

California Hydrogen Business Council January 2004 Report

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1. California Hydrogen Business Council (CHBC) January 23 Meeting

Join an expected 150 leaders in the hydrogen business at South Coast Air Quality Management District, Diamond Bar, CA for this exciting meeting on January 23, from 9 to 5. Secretary of California EPA, Terry Tamminen, will present in the morning. Presentations will also include the trade-offs in hydrogen production from large-scale reformation Vs. onsite reformation Vs. electrolysis. Hear the financial side of hydrogen systems. Get updates on what is going on at the California State Stationary Fuel Cell Collaborative, SCAQMD, U.C. Davis, major automotive makers, and early stage companies. Add this meeting to your calendar. Save money by paying in advance. Advance registration is \$25 for Members and \$75 for Non-Members. After January 16th the cost goes up to \$35 for Members and \$100 for Non-members. Contact Melissa Stock at 562-493-4014 or melissastock@socal.rr.com to ensure your reservation. Payment may be made by check, Visa, M/C or AMEX.

2. Stuart Energy Partners with the Hydrogen Car Company

Stuart Energy Systems Corporation (TSX: HHO) announced today that it has formed a strategic partnership with the Hydrogen Car Company (HCC), led by S. David Freeman, former Chairman of the California Power Authority. HCC is a privately-held, California-based company focused on developing and marketing a new generation of cars and trucks that are powered by hydrogen internal combustion engines (H2ICEs). To support the sale of its vehicles, HCC will exclusively offer Stuart Energy hydrogen fueling infrastructure solutions to its customers, ranging from the Personal Energy Stations (PES), under development for home fueling, to large scale Hydrogen Energy Stations (HES), currently being deployed around the world for fleet fueling and power applications. In addition to being an exclusive hydrogen infrastructure partner, Stuart Energy is also a strategic investor in HCC.

http://www.stuartenergy.com/main_media_center.html

3. Hydrogen Production and Storage Forum Presentation Summary

Speakers at Intertech's 2003 "Hydrogen Production and Storage Forum," held in Washington, D.C., presented roadmaps and breakthroughs. One speaker, addressing the chicken and egg quandary of what comes first - H2-powered fuel cell vehicles or the infrastructure to refuel them - declared "the chicken has won," based on the growth of H2 fueling stations throughout the world. Christopher Bordeaux, with the U.S. Department of Energy's (DOE) Hydrogen Program, stated that government supported hydrogen fuel initiatives and the FreedomCAR program "will ultimately provide freedom from foreign oil by bringing vehicle technology and a hydrogen initiative together at the right time in history." Bordeaux said that "hydrogen storage is a number one priority within the Hydrogen Road Map." For consumers to accept H2-fueled vehicles, 25% of all existing refueling stations will need to dispense H2, suggests David Cepla, vice president of business

development for HyRadix Inc. The DOE has set an ultimate target cost per kg of H₂ at refueling stations at \$1.50. Cepla believes the market penetration can be achieved within the next two decades with government leadership such as that it provided for the switch from leaded to unleaded gasoline. This timeline could be accelerated. The storage efficiency requirements for H₂ by 2015 will be at least double those in 2005, predicts Neel Sirosh, director of advanced technologies for Quantum Fuel System Technologies Worldwide (QFST). The company developed the world's first 5,000-psi H₂ storage system for Hyundai, using its TriShield tanks, and the first 10,000-psi system in collaboration with GM and DOE. More good news comes in another fact Sirosh provided: There are three million vehicles running today on natural gas and using pressurized tanks similar to those required for H₂.
<http://www.fcellreport.com/FCIR/fcirreport2004.asp>

4. New Technologies for Hydrogen Reformation

On 17 and 18 June 2004 a workshop is organized at the University of Twente on the topic of existing and advanced syngas production technology. Presently steam reforming and partial oxidation techniques or combinations of both are widely performed, but there are many new technologies, for both small and large scale applications in development. The production of synthesis gas from natural gas is competitive and or complementary to production from other basis hydrocarbons. Therefore gasification technologies like coal, waste and biomass gasification that are rapidly being developed are of interest to compare in performance and technology. It is expected that many significant results recently have come available. An international workshop on existing and new technologies will be of high importance for the proliferation of advanced synthesis gas production technology. Aimed is that many universities, institutes, engineers and contractors as well as users of the technology will attend to have an overview about what is on the market and what can be expected in the near future.
<http://thw.civ.utwente.nl/Events/symposiumPOGT/>

5. Customer choices will drive hydrogen economy, Shell Hydrogen CEO tells summit.

Jeremy Bentham, Chief Executive Officer of Shell Hydrogen, addressing the inaugural meeting of the International Partnership for the Hydrogen Economy, told an audience of government and industry leaders that they have an opportunity to champion the adoption of hydrogen as a mass market fuel. This will only succeed if effort is focused on 'moments of truth' – the moment for billions of customers around the world when they choose to use hydrogen and fuel cell applications in their everyday lives. Mr Bentham told the meeting that the development of a hydrogen economy will require breakthroughs to make the technology affordable, and government action to stimulate development and mitigate early commercial risk. Consumers will also need to be convinced of the individual benefits fuel cell vehicles offer, including a smoother, quieter ride, better acceleration, lower maintenance, ample electric power for increasing in-car applications, and increased and more flexible internal space. Shell Hydrogen's estimates show that the initial investment required to supply just two per cent of cars in Europe alone with hydrogen by 2020 would be some \$20 billion. To support this, a consistent regulatory and fiscal climate is required in which hydrogen can become an important part of the energy mix, alongside both cleaner traditional fuels and new developments, such as in the biofuels arena.
http://www.shell.com/home/Framework?siteId=hydrogen-en&FC2=/hydrogen-en/html/iwgen/news_and_library/pressreleases/2003/zzz_lhn.html&FC3=/hydrogen-en/html/iwgen/news_and_library/pressreleases/2003/speech_jeremy_bentham_1911_2003.html

6. Sacramento News Cameras to be powered with hydrogen fuel cells

Sinclair Broadcast Group intends to power its newsgathering cameras with hydrogen-powered fuel cells instead of batteries as part of its NewsCentral central casting venture, which now stretches to 12 of the group's 62 stations. The station group plans to test the environmentally friendly fuel cells as a replacement for traditional camera batteries at its Sacramento, Calif., CBS affiliate, KOVR-TV, next month before dispatching the fuel cells to the rest of its stations later this year. Sinclair will conduct the fuel cell trial in conjunction with a test of a next-generation camera from Panasonic, the P2. Jadoo Power Systems of Folsom, Calif., will supply the clean energy

source to Hunt Valley, Md.-based Sinclair, which invested the majority of the \$5 million round of financing that Jadoo raised in October.

<http://www.tvweek.com/technology/011204fuelcells.html>

7. Corporate Venturing & Strategic Investing Conference

Association of Strategic Alliance Professionals

February 3 - 5, in Rancho Mirage, California, there will be a conference of strategic alliance and private equity investment executives. This conference will focus on how Fortune 1000 corporate investors can further develop their investing and strategic alliance programs and navigate investing in this challenging market. The conference will highlight successful alliance programs and detail how they are managing their existing portfolio companies; how they are adding value by returning to the corporate development focus of the core business and which niches they are targeting. At the conference, CHBC Board Member, John Addison, will present "Breakthrough Alliances for Breakthrough Innovation." John Addison, author of Revenue Rocket, will share the new strategies for commercializing disruptive technology, achieving market leadership, and partner excellence. This session will include a panel of executives who will share how they have created successful partnerships in the hydrogen and fuel cell market.

<http://www.strategic-alliances.org/>

8. U.S. Fuel Cell Council's Media Guide is now available

The third edition of the U.S. Fuel Cell Council's Media Guide is now available, featuring detailed listings for more than 110 key players in the fuel cell industry. "Not a day goes by without a story about fuel cells and the hydrogen economy in a major publication or on the air. The Media Guide provides detailed listings for more than 110 fuel cell developers and manufacturers, key component suppliers, fuel providers, end users, research institutions and governmental agencies. Each listing provides press and general information contacts, web site addresses, and a brief description of the company's fuel cell activities.

www.usfcc.com

9. 30% efficiency in Solar Electrolysis

Chemists at the University of Massachusetts at Boston say they have discovered a way to double the efficiency of a solar-powered process used to generate hydrogen fuel. "This is a fundamental step in hydrogen production," said UMass professor Stuart Licht, the project's team leader. Unlike current solar hydrogen generators that only make use of the electrical portion of light particles, the UMass process also harnesses the thermal energy produced by the infrared portion of the spectrum. This energy is used to heat the water to 600 degrees Celsius, at which point it is injected into an alkaline solution and then forced to split into hydrogen and oxygen molecules using electrical energy.

<http://www.wired.com/news/autotech/0,2554,61245,00.html>

10. CHBC Silver Members

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

- South Coast Air Quality Management District
- Air Products and Chemicals
- Apollo Power
- BOC Gases
- California Air Resources Board
- Clean Energy
- Collier Technologies
- EmeraChem
- General Electric
- Hydrogen Car Company
- Hydrogenics Corporation
- Praxair

- Stuart Energy Systems

11. CHBC Board of Directors

Members have requested CHBC Board contact information. Feel free to contact us at info@californiahydrogen.org.

12. 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.

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