**California Hydrogen Business Council**
**November 2003 Report**

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



**Special CHBC Meeting and Tour at Praxair on November 20, 2003**

Join hydrogen leaders for a tour of the Praxair Ontario Hydrogen Production Facility followed by dinner. Speakers include Jeff Richards, Praxair, and S. David Freeman, Hydrogen Car Co. The meeting is from 16:15 to 20:00. Registration is $45.00 for Members and $65.00 for Non-Members until Friday November 14, 2003. An additional $10.00 will be charged for late registration. To register, contact Melissa Stock at (562) 493-4014 or melissastock@socal.rr.com. Payment may be made by check, Visa, M/C or AMEX.

**Praxair to Head U.S. Department of Energy Ultra-Clean Fuel Team**

Praxair, Inc. (NYSE:PX) has been selected by the U.S. Department of Energy (DOE) to lead one of eight teams that will pioneer a new generation of ultra-clean transportation fuels and associated emission controls to meet stringent tailpipe emission standards later this decade. The Praxair team includes BP, Sasol Technology, Statoil, International Truck and Engine, and Nuvera Fuel Cells. The team plans to leverage breakthrough ceramic membrane research to develop a low-cost, environmentally-friendly technology for the production of synthesis gas. The production of synthesis gas, a mixture of hydrogen and carbon monoxide, is a vital step in the production of ultra-clean liquid fuels, including synthetic diesel, synthetic gasoline, methanol and other oxygenates, from natural gas reserves.
http://www.praxair.com/praxair.nsf/1928438066cae92d85256a63004b880d/89cc7d9fd97b31708525696e004f727d?OpenDocument

**130 attend the General Meeting of the California Hydrogen Business Council**

130 attended the October 31 meeting of the CHBC at the Toyota Technical Center in Torrance, California. Though largely a California crowd, attendees came from across the U.S. and Canada, and from as far away as Europe, Japan and Australia/New Zealand. Speakers represented a range of large and small organizations including General Electric Global Research, Toyota, Stuart Energy Systems, Alliances for Discovery, The California Governor's Office for Planning and Research, TIAX, LLC, EmeraChem Corp., Texaco Ovonic Systems, and the National Fuel Cell Research Center. Attendees took a tour of various hydrogen vehicles on display as well as Toyota's hydrogen vehicle refueling station. Some were given the opportunity to drive Toyota's FCHV, and Toyota engineers demonstrated the hydrogen refueling process. Also on display was a hydrogen-powered Toyota Tacoma pickup, and a Hummer H2 retrofitted to operate on hydrogen as well natural gas, biodiesel, conventional diesel and waste cooking oil. Solar

Integrated Technologies displayed their new solar panels providing energy to Stuart Energy's new Energy Deck.

**PriceWaterhouseCoopers Financial Report covering Fuel Cell Corporations**

In North America, most public fuel cell companies are developing proton exchange membrane fuel cells (PEMFC) and related fueling infrastructure. This emphasis on PEMFC technology suggests that investor interest in the potentially huge transportation market has historically outweighed that for portable and stationary applications. However, with commercialization in the portable and stationary markets expected to precede commercialization in the transportation market, companies focused on PEMFC technology may remain dependent on financing for considerably longer than companies focused on other fuel cell technologies. Across the companies surveyed, revenues increased 71%, from US$128 million in 2001 to US$219 million in 2002. Despite an increase in revenue between 2001 and 2002, none of the companies surveyed were profitable, largely due to the high cost of low-volume production and a continual focus on R&D. Losses totaled US$405 million in 2002, up 35% from 2001.
http://www.pwc.com/extweb/ncsurvres.nsf/docid/0156308D26DD0F3E85256DA9005897C2

**Quantum Awarded Military Contract to Develop Fuel Cell Vehicle**

Quantum has been awarded a contract by the U.S. Army TARDEC-NAC (National Automotive Center) to develop and demonstrate a high performance, hydrogen fuel cell powered light-duty, special operations vehicle. The vehicle will be designed by Quantum's Advanced Vehicle Concept Center in Lake Forest, California. This is Quantum's second contract supporting the U.S. Army in the development of hydrogen fuel cell systems applications. This program will integrate a hydrogen fuel cell powered hybrid electric powertrain into a light-duty off-road vehicle, and will achieve performance that meets or exceeds the gasoline internal combustion engine version. Specifically, Quantum will develop a chassis and body, integrate the fuel cell power module, design the electric drive system, design the hydrogen fuel storage and delivery system, and develop the operational and maintenance documentation. Fuel comprises 70 percent of the supplies transported by the Armed Services to support battlefield operations.

http://www.qtww.com/press_releases/pr_oct_08_2003.shtml

**Transition to Alternative Fuels Conference**

On December 9 and 10 a conference that will bring national DOT directors together with a multi-disciplinary set of experts to examine the policy implications of alternative fuels. It will be in Costa Mesa, California, under the sponsorship of the Center for Urban Infrastructure, U.C. Irvine. There will be a number of speakers from federal, state, and local government; vehicle manufacturers; energy firms; UCI and the National Fuel Cell Research Center.
http://www.c-u-i.org/uploadFiles/flyer.htm

**South Coast Air Quality Management District Announces 15th Annual Clean Air Awards**

The South Coast AQMD has an annual awards ceremony to honor the visionaries in the region who have helped in the fight for clean air through innovation, leadership and exemplary service. This year, the President of the California Hydrogen Business Council, Hank Wedaa, was honored as a winner in the category of Leadership in Government.

**Hydrogen Increases Foothold in Combustion Science and Engineering**

Important papers were presented at the Western States Section of The Combustion Institute dealing with research into practical applications of hydrogen in combustion systems. Dr. Jacqueline Chen of Sandia National Laboratories described combustion strategies for hydrogen-

fueled diesel-cycle engines. Reinhard Seiser of UC San Diego presented numerical modeling and experiments on hydrogen ignition phenomena relevant to internal combustion engines. Professor Christopher Cadou of the University of Maryland described guidelines for developing micro-scale hydrogen-fueled engines for future miniaturized devices ranging from unmanned aerial vehicles to laptop computers. At this point, according to Professor Cadou, the major obstacle is a cost-effective and light-weight means of storing hydrogen.
www.wssci.org or www.combustioninstitute.org

**California Hotel and Lodging Association partners with Ida-Tech in 50kW PEM development program awarded by DOE**

IdaTech has been awarded a $9.6 million development program by the U.S. Department of Energy (DOE) for the development of a 50-kW proton exchange membrane (PEM) fuel cell system suitable for providing grid-independent energy sources for large facilities. IdaTech's partners for the program include fuel cell manufacturer Hydrogenics Corporation, Sempra Energy, Puget Sound Energy, Marriott International, and the California Hotel and Lodging Association.
http://www.idatech.com/media/news.html?article=54

**CHBC Silver Members**

California Hydrogen Business Council gives a big thanks to these Silver Members who are major contributors to our growth and success.

- Air Quality Management District
- Air Products and Chemicals
- Apollo Power
- BOC Gases
- California Air Resources Board
- Clean Energy
- EmeraChem
- GE Global Research
- Hydrogen Car Company
- Praxair
- Stuart Energy Systems

**Be a member of the California Hydrogen Business Council**

Be part of the organization that is on the "leading edge" of making the hydrogen economy a reality. The California Hydrogen Business Council (CHBC) provides the link between hydrogen-technology developers, businesses, energy leaders, government, and infrastructure providers. CHBC is a non-profit organization. You are invited to join the California Hydrogen Business Council (CHBC). 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.

Individual membership is $200 per year. Organizations can send five people per meeting at lower rates, plus benefit from added marketing visibility, being Silver Members for $1,000 per year. Send your application today with a check made payable to the "California Hydrogen Business Council," or call with your credit card.


| | | |
|---|---|---|
| CHBC Report Publisher | **Elias Azrak** | eazrak@hydrogen.la |
| CHBC Report Editor | **John Addison** | john@optimarkworks.com |

**California Hydrogen Business Council**
Melissa Stock
melissastock@socal.rr.com
3532 Katella Avenue
Suite 108
Los Alamitos, CA  90720
Phone 562-493-4014

**http://www.californiahydrogen.org**