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CHBC - Report - July 2010

August 13, 2010

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EVENTS:

23. September 13-15 2010, Hydrogen Action Summit / 6th Annual MSHBC Hydrogen Implementation

Conference, Grand Forks, North Dakota. Organized and hosted by the University of North Dakota EERC's National Center for Hydrogen Technology (NCHT), in partnership with U.S. Senator Byron Dorgan's Energy Research Corridor, and the MSHBC. www.undeerc.org/H2Summit/Default.aspx



24. January 17 - 21, 2011, International Conference on Renewable Energy Jaipur, India. Organized by Centre for Non-Conventional Energy Resources, University of Rajasthan, Jaipur, India. Includes a session on fuel cell and hydrogen technology. www.uniraj.ac.in/icre2011/. Schedule to speak are: Prof. Anil V. Virkar (University of Utah) "Solid oxide fuel cells (SOFC)," USA and Prof. Ping Chen (Dalian Institute of Chemical Physics) "Development of amide-hydride systems for hydrogen storage," China

NEWS:

1. Ballard Extends Agreement to Supply Fuel Cells to Plug Power - Ballard Power Systems of Vancouver has extended its agreement with Plug Power Inc to supply fuel cells for its GenDrive power units, which are used in fork lift trucks. Ballard has been exclusive fuel cell supplier for Plug Power's GenDrive power units since 2008.

From now on, Plug Power will also become the exclusive systems integrator for Ballard's fuel cell stack, when selling into the North America material handling market. The two companies claim that they have 85 per cent market share selling fuel cells for material handling. Customers include Walmart Canada, United Natural Foods, Inc., Sysco Houston, FedEx Freight, Wegmans, and Whole Foods. The source of this information is from the Hydrogen Journal at <http://www.thehydrogenjournal.com/displaynews.php?NewsID=492&PHPSESSID=1sge8n692fti0tksvbrt84dou4>

2. UNFI Deploys Plug Power GenDrive Fuel Cells at Distribution Center in FLA - Sustainability-focused company chooses green power to decrease carbon footprint. - Plug Power Inc, a leader in providing clean, reliable energy solutions, announced that its GenDrive™ fuel cell units are currently powering a fleet of The Raymond Corporation's electric lift trucks at United Natural Foods, Inc.'s distribution center in Sarasota, Florida.

UNFI purchased 65 GenDrive fuel cell units on December 24, 2009. UNFI added 29 new Raymond lift trucks to its fleet, and will retrofit 36 existing Raymond lift trucks to run off the GenDrive fuel cells. The Raymond Corporation, and Authorized Raymond Sales and Service Center Abel Womack, provided fuel cell compatible Raymond Reach-Fork® trucks, pallet trucks, orderpickers and counterbalanced lift trucks to UNFI. The GenDrive units, manufactured at Plug Power's Latham, NY, facility shipped in early June.

By powering the lift truck fleet at its 352,000 square-foot distribution center with Plug Power's GenDrive fuel cell units, UNFI made a commitment to adopt a hydrogen economy at its facility. Productivity gains are expected at its Sarasota operation as lift trucks will be able to move product at a faster pace. By using GenDrive, battery droop is also eliminated. Material handling equipment operates at full performance as GenDrive continuously performs like a fully charged battery.

Operational costs at the facility are expected to be reduced from the replacement of UNFI's large battery infrastructure with two compact hydrogen dispensers placed in strategic locations throughout the facility. Operator and truck downtime are also anticipated to decrease as a result of GenDrive units being refueled with hydrogen in less than three minutes. For the source of this information, go to PlugPower's website at: <http://www.plugpower.com/newsroom/pressreleases.aspx?action=details&newsid=348>

3. US Foodservice Deploys 40 Fuel Cell Pallet Trucks in CA - US Foodservice-San Francisco has purchased 40 direct methanol fuel cells to power pallet jacks in its Livermore, Calif., food distribution facility. U.S. Foodservice expects to save 620,000 kilowatt-hours annually using the OorjaPac Model 3 units from Oorja Protonics.

Additionally, U.S. Foodservice is gaining significant operational efficiencies as the fuel cells eliminate the need for a battery swap mid-shift. This translates to an estimated four hours of productivity savings per day or about 920 hours per year, which greatly accelerates the return on investment.

Forty pallet jacks are being retrofitted with the DMFCs. After a month-long trial period, U.S. Foodservice saw demonstrably increased productivity using the DMFCs. With longer charges than traditional batteries, the fuel cells outlast their predecessors, running for a full eight hours, versus an average four to six hours.

www.oorjaprotonics.com, Source: Fuel Cell Today, <http://www.fuelcelltoday.com/online/news/articles/2010-07/US-Foodservice-Deploys-Fuel-Cell>

4. Horizon's New MiniPocket Hydrogen Fuel Cell - Horizon launches pocket-size fuel cell power plant for portable electronics.

- World's first fuel cell product to compete on cost with both disposable and rechargeable batteries
- Refilling just one cartridge 100 times avoids using 1000 disposable AA alkaline batteries
- 100% recyclable, no heavy metals, no toxic liquids used as fuel

Go to the **Utube video** at: <http://www.bookofjoe.com/2010/07/pocket-hydrogen-fuel-cell.html>, or read the **News Release** at: <http://www.horizonfuelcell.com/files/MinipakPR2010.pdf>.

5. Toshiba Launches DMFC in Japan as External Power Source for Mobile - TOKYO-Toshiba Corporation, a world leader in the development of fuel-cell technology for handheld electronic equipment, announced the launch of its first direct methanol fuel-cell product: Dynario, an external power source that delivers power to mobile digital consumer products. Dynario, together with a dedicated fuel cartridge for refueling on the go, will be launched in Japan, in a limited edition of 3,000 units only, and will be exclusively available at Shop1048, Toshiba's direct-order web site for digital consumer products in the Japanese market. Orders will be accepted from October 22, and shipping will start on October 29.

The power consumption of mobile electronic devices, including mobile phones, has greatly increased with added functionality, including TV reception and Internet connectivity. As a result, battery exhaustion has become a major concern. Dynario's DMFC delivers almost instant refueling that untethers electrical equipment from AC adapters and power outlets. It runs on mix of methanol and ambient oxygen, and the chemical reaction between the two in the fuel cell produces electricity. For the source of this article, go to: <http://www.fuelcelldispatch.com/PortablePower/tabid/2705/articleType/ArticleView/articleId/122/Toshiba-Launches-Direct-Methanol-Fuel-Cell-in-Japan-as-External-Power-Source-for-Mobile-Electronic-Devices.aspx>

6. Hydrogenics Electrolyser get Orders from Russia and Middle East - Hydrogenics Corporation, an Ontario manufacturer of hydrogen generation and fuel cell products, reports new deals from Russia and the Middle East.

In Russia, Hydrogenics will supply a large light bulb manufacturer in Tomsk, central Russia, with a HySTAT electrolyser to provide hydrogen.

In the Middle East, it will supply an electrolyser to be used at a new seawater desalination and power plant in Saudi Arabia called Shuabibah-3. The plant will burn oil to desalinate water and create electricity. It will supply 194 million gallons of water and 900 megawatts of electricity daily. This order is jointly with Siemens AG. Both orders are expected to be shipped during the second half of 2010.

For more information, visit the source of this article at the Hydrogen Journal website at

[http://www.thehydrogenjournal.com/displaynews.php?NewsID=493&](http://www.thehydrogenjournal.com/displaynews.php?NewsID=493&PHPSESSID=bqc4r6ddl9amccr49tn210rsu1)

[PHPSESSID=bqc4r6ddl9amccr49tn210rsu1](http://www.thehydrogenjournal.com/displaynews.php?NewsID=493&PHPSESSID=bqc4r6ddl9amccr49tn210rsu1). For a related story, "Siemens to Supply Power Plant Components to Saudi Arabia," visit <http://www.energetica-india.com/siemens-to-supply-power-plant-components-to-saudi-arabia/>.

7. Electron Beam Helps Build a Fuel Cell in Russia - Russian physicists from Tomsk (the Institute of High-Current Electronics, Siberian branch of Russian academy of sciences) suggest using some particular features of high-current electron beam for building fuel cells for hydrogen economy.

Protein synthesis is a very complicated process, which is executed at a ribosome, special cell organelle. A hydrogen economy is proposed to solve some of the negative effects of using hydrocarbon fuels where the carbon is released to the atmosphere and is thought to cause various negative effects on climate of our planet. Today hydrogen is used mainly in two ways: first is ammonia production, which later is used as a fertilizer. Second is when hydrogen is used to convert heavy petroleum sources into lighter fractions for further use as fuels. For the complete article, go to: http://www.russia-ic.com/education_science/science/breakthrough/1130/

8. FuelCell Energy to Supply FC at Frozen Food Processing Plant, LOGANEnergy to Purchase & Install-

Danbury, CT, FuelCell Energy, Inc. a leading manufacturer of high efficiency ultra-clean power plants using renewable and other fuels for commercial, industrial, government, and utility customers, announced the sale of a 300 kilowatt DFC300 fuel cell power plant and five year service contract. LOGANEnergy, a dedicated fuel cell energy services company, will purchase and install the fuel cell power plant at the frozen food processing facility of Carla's Pasta, Inc. in South Windsor, CT...

"We operate our frozen pasta and pesto plant 24 hours per day and were attracted by the fuel cell power plant's reliability and energy security as it generates power right on our property," said Sergio Squatrito, Vice President, Operations, Carla's Pasta, Inc. "The high efficiency of the fuel cell power plant decreases our fuel and electrical costs, and lowers our carbon footprint. Our environmental stewardship is further enhanced with the installation of these fuel cells as the energy generation process emits virtually zero harmful pollutants."

The fuel cell power plant is expected to provide 60 percent of the energy needs of the recently expanded Carla's Pasta, Inc. facility. The fuel cell power plant will generate ultra-clean base load electricity and will be configured to recover the byproduct heat from the fuel cell energy conversion process. The byproduct heat will be used for facility heating and heating hot water for the production process and general facility needs. This combined heat and power (CHP) configuration can achieve up to 80% efficiency, which is more than twice as efficient as power delivered via the transmission grid. The power plant is expected to be operational by mid 2011.

Sam Logan, Jr., CEO LOGANEnergy, commented, "We are providing a fully functional turn-key fuel cell power plant for our customer, Carla's Pasta, Inc. Partnering with FuelCell Energy allows us to offer our customers economical power generation that is highly efficient, environmentally friendly and reliable." For the entire article, go to <http://fcel.client.shareholder.com/releasedetail.cfm?ReleaseID=492678>.

9. Sprint Tests Hydrogen Cells for Backup Power Capabilities - Sprint Nextel has been looking for alternatives to diesel backup generators that are typically the only way to keep calls coming when hurricanes, wildfires, or electrical-system overloads cut the power to cell-phone towers.

In the fall, with the help of a \$7.3 million federal grant and \$10 million of its money, the telecom will begin rolling out a second phase of its experiments with hydrogen fuel cells. Sprint began using the cells in 2005, eventually adding around 250 of them to cell towers in areas most likely to see power failures, said Bob Azzi, senior vice president of network for the Overland Park, Missouri-based company. With the U.S. Department of Energy grant, the company is adding 260 cells to towers in California, New York, New Jersey, and Connecticut and upgrading 70 cells in Texas and Louisiana.

To read more, go to: <http://www.portfolio.com/views/blogs/the-tech-observer/2010/07/18/sprint-tests-hydrogen-cells-for-backup-power-capabilities#ixzz0v6jXfzXc>.

10. Forestry Commission Joins ITM Power's On Site Hydrogen Trials - ITM Power, the energy storage and clean fuel company, is pleased to announce that the Forestry Commission has signed an agreement to participate in the Hydrogen On Site Trials (HOST) of ITM's transportable high pressure refueling unit (HFuel) that it is currently being built with support from the Technology Strategy Board, (TSB) and partners Gateway to London, and Revolve Technologies, as announced in February 2010.

Commencement of HOST will begin in 2011, and will encompass the operation and refueling of two HICE (Hydrogen Internal Combustion Engine) Revolve Technologies Ford Transit vehicles with hydrogen produced on site at the point of use, at sites operated by participating companies and in the Gateway to London development area. The Forestry Commission joins DHL Supply Chain and London Stansted Airport, who signed agreements to join HOST in June 2010.

Membership of HOST provides each partner with a one week free trial of HFuel and the two Revolve HICE transit vehicles, and an option to lease both HFuel and vehicles for additional week(s). The demonstrations are 100% managed and operated by ITM personnel in liaison with site owners' operations and management.

Commenting for ITM Power, CEO Graham Cooley stated "We are delighted that the Forestry Commission, the largest land manager in Britain and the biggest provider of outdoor recreation, has agreed to join ITM's HOST programme in order to appraise the potential of ITM's technology to decarbonise forestry vehicles. The Forestry Commission has an important role as a member of the government's Renewable Energy Deployment and Environmental Issues Project Board."

"It's all about producing a clean fuel at the point of use, addressing the important sustainability issue of eliminating the carbon footprint of the fuel supply chain. The HOST trials will play an important role in demonstrating the potential of ITM's HFuel technology to the land management sector particularly where the supply of fuel is an issue in remote areas. We expect companies from other sectors to be joining the HOST scheme in the near future."

Jeffrey Livingston, Head of Mechanical Engineering Services at the Forestry Commission stated, "The Forestry Commission is a world leader in the development of sustainable forest management, and we have a policy of constantly exploring ways to reduce the environmental impact of all our activities, including the operation of our vehicle fleet. For example, Mechanical Engineering Services have been 'greening' resources through the use of alternative fuels, lubricants, and chemicals, and the potential use of 'green' hydrogen, a clean fuel derived from water and renewable sources of energy, fits well with this policy and programme."

ITM will be holding an Open Day on the 15th September from 12.30 which will also include the launch of the Transportable Hydrogen Refuelling Station (HFuel). Please Click Here to register.

The source of this article is Rebecca Markillie, Marketing Coordinator, [ITM Power](#) .

ITM Power plc. Graham Cooley, CEO 0114 244 5111
Tavistock Communications. Simon Hudson / Andrew Dunn 020 7920 3150
Forestry Commission. Charlton Clark 0131 314 6500

11. Two Ford Ranger Truck Engines Burn Liquid Hydrogen to Power the Boeing Phantom Eye - Boeing unveiled the Phantom Eye, a hydrogen powered unmanned spy plane. The aircraft is designed to be constantly deployed in the stratosphere over a specific area, while providing intelligence, reconnaissance, surveillance and communication.

This state of the art UAV (Unmanned Aerial Vehicle) is equipped with a liquid-hydrogen propulsion system that powers two four-cylinder truck engines. For the rest of the article, go to: <http://crispgreen.com/2010/07/boeing-phantom-eye-hydrogen-plane/>

Item 12 taken out because it was an old posting.

13. Singapore's First Hydrogen-Powered Public Bus - SINGAPORE: Singapore's first hydrogen-powered public bus will hit the streets in August.

It'll be the first such bus in Southeast Asia and promises to help save the environment. Called GreenLite, it does not emit carbon and is "low" on noise. It's powered by a battery system and fuel cell technology that "converts" hydrogen into electrical energy and creates pure water as a by-product. The bus is jointly developed by researchers from Singapore's Nanyang Technological University (NTU) and China's Tsinghua University over seven months. Go to source of this article at: <http://www.channelnewsasia.com/stories/singaporelocalnews/view/1070444/1.html>

14. Proposal for UK Gas Power Station with Carbon Capture + Fuel Cells - UK Company B9 Gas, an affiliate of B9 Coal, is announcing plans to build a gas power station using carbon capture, as an entry to the UK's Department of Energy and Climate Change carbon capture and storage demonstration competition.

AFC Energy of the UK, a specialist in alkaline fuel cells, is supporting the project. Instead of just burning the gas, it will use it to make hydrogen (via steam methane reforming). The hydrogen will be passed into an AFC Energy alkaline fuel cell to make electricity. The carbon dioxide emitted from the reforming operation will be buried. The company believes that it can capture 99 per cent of the carbon dioxide this way. A B9 spokesperson told Reuters that they calculate the capital cost of a conventional gas turbine at \$835,800 per megawatt, compared to \$300,000 per megawatt for an AFC alkaline fuel cell (although this does not include the cost of the reformer).

For more information, visit the source of this article at the Hydrogen Journal's website
<http://www.thehydrogenjournal.com/displaynews.php?NewsID=491&PHPSESSID=bqc4r6ddl9amccr49tn210rsu1>

15. Venice Inaugurates Emission-free Hydrogen Plant - Officials in the Italian city of Venice have welcomed the start-up of an innovative power plant that is designed to showcase the benefits of advanced hydrogen technologies.

The hydrogen-fuelled combined cycle plant at Fusina is the first industrial-scale facility of its kind and is part of a wider set of projects backed by Italy's Hydrogen Park consortium.

It will generate around 60 GWh/year and avoid the emission of more than 17,000 tonnes of carbon dioxide per year, says Enel, which built the 16 MW facility.

The Fusina hydrogen plant has a total output of 12 MW and its waste heat is used to generate high temperature steam to produce an additional 4 MW in an adjacent coal-fired power plant. It uses 1.3 tonnes per hour of hydrogen, which is sourced from a nearby petrochemical plant via a 4 km-long pipeline.

Enel and its Hydrogen Park partners have invested €50 million in the plant. The consortium - formed by the Venice Industrial Union in 2003 - seeks to promote the development and application of hydrogen technologies in transport and power generation in the industrial area of Porto Marghera.

Enel initially tested the plant using methane as a fuel in early 2009 before switching to hydrogen in August that year. Go to the source at: <http://fuelcellworks.com/news/2010/07/19/venice-inaugurates-emission-free-hydrogen-plant/>

16. UK Fuel Cells and Hydrogen Associations Merge - The UK's Hydrogen Association and Fuel Cells UK Association have merged to form the UK Hydrogen and Fuel Cells Association.

The new association hopes that with membership of both the leading fuel cell and hydrogen companies, it will have "greater influence over key public and private stakeholders to support hydrogen energy and fuel cell research." The association also aims to be an "authoritative point of contact and a clear, informed and current view on research, development and demonstration priorities for Government, other funding agencies and key influencers." For more information, visit the source of this article at The Hydrogen Journal's website: <http://www.thehydrogenjournal.com/displaynews.php?NewsID=483&PHPSESSID=bqc4r6ddl9amccr49tn210rsu1>

17. H2 Logic Joins Auto Giants in European Hydrogen Project - H2 Logic, the Danish developer of hydrogen fuel cell transport and infrastructure solutions, has joined auto giants Daimler and Fiat in a major European project to test hydrogen fuel cell powered cars and hydrogen refuelling stations, reports national daily newspaper Børsen. H2 Logic

will supply fuel cells to five of the 17 vehicles involved in the project, as well as establishing a fixed hydrogen refuelling station in Oslo and a mobile refuelling station that will be used round Europe when the cars tour around to promote the benefits of hydrogen technology. The five vehicles that H2 Logic will supply fuel cells for are Norwegian Think cars. The other 12 comprise 10 from Mercedes-Benz and two from Alpha Romeo. For more information, go to: <http://energyportal.eu/latest-energy-savings-news/8957-h2-logic-joins-auto-giants-in-european-hydrogen-project.html>

18. Air Products to Build Plant to Supply Nitrogen and Hydrogen to POSCO in India - Air Products announced that INOX Air Products Ltd., its joint venture in India, has signed a long-term contract with POSCO Maharashtra Steel Private Limited (PMSPL) to supply on-site nitrogen and hydrogen gases to its new facility located in Vile Bhagad, Maharashtra, Western India. PMSPL is a subsidiary of POSCO, the world's fourth largest steel producer by output, and the site will be POSCO's second steel galvanizing project outside of Korea and the first investment for production in India. For the rest of the article, visit Air Products website at: <http://www.airproducts.com/PressRoom/CompanyNews/Archived/2010/15Jul2010.htm>

19. Waste Fat from Frying Fuels Hydrogen Economy - Pour that dirty fat from the fryer down the sink -- it could be used to make the fuel of the future. Hydrogen has been tipped as a cleaner, greener alternative to fossil fuels. But scientists have struggled to find a way to make it that doesn't consume vast amounts of energy, use up scarce natural resources, or spew out high levels of greenhouse gas.

Researchers at the University of Leeds have now found an energy-efficient way to make hydrogen out of used vegetable oils discarded by restaurants, takeaways and pubs. Not only does the process generate some of the energy needed to make the hydrogen gas itself, it is also essentially carbon-neutral.

"We are working towards a vision of the hydrogen economy," said Dr Valerie Dupont, who is leading the Leeds-based project. "Hydrogen -based fuel could potentially be used to run our cars or even drive larger scale power plants, generating the electricity we need to light our buildings, run our kettles and fridges, and power our computers. But hydrogen does not occur naturally, it has to be made. With this process, we can do that in a sustainable way by recycling waste materials, such as used cooking oil."

To read the rest of the article, go to the sciencedaily.com website at: <http://www.sciencedaily.com/releases/2010/07/100727094820.htm>

20. House Unveils Renewable Energy Tax Credit Bill - House Ways and Means Committee Chairman Sander Levin, D-Mich., has released a draft bill that would provide tax credits for manufacturers of renewable energy equipment and funding for other sources of clean energy... The proposed legislation would modify the Section 48C advanced manufacturing tax credit to provide an uncapped 30 percent investment tax credit for expenditures to re-equip, expand or modify facilities that manufacture and fabricate solar energy property, fuel cell power plants, and advanced energy storage systems (including batteries for advanced vehicles). For the entire article, cut and paste the following link. <http://www.webcpa.com/news/House-Unveils-Renewable-Energy-Tax-Credit-Bill-55047-1.html>

Item 21 taken out because it was an old posting.

22. DOE Selects Four Advanced IGCC/Biomass Gasification Projects to Test Hydrogen Membrane Separation Technology - The US Department of Energy (DOE) has selected four advanced coal gasification projects for funding of up to \$5.9 million, with an addition \$1.7 million of non-Federal cost sharing funds. The projects will test membrane technology to separate hydrogen and carbon dioxide (CO₂) from coal or coal/biomass-derived synthesis gas (syngas), such as from Integrated Gasification Combined Cycle (IGCC) power systems.

The work will be managed by the Office of Fossil Energy's National Energy Technology Laboratory. For more information, go to the source of this article at: <http://www.favstocks.com/doe-selects-four-advanced-coal-or-coalbiomass-gasification-projects-for-up-to-5-9m-in-funding-to-test-membrane-separation-technology/2721619/>