 contest on Tuesday, January 14th at 2:00 pm EST.
<http://www1.eere.energy.gov/hydrogenandfuelcells/webinars.html>

MATERIALS/COMPONENTS/TESTING

REPORTS/MARKET STUDIES

Business Case for Fuel Cells 2013.

Fuel Cells 2000 has released *The Business Case for Fuel Cells 2013: Reliability, Resiliency & Savings*, which takes a look at some of the new markets for fuel cells and the benefits they are providing customers. The report also highlights all of the sales and installations of fuel cells to businesses in the past year. Lots of great new information!
<http://www.fuelcells.org/pdfs/2013BusinessCaseforFuelCells.pdf>

State of the States: Fuel Cells in America 2013.

The *State of the States: Fuel Cells in America 2013* report highlights leadership among U.S. states to grow domestic fuel cell manufacturing and deployment. The report recognizes California, Connecticut, New York, Ohio, and South Carolina for leading the country with continued and expanded support for fuel cell and hydrogen technologies — helping to reduce emissions, improve energy efficiency, and create new job and business opportunities. The report also highlights efforts in Delaware, New Jersey, Texas, and other states to advance fuel cell technologies.
http://www1.eere.energy.gov/hydrogenandfuelcells/pdfs/state_of_the_states_2013.pdf

2012 Fuel Cell Technologies Market Report.

DOE also released the *2012 Fuel Cell Technologies Market Report* – detailing trends in the U.S. fuel cell and hydrogen technologies market. The report highlights continued growth in fuel cell commercial deployments, including material handling equipment such as forklifts as well as combined heat and power systems and back-up and auxiliary power units. Nationally, U.S. fuel cell shipments grew from 1,000 units in 2008 to nearly 5,000 units in 2012, while domestic manufacturing increased by more than 60 percent from 2011 to 2012.
<http://energy.gov/articles/energy-dept-reports-us-fuel-cell-market-production-and-deployment-continues-strong-growth>

Grid Energy Storage.

DOE released a report, *Grid Energy Storage* that includes discussion of hydrogen and fuel cells.
<http://energy.gov/sites/prod/files/2013/12/f5/Grid%20Energy%20Storage%20December%202013.pdf>

CA ZEV Guidebook.

The California State government has published “Zero-Emission Vehicles in California: Community Readiness Guidebook,” highlighting many aspects of ZEV readiness, including necessary infrastructure, planning and zoning, permitting guidelines, greening local fleets and encouraging consumers through incentives and outreach. Although focused much on battery electric vehicles and charging stations, there is a hydrogen section and information on fuel cell vehicles included.
http://opr.ca.gov/docs/ZEV_Guidebook.pdf

REQUESTS FOR PROPOSALS/FUNDING OPPORTUNITES

DOE RFI.

DOE's Fuel Cell Technologies Office has issued a request for information (RFI) seeking feedback from interested stakeholders regarding strategies for a robust market introduction of hydrogen supply, infrastructure, and FCEVs. This input will augment financing strategies that DOE analyzes for public

deployment of infrastructure for supporting FCEV introduction in U.S. markets. Such financing strategies should maximize financing, for example, with debt and equity, while minimizing public incentives.
<https://eere-exchange.energy.gov/Default.aspx#Foald9651a5e7-5dfb-4f1e-bc07-0e02a8a83bdf>

FCH JU Call for Proposals 2013 Part 2.

The Fuel Cells and Hydrogen Joint Undertaking (FCH JU) issued the second part of its 6th annual call for proposals, offering €23 million (US\$31 million) for fuel cell and hydrogen projects. Focus areas include Large-scale demonstration of buses and refueling infrastructure VI; Demonstration of hydrogen production from biogas for supply to vehicle refueling applications; Demonstration of portable generators, back-up power and uninterruptible power systems; and Development of a European framework.
http://ec.europa.eu/research/participants/portal/doc/call/fp7/fch-ju-2013-2/1585109-fch-ju-2013-2_call_fiche_en.pdf

MISCELLANEOUS

Flush with Fuel Cells.

The California Institute of Technology (Caltech) will incorporate a fuel cell stack made by SAFCCell, Inc. into its award-winning solar toilet to enhance the lavatory's energy-efficiency. The solar-powered prototype toilet, winner of the Reinventing the Toilet Challenge issued by the Bill and Melinda Gates Foundation in August of 2012, uses a chlorine reactor to rapidly disinfect wastewater. The hydrogen resulting from that solar driven electrochemical reaction will be diverted to a fuel cell, which will generate additional electricity for powering the lavatory at night or as needed for other lavatory components.
http://www.safcell.com/_press/20131210-Caltech%20Solar%20Toilet.pdf

CONFERENCES

For a complete list of conferences, please go to <http://www.fuelcells.org/newsroom/conferences/>.

10th International Hydrogen and Fuel Cell Expo.

The 10th International Hydrogen and Fuel Cell Expo will take place February 26-28, 2014, at Tokyo Big Sight in Tokyo, Japan. For more information, please go to <http://www.fcexpo.jp/en>.

EHEC 2014.

The European Hydrogen Energy Conference 2014 will be held March 12-14, 2014, in Seville, Spain. The deadline for submitting an abstract has been extended to October 20, 2013. For more information, please go to <http://www.ehec.info/>.

ACT Expo.

The Alternative Clean Transportation (ACT) Expo will be held May 5-8, 2014, in at the Long Beach Convention Center in Long Beach, California. For details on the Expo, please go to <http://www.actexpo.com/> and to receive a discount on registration, use the code FC50.

WHEC 2014.

The 20th World Hydrogen Energy Conference (WHEC) will be held June 15-20, 2014, at the KDJ Convention Center in Gwangju Metropolitan City, Korea. For more information, please go to <http://whec2014.com>.

4th New Energy Forum 2014.

BIT's 4th New Energy Forum 2014: Fueling a Beautiful World of Cleanness and Sustainability will be held September 21-23, 2014, in Qingdao, China. For conference information, please go to <http://www.bitcongress.com/nef2014/>.

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