

California Hydrogen Business Council December 2004 Report

Summarized in this issue (with links to complete articles):

1. Welcome New Members
2. CHBC Meeting on February 25, Sponsored by Honda
3. Building Successful Alliances
4. CHBC Seeks 2005 Web Sponsor
5. Energy Partnerships to Flow from Bush-Martin Summit
6. Hydrogenics Corp to Buy Stuart Energy Systems
7. Quantum to Acquire Starcraft Corp.
8. Ford Introduces Hydrogen-Powered Cars and Bus
9. BOC Helps Build the Canada's Hydrogen Highway(tm)
10. Shell Moves to Phase 3 of 5 in Hydrogen Fueling Stations
11. GE Global Research to Lead DOE Projects in Production of Hydrogen
12. Quantum Ships First Fuel Cell Vehicle to U.S. Army
13. MTI MICRO Receives OK to Use Methanol Fuel Cartridges on Airplanes
14. PolyFuel Challenges DuPont in Automotive PEM Membranes
15. CHBC 2005 Meeting Dates
16. CHBC Silver Members
17. CHBC Board of Directors
18. CHBC Membership

1. Welcome New Members

CHBC welcomes new Silver member H2Safe and the Advanced Transportation Technologies Initiative (ATTI), a network of community colleges in California, which trains students and re-trains workers for "the jobs of the future." We appreciate your support!

2. CHBC Meeting on February 25, Sponsored by Honda

Register now for the next General Meeting of the California Hydrogen Business Council on Friday, February 25 at Honda's facility in Torrance. Confirmed speakers include confirmed Stan Ovshinsky, ECD Ovonic; Dr. Alan Lloyd, California Air Resources Board; Pierre Rivard, Hydrogenics; Bill Ernst, Plug Power; Jack Broadbent, chair of BAAQMD; Dan Rabun, Air Products and Chemicals; Shannon Baxter, California Hydrogen Highway Program Manager; Alison Grigg, Canadian Hydrogen Highway.
<http://www.californiahydrogen.org/page.cfm?content=48>

3. Building Successful Alliances

CHBC members receive a substantial discount to attend a two-day course held February 23-24, 2005 at the Holiday Inn in Torrance, CA, taught by Julian Gresser, chairman, Alliances for Discovery. An international attorney, negotiator and recognized expert, he was twice visiting Mitsubishi professor at Harvard Law School. This seminar teaches attendees a complete system for negotiating, structuring, managing and measuring the performance of Adaptive Alliances(TM) anywhere in the world. For more details or to register, contact jcole@hydrogen.la.

4. CHBC Seeks 2005 Web Sponsor

It's not too late to become CHBC's 2005 web sponsor! For \$3,500, your name and logo can be on every page of our site, with links to your website. For \$1,500, your name and logo can appear on our Home Page. If you are interested, please contact Managing Director Catherine Rips, (760) 341-2924.

5. Energy Partnerships to Flow from Bush-Martin Summit

President Bush and Canadian Prime Minister Paul Martin met recently to discuss a number of subjects, including hydrogen. A carefully worded communiqué released on November 30 by the Canadian Prime Minister's Office, stated, "Our objective is to expand economic opportunities and prosperity for all our peoples and the competitiveness of North American business..." Among the immediate steps to be undertaken is the development of plans to "expand technology partnerships that promote the clean and efficient use of energy resources, including initiatives in clean coal, hydrogen, and renewable energy resources." <http://www.californiahydrogen.org/page.cfm?content=20&display=18>

6. Hydrogenics Corp to Buy Stuart Energy Systems Hydrogenics Corp. (HYGS) has agreed to acquire Stuart Energy Systems Corp. (HHO.T) in a share-exchange valued at about C\$155 million. In a joint news release, the companies said the exchange ratio will be 0.74 of a Hydrogenics share for each Stuart Energy Systems

(SES) share. The offer represents a 32% premium based on the 20-day volume weighted average price of the shares of both companies, they noted. The planned offer has the unanimous support of SES's board, which is recommending that SES shareholders accept the offer. Hydrogenics said the acquisition "will expand our revenue base and cash reserves considerably, and we expect it will be accretive to earnings, EBITDA and cash flow." http://www.hydrogenics.com/ir_newsdetail.asp?RELEASEID=147848

7. Quantum to Acquire Starcraft Corp.

Quantum Fuel Systems Technologies Worldwide Inc., (Nasdaq: QTWW) announced it has entered into an agreement whereby Quantum will acquire all of the outstanding shares of Starcraft Corporation (Nasdaq: STCR). Alan P. Niedzwiecki, Quantum's President and Chief Executive Officer, noted, "Merging the two companies will allow the combined company to expand its current OEM capabilities while positioning itself as a major player in the early stage development and production of fuel cell vehicles. The Starcraft product portfolio coupled with its service and assembly capabilities will position Quantum as a specialty vehicle designer, integrator and assembler for low-volume programs with the military and growing OEM customer base." http://www.qttww.com/press_releases/pr_nov_23_2004.shtml

8. Ford Introduces Hydrogen-Powered Cars and Bus

Ford has introduced the H2RV, which combines an internal combustion engine powered by hydrogen, boosted by a supercharger, with a Ford patented Modular Hybrid Transmission System (MHTS). Two H2RV vehicles, based upon the Ford Focus wagon, are now on the streets of southeastern Michigan, generating thousands of real-world miles. Ford also introduced a new shuttle bus with a hydrogen internal combustion engine (H2ICE) that boasts a 99-percent reduction in carbon dioxide (CO2) emissions. The new vehicle features a Ford E-450 chassis cab paired with a shuttle bus body and a 6.8-liter Triton V-10 engine fueled with hydrogen. The H2ICE E-450 seats up to 12 passengers and is equipped with a 25-gallon equivalent, 5,000 psi hydrogen fuel tank. The vehicle is expected to have a range of up to 150 miles, depending on conditions and vehicle load. http://media.ford.com/newsroom/release_display.cfm?release=19385

9. BOC Helps Build Canada's Hydrogen Highway BOC is helping design and construct a hydrogen fueling station located along Canada's Hydrogen Highway(TM) in Vancouver, BC. The station is located at NRC's Institute for Fuel Cell Innovation on the campus of the University of British Columbia (UBC). Full system commissioning expected in the first quarter of 2005. This is the second of seven proposed hydrogen fueling stations planned for the length of highway that stretches from the Vancouver airport to Whistler. The British Columbia Hydrogen Highway is planned to be completed in 2007 to support Canada in its hosting of the 2010 Olympic and Paralympic Winter Games. BOC also provided funding and support for the first station, the Compressed Hydrogen Infrastructure Project (CH2IP) located at BC Hydro's PowerTech Labs in Surrey, British Columbia. That station began fueling hydrogen powered vehicles to 350 bar in 2002 and then to 700 bar in 2003, making it the world's first 700-bar fast-fill compressed hydrogen vehicle fueling station. http://www.boc.com/news/article_791_01nov04.asp

10. Shell Moves to Phase 3 of 5 in Hydrogen Fueling Stations

Shell Hydrogen opened the first hydrogen dispenser at a retail gasoline station to service a fleet of six fuel cell vehicles from the General Motors Corporation. This is Step 3, in its corporate 5 step expansion plan:

Step One - Stand-alone projects with restricted access (like depots for hydrogen-fueled buses)

Step Two - Second generation sites, with public access, but separate from existing gasoline stations (e.g. the facility Shell opened in Iceland in April 2003 which supplies hydrogen made from water to three city buses)

Step Three - Fully integrated fuel stations (traditional fuels and hydrogen) Step Four - Within the next five years, mini-network "Lighthouse Projects" (semi-commercial, public-private partnerships involving multiple energy companies, governments, and fleets of 100 or more vehicles)

Step 5 - 2010-2020 connecting the mini-networks with corridors and filling in the white spaces.

<http://www.cleantech.com/story.php?nID=3290>

11. GE Global Research to Lead DOE Projects in Production of Hydrogen

GE Global Research announced it was selected by the Department of Energy (DOE) to lead \$11 million of research projects in the development of hydrogen as a fuel source. GE Global Research, along with the California Institute of Technology, will discover materials and develop designs for a solar-to-hydrogen system. GE Global Research, along with the University of Minnesota and Argonne National Laboratory, will develop a revolutionary compact reforming technology that will enable hydrogen to be produced from natural gas and renewable fuels, such as methanol and ethanol. GE Global Research, along with Northwestern University and Functional Coating Technology, LLC, will develop an electrolyzer concept that is efficient, affordable and environmentally friendly. High temperature steam electrolysis using solid oxide technology

has the potential for highly efficient and affordable hydrogen generation. A reversible solid oxide electrolysis cell (SOEC) hydrogen production system capable of producing either hydrogen or electricity on demand is a pathway to a cost-competitive, distributed renewable system. <http://www.research.ge.com/>

12. Quantum Ships First Fuel Cell Vehicle to U.S. Army

Quantum Fuel Systems Technologies Worldwide, Inc., (QTWW) and the U.S. Army TARDEC's NAC (Tank-Automotive Research, Development and Engineering Center's National Automotive Center) unveiled a high performance, fuel cell off-road vehicle, the "Quantum AMV(tm)" (Alternative Mobility Vehicle), nicknamed the "Aggressor." The vehicle is designed and manufactured by Quantum for the U.S. Army under contract with the NAC. http://www.qtww.com/press_releases/pr_nov_01_2004.shtml

13. MTI MICRO Receives OK to Use Methanol Fuel Cartridges on Airplanes

MTI MicroFuel Cells Inc. (MTI Micro), the developer of award-winning Mobion(TM) cord-free rechargeable portable power technology suitable for handheld electronic devices and a subsidiary of Mechanical Technology Inc, (NASDAQ:MKTY), announced it has received United Nations Packaging Certification and is now in U.S. Department of Transportation Compliance for shipment of its methanol fuel cartridges, supporting its initial product launch. With this recognition in place, authorized shippers can now conveniently transport MTI Micro's fuel refills by ground, sea and air, both domestically and internationally. "MTI has emerged as a leader in the development of safe and reliable methanol fuel cartridges and packaging," said John Lynn, President and CEO of the Methanol Institute, the global trade association for the methanol industry. "This is a significant achievement in the acceptance of methanol shipments, and will hasten the eventual widespread market adoption of micro fuel cell technology." <http://www.mtimicrofuelcells.com/news/article.asp?id=191>

14. PolyFuel Challenges DuPont in Automotive PEM Membranes

PolyFuel's membrane technology uses new hydrocarbon-based polymers that show improved operating characteristics over perfluorinated membranes, at substantially reduced cost. For example, perfluorinated membranes typically require high levels of moisture (humidification) for stable operation. Unlike most perfluorinated membranes, PolyFuel's hydrocarbon membrane technology operates stably at low relative humidity. This means that the fuel cell or automotive manufacturers do not have to add overly complicated and expensive systems to keep the membrane hydrated. Additionally, the PolyFuel hydrocarbon membranes retain stability at an operating temperature of 95°C – a fact that reduces engine cooling system complexities and limitations. Furthermore, PolyFuel hydrocarbon membranes produce 10 to 15 percent more power at real-world operating conditions compared to perfluorinated membranes. http://www.polyfuel.com/pressroom/press_pr_100504.html

15. CHBC 2005 Meeting Dates - Save These Dates

February 25, May 20, September 16, November 18

16. CHBC Silver Members

CHBC gives a big thanks to our growing list Silver Members who are major contributors to our growth and success. To learn about our Silver Members:

17. CHBC Board of Directors

To contact the board members, please click info@californiahydrogen.org

18. Be a Member of the California Hydrogen Business Council

Be involved with the leaders in making the hydrogen economy a reality. CHBC is a non-profit organization, which offers a common meeting ground for discussing the technologies, methodologies, and opportunities in the hydrogen economy. Silver Membership is \$1,000 per year and allows organizations to send five people to each meeting at reduced member rates, plus provides valuable marketing opportunities. Individual membership is \$200 per year. To join, visit our website or call (760) 341-2924 with your credit card.

We welcome important news from our members for inclusion on our website and in next month's report. Please send to: info@californiahydrogen.org. Thank you for helping build a great organization.

CHBC Report Publisher, John Addison
Editor, Catherine Rips