CHBC News: April 2009

1. Welcome New Members

CHBC extends a warm welcome to our newest members, Larry Wnuk and Jim Mattioda. We appreciate your support!

2. New Beginnings: June 18, 2009, AQMD

A new administration and new funding sources are giving the hydrogen community fresh chances to tell our story. With all the chatter about hydrogen, electric vehicles, biofuels, etc., on June 18, the California Hydrogen Business Council will come together with leading industry groups to discuss what resonates in Washington, Sacramento and in the press. A level-setting panel will provide real world input on hydrogen cars, buses, supply and infrastructure. We'll look at how social media can create grass roots advocates and hear an enviro's perspective on hydrogen. Our goal is to come away with specific action items that will help us move forward as an industry -- stronger than ever! Watch for more details on this important General Meeting, now being held on June 18 (rather than May) due to industry conflicts.
New Beginnings: http://www.californiahydrogen.org/page.cfm?content=48

3. ARB Issues Notice of Intent to Award Stations

The California Air Resources Board issued a Notice of Intent to Award Grant Agreements

under RFP 08-606, "Establish Modular Hydrogen Fueling Stations." The Air Resources Board intends to award grant agreements to: Mebtahi Chevron, Harbor City; San Francisco International Airport, San Francisco; Shell Hydrogen, Newport Beach; and the University of California - Los Angeles, Los Angeles.
Stations: http://www.hydrogenhighway.ca.gov

4. Hydrogen Fuel Cell Vehicle and Station Deployment Plan
The California Fuel Cell Partnership has released an action plan that details a strategy for deploying hydrogen fueling stations and fuel cell vehicles in California. "Hydrogen Fuel Cell Vehicle and Station Deployment Plan: A Strategy for Meeting the Challenge Ahead" specifies the steps needed to meet the fuel needs of 4,300 passenger vehicles and 20 fuel cell buses by 2014, and prepares for even more growth though 2017. The plan calls for 46 retail hydrogen fueling stations in six key California communities at a cost of about $180 million over four years; $60 million from industry and $120 million from government. "By 2017, automotive manufacturers plan to place 50,000 zero-emission fuel cell vehicles in customer hands," noted CaFCP Executive Director Catherine Dunwoody.
CaFCP Plan: http://www.fuelcellpartnership.org/hydrogen-fuel-cell-vehicle-and-station-deployment-plan-fuel-cell-vehicle-and-station-dep

5. Watch TopGear Test FCX Clarity, Call it 'Future of Motoring'
Last December, James May, co-host of the UK car show "Top Gear," flew to LA to test drive the Honda FCX Clarity prototype, which he calls "the most important car of the next 100 years." The Honda FCX Clarity is a fuel cell vehicle that uses compressed hydrogen to generate electricity and power the car's electric motor. The Clarity has a driving range of 280 miles per tank, delivers 135hp, can travel up to 100 mph, and can reach 60 mph from a standstill in under 9 seconds. The video clip made it onto YouTube.com recently and shows May meandering through the LA foothills, filling up at a hydrogen fueling station, and interviewing Clarity fan Jay Leno. The FCX Clarity was also recently reviewed by the L.A. Auto Examiner, which calls the vehicle "exhilarating and promising."
Honda FCX Clarity: http://www.topgear.com/us/videos/more/james-tests-honda-clarity
LA Auto Examiner Review: http://www.examiner.com/x-1194-LA-Auto-Examiner~y2009m3d13-2009-Honda-FCX-Clarity-road-test

6. BMW Led Group Develops Ultra Efficient Hydrogen Combustion System
The BMW Group Forschung und Technik, in cooperation with researchers in Graz and Vienna, Austria, has succeeded in developing a dedicated hydrogen combustion engine with diesel-like geometry and progressive H2 high-pressure direct injection technology. The result is an efficiency level of up to 42 percent, on par with that of the best turbodiesel engines. The new system combines the strengths of spark-ignition and diesel concepts while utilizing the favorable combustion properties of hydrogen, thereby achieving efficiency values that easily compare with state-of-the-art turbodiesel engines. The engineers based their work on the joint EU HyICE project, during which maximum specific powers of up to 100 kilowatts per liter of displacement were demonstrated for a spark-ignition hydrogen combustion process.
BMW: http://www.theautochannel.com/news/2009/03/12/453159.html

7. Nissan X-TRAIL FCV Leads Nissan's Fuel-Cell Development Efforts
As part of the Nissan Green Program 2010, Nissan is continuing to test its next-generation fuel-cell stack, which has been placed into the Nissan X-TRAIL SUV. The newest fuel-cell stack was announced last August, with cold-weather testing beginning just last month at Nissan's Hokkaido Proving Ground. With continuous development of their fuel-cell technology, Nissan exhibited its new stack at the recent FC Expo 2009. The new fuel-cell

stack is 25% smaller than previous models, while capable of providing an additional 40 kW of power -- 130 kW versus 90 kW on previous models. The new fuel-cell stack also uses half the amount of platinum in its electrodes and a more durable catalyzer, enabling an increased life span and decreased production cost.
Nissan X-TRAIL:
http://www.trucktrend.com/features/news/2009/163_news090304_nissan_x_trail_fuel_cell_vehicle/

8. Mazda's First Premacy Hydrogen RE Hybrid Leases Start in Japan
Japan-Mazda Motor Corp. recently commenced commercial leasing of the Mazda Premacy Hydrogen RE Hybrid, a hydrogen hybrid vehicle that offers substantially improved performance, thanks to the addition of a hybrid system. The first units will be delivered to local government authorities and energy-related companies during 2009. The Premacy Hydrogen RE Hybrid is Mazda's second hydrogen rotary engine model to be commercialized; the first was Mazda's unique RX-8 Hydrogen RE. The Premacy Hydrogen RE Hybrid's finalized specifications were approved by Japan's Ministry of Land, Infrastructure, Transport and Tourism (MLIT) on March 5, 2009. The first vehicles received their registration numbers from the Hiroshima branch of the Chugoku District Transport Bureau on March 25.
Mazda: http://www.autobloggreen.com/2009/03/25/mazdas-first-premacy-hydrogen-re-hybrid-leases-start-in-japan/

9. New Combustion Strategy Accelerates Hydrogen Engine Development
Researchers in Argonne's Center for Transportation Research have built the Modular Automotive Technology Testbed (MATT), an Erector Set-like platform for automotive powertrains in which engineers can swap in and out different engines, transmissions and other core powertrain components. By using MATT, Argonne researchers gain the ability to test a 4-cylinder hydrogen engine on the standard drive cycles. Argonne Engineer Henning Lohse-Busch and his colleagues developed an optimal variable air-fuel ratio combustion strategy that allows a hydrogen internal combustion engine to run efficiently and cleanly in a conventional vehicle. According to Lohse-Busch, these hydrogen-burning combustion engines represent the "bridging technology to the hydrogen economy."
Argonne: http://insciences.org/article.php?article_id=3313

10. AC Transit Orders Four More UTC Fuel Cell Systems for Next Gen FC Buses
UTC Power recently announced that the Alameda-Contra Costa Transit District (AC Transit) of Oakland, Calif., has exercised options for four more PureMotion(R) Model 120 fuel cell systems for its next-generation hybrid-electric fuel cell buses. Early in 2008, AC Transit placed the largest single fuel cell bus order in U.S. history, ordering eight Van Hool hybrid-electric buses with UTC Power fuel cell systems. The combined order of 12 new buses will be delivered by Van Hool from late 2009 through 2010. AC Transit is currently operating three Van Hool hybrid-electric buses with UTC Power fuel cell systems. AC Transit's first-generation fuel cell buses with UTC Power fuel cell systems have demonstrated on average 70 percent better fuel economy than a control fleet of diesel buses.
AC Transit:
http://news.prnewswire.com/DisplayReleaseContent.aspx?ACCT=104&STORY=/www/story/03-11-2009/0004986726&EDATE=

11. Burbank Zero Emission Bus Project
Burbank will soon be the home of California's first hydrogen fuel cell plug-in hybrid electric bus demonstration project. The timing of this project is important due to California's new Zero Emission Bus regulation which requires transit agencies with 200 buses or more to purchase zero emission buses as early as the year 2011. Proterra will be assembling the 35

foot long, 37 passenger bus. The lightweight composite body bus will house two Hydrogenics 16kW fuel cell modules and a Proterra Terra Volt Energy system powered by lithium titanate batteries. The on-board storage tanks provide hydrogen to the fuel cells which produce electricity; this electricity energizes the batteries that power the bus. The Hydrogen BurbankBus is targeted to start route coverage during the summer of 2009.
Burbank: http://www.californiahydrogen.org/page.cfm?content=20&display=101

12. New Mercedes-Benz Citaro FuelCELL Hybrid Bus Being Tested
This June, Mercedes-Benz Buses will present the new Citaro FuelCELL Hybrid model, the brands first fuel-cell hybrid bus. The regular-service city bus marks yet another important milestone on the road to zero-emission mobility and improved resource conservation within the framework of Daimlers ☐Shaping Future Transportation global initiative. The Citaro FuelCELL Hybrid is based on the proven platform for the top-selling Mercedes-Benz Citaro city bus. Hydrogen consumption in the Citaro FuelCELL Hybrid will be much lower than in previous fuel cell buses, thanks to a hybrid drive with a sophisticated drive system control unit. The model thus offers major benefits in terms of resource conservation and reduction of emissions associated with producing the required hydrogen.
Mercedes: http://www.benzinsider.com/2009/03/new-mercedes-benz-citaro-fuelcell-hybrid-buses-being-tested/

13. Canadian Hydrogen Highway On Track
British Columbia Energy Minister Blair Lekstrom said recently Canada's Hydrogen Highway project is on-track for 2010. The $89-million highway will allow hydrogen-powered vehicles to drive from California to Whistler, with hydrogen refuelling stops along the way. Hydrogen fuelling stations will be located in such places as Whistler, Vancouver, Richmond and Surrey. Four of the seven planned stations have been built, and the other three are under way. This summer, B.C. Transit will be unveiling the first of its 20 hydrogen fuel-cell demonstration buses, the biggest fleet of its kind in the world, in time for the 2010 Winter Olympics. And the Whistler fuelling facility and depot will be completed by December.
Highway:
http://www.canada.com/technology/Hydrogen+track+Lekstrom/1375787/story.html

14. Hydrogenics Awarded $1.8 Million of New Orders
Hydrogenics Corp. announced that it has been awarded $1.8 million worth of orders for electrolyzers to be used in various industrial applications worldwide; delivery is anticipated in 2009. "These orders further demonstrate the strong, global leadership position of our OnSite Generation business unit, particularly for applications that require a high standard of performance, durability, and reliability," said Daryl Wilson, president and chief executive officer. "Included in these awards is a repeat order from the largest power utility in Africa for electrolyzers to upgrade its electrical generating capacity. We continue to see a steady pace of proposals for a variety of industrial gas applications, primarily to increase operating efficiencies or replace outdated on-site generating equipment."
Hydrogenics: http://www.hydrogenics.com/ir_newsdetail.asp?RELEASEID=370121

15. Ballard Announces Fuel Cell Supply Agreement with Baxi Innotech
Ballard Power Systems Inc. recently announced that it has entered into a three-year supply agreement with Baxi Innotech GmbH, the leading European developer and manufacturer of fuel cell micro combined heat and power (mCHP) units. Under the agreement, Baxi Innotech agrees to exclusively purchase Ballard fuel cells through to the end of Phase 2 of the German Callux Project, scheduled to conclude in 2012. The Callux Project represents Germany's largest demonstration project of combined heat and power fuel cell systems for domestic use. The supply agreement also provides for joint product development efforts,

and lays the groundwork for future collaboration beyond the scope and timing of the current project.
Ballard: http://phx.corporate-ir.net/phoenix.zhtml?c=76046&p=irol-newsArticle&ID=1265088&highlight=

16. Air Products' Hydrogen Fueling Equipment to Boost UNIDO-ICHET Project
Air Products announced that it will supply hydrogen fueling equipment for a hydrogen transportation demonstration project in New Delhi, India. The project, being financially and technically supported by The International Centre for Hydrogen Energy Technologies of the U.N. Industrial Development Organization, will be conducted over two years beginning in July 2010 and include development of a fleet of 15 three-wheeled vehicles. The hydrogen-powered fleet will transport visitors at the Pragati Maidan, where many large public exhibitions are held, in partnership with the India Trade Promotion Organization. The Indian Institute of Technology Delhi will oversee the project's management, and the vehicles will be developed by Indian automaker Mahindra & Mahindra, in collaboration with IIT-Delhi.
India:
http://www.airproducts.com/PressRoom/CompanyNews/Archived/2009/12Mar2009.htm

17. Whole Foods Market Incorporates Fuel Cell Technology
The newly opened Whole Foods Market, Glastonbury, CT, is the first supermarket to generate most of its power on-site with an ultra-clean fuel cell from UTC Power. It will generate 50% of the electricity and heat and nearly 100% of the hot water needed to operate the store on-site using fuel cell technology. The UTC Power fuel cell system captures its exhaust energy for local cooling and heating. The harnessed exhaust energy at the store will cool refrigeration cases year-round and heat the store in the winter months.The fuel cell at the Glastonbury Whole Foods Market will be configured for grid-independent operation and is capable of providing 200 kW of standby power if there's a grid failure, which will enable the store to operate without disruption.
Whole Foods: http://contractingbusiness.com/news/whole_foods_fuel_cells_0309/

18. BV's Fuel Cell Guidelines for Use on Ships
Classification society Bureau Veritas is developing comprehensive new guidelines covering the safe application of fuel cells in ships. Thus far, their application in shipping has been limited to a few pilot projects. BV product manager Gijsbert de Jong says the new BV guidelines break a vicious circle in which lack of a regulatory framework limits the possibilities for building and testing the prototype applications needed to determine the safety and performance criteria involved. There are several different types of fuel cell technology. BV has found that the use of hydrogen offers a number of advantages, not least the fact that there is an unlimited resource in atomic form and that it delivers a higher chemical energy per unit mass than does natural gas, and is non-toxic, non-polluting and non-poisonous.
Guidelines: http://www.marinelog.com/DOCS/NEWSMMIX/2009mar00051.html

19. First e-Flight Expo Takes Off at AERO
Motorized flight exclusively powered by a fuel cell is now possible. The ultralight aircraft by French company Helite will take to the air exclusively propelled by hydrogen energy without supplementary energy supplied by batteries. Weather permitting, the hydrogen plane will even be presented in flight at the AERO International Aviation Trade Show from April 2-5, 2009. "Unlike the Boeing project (April 2008), our hydrogen-powered plane is an extremely light aircraft, weighing less than 160 kg including the pilot," says Gerard Thevenot of Helite, who will fly the plane. "This allows us to fly for the first time only with a fuel cell and

without any auxiliary batteries. This is a world first!"
Flight: http://www.amtonline.com/article/article.jsp?siteSection=1&id=7711

20. Hydrogen to Fuel Green Jets
A British company has developed an air-breathing hydrogen engine that could radically cut the environmental footprint of air and space travel. Reaction Engines, based in Oxfordshire, has just secured a 1M EUR grant from the European Space Agency (ESA) to advance its Sabre propulsion system. Like a rocket engine, Sabre burns liquid hydrogen. But unlike a rocket, Sabre does not also require a supply of liquid oxygen to operate inside the Earth's atmosphere; instead it grabs, cools and compresses its own supply from the air itself. Although developed for the Skylon pilotless-spaceplane project, Sabre could be central to a new generation of hydrogen-fuelled aircraft.
Jets:
http://business.timesonline.co.uk/tol/business/industry_sectors/transport/article5907888.ece

21. Tokyo Gas Halves CO2 Emissions in Hydrogen Production
Tokyo Gas Co announced recently that it succeeded in halving CO2 emissions in a verification test of CO2 separation/collection in a hydrogen production process while maintaining its production efficiency. Tokyo Gas has been developing and verifying hydrogen production equipment intended for fuel cell vehicles at its JHFC Senju Hydrogen Station (in Arakawa Ward, Tokyo). In November 2008, the company attached a CO2 separation/collection device to the equipment and started the test. Analysis of the obtained data showed that the energy loss due to CO2 separation/collection was about 3%. At the station, hydrogen is produced from city gas by using a hydrogen separation type reformer that produces hydrogen and CO2 by the steam-reforming reaction between city gas (methane) and steam.
Tokyo Gas: http://techon.nikkeibp.co.jp/english/NEWS_EN/20090313/167146/

22. Lawmakers Want to Study Detroit-to-Lansing Rail
A group of Michigan lawmakers said recently it is preparing to study whether building a proposed high-speed passenger rail line connecting Detroit and Lansing is a feasible option. Supporters say the elevated rail line, powered by hydrogen made with solar power, could move passengers at about 200 miles per hour. It also would include stainless steel conduits to move electricity, fiber optics, hydrogen gas and other materials to generate revenue. The Michigan-based Interstate Traveler Company LLC says the project would be financed by private investors. But the company would need access to rights of way along interstate highways to make it work, so the project would require a public-private partnership.
Rail: http://www.chicagotribune.com/news/chi-ap-mi-high-speedrail,0,7658605.story

23. AF&V Conference and Expo, April 19-22, Orlando
The Alternative Fuels & Vehicles National Conference + Expo 2009 (AF&V 2009) brings together industry experts, transportation leaders and policy makers to help fleets sort through which fuels and vehicles make the most sense for them. AF&V 2009 showcases non-petroleum options including natural gas, ethanol, biodiesel, propane, electricity, and hydrogen, and their companion vehicles. The conference embraces advanced technologies that result in fuel efficiency, petroleum displacement and emissions improvements. Included in the areas of interest are hybrid-electric and plug-in hybrid technologies; blends, including hydrogen; fuel cells; and, idle-reduction devices. All of these are featured as part of the diverse program, Expo Hall and Ride-n-Drive.
AFVI: http://afv2009.com

24. Small Fuel Cells 2009, May 7-8, Orlando
In the U.S. Dept. of Energy's (DOE) opening talk, Kevin McMurphy and Nancy Garland of the Office of Hydrogen, Fuel Cells & Infrastructure Technologies will discuss recent awards by the DOE in portable power fuel cell research and development (R&D). In addition, they will present the latest results of the DOE's fuel cell R&D efforts for portable power applications within the Office of Energy Efficiency and Renewable Energy. These results will be compared with the DOE's targets for fuel cells in portable power applications.
Conference:
http://www.knowledgefoundation.com/viewevents.php?event_id=97&act=evt#aid

25. Board of Directors; Send Us Your News!
We welcome important news from our members for inclusion on our website and in next month's report. Thank you for helping build a great organization. The board of directors of the California Hydrogen Business Council is as follows: President, Paul Scott, ScD; Vice President, Mark Abramowitz; Treasurer, Josh Mauzey; Secretary, JJ Weston; President Emeritus, Hank Wedaa; Managing Director, Catherine Rips; Membership Chair, Richard Cromwell III; Program Chair, Fred Silver; Directors at Large, Terry Tamminen, Debbie Smith and Larry Watkins. Ex-officio Government Liaisions - Analisa Bevan and Gerhard Atchelik. To send news or contact the board, please email: info@californiahydrogen.org.

Catherine Rips, Editor/Publisher

California Hydrogen Business Council
760-341-2924
www.CaliforniaHydrogen.org