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CHBC - Report - June 2010

July 9, 2010

Dear Readers,

This e-blast is being resent to acknowledge the proper reference to the articles from the the Hydrogen & Fuel Cell Letter.

Thank you.

EVENTS:

1. **July 13-15, 2010 - SEMICON West** will be held at the Moscone Center in San Francisco. For more information, please visit, <http://www.semiconwest.org/index.htm>, accessed July 6, 2010 from California Fuel Cell Partnership, <http://www.fuelcellpartnership.org/outreach/events>.

2. **July 16, 2010, Alt Fuels Advisory Committee Meeting and Hearing to Discuss the Draft Investment Plan**, Beginning at 9 a.m., California Energy Commission (CEC), Sacramento, California. Remote attendance is possible through WebEx. For more information, go to the CEC's website at <http://www.energy.ca.gov/calendar/events/index.php?com=detail&eID=1069&year=2010&month=7>.

3. **August 9-10, 2010 - Fifth Annual New Energy Symposium (NES)** - New York, New York, USA. For more information, please visit <http://www.neny.org/nes/2010/home>. Accessed July 6, 2010 from Fuel Cell 2000, <http://www.fuelcells.org/news/conf.html>. NYSERDA and Kliener Perkins will be on the panel.

4. **August 28, 2010 - The California Fuel Cell Partnership, along with the South Coast Air Quality Management District** will be showcasing hydrogen fuel cell vehicles. There will also be informational materials available. Location: Chino City Hall, C Street, Chino, CA, Time: 8:00am-3:00pm, accessed July 6, 2010 from California Fuel Cell Partnership, <http://www.fuelcellpartnership.org/outreach/events>.

5. **September 5-8, 2010, EcoGen 2010**, Sydney Convention and Exhibition Centre, Australia, For more information, please visit <http://www.ecogen2010.com/index.php>. Accessed July 6, 2010 from http://ecogeneration.com.au/news/david_rand_talks_hydrogen_at_ecogen_2010/042437/.

6. **September 27-28, 2010, f-cell 2010** - Stuttgart, GERMANY -. For more information, please visit <http://www.f-cell.de/englisch/Home/>

7. **October 1-2, 2010, Santa Monica Alt Car Expo** will be held at the Santa Monica Civic Auditorium in Santa Monica, CA. CaFCP will have hands-on displays, as well as have fuel cell vehicles in the Ride&Drive. For more information, visit <http://www.altcarexpo.com/>. Accessed July 6, 2010 from California Fuel Cell Partnership, <http://www.fuelcellpartnership.org/outreach/events>.

8. **October 18-22, 2010, 2010 Fuel Cell Seminar & Exposition** - San Antonio, Texas, USA. For more information, please visit <http://www.fuelcellseminar.com/>

9. **October 19-20, 2010, Remote 2010 Conference and Expo** - Dallas, Texas, USA. For more information, please visit http://www.remotemagazine.com/rem-conf10/rem10_index.php, July 6, 2010 from Fuel Cell 2000, <http://www.fuelcells.org/news/conf.html>.

10. **October 19-21, 2010, European Future Energy Forum**, For more information, please visit <http://www.europeanfutureenergyforum.com/>, July 6, 2010 from Fuel Cell 2000, <http://www.fuelcells.org/news/conf.html>.

11. **November 9-10, 2010, GovGreen Conference and Exhibition** - Washington, DC, USA -. For more information, please visit <http://www.ceileadership.org/>, July 6, 2010 from Fuel Cell 2000, <http://www.fuelcells.org/news/conf.html>. Dr. Dorothy Robyn, Deputy Under Secretary of Defense for Installation and Environment is scheduled to be a keynote speaker.

THE REST OF THE NEWS:

12. Batteries, Hybrids, Take Precedence over Hydrogen, Fuel Cells at Merit Review

13. Fuel-Cell Research Is Worth Risk, Says National Academies Report

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THE REST OF THE NEWS:

12. Batteries, Hybrids, Take Precedence over Hydrogen, Fuel Cells at Merit Review

This article is abstracted from the Hydrogen & Fuel Cell Letter with permission from Peter Hoffmann, Editor and Publisher, July 2010 Vol XXV/No. 7, ISSN1080-8019, p 1 and 2, <http://www.hfcletter.com/>, info@hfcletter.com, (845) 876-5988.

WASHINGTON, D.C. - Relegation of hydrogen and fuel cell technologies to the back seat, behind a focus on efficiency, battery electrics and hybrids, was evident in various ways at the Energy Department's Annual Merit Review and Peer Evaluation Meeting here last month.

In terms of size, it was apparently the biggest event ever: the June 7-11 meeting drew more than 1,600 registered attendees who were flooded with information from about 600 presentations of which some 85% were reviewed by more than 300 reviewers. Last year, close to 1,300 people showed up to take in about the same number of presentations (H&FCL June 09 - H&FCL will plan to run a second report next month on some of the presentations).

The shift in emphasis was already hinted at in the very title: Last year, it was called the "2009 Hydrogen Program and Vehicles Technologies Program" meeting, to be switched around this year to "2010 Vehicles Technologies and Hydrogen Programs" meeting. Once upon a time, it was known simply as DoE's Hydrogen Program Annual Merit Review & Peer Evaluation Meeting, which in 2008 drew 1,000 participants and almost 300 presentations (H&FCL July 08).

Hydrogen in "More Distant Future"

That focus shift came through as well in plenary session's remarks by Henry Kelly, DoE's principal deputy assistant secretary for energy efficiency and renewable energy (EERE), the umbrella office for hydrogen and fuel cell technologies. Kelly listed higher efficiencies for internal combustion engines, hybrids and "possibly" fuel cell vehicles as principal priorities, using electricity and a hydrogen infrastructure "in the more distant future" to support these transportation technologies. The good news is that the United States has the "freedom of options" but with some limits, he added, "but we don't have options for "heavy trucks," for example. "We need liquid fuel, at least in current thinking," Kelly added, including ethanol and butanol.

DoE also needs to work with other agencies such as the Transportation Department in fuel cell bus development, for example. And in what sounded like a more hopeful portent, he said DoE has to watch and be involved in what is happening internationally in energy infrastructure development: Secretary Steven Chu is keen on the idea that the United States is in line with "what other countries are doing," he said.

Touching on similar themes and priorities, Matthew Rogers, senior advisor to the secretary and director of the Office of the American Recovery and Reinvestment Act, suggested in his introductory remarks that technologies that can take the country "far beyond CAFÉ" efficiency standards may be batteries at \$100/kWh, engines that get 60 miles per gallon, and sustainable biofuels at \$2/gallon. Current rates of oil imports and use, current rates of carbon dioxide emissions are unsustainable, but "the good news is that we are turning a corner. The rate of innovation in transportation is exceptional," and, he said, the country has the potential to meet this "massive systems integration challenge" and change and create a new infrastructure:

"Take CO2 and sunlight, water and enzymes, and integrate," was his shorthand prescription.

13. Fuel-Cell Research Is Worth Risk, Says National Academies Report

A government-industry collaborative research program on advanced automotive technologies should continue to work on fuel cells and other far-off technologies, in addition to more immediately promising transportation options such as electric vehicles and biofuels, according to a review by the National Academies.

The FreedomCAR (Cooperative Automotive Research) and Fuel Partnership -- which includes the Energy Department, major automakers, five major oil and gas companies and two electric utilities -- performs a range of research and development on vehicle technologies.

Created in 2002 by the George W. Bush administration, the program initially focused primarily on fuel-cell systems that would use hydrogen to store energy. But in 2009, the Obama administration proposed zeroing out funding for the related DOE program -- a cut that Congress reversed through appropriations -- and pushed the FreedomCAR and Fuel

An assessment published today by the academies' National Research Council repeated a message it sent a year ago in response to that change: Hydrogen and fuel-cell research is an appropriate task for the public-private research effort. <http://www.nytimes.com/gwire/2010/06/30/30greenwire-fuel-cell-research-is-worth-risk-says-national-79211.html>

14. Seen Elsewhere: Proton Energy/SunHydro's - Full-Page Hydrogen Ad in "New York Times"

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NEW YORK – For those among us who don't get to read the increasingly rare print edition of the "New York Times," (Tom Sullivan, Chairman of Proton Energy and SunHydro, took out a) full-page ad, June 1, page A-17 in support of hydrogen. The text of the ad reads as follows:

IN THE TIME IT TAKES TO CLEAN UP THE DISASTER IN THE GULF...HYDROGEN CAN MAKE GASOLINE A FUEL OF THE PAST.

It is very frustrating sitting here watching millions of gallons of oil spew into our ocean. Even more frustrating is knowing we have the technology with hydrogen to make gasoline extinct.

WHY HYDROGEN?

- The only emission from a hydrogen car is a bit of clean water
- Hydrogen is made from water
- All the major car companies have hydrogen cars – 3 have set major production for 2014
- Fill up is about the same time as existing gas fueling
- Hydrogen is proven to be as safe or safer than other fuel
- No pollution is produced from a hydrogen vehicle – if made with a PEM electrolyzer powered by the sun or wind it is 100% pollution free
- We can stop spending the 1 billion dollars a day importing foreign oil
- America could be the leader in exporting this technology

Thank you for listening and GO HYDROGEN!

Tom Sullivan
Chairman
Proton Energy
SunHydro

The H&FCL hopes to carry an interview with Sullivan in the next issue.

15. Hydrogen Fuel Cell Technology in African Telecom Market

Afrox's PowerCube system offers an efficient power source for remote towers without access to the electricity grid, says Afox's Robert Carlton-Shields. A new hydrogen fuel-cell technology could revolutionize the African telecoms market, by bringing clean, low-cost power to remote cell towers, says Robert Carlton-Shields, Afox business manager for special products and chemicals.

The local industrial gases company has partnered with UK-based Diverse Energy to conduct field trials of hydrogen-from-ammonia fuel technology in three regions across Africa. For the rest of the article, visit http://www.itweb.co.za/index.php?option=com_content&view=article&id=34590:hydrogen-tech-trials-begin&catid=69&Itemid=58

16. UTC Power Transit Bus Fuel Cell System Sets Durability Record

UTC Power, a United Technologies Corp., announced it has set durability records for its latest generation transit bus fuel cell system.

A PureMotion® Model 120 fuel cell powerplant aboard an Alameda-Contra Costa Transit District (AC Transit) bus operating in the Greater Oakland, California, area has surpassed 7,000 hours in service with the original cell stacks and no cell replacements, and another has exceeded 6,000 hours.

"Based on industry data we've seen, these durability milestones are unmatched in the industry," said Ken Stewart, UTC Power Vice President-Transportation. "We've worked very hard at UTC Power over the past several years to improve our fuel cell stack durability, which is recognized as a key challenge to commercializing fuel cell vehicles. These operating hour numbers demonstrate our significant progress."

Three of AC Transit's buses are equipped with UTC Power fuel cell systems and have now traveled more than 255,000 miles, with an average fuel economy that is 65 percent better than the control fleet of diesel buses running the same routes and duty cycles. For the rest of the article, visit <http://www.prnewswire.com/news-releases/utc-power-transit-bus-fuel-cell-system-sets-durability-record-97386654.html>

17. FuelCell Energy to Supply Direct FuelCell Power Plants to California Utility

FuelCell Energy, Inc. announced that Pacific Gas and Electric Company (PG&E) has ordered two 1.4 Megawatt DFC1500 fuel cell power plants to install as utility-owned fuel cells on the campuses of California State University East Bay – Hayward Hills (CSU – East Bay) and San Francisco State University (SFSU). The total value of these contracts is approximately \$12.6 million, which will include engineering, procurement and construction services for the installation of the power plants...

"Just as California is serving as a model for the rest of the nation in enacting ambitious policies to reduce climate change and our dependency on oil, these partnerships are also leading the way in moving us toward a cleaner, more sustainable future," said Governor Schwarzenegger. "Fuel cells are another great resource to provide clean and efficient energy while reducing emissions. I applaud all of these groups for coming together and working towards a shared

solution of helping to power these campuses with clean energy."
<http://fcel.client.shareholder.com/releasedetail.cfm?ReleaseID=476221>

18. Hydrogenics Chosen for Grid Stabilization Project

Hydrogenics Corporation ("Hydrogenics" or the "Company"), a leading developer and manufacturer of hydrogen generation and fuel cell products, announced that it has been selected by Ontario's Independent Electricity System Operator (IESO) to participate in the Alternative Technologies for Regulation Demonstration Project for utility-scale grid stabilization. Over a two month period, the load from a Hydrogenics HySTATM electrolyzer will provide regulation services within Ontario's electricity market by responding to power signals from the IESO.

Using an electrolyzer currently installed at Hydrogenics' corporate headquarters, the IESO and Hydrogenics will work together to assess how well the hydrogen equipment follows regulation signals in a real-world scenario. In doing so, Hydrogenics will aim to provide better balancing of electrical supply and demand while alleviating local transmission constraints.

"We are very pleased to have been selected for this ambitious study by Ontario's IESO," said Daryl Wilson, President and CEO. "We believe this demonstration will showcase the smart-grid capability of utility-scale hydrogen technology, which can and will be used for both grid stabilization and energy storage in the years to come." For the rest, visit http://www.hydrogenics.com/invest/news_Details.asp?RELEASEID=483969

19. AFC Deploys Operational Alkaline Fuel cell with Linc Energy in Australia

UK-based fuel cell developer AFC Energy has deployed an alkaline fuel cell system, which is now in operation at Linc Energy's underground coal gasification (UCG) demonstration facility in Chinchilla, Australia.

AFC Energy believes that this is the first hydrogen fuel cell deployed with UCG, and as such represents a major step towards the opportunity of combining UCG and alkaline fuels cells as a breakthrough technology for cleaner coal worldwide. The company sees this combination of technologies as potentially the cleanest way to use coal.

Hydrogen produced from Linc Energy's UCG process is an ideal feedstock for AFC Energy's low-cost alkaline fuel cell systems. Linc Energy will utilize a simple membrane gas separation process on the UCG gases, to ensure a hydrogen-rich mix is available for the fuel cell system. For the rest of the story, visit <http://www.renewableenergyfocus.com/view/10639/afc-deploys-operational-alkaline-fuel-cell-with-linc-energy-in-australia/>

20. University of North Florida Gets \$9.4M For Direct Methanol Fuel Cell Laptop Research

Researchers in the University of North Florida's School of Engineering working to make laptop batteries smaller, more efficient and better for the environment got a major boost with \$9.4 million in federal contracts.

The multimillion contracts from the U.S. Army and the U.S. Department of Energy for fuel cell research at UNF is the largest the university has ever received for technology research.

The researchers are working together with graduate students to design direct methanol fuel cells, called DMFC, that could replace batteries used in laptops by both the military and the average consumer. For the rest of the article, visit <http://www.news4jax.com/technology/24098346/detail.html>

21. UltraCell Introduces Industry's First Water Resistant and Buriable Fuel Cell System

UltraCell Corporation announced the shipment to the U.S. Military of the UltraCell Snorkel fuel cell system with an ultra-rugged two-gallon fuel tank. The Snorkel system provides the end user virtually silent and hidden fuel cell operation for long term and unattended covert power.

The new Snorkel system provides a fuel cell enclosure that enables buried and camouflaged operation in a wide range of environments with UltraCell's XX25 or XX55 fuel cells. The system can be paired with a broad range of fuel containers specific to the desired mission. Up to 25,000Whr (1000hr at 25W and 2500hr at 10W) of fuel can be connected to the enclosure. For the rest of the article, visit [Marketwire.com at: http://www.marketwire.com/press-release/UltraCell-Introduces-Industrys-First-Water-Resistant-and-Buriable-Fuel-Cell-System-1282582.htm](http://www.marketwire.com/press-release/UltraCell-Introduces-Industrys-First-Water-Resistant-and-Buriable-Fuel-Cell-System-1282582.htm)

22. Bloom Box Goes Into Operation Atop Electric Power Board (EPB) Building in Chattanooga, Tennessee

Chattanooga now has its own 100 KW Bloom Energy Server to power up a section of the EPB Building downtown, officials announced at a press conference recently.

Congressman Zach Wamp and Bloom Energy principal co-founder and CEO Dr. K.R. Sridhar were on hand to unveil the technology, which they said could produce clean, reliable, affordable power practically anywhere, allowing clean energy to be created onsite.

"The Tennessee Valley has been involved with this technology for a long time, and we're now at the point of demonstrating its viability as a complement to the grid," Congressman Wamp said. "The ultimate goal would be to manufacture fuel cells in Tennessee and further advance the new manufacturing boon in the Tennessee Valley Corridor."

Congressman Wamp said he first learned about solid oxide fuel cell technology seven years ago from Dr. Sridhar. That meeting led to a partnership of UTC, the National Center for Computational Engineering (SimCenter), EPB, TVA and The Enterprise Center with Bloom Energy, which brought about the testing and demonstration of the new fuel cell in Chattanooga... The Bloom Box, housed on the top floor of the EPB parking garage, will provide power for 30,000 square feet of the EPB building...

It is currently operating off of a natural gas supply. Rep. Wamp said if it can be converted to be powered by Tennessee-grown switch grass "it will take it to negative carbon." For the entire article, visit [chattanooga.com at: http://www.chattanooga.com/articles/article_178810.asp](http://www.chattanooga.com/articles/article_178810.asp)

23. Walmart Canada to use GenDrive Fuel Cells from Plug Power

Plug Power Inc., announced that its GenDrive™ fuel cell units will power Walmart Canada's fleet of electric lift trucks at the company's sustainable refrigerated distribution center in Alberta, Canada.

The GenDrive systems will be integrated into trucks manufactured by Crown Equipment Corporation. Both perishable and freezer goods will be distributed in Walmart Canada's newly built facility to support retail stores in Western Canada.

The GenDrive freezer units will operate in conditions as low as -20°F (-29°C). For the rest of the article, visit Plug Power's website at: <http://www.plugpower.com/newsroom/pressreleases.aspx?action=details&newsid=344>

24. SYSCO Deploys 98 Plug Power GenDrive Fuel Cells at Houston Distribution Center

Plug Power Inc., reliable energy solutions, announced that Sysco has deployed 98 GenDrive™ fuel cell units to power a fleet of The Raymond Corporation's electric lift trucks at its new Houston, Texas distribution center. GenDrive product is placed into 72 Raymond Model 8400 pallet trucks and 26 Raymond Model 7400 Reach-Fork® trucks.

The units will be immediately put to work, moving both dry and freezer goods throughout the 585,000 square foot facility. Cold-storage areas of the distribution center can reach temperatures as low as negative eight degrees Fahrenheit. Unlike lead-acid batteries that do not react well under cold temperatures, fuel cells continue to meet or exceed customer requirements despite the sub-zero temperature.

Indoor hydrogen fueling dispensers, provided by Air Products are strategically located throughout the distribution center. Truck operators can quickly refuel the GenDrive units in less than 2 minutes, completely eliminating the need to change, store, charge and maintain multiple lead-acid batteries per truck. For the rest of the article, visit <http://www.marketwatch.com/story/sysco-deploys-98-plug-power-gendrive-fuel-cells-at-houston-distribution-center-2010-06-17>

25. US Fuel Cell Forklifts to get Tax Credits

US Senator Charles Schumer of Albany is introducing US legislation to give tax credits to companies, which make fuel cells for heavy machinery, according to the Albany Business Review.

Until now, tax credits have been available for fuel cells for cars and trucks but not heavy machinery. News taken from <http://www.h2journal.com/displaynews.php?NewsID=455>. The article can be accessed from <http://www.bizjournals.com/albany/stories/2010/05/31/daily17.html>.

26. Boeing Testing Hydrogen Plane in Missouri

Boeing is testing a hydrogen powered plane "cart" at Perryville Airport, Missouri, according to news service the Southeast Missourian.

The cart is used to hold the aircraft using liftoff. It is described as a "wagonlike" structure with a U-shaped centre. The aircraft has a wingspan of 150 feet and needs support during take-off. The airport was chosen because it has a long runway, of 7,000 feet.

The test is part of the Phantom Eye project, to develop unmanned aircraft powered by liquid hydrogen, which can fly at high altitudes for up to 4 days.

"The city has an airport that meets their need and we were excited to help out," City administrator Brent Buerck is quoted as saying. The news is taken from <http://www.h2journal.com/displaynews.php?NewsID=470&PHPSESSID=ghpetlff1nk2k8kuc29p052lq5>. The article can be accessed from <http://www.semissourian.com/story/1642136.html>.

27. Quantum Fuel Systems Technologies and Toyota Hydrogen Hybrids Delivered to Norway

The threat of global warming has captured the attention of the global community. Different countries have already taken steps to reduce that risk. In the United States, President George W. Bush calls for the reduction of gasoline consumption by as much as twenty percent in ten years time. In Brazil, huge steps are taken to produce alternative fuel like bio-ethanol.

Recently, Norway joined the ranks of countries working for the development of alternative fuels by initiating the Norwegian Hydrogen Highway or which is more commonly referred to as HyNor. The initiative is focused on the promotion of the use of hydrogen fuel cell powered vehicle in the country.

The Quantum Fuel Systems Technologies Worldwide Inc. is one of the vehicle suppliers of the project. On March 29, the company reported that they have delivered eleven hydrogen hybrid Toyota Prius vehicles to Miljøbil Grenland AS which is a professional operator of an electric car fleet through a leasing concept. These vehicles will be the art of the countries dedication to encourage the use of alternative fuel vehicles to reduce greenhouse gas emission, which is the culprit behind global warming. To read the entire article, go to: <http://www.feras.co.uk/hydrogen-hybrids-delivered-to-norway/>

28. Riversimple Hydrogen Car

With most of the eyes of the automotive industry turned towards the advent of the electric vehicle in its purest sense, a British company is trying somewhat of a different approach. Riversimple, the company which one year ago pulled the wraps off a two-seater zero emissions hydrogen-electric vehicle, is currently touring Australia in an attempt to raise awareness and increase the interest in this open-source, affordable hydrogen vehicle.

"We are seeking international partners to enter joint ventures and pursue the Riversimple model in regions across the world, tailoring the vehicle and the service to local needs and conditions," Hugo Spowers, Riversimple founder explained the reasons behind the tour to GoAuto.

Having a fuel consumption equivalent to 360 miles per gallon (0.8l/100 km), the yet unnamed car (known for now as the Network Electric) uses a 6kW fuel cell sourced from Horizon Fuel Cell Technologies and is made of lightweight composite materials. It can travel 240 miles (390 km) on a single tank of hydrogen. For the rest of the article, go to: <http://www.autoevolution.com/news/riversimple-hydrogen-car-tours-oz-21830.html>. The first story was accessed from The Hydrogen & Fuel Cell Letter, July 2009, "UK's Riversimple Urban Fuel Cell Car is Unveiled, Aims to Change the Industry." www.hfcletter.com, (845) 876-5988.