

news from **FUEL CELLS 2000**

Fuel Cells 2000's Fuel Cell Technology Update – December 2012

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Fuel Cells 2000 has released the latest version of its popular report, the **Business Case for Fuel Cells 2012: America's Partner in Power**. The report highlights how fuel cells work in tandem with other technologies and fuels including renewable such as solar, wind and biogas and traditional ones such as natural gas or batteries. The report also profiles several companies leading the way with fuel cell installations and deployments and showcases recent purchases by the private sector.

<http://www.fuelcells.org/wp-content/uploads/2012/12/FC-Business-Case-2012.pdf>

Have a wonderful holiday season! If you or your company are looking a tax-deductible organization to donate before the end of the year, Fuel Cells 2000 is a non-profit, 501 (c)(3) organization and all contributions help to keep all of our resources free of charge.

<http://www.fuelcells.org/about-us/support-fuel-cells-2000/>

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TRANSPORTATION APPLICATIONS

P&G Purchases Additional Fuel Cells for Lift Trucks.

Procter & Gamble Co. has bought Plug Power's GenDrive® fuel cells for its electric lift truck fleet at its manufacturing facility located in Mehoopany, Pennsylvania. This brings P&G's total to more than 340 fuel cell systems to convert trucks at four sites – California, Louisiana, North Carolina and now Pennsylvania.

http://www.plugpower.com/News/PressReleases/12-11-29/PLUG_POWER_ANNOUNCES_ADDITIONAL_SITE_FOR_PROCTER_GAMBLE.aspx

STATIONARY APPLICATIONS

Samsung Purchases 3 MW of UTC Power Fuel Cells.

Samsung Everland has purchased seven UTC Power PureCell® Model 400 fuel cell systems to be installed at the Korean South East Power Co. Ltd.'s (KOSEP) Bundang facility in the Gyeonggi province. The fuel cells will provide 3 megawatts (MW) of clean electricity to the local grid and thermal energy to the district heating business. The project is expected to be operational in spring 2013.

<http://www.utcpower.com/pressroom/pressreleases/seven-purecell-systems-to-generate-clean-sustainable-power-for-the-greater>

AQMD Installing UTC Unit at Headquarters.

South Coast Air Quality Management District (AQMD) will install a UTC Power PureCell® System Model 400 fuel cell at its headquarters in Diamond Bar, California. AQMD's first fuel cell, purchased in 1994, ran for more than 50,000 hours.

<http://www.utcpower.com/pressroom/pressreleases/purecell-system-to-power-california-air-quality-agency>

Microsoft to Install FuelCell Energy Unit in Wyoming.

FuelCell Energy, Inc. will install a 300-kW Direct FuelCell® (DFC®) fuel cell power plant at Microsoft's Data Plant project in Cheyenne, Wyoming. The fuel cell system will be installed at the Dry Creek Water Reclamation Facility and utilize renewable biogas to provide power to the Data Plant. Any excess power

will be provided to the water reclamation facility to offset their electric costs. The fuel cell will be configured to be grid independent to provide continuous power to the data center in the event of a grid outage.

<http://fcel.client.shareholder.com/releasedetail.cfm?ReleaseID=722316>

FuelCell Energy Receives Mega MW Order from POSCO.

FuelCell Energy, Inc. has received a \$181 million, multi-year order from its South Korean partner, POSCO Energy for 121.8 MW of fuel cell kits and services to be manufactured at the FuelCell Energy production facility in Torrington, Connecticut. The first 1.4 MW delivery will occur in May 2013, after a previous order for 70 MW is finished. FuelCell Energy also announced the execution of a series of strategic initiatives with its South Korean partner, POSCO Energy, to expand the market for stationary fuel cell power plants in Asia, including a license agreement for POSCO Energy to manufacture DFC® power plants in South Korea and sell throughout Asia. A production facility will be built at the POSCO Energy campus in Pohang, South Korea, beginning in early 2013, to produce up to 140 MW of fuel cell components annually, with equipment initially procured for an expected annual production volume of 70 megawatts.

<http://fcel.client.shareholder.com/releasedetail.cfm?ReleaseID=718539>

<http://fcel.client.shareholder.com/releasedetail.cfm?ReleaseID=718546>

Ballard Completes First Phase on Residential Fuel Cell Systems for Africa.

Ballard Power Systems has successfully completed first phase of work, and has already begun the second phase, on fuel cell-powered generators for the African rural home market with its partner Anglo American Platinum. Under the agreement, Anglo American Platinum has committed to fund development and testing of the planned home generator product for remote African communities. Work to date has included a market feasibility study, testing of a proof-of-concept system based on Ballard and Dantherm Power's technology, and initial work on a prototype system.

<http://www.ballard.com/about-ballard/newsroom/news-releases/news11081201.aspx>

PORTABLE/BACKUP POWER

Ballard and Nokia Developing Mobile Networks in Japan.

Nokia Siemens Networks is working with Ballard Power Systems, Inc. to develop mobile networks that would be able to operate during power blackouts in Japan. NTT DOCOMO has evaluated the Nokia Siemens Networks Flexi Multiradio base station with an integrated fuel cell for potential commercial deployment, installing a system at a DOCOMO R&D Center test site in Japan's Yokosuka Research Park.

<http://www.ballard.com/about-ballard/newsroom/news-releases/news11191201.aspx>

WATT Fuel Cell Advances Platforms.

WATT Fuel Cell Corporation announced several advancements in the production of its portable and small stationary solid oxide fuel cell system platforms for commercial and military applications. These include refinement of the company's cell manufacturing process, reduction of costs in cell and stack production and balance-of-plant component, completion of system testing on a 500-watt propane-powered unit, and preparation for initial product rollouts in 2013.

http://www.wattfuelcell.com/news/commerciallyviablefuelcellsystems_pr/

Ballard Systems Power Through Sandy.

The 17 Ballard ElectraGen™-ME fuel cell systems that are installed in a local telecom network in the Bahamas began operating automatically as grid power was lost when Hurricane Sandy hit the area. As a group, the 17 5-kW systems provided the equivalent of one month of backup power over a concentrated seven day period during and after the storm; producing more than 1,200 kilowatt-hours of electricity.

<http://www.ballard.com/about-ballard/newsroom/news-releases/news11061201.aspx>

ACAL BFi and SFC Energy Enter Agreement.

As part of a new distribution agreement, ACAL BFi will now also offer SFC Energy AG's portfolio of EFOY Pro fuel cell generators as part of their Power Solutions portfolio to meet customer demands.

<http://www.sfc.com/en/SFC-Energy-Group-and-ACAL-BFi-close-distribution-agreement>

MICRO FUEL CELLS

MILITARY APPLICATIONS

SFC Energy Delivers Fuel Cells to German Army.

SFC Energy AG has delivered the integrated fuel cell systems the German Bundeswehr ordered back in March 2012. The systems consist of the portable JENNY fuel cell, the SFC Power Manager, a hybrid battery specially tailored to the system, and a solar panel that is used by soldiers to power radios, navigational equipment, night-vision equipment, laser range-finders, portable computers, and PDAs. The net order volume amounts to just under €5 million (US\$6.4 million).

<http://www.sfc.com/en/Delivery-of-major-order-from-German-Bundeswehr>

FUELS/REFORMERS/STORAGE

Air Products to Build Solar Hydrogen Station in India.

Air Products has been awarded a contract with India's University of Petroleum and Energy Studies (UPES) to build the country's first solar powered renewable hydrogen fueling station. The station will be part of a mass public transit bus fueling and vehicle demonstration program administered by UPES. The station, which will generate hydrogen from solar energy via an electrolyzer and be located at the Solar Energy Centre near Delhi, is scheduled to be on-stream in July 2013.

<http://www.airproducts.com/company/news-center/2012/11/1128-air-products-india-wins-renewable-hydrogen-fueling-station-contract.aspx>

Hydrogen Station Opens in Turkey.

Hydrogenics Corporation officially opened its electrolysis-based hydrogen fueling station at Golden Horn, Istanbul. The 350 bar station can generate up to 65 kilograms per day of hydrogen.

http://www.hydrogenics.com/invest/News_Details.asp?RELEASEID=724231

ITM Power Consortium Wins EU Award, ITM Signs Agreement with AEG.

ITM Power has received confirmation of a €3.59 million (US\$4.6 million) grant award from the European Union's Joint Technology Initiatives for the development of an advanced refueling system using ITM Power's high pressure hydrogen electrolysis technology. For the three year program, ITM Power will be working a consortium to develop an all electrochemical high pressure (70MPa) hydrogen refueling station for fuel cell electric vehicles. ITM Power has also signed an agreement with AEG Power Solutions (AEG PS) to cooperate in integrating its electrolyzer technology with AEG's power control electronics.

<http://www.itm-power.com/news-item/e3-59m-grant-award-for-an-advanced-refueling-product/>
<http://www.itm-power.com/news-item/rapid-response-electrolyser-power-systems-integration/>

Acta Enters Five-Year Agreement with FutureE.

Acta S.p.A. has signed a five-year non-exclusive supply agreement with FutureE Fuel Cell Solutions GmbH to integrate Acta's EL500 series electrolyzers into FutureE's fuel cell and electrolyzer system, Jupiter Independence, for back-up and off-grid power.

<http://www.sentpressrelease.com/email/attachment/download?hash=00fdbb4fec98f32f628c1c4cb5d34de8e10efbcdcac7b98f49ffbbe1511d2066>

Element 1 Debuts New Syngas Generator.

Element 1 Corporation has unveiled its new laboratory syngas generator, the LT-10. The syngas generator produces a real reformat mixture for accurate research, development, and testing for a variety of industrial and commercial applications.

<http://www.e1na.com/pdf/Element%201%20Press%20Release%20LT-10%20112912.pdf>

MATERIALS/COMPONENTS/TESTING

Metro Mold Signs Long Term Supply Agreement with UTC Power.

Metro Mold & Design, LLC has signed a long-term agreement with UTC Power to be the exclusive provider of composite graphite plate components for its PureCell® Model 400 stationary fuel cell system through the end of 2017.

<http://www.metromold.com/>

ITM Awarded Grant to Develop MEAs.

ITM Power has received confirmation of a €3.9 million (US\$4.6 million) grant award to its consortium to develop Proton Exchange Membrane (PEM) Fuel Cell Membrane Electrode Assemblies (MEAs) with ultra-low platinum loadings for automotive applications.

<http://www.itm-power.com/news-item/eu-funding-for-pem-fuel-cell-innovation-impact/>

SBIR/STTR Winners.

The U.S. Department of Energy (DOE) announced that two fuel cell/hydrogen projects were selected as part of the FY 2012 Small Business Innovation Research and Small Business Technology Transfer (SBIR/STTR) Phase I Release 3 award winners. Nextgen Aeronautics, Inc. of Torrance, California, will incorporate low-cost nanoreinforcement into high-pressure all-composite tank designs for hydrogen storage and Treadstone Technologies, Inc. of Princeton, New Jersey, will develop a novel, low cost structured metal bipolar plate technology for low temperature PEM fuel cells for transportation applications.

<http://science.energy.gov/~media/sbir/pdf/awards%20abstracts/fy12/FY12PIR092712.pdf>

WVU Researcher Wins Grant to Study SOFC Cathodes.

West Virginia University associate professor Xingbo Liu is the recipient a DOE grant to study the development of low-cost, solid oxide fuel cell (SOFC) technology and advance cathode performance in SOFCs.

<http://wvutoday.wvu.edu/n/2012/11/27/wvu-s-liu-earns-doe-grant-to-study-next-generation-of-fuel-cell-cathodes>

REPORTS/MARKET STUDIES

New Business Case for Fuel Cells Report.

Fuel Cells 2000 has released the latest version of its popular report, the Business Case for Fuel Cells 2012: America's Partner in Power. The report highlights how fuel cells work in tandem with other technologies and fuels including renewable such as solar, wind and biogas and traditional ones such as natural gas or batteries. The report also profiles several companies leading the way with fuel cell installations and deployments and showcases recent purchases by the private sector.

<http://www.fuelcells.org/wp-content/uploads/2012/12/FC-Business-Case-2012.pdf>

Hydrogen Report.

The Institution of Gas Engineers and Managers (IGEM) has released a new technical report, "Hydrogen: Untapped Energy?" which examines hydrogen as a fuel source with a focus on the UK.

<http://www.igem.org.uk/media/232929/Hydrogen-Report-Complete-web.pdf>

German Fuel Cell CHP Report.

A German analysis was published in October that examines the potential ecological and economic benefits of small fuel cell combined heat and power (CHP) generation systems under 10 kW. The study, which was commissioned by the Fuel Cell Initiative and the Fuel Cells Working Group of the VDMA (a German engineering association) and conducted by the Institute for Energy and Environmental Research Heidelberg (IFEU), lays out two scenarios for fuel cell deployment compared to no fuel cells at all.

<http://www.now-gmbh.de/en/press/2012/ifeu-study-of-the-benefits-of-innovative-chp-technology.html>

Fuel Cell Report.

A new report from BCC Research, "Fuel Cells Market for Residential, Commercial and Military Power," is now for sale.

<http://www.reportsnreports.com/reports/205876-fuel-cells-for-residential-commercial-and-military-power.html>

REQUESTS FOR PROPOSALS

DOE SBIR/STTR.

DOE has issued its FY 2013 Phase I Release 2 Funding Opportunity Announcement (DE-FOA-0000801) for the Small Business Innovation Research (SBIR) and Small Business Technology Transfer (STTR) Programs. Issued by the Office of Basic Energy Science, Topic 6 is "Hydrogen Dispenser Technologies." <http://science.energy.gov/sbir/funding-opportunities>

MISCELLANEOUS

Fuel Cell Challenge Winners Announced.

Three University of South Carolina (USC) teams each won \$25,000 from the Fuel Cell Collaborative, a partnership between the University of South Carolina (USC), City of Columbia, SCRA, EngenuitySC, and Midlands Technical College, for its Fuel Cell Challenge V. The purpose of this year's Challenge was to engage interdisciplinary student teams from USC through two contests: the Industry Challenge, where students create solutions for industry proposed problems; or the Innovation Challenge, where students submit business plans to commercialize new hydrogen and fuel cell technologies.

http://www.fuelcellcollaborative.com/client_resources/News/FCCChallengeStudentTeamAnnouncement20121108.pdf

Ballard Wins Deloitte Green™ 15.

Ballard Power Systems is a 2012 recipient of the Deloitte Technology Green™ 15 Award, designed to showcase Canadian companies that are creating economically viable intellectual property in the field of green technology.

<http://www.ballard.com/about-ballard/newsroom/news-releases/news11131201.aspx>

CONFERENCES

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

DOE Webinar.

DOE will host a webinar from 12:00 pm to 1:00 pm (EST) on December 11, 2012, discussing a tool for estimating the economic impacts of fuel cells in early market applications. The tool, titled JOBS and economic impacts of Fuel Cells (JOBS FC), estimates the jobs created by deploying fuel cells in forklifts, backup power, and prime power applications. To register for this free webinar, go to

<https://www1.gotomeeting.com/register/797395577>.

IDGA Tactical Power Sources Summit.

The Institute for Defense & Government Advancement (IDGA) 10th Annual Tactical Power Sources Summit will be held January 28-30, 2013, at the Hilton Alexandria Mark Center in Alexandria, Virginia.

For more information, please go to <http://www.tacticalpowersourcessummit.com/>.

9th International Hydrogen and Fuel Cell Expo.

The 9th International Hydrogen and Fuel Cell Expo will be held February 27-March 1, 2013, in Tokyo, Japan. If you are a U.S. company interested in exhibiting, contact Wayne Kakos at

wkakos@reedexpo.com to learn about options.

<http://www.fcexpo.jp/en/>

HANNOVER MESSE 2013.

The HANNOVER MESSE 2013, Group Exhibit Hydrogen + Fuel Cells will be held April 8-12, 2013, in Hanover, Germany. For more information, please go to <http://www.h2fc-fair.com>.

HFC 2013 Seeking Abstracts.

Hydrogen and Fuel Cells 2013 will take place June 16-19, 2013, at the Vancouver Convention Center in Vancouver, Canada. The conference is now accepting technical abstracts until December 8th.

<http://www.hfc2013.com/abstract/>

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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.