CHBC News: November 2007

1. Welcome New Members

CHBC extends a warm welcome to new QuantumSphere, our newest Silver Member, and to Individual Members Akira Yamanaka, Trans-Pac Sales; Cynthia Verdugo Peralta, VPC Energy; Catherine Reheis-Boyd; and Brian Goldstein. We appreciate your support!
QuantumSphere: http://www.quantumsphere.com

2. EU Eases Hurdles for Hydrogen Cars

Hydrogen-powered cars will be cleared for sale in a uniform way throughout the European Union under new rules proposed by the European Commission in October. The move would simplify approval for hydrogen vehicles and ensure uniform standards were in place throughout the 27-nation bloc. The EU also announced it would help fund a program of hydrogen research and development called the Fuel Cells and Hydrogen Joint Technology Initiative with $664 million over six years, a sum that would be matched by European industry. It said the program would "accelerate the development of hydrogen technologies to the point of commercial take-off between 2010 and 2020." The proposals require approval from the European Parliament and EU governments before they can enter force.
EU: http://www.reuters.com/article/environmentNews/idUSL1046747620071010

3. Formation of Standards Bring H2 Economy Closer

In preparation for the hydrogen economy, the U.S. National Institute of Standards and Technology (NIST) is working to develop standards, methods and measurements regarding hydrogen in the marketplace. Under an interagency agreement, the U.S. Department of Energy (DOE) asked the NIST to intensify efforts to develop the standards, test procedures and test methods needed to buy and sell hydrogen in the marketplace as easily as petrol,

diesel and other fuels are dealt with today. Accurate measurements and standards are critical to U.S. development and implementation of the new technology, where such requirements are necessary in almost every stage of hydrogen production, distribution and sales.
Standards: http://www.gasworld.com/news.php?a=2062

4. Honda to Debut Production FCX at LA Auto Show
Honda has announced it will put the world's first hydrogen fuel cell car into production next year. The car will travel an estimated 270 miles at speeds of up to 100mph and will produce only water vapour from its exhaust. To be unveiled at the Los Angeles motor show next month, the car is expected to closely follow the design of the FCX concept car. Instead of a fuel gauge there will be a range meter that tells you how far you can travel with the hydrogen left in the tank. It is also expected to feature lithium-ion batteries to recover energy during braking. The transmission will be gearless so you will simply select neutral or drive. The announcement by Takeo Fukui, president and chief executive of Honda Motor Company, is a landmark in new car technology. Mr. Fukui also said, "I would say there's no future for the auto industry without fuel cell cars."
Honda:
http://driving.timesonline.co.uk/tol/life_and_style/driving/features/article2744803.ece
No Future Without Fuel Cell Cars:
http://www.channelnewsasia.com/stories/afp_asiapacific_business/view/307388/1/.html

5. GM to Lend SUVs to Prove Hydrogen Fuel Holds Water
GM recently launched Operation Driveway, setting in motion its long-promised program to put fuel-cell vehicles in the hands of average drivers for extended real-world road testing. More than 100 fuel-cell-equipped Chevy Equinox sport utility vehicles will be used in the test, divided about 60/40 between Los Angeles and New York. The goal of what GM is calling the "first large-scale market test" of fuel-cell vehicles is to introduce the two coasts to a technology that is viewed by many as too expensive and difficult to use -- which, according to GM, it isn't. (Editor's Note: Attendees at the October 25 California Hydrogen Business Council meeting had the chance to drive the Equinox FCV.)
Project Driveaway: http://www.latimes.com/business/la-fi-garage20oct20,0,2608759.story?coll=la-home-center

6. Opera Singer Placido Domingo Gets Keys to BMW Hydrogen 7
It's clear that BMW is hoping famed tenor Placido Domingo will sing the praises of the environmentally friendly BMW Hydrogen 7. Domingo, one third of the famed Three Tenors and a superstar in the world of opera, was recently given the keys to a BMW Hydrogen 7. The automaker described Domingo as a "dedicated public advocate" who has raised "millions of dollars through special benefit concerts to help such causes as the victims of the 1985 Mexican earthquake, AIDS and more." John White, Co-Founder and Executive Director of the Center for Energy Efficiency and Renewable Technologies (CEERT), has likewise received keys to a BMW Hydrogen 7. (Editor's Note: Attendees at the October 25 California Hydrogen Business Council meeting also had the chance to drive the Hydrogen 7, which runs on liquid hydrogen.)
Domingo: http://www.edmunds.com/insideline/do/News/articleId=122881
White: http://autoweb.com.au/cms/A_109411/newsarticle.html

7. City Wins Praise for Use of Hydrogen Cars
Ontario, CA employees have been driving around in five Toyota Prius' converted to run on hydrogen fuel for the past year. Their participation in the South Coast Air Quality Management District demonstration project earned Ontario an award from the district

recently. "It's no secret this region is known for high levels of smog," said Ken Jeske, Ontario public works director. "So it's important that alternative fuels or better emission controls be developed, and we're doing our part to get them developed." In addition to Ontario, four other Southern California cities were praised for trying out the hydrogen-fueled cars this past year - Burbank, Riverside, Santa Ana and Santa Monica.
AQMD Award: http://www.sbsun.com/news/ci_7270428

8. Improved Toyota FCHV Makes Successful Trip
An improved version of Toyota Motor Corp.'s Toyota FCHV (fuel cell hybrid vehicle) successfully completed a long-distance road test by traveling from Osaka to Tokyo on a single fueling of hydrogen. The test trip covered approximately 348 miles and was completed with the air conditioner on. Toyota's FCHV is 25 per cent more fuel efficient than earlier versions, due to improvements in the high-performance Toyota FC Stack fuel cell and to improvements in the control system for managing fuel cell output and battery charging/discharging. The vehicle also features Toyota-developed 70-Mega Pascal (MPa) high-pressure hydrogen tanks capable of storing about twice the amount of hydrogen as the previous 35-Mpa high-pressure hydrogen tanks. Toyota says the improvements in the vehicle make it possible to achieve a single-fueling cruising distance of approximately 466 miles.
Toyota FCHV: http://www.energycurrent.com/index.php?id=3&storyid=5640

9. Mazda Unveils Hydrogen Hybrid with Rotary Engine
Mazda has unveiled a new kind of hybrid vehicle that runs on hydrogen fuel powering an electric motor. The Japanese automaker said it will be available for leasing in Japan next year. The Mazda Premacy Hydrogen RE Hybrid operates on a rotary engine, which has a reputation for being quiet because it doesn't have pistons like standard engines. Mazda officials said the latest hydrogen hybrid is an improvement over its previous hydrogen vehicle, leased since 2006, extending its run on a full tank of hydrogen from 62 miles to 124 miles. The new car also has a lithium-ion battery that drives the motor and recharges itself using energy from braking, further conserving on electricity.
Mazda:
http://www.detnews.com/apps/pbcs.dll/article?AID=/20071002/UPDATE/710020420/1148/AUTO01

10. Quantum Receives Order for Hydrogen Hybrid Vehicles for U.S. Army
Quantum Fuel Systems Technologies Worldwide, Inc. has announced an order for six hydrogen hybrid vehicles for the U.S. Army's Tank Automotive Research, Development and Engineering Center (TARDEC). The contract will be administered by Aerospace Engineering Spectrum (AES), based in Ogden, Utah. This order is a follow on to Quantum's successful completion of the development of a Ford Escape Hydrogen Hybrid for TARDEC, incorporating Quantum's advanced hydrogen fuel injection system and ultra-lightweight hydrogen storage system. The six Ford Escape Hydrogen Hybrids will be placed into service as administrative fleet vehicles at two military facilities in North America. This deployment will support the U.S. Army and its 21st Century Base initiative.
Quantum: http://money.cnn.com/news/newsfeeds/articles/prnewswire/LAM02322102007-1.htm

11. Intelligent Energy and Suzuki Exhibit New FC Motorcycle
Intelligent Energy has provided Suzuki Motor Corp. with its fuel cell power system, installed in the Crosscage, a new prototype hydrogen fuel cell motorcycle, unveiled at the 40th Tokyo Motor Show. The Crosscage bike is the result of a successful collaboration between the two companies for the production of a unique Suzuki motorcycle design, utilizing Intelligent

Energy's advanced fuel cell power system. The Crosscage concept bike is a fuel cell motorcycle designed to achieve optimum performance using Intelligent Energy's air-cooled fuel cell system. Suzuki believes that the Crosscage could be one of the solutions for balancing environmental protection and exciting biking.
Crosscage: http://www.intelligent-energy.com/index_article.asp?SecID=15&secondlevel=798&artid=3838%20

12. Fill 'Er Up With Hydrogen -- in Orgeon
Hydrogen fuel stops could become another roadside attraction in Oregon and along the West Coast, under an agreement signed by Gov. Ted Kulongoski and his counterpart in British Columbia. Kulongoski, who visitied Canada recently, and Premier Gordon Campbell committed to explore ways to make it possible to drive a hydrogen-powered car from British Columbia to California by 2010. The alternative fuel idea is part of a broader agreement by both leaders to jointly pursue environmentally friendly policies and economic incentives. The two also pledged to help combat global warming by working on cleaner energy systems, and to protect the Pacific Ocean. (Editor's Note: Those attending the October 25 CHBC meeting heard comments on the importance of linking BC, British Columbia to BC, Baja CA. This is a major step!)
Hw Hwy: http://blog.oregonlive.com/politics/2007/10/fill_er_up_with_hydrogen.html

13. Air Products' Mobile Fueler Up to the Challenge in South Carolina
Air Products mobile hydrogen fueler technology is proving to be up to the challenge in Columbia, S.C. where it is participating in a six-location Fuel Cell Lift Truck Demonstration Project in the Greater Columbia Fuel Cell Challenge. Air Products mobile fueling technology is providing hydrogen for two hydrogen powered lift trucks that have been equipped with fuel cell power packs and are performing daily use evaluations, concluding in December, at various warehouse facilities in the greater Columbia area. This multiple site demonstration project is the most ambitious initiative to date funded under the sponsorship of the Greater Columbia Fuel Cell Challenge.
APCI: http://money.cnn.com/news/newsfeeds/articles/prnewswire/NETU09202102007-1.htm

14. Honda's Hydrogen Home Energy Station
Ready infrastructure or not, Honda intends to begin selling a fuel-cell vehicle soon. (The FCX fuel-cell vehicle's stack now produces 100 kW in a 2.2-cu-ft package that weighs just 148 pounds--a 260 per cent increase in power density and a 67 per cent drop in weight since the company's original fuel cell stack of 1999.) To ensure an ample supply of hydrogen, the company has developed a home-refueling system that is integrated into the home's energy system. It reforms natural gas into hydrogen, producing electricity and heat to warm the house or its hot-water tank. This third-generation system can adjust to changing power demands and is said to make much more efficient use of the natural gas than furnaces or hot-water heaters do by simply lighting a flame.
Honda Home Refueler:
http://www.motortrend.com/features/auto_news/2007/112_news0710_tokyo_tech/

15. Hydrogen Storage Model Speeds Development Of Alternative Fuel Vehicles
Researchers at the UCLA Henry Samueli School of Engineering and Applied Science have developed a model that could help engineers and scientists speed up the development of hydrogen-fueled vehicles by identifying promising hydrogen-storage materials and predicting favored thermodynamic chemical reactions through which hydrogen can be reversibly stored and extracted. "We are steadily approaching the moment when we will be able to theoretically design materials with desired properties, just like a tailor makes a suit

to fit the customer's needs," said Vidvuds Ozolins, UCLA associate professor of materials science and engineering. "This will bring in a qualitatively new era of collaboration between theory and computation, experiment and technology development." The research was funded by grants from the U.S. Department of Energy.
H2 Storage: http://www.sciencedaily.com/releases/2007/10/071003100601.htm

16. CleanCarMap.com Adds Trip Planner to Alt Fuels Database
CALSTART has announced that its web site, CleanCarMaps.com, has added functionality from Google Maps, making planning road trips in alternative fuel vehicles easier than ever before. "CleanCarMaps.com now uses Google Maps, which allows users to drag and drop trips and plan them easily," said Monica Alcaraz, CleanCarMaps' project manager. Users can search CleanCarMaps.com for electric inductive small and large paddle, electric conductive, compressed natural gas (CNG), liquefied natural gas (LNG), liquefied petroleum gas (LPG), biodiesel, ethanol, hydrogen and methanol to run their alternative fuel vehicles.
CleanCarMaps: http://www.CleanCarMaps.com

17. Exide Technologies Signs Agreement with Ballard
Exide Technologies, a global leader in stored electrical-energy solutions, announced it has signed an agreement with Ballard Power Systems to develop an on-board hybrid hydrogen fuel cell and lead-acid battery energy system for the forklift truck (or materials handling) market. Exide plans to meet all its hydrogen fuel cell needs in the forklift truck market over the next five years exclusively with Ballard fuel cells. Ballard's work in the materials handling market has, to this point, been based on using the company's Mark9 SSL(TM) fuel cell stack as an alternative to lead-acid batteries. This program will utilize Ballard's Mark1020 ACS(TM) hydrogen fuel cell stack and Exide's ELEMENT(TM) valve regulated lead acid batteries.
Ballard: http://money.cnn.com/news/newsfeeds/articles/marketwire/0313330.htm

18. Affordable Onsite Generators Could Provide Fuel Cell Breakthrough
Jan van Dokkum, president of UTC Power, the fuel cell division of engineering conglomerate United Technologies, believes that after countless false dawns the fuel cell market is fast approaching commercial viability - and it is as a source of onsite energy for buildings that fuel cells will enjoy their long-anticipated breakthrough. Speaking at the recent Grove Fuel Cell Symposium, van Dokkum said fuel cells can deliver the reliable, highly efficient and clean energy that environmentally conscious businesses are looking for. "If you use a fuel cell to generate power onsite you can get 90 per cent efficiency off your fuel, compared to less than 40 per cent efficiency for the electricity off the grid--it makes sense to run the onsite generator continuously and just use the grid as back up and to help cover peak loads."
Onsite Generators: http://www.vnunet.com/business-green/analysis/2201376/fuel-cells-face-static-future

19. Samsung Fuel Cell Mobile Device Runs on Water
A micro fuel cell and hydrogen generator that runs on water has been developed by Samsung Electro-Mechanics. According to a Korean news source, mobile phones which run on water could hit the market as soon as 2010. The micro fuel cell can be used to power mobile devices as it can generate up to three watts of electricity; the fuel cell could power a handset for up to 10 hours. Explaining the process, Oh Yong-soo, vice president of Samsung Electro-Mechanics' research center, said "When the handset is turned on, metal and water in the phone react to produce hydrogen gas. The gas is then supplied to the fuel cell where it reacts with oxygen in the air to generate power." Cartridges would have to be changed once every five days based on usage of around four hours a day on average.

Samsung: http://www.fuelcelltoday.com/online/news/articles/2007-10/Samsung-develop-mobile-phone--wh

20. Hydrogen Plane Runs for Three Days Without Refuelling
Boeing and Ford have successfully tested a new hydrogen aircraft engine with a simulated flight that lasted nearly four days. The project, called the High Altitude Long Endurance (HALE) aircraft, is being run to test the feasibility of having unmanned craft in permanent flight to act as communications systems that can be quickly and cheaply set up where coverage by traditional means isn't available. "This test could help convince potential customers that hydrogen-powered aircraft are viable in the near-term," said Boeing Advanced Systems president George Muellner. The HALE's engine is a modified four cylinder Ford engine that can use hydrogen as a fuel and run for an extended period. In a simulation chamber the engine ran for nearly four days, powering the craft up to an equivalent of 65,000 feet.
HALE: http://www.vnunet.com/vnunet/news/2202055/hydrogen-plane-runs-three-days

21. Japanese Govt, Steelmakers to Develop H2-Powered Blast Furnace
Japan's Ministry of Economy, Trade and Industry plans to launch a project with Nippon Steel Corp, JFE Steel Corp and others to develop a new type of blast furnace that emits about 30 per cent less carbon dioxide than existing furnaces. The ministry plans to spend a total of 25 billion yen starting in the year to March 2009 to commercialize the technology in 10 years. The new furnace will run on hydrogen, instead of coke, thereby achieving the significant emission cut. In addition, the project aims to develop ways to utilize waste heat from the furnaces and technology to isolate carbon dioxide from blast furnace emissions. The steel industry is the biggest emitter of carbon dioxide in Japan's industrial and energy sector, accounting for 41.2 percent of the sector's overall discharge or 13 percent of national emissions.
Blast Furnace:
http://www.forbes.com/afxnewslimited/feeds/afx/2007/10/28/afx4270770.html

22. ARB to Hold SB 1505 Workshop Nov 14
Staff from the California Air Resources Board, Sustainable Transportation Technology Branch will hold a public workshop on California Senate Bill 1505 (Statutes of 2006). The purpose of the workshop is to share ideas on reporting requirements and scenarios for meeting the statutory requirements, and to generate discussion on how to best implement the requirements of Senate Bill 1505. The workshop will be held in Sacramento at the California Environmental Protection Agency building November 14th, 2007.
Workshop: http://www.arb.ca.gov/msprog/hydprod/hydprod.htm

23. Next CHBC General Meeting January 18, 2008
California Hydrogen Business Council will hold quarterly meetings in 2008 on the following dates. January 18, May 16, September 12 (Northern CA), and December 5. Please mark your calendars accordingly! More information will be released soon.
Meetings: http://www.californiahydrogen.org/page.cfm?content=16

24. Send Us Your News!
We welcome important news from our members for inclusion on our website and in next month's report. In addition to being distributed to CHBC's list of over 2200 industry members, our newsletters are forwarded to thousands more through the Canadian Hydrogen Association and FuelCellMarkets.com. Please send to: info@californiahydrogen.org. Thank you for helping build a great organization.

Clean Fleet Report: http://www.cleanfleetreport.com
Fuel Cell Markets: http://www.fuelcellmarkets.com

25. Board of Directors
President - Henry Wedaa; Vice President - Paul Scott, ScD; Managing Director - Catherine Rips; Secretary - Josh Mauzey; Treasurer - Jerald Cole; Membership Chairman - Mark Abramowitz; Fleets Chair - John Addison; Program Chairman - Henry Wedaa; Director at Large - Larry Watkins; Director at Large - John Williams, PE; Director at Large - Allan Bedwell; Director at Large - Fred Silver; Ex-officio Government Liaision - Analisa Bevan. To contact the board, please email: info@californiahydrogen.org.

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