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1. CHBC to Meet in Sacramento April 27

The January 18 CHBC meeting, hosted by South Coast Air Quality Management District, was well attended and very well received by participants. But if you missed that conference, you get another chance! Mark your calendars now for Friday, April 27. At the request of industry members and friends in Northern CA, we will once again return to CalEPA in Sacramento. Legislators and staffers are welcome to attend. Following the Sacramento meeting, we'll hold day-long conferences on Friday, July 27 (location to be announced) and Thursday, October 25 (location to be announced). More details will be released soon.

[CHBC](http://www.californiahydrogen.org): <http://www.californiahydrogen.org>

2. Major Material Handling Dealership Provides Market Channel for HyPX™ Fuel Cell Power Pack

Hydrogenics Corp. recently announced it has entered into a distribution agreement with LiftOne, a division of Carolina Tractor. A leading full-service material handling dealership, LiftOne is Hydrogenics' first distributor for the company's HyPX(TM) Fuel Cell Power Pack product for lift trucks. Under the agreement, LiftOne will market, sell, and service the HyPX fuel cell solution to potential end-users in Virginia, North Carolina and South Carolina. Hydrogenics HyPX Power Pack incorporates a hybrid fuel cell power solution, fueled by hydrogen, to deliver a zero emission 'plug and play' lead acid battery replacement for forklift trucks.

[Hydrogenics](#):

http://www.http://www.hydrogenics.com/ir_newsdetail.asp?RELEASEID=224676

3. Honda FCX Concept Displayed at North American International Auto Show

The fully-functional Honda FCX Concept vehicle displayed at the North American International Auto Show features a newly developed compact, high-efficiency Honda FC Stack as well as a low-floor, low-riding, short-nose body. To meet Honda objectives the FCX Concept is equipped with a V Flow fuel cell platform consisting of a compact, high-efficiency fuel cell stack arranged in an innovative center-tunnel layout. This has allowed designers to create an elegant, low-riding, sedan form that would have been difficult to achieve in a conventional fuel cell vehicle. This new fuel cell stack is 20 percent smaller and 30 percent lighter than the current FCX FC stack, yet its power output is 14kW greater. The FCX Concept offers improved energy efficiency and performance along with a more spacious interior.

[Honda](http://www.hondanews.com/CatID1000?mid=2007010830542&mime=asc): <http://www.hondanews.com/CatID1000?mid=2007010830542&mime=asc>

4. BMW Hydrogen 7 Canadian Premiere at Canadian International Auto Show

BMW Group Canada will present the BMW and MINI product line highlights at the Canadian International Auto Show (CIAS) Press Day on February 14th, 2007. This event will mark the Canadian premiere of the BMW Hydrogen 7 - the world's first hydrogen-drive luxury performance automobile. The BMW Hydrogen 7 is the world's first hydrogen-powered luxury sedan designed for everyday use. It is based on BMW's 7 Series model and is equipped with an internal combustion engine capable of running either on liquid hydrogen or gasoline. When running in hydrogen mode, the BMW Hydrogen 7 essentially emits nothing but water vapour, dramatically reducing emissions. The BMW Hydrogen 7 is powered by a 260 hp twelve-cylinder engine with peak torque of 287 lb-ft at 4,300 rpm. It accelerates to 100 km/h in 9.5 sec and has a top electronically limited speed of 230 km/h.

[BMW](http://www.newswire.ca/en/releases/archive/January2007/19/c6208.html): <http://www.newswire.ca/en/releases/archive/January2007/19/c6208.html>

5. GM Introduces E-Flex Electric Vehicle System

GM has introduced a new family of electric vehicle propulsion systems -- the E-Flex Systems -- and showed the first concept application of E-Flex at the North American International Auto Show: the Chevrolet Volt, a 40-mile all-electric range (AER) plug-in hybrid. E-Flex initially uses a plug-in capable, battery-dominant series hybrid architecture. The E-Flex vehicles are all electrically-driven, feature common drivetrain components, and will be able to create electricity on board (either through a genset or a fuel cell). Regenerative braking will also contribute to the on-board electricity generation. (E stands for electric drive and Flex for the different sources of electricity.)

[GM](http://www.greencarcongress.com/2007/01/gm_introduces_e.html): http://www.greencarcongress.com/2007/01/gm_introduces_e.html

6. Two American Icons Deliver Ford Airstream Concept

Playing to win in the growing crossover segment, Ford has joined with another iconic company to showcase how it could further expand its lineup of expressive crossovers with the Ford Airstream Concept. The concept is powered by a plug-in hydrogen hybrid fuel cell drivetrain -- called HySeries Drive(TM)-- that operates under electric power at all times. This advanced fuel cell system is half the weight and cost of today's fuel cells and can operate in the dead of winter. That's a major step forward because today's fuel cells don't do well when the mercury dips below freezing. The new fuel cell is supplied by Ford partner Ballard.

[Ford Airstream](http://media.ford.com/newsroom/release_display.cfm?release=25147): http://media.ford.com/newsroom/release_display.cfm?release=25147

7. Mazda5 Hydrogen RE Hybrid

Mazda's current hydrogen-rotary project is the Mazda5 Hydrogen RE Hybrid, an adaptation of the Mazda5 minivan introduced last year. RE stands for rotary engine, and the rest explains itself: The concept's engine can run off hydrogen or gasoline, and is

supplemented by an electric motor, thus the hybrid designation. Drivers can switch between gasoline and hydrogen on the fly. Mazda says its Renesis rotary engine allows optimal conditions for hydrogen fuel. Exhaust and intake ports, adjacent in a conventional cylinder head, can lead to backfiring if hydrogen ignites prior to the combustion stroke. Because of the distance between the Mazda rotary engine's intake and exhaust ports - and the fact that its chambers are isolated by the rotor's apex seals - intake temperatures are lower and backfire is less likely. With hydrogen fuel, the total output is 108 horsepower; gasoline yields 207 hp.

[Mazda:](#)

http://www.cars.com/go/features/autoshow/vehicle.jsp?autoshow=&vehicletype=concept&autoshowyear=2006&vehicle=concept_mazda_mazda5hydrogen

8. Hydrogen Racing Series Unveiled

The Hydrogen Electric Racing Federation (HERF) was unveiled on January 10, the first step toward on-track competition for hydrogen electric fuel cell-powered racing. HERF plans on beginning that on-track competition, dubbed the "Hydrogen 500," beginning in 2009, with additional races, including international events in 2010 and 2011. Peter M. DeLorenzo, president and CEO of the HERF, introduced "The Future of Racing" in a speech before auto industry executives, senior executives from Bridgestone-Firestone and Michelin, as well as Tony George, the CEO of the Indianapolis Motor Speedway and the Indy Racing League, and Scott Atherton, president and CEO of the American Le Mans Series.

[Racing:](#) <http://www.thestar.com/Sports/article/169869>

9. Hydrogen-CNG Combo Fuel for Autos

The quest for a sustainable source of fuel supply has brought India's automobile rivals together. Tata Motors, Bajaj Auto, Mahindra & Mahindra, Ashok Leyland and Eicher Motors have joined hands under the aegis of the Society of Indian Automobile Manufacturers (SIAM) to participate in a project to create an optimal mix of hydrogen and compressed natural gas (CNG). The idea is to make the fuel mix usable in existing vehicles with minimum modifications in the engine and engine components. The participating companies are providing seven different types of vehicles for this project, which is being done in partnership with the ministry of new and renewable energy.

[Hydrogen-CNG:](#) <http://www.dnaindia.com/report.asp?NewsID=1074766>

10. Linde Supplies Hydrogen During World Economic Forum

The Linde Group showcased its trailH2(TM) mobile hydrogen filling unit on 24-28 January 2007 in Davos in Switzerland, presenting its hydrogen technologies to the public. While the World Economic Forum (WEF) was being held in Davos, the world market leader for hydrogen plants supplied several Hydrogen 7 BMWs with the climate-neutral fuel. The trailH2(TM), which comprises a 1,000-litre hydrogen dewar vessel and independent electricity supply via an on-board fuel cell, is ideally suited as a flexible fuel supply. It allows increasing numbers of hydrogen-powered vehicles to be mobile at a time when the infrastructure of hydrogen filling stations is still under construction

[Linde:](#)

<http://www.linde.com/international/web/linde/like35lindecom.nsf/0/BB632C1DC549ED11C125726C0037817F>

11. Quantum Awarded Contract For Compressed Hydrogen And Oxygen Storage

Quantum Fuel Systems Technologies Worldwide, Inc. has been awarded a contract by Lockheed Martin to supply its new state-of-the-art hydrogen and oxygen fuel storage tanks for a regenerative power supply system to be used in a stratospheric airship application. Utilizing its expertise in ultra-lightweight all-composite gaseous fuel storage,

Quantum developed unique compressed gas storage systems for oxygen and hydrogen with higher system weight efficiency than has been demonstrated in the past. Additionally, the storage systems have been designed and tested to withstand an extreme range of conditions from sea level to high altitude.

[Quantum](http://www.e-composites.com/frontend/newspage.aspx?sno=3589): <http://www.e-composites.com/frontend/newspage.aspx?sno=3589>

12. H2Gen Innovations Provides Hydrogen Generator for Orlando Energy Station

H2Gen Innovations, Inc. has delivered its factory-tested HGM 2000 hydrogen generation system to Chevron Hydrogen Co., for use in Chevron's hydrogen energy station being constructed near the Orlando, FL airport. The H2Gen generator is capable of reforming natural gas to produce 115 kg of hydrogen per day, enough to power at least eight of the HICE buses to be used at the airport. The generator passed a rigorous in-factory test during which it was available 99.75% of the time while producing 99.999% pure hydrogen. The unit has also received CSA certification, a requirement for incorporation into Chevron's hydrogen energy station.

[H2Gen](http://home.businesswire.com/portal/site/google/index.jsp?ndmViewId=news_view&newsId=20070108005323&newsLang=en):

http://home.businesswire.com/portal/site/google/index.jsp?ndmViewId=news_view&newsId=20070108005323&newsLang=en

13. DOE Solicits Input on Sodium Borohydride

The DOE Hydrogen Program recently issued a Federal Register Notice (PDF 78 KB) soliciting input regarding the hydrolysis of sodium borohydride for on-board vehicular hydrogen storage applications. Input is due by April 30, 2007. This information will be used as part of DOE's go/no-go decision consideration in determining the future of applied research and development of hydrolysis of sodium borohydride for on-board hydrogen storage, including regeneration of the spent fuel.

[DOE RFP](http://www.fuelcellsworks.com/Supppage6712.html): <http://www.fuelcellsworks.com/Supppage6712.html>

14. DOE Advances Production of Hydrogen from Coal

The U.S. Department of Energy announced the selection of six research and development projects that will promote the production of hydrogen from coal at large-scale facilities. This central approach will combat climate change by allowing for the capture - and subsequent sequestration - of carbon dioxide generated during hydrogen production. The large-scale production of hydrogen from coal faces several technological challenges that must be overcome before its widespread use becomes a reality. To address these challenges, the new cost-shared projects will focus on two areas of interest: Ultra-Pure Hydrogen and Process Consolidation. The six projects total nearly \$9.4 million in value, with DOE providing \$7.4 million and industry partners contributing more than \$1.8 million.

[DOE](http://www.netl.doe.gov/publications/press/2006/06070-Hydrogen_from_Coal_Projects.html): http://www.netl.doe.gov/publications/press/2006/06070-Hydrogen_from_Coal_Projects.html

15. EERC Demonstrates Hydrogen Production at Ethanol Facilities

The Energy & Environmental Research Center (EERC) at the University of North Dakota is leading a project to demonstrate the production of hydrogen at existing and future ethanol facilities in a unique, economical way, providing a near-term path toward a hydrogen economy. The hydrogen produced could be used on-site in fuel cells to provide additional power for the plant or as fuel for hydrogen vehicles. Under the multiyear contract, the EERC's Centers for Renewable Energy and Biomass Utilization are testing the technical feasibility of integrating hydrogen production with ethanol production. Activities include optimizing the ethanol-reforming process, demonstrating utilization of the produced hydrogen for power generation, optimizing the design for future ethanol

plants, and conducting a full economic evaluation of the technology.

[Ethanol](http://www.undeerc.org/newsroom/newsitem.asp?id=279): <http://www.undeerc.org/newsroom/newsitem.asp?id=279>

16. Raymond Receives Funding from New York to Develop Fuel Cell Technology

The Raymond Corp. announced that it has been awarded a contract for \$750,000 from the New York State Energy Research and Development Authority (NYSERDA) to research hydrogen fuel cell applications in electric lift trucks. Beginning this year, Raymond's Greene, N.Y., manufacturing facility will become a "living lab," with hydrogen fuel cell-powered Raymond forklifts in the facility. Raymond also will develop the necessary infrastructure for indoor fast-fill hydrogen refueling systems, which represents new technology (refueling systems are typically installed outdoors). Expected outcomes include a working indoor refueling system that meets all required code and standard requirements, and documented best practices for the design and application of indoor refueling systems.

[Raymond](http://www.raymondcorp.com/content/viewArticle.cfm?articleID=220): <http://www.raymondcorp.com/content/viewArticle.cfm?articleID=220>

17. Hydrogen-Powered Lawnmowers?

In a breakthrough that could make fuel cells practical for such small machines as lawnmowers and chainsaws, researchers have developed a new mechanism to efficiently control hydrogen fuel cell power. Many standard fuel cell designs use electronics to control power output, but such designs require complex systems to manage humidity and fuel recovery and recycling systems to achieve acceptable efficiency. The new process controls the hydrogen feed to match the required power output, just as one controls the feed of gasoline into an internal combustion engine. The system functions as a closed system that uses the waste water to regulate the size of the reaction chamber, the site where the gasses combine to form water, heat and electricity. National Science Foundation (NSF) awardee Jay Benziger of Princeton University developed the new technique with his student Claire Woo. Their findings are published in the February 2007 Chemical Engineering Science, now available online.

[Lawnmowers](http://www.nsf.gov/news/news_summ.jsp?cntn_id=108293&org=NSF&from=news):

http://www.nsf.gov/news/news_summ.jsp?cntn_id=108293&org=NSF&from=news

18. A Boost for Hydrogen Fuel Cell Research

The development of hydrogen fuel cells for vehicles is another step closer. Researchers with the U.S. Department of Energy's Lawrence Berkeley National Laboratory (Berkeley Lab) and Argonne National Laboratory (ANL) have identified a new variation of a familiar platinum-nickel alloy that is the most active oxygen-reducing catalyst ever reported. The slow rate of oxygen-reduction catalysis on the cathode - a fuel cell's positively charged electrode - has been a primary factor hindering development of the polymer electrolyte membrane (PEM) fuel cells favored for use in vehicles powered by hydrogen. "The existing limitations facing PEM fuel cell technology applications in the transportation sector could be eliminated with the development of stable cathode catalysts with several orders of magnitude increase in activity over today's state-of-the-art catalysts, and that is what our discovery has the potential to provide," said scientist Vojislav Stamenkovic.

[Breakthrough](http://www.chemie.de/news/e/61303/?pw=a&defop=and&wild=yes&sdate=01/01/1995&edate=01/29/2007):

<http://www.chemie.de/news/e/61303/?pw=a&defop=and&wild=yes&sdate=01/01/1995&edate=01/29/2007>

19. Danish Government Backs Fuel Cell Future

The Danish government has unveiled a range of initiatives designed to establish a hydrogen economy, releasing funding worth almost \$200 million. With \$33 million in annual financial support included for the development of fuel cells and plans for a tax break on all hydrogen cars, the government has committed to a clean energy programme

expected to deliver results by 2025. Funding for research and development in the energy industry will be ramped up to \$160 million annually under the National Hydrogen & Fuel Cell Strategy as part of a broader effort to use cleaner power. Among the key objectives of the plan is the delivery of hydrogen infrastructure in Scandinavia by 2012, with the Danish Energy Authority building on goals first set out in the 2005 National Hydrogen & Fuel Cell Strategy.

[Denmark:](#)

<http://www.fuelcelltoday.com/FuelCellToday/IndustryInformation/IndustryInformationExternal/NewsDisplayArticle/0,1602,8710,00.html>

20. Australia-State Joins International Charge on Hydrogen

The State Government has joined forces with six cities in Europe and Canada to promote the use of hydrogen as a sustainable transport fuel. Planning and Infrastructure Minister Alannah MacTiernan has signed a Memorandum of Understanding, along with representatives from Amsterdam, Barcelona, Berlin, Hamburg, British Columbia and London, outlining the establishment of an international working group committed to promoting hydrogen and fuel cell technology. "The working group will aim to demonstrate the existence of potential global markets for hydrogen-powered bus technologies to suppliers of hydrogen buses and refuelling infrastructure," she said. "We hope this will encourage these suppliers to commercialise hydrogen buses as soon as possible."

[Australia:](http://www.fuelcellworks.com/Suppage6765.html) <http://www.fuelcellworks.com/Suppage6765.html>

21. HICE Symposium and Clean HDV Conference

The Clean Heavy-Duty Vehicle Conference, to be held at the Hilton Los Angeles/Universal City, CA, is the only national conference that focuses on clean advanced technologies and fuels for these vehicles. It provides participants with an opportunity to discuss and define what the road map should be for advanced technologies and fuels for the 21st century heavy-duty vehicle industry. Leading executives from truck and engine manufacturing companies and suppliers, advanced technology companies, oil industry, as well as high-ranking officials from federal, state, and local government regulatory agencies, and users of clean heavy-duty vehicles are featured speakers. CHBC is a Support Sponsor of the event, as well as of the affiliated Hydrogen Internal Combustion Symposium,

[CalStart:](http://www.calstart.org/programs/chdvc/index.php?p=programs) <http://www.calstart.org/programs/chdvc/index.php?p=programs>

22. NHA March 19-22, 2007

The 2007 National Hydrogen Conference and Expo US will be held March 19-22 in San Antonio, TX. The preliminary program includes presentations by many CHBC Silver members, including BMW, Honda, Linde, Shell Hydrogen and others. Also on the program are General Motors, Chevron, Toyota and the U.S. Army Research, Development and Engineering Command, Honda. A Ride & Drive will once again be managed by the California Fuel Cell Partnership.

[NHA 2007:](http://www.hydrogenconference.org) <http://www.hydrogenconference.org>

23. Membership Benefits

To give members the benefits of membership and sponsorship, CHBC has reorganized membership levels and perks. Platinum membership has been reduced to \$5,000 per year and includes your logo on each page of the CHBC website for one year, your firm credited as sponsor of two General Meetings during the year, and two free registrations at each CHBC meeting for 12 months. Gold membership has been reduced to \$2,500 and includes your firm credited as a sponsor of one General Meeting during the year and one free registration to each CHBC General meeting for one year. Silver membership remains the buy of the century at \$1,000; Individual membership is \$200. Please see

<http://www.californiahydrogen.org/page.cfm?content=12> for full details. To inquire about membership, contact Managing Director Catherine Rips, info@californiahydrogen.org.

[Gold Members](http://www.californiahydrogen.org/page.cfm?content=61): <http://www.californiahydrogen.org/page.cfm?content=61>

[Silver Members](http://www.californiahydrogen.org/page.cfm?content=33): <http://www.californiahydrogen.org/page.cfm?content=33>

24. 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 - Gary Dixon; Director at Large - John Williams, PE; Director at Large - Allan Bedwell; Director at Large - Fred Silver. To contact the board, please email: info@californiahydrogen.org.

25. 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.

[CHA](http://www.h2.ca/): <http://www.h2.ca/>

[Fuel Cell Markets](http://www.fuelcellmarkets.com): <http://www.fuelcellmarkets.com>

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