California Fuel Cell Partnership Announces 2004 Goals

WEST SACRAMENTO, CA - The California Fuel Cell Partnership plans to add more fuel cell vehicles to the 41 that are currently operating on California roads.

And, says a mid-February announcement about the partnership’s goals for this year, more hydrogen fueling stations will be built as well. Other goals include the promotion of “common fit” fueling station/fueling protocols; train 100 community emergency response personnel; help develop codes and standards; publish resource and information materials that will help members and California communities implement demonstration programs; and other activities.

"As fuel-cell powered cars and buses move into the hands of real-world users, we will gradually extremely valuable operating data and lessons," said Firoz Rasul, chairman of Ballard Power Systems and the partnership’s chair this year (H&FC, Nov. 03).

One principal target for the 30-member organization is to have up to 500 fuel cell vehicles in fleet operations in the state by 2007, principally in the metro area of greater Los Angeles and in the San Francisco-Sacramento region. Contact: CAFCP, Joe Irvin (media), 916/371-2899; irvinj@cafcp.org.

Researchers Devise Double-Duty Fuel Cell: Produce Power and Clean Effluent

UNIVERSITY PARK, PA - A team of three environmental engineers at Penn State here have demonstrated a double-duty microbial fuel cell (MFC) that cleans wastewater flushing down the drain while at the same time generating electricity.

The power output so far is tiny - 10-50 milliwatt per square meter of electrode surface - but at the same time it removes up to 78% of the effluent’s organic matter, as measured by biochemical oxygen demand, reports a Penn State release.

Bruce S. Logan, a professor of environmental engineering and the project’s director, says microbial fuel cells "may represent a completely new approach to wastewater treatment. If power generation in these systems can be increased, MFC technology may provide a new method to offset wastewater treatment plant operating costs, etc.

Dr. Bruce Logan and Dr. Hong Liu work with their microbial fuel cell. Photo by Greg Grieve, Penn State.
making advanced wastewater treatment more affordable for both developing and industrial nations. The Penso State device consists of a tube about six inches long and 2.5 in. in diameter. In it are eight graphite anodes, the negative electrode of a fuel cell, with about 36 square in. of surface area to which the bacteria can adhere and pass electrons to. The cathode is a carbon/platinum catalyst PEM membrane fused to a plastic support tube. Unlike other microbial fuel cells where, according to Logan, various kinds of bacteria are typically added to the system, here only the naturally occurring wastewater bacteria drive the process.

First Demonstration Ever

Logan says this is the first demonstration ever that these organisms, skimmed from the settling pond of a treatment plant, can directly produce electricity. These organic fuel cells work through the action of bacteria which can pass electrons to the anodes. From there, the electrons flow to the positive cathode at an electric current where they combine with hydrogen ions (protons) and oxygen to form water. Additionally, an oxidizing reaction occurs in the bacterial cell's interior that lowers the biochemical oxygen demand which in turn cleans the water.

The project is described in a on-line paper by Logan and Dr. Hong Liu, a postdoctoral researcher, and Ramanathan Ramaswamy, a doctoral candidate, "Production of Electricity During Wastewater Treatment Using a Single Chamber Microbial Fuel Cell." It is scheduled for future publication in the "Environmental Science and Technology" journal. Contact: Dr. Logan, 814/663-7905, blogan@pms.edu; Pensio State media office, Barbara Hake or Vicki Fong, 814/663-9485, bhake@pms.edu, vefong@pms.edu.

Briefly Noted

* Preliminary results of an ongoing five-country public perceptions survey of hydrogen-powered buses indicates that support for hydrogen and fuel cells is generally high, but that knowledge about them is rather low. The early results of the two-week half-year study, "AcceptH2: Public Perception of Hydrogen Buses in Five Countries," are based on surveys and interviews conducted in London, Luxembourg and Penth. They were presented at the International German Hydrogen Energy Congress Feb. 11-12 in Essen. Still to come is a report from Berlin and Oakland, CA. Also among the preliminary findings: males and individuals with a higher level of education; hydrogen evokes both positive (environment) and negative associations (danger, explosive); there is practically no opposition to the introduction of hydrogen fuel and hydrogen vehicles; and in Luxembourg, more than 50% of all respondents would be willing to pay between Euro 0.01 and 0.30 in additional bus fare for hydrogen buses. Source: canadasources-web.com/www.accepth2.com

* A six-city series of educational hydrogen workshops organized by the U.S. Energy Department will kick off this month, March 26, in Lansing, MI in cooperation with Lansing Community College and Michigan's NextEnergy, the state's comprehensive energy plan. Announcing the series last month, Energy Secretary Spencer Abraham said this energy "revolution will succeed only through cooperation among federal, state and local partners." The other stops are Austin, TX April 16, with other sessions to be held in New Orleans, Baltimore, DC and Philadelphia. The project is being partially funded by the Canadian Transportation Fuel Alliance, an initiative with Canada's government. Separately, Hydrogenics announced it has been contracted by the U.S. Navy's Naval Surface Warfare Center-Crane division to provide a PEM electrolysis HylYzer 2 hydrogen refueling for the center's test facility in Crane, IN. Delivery is scheduled for the middle of this month. In early February, Hydrogenics and it had sold its first 10 kW HyPM fuel cell power module to a major Japanese corporation, also for delivery this month. The deal also includes a newly developed diagnostic stand. And finally, Hydrogenics reported that the end of February an agreement with Maxwell Technologies, Inc., Santa Clara, CA as preferred supplier to integrate Maxwell's BOOSTCAP ultracapacitors into the Canadian firm's fuel cell power systems. The deal is to run for four years. Contact: Media, Melody Ginkel, 416/544-4909, melody.ginkel@maxwell.com

* Bend, OR-based IdaTech and RWE Fuel Cells, a subsidiary of Germany large RWE utility, Essen, will jointly install two natural gas-fueled 5 kW fuel cell power generation systems in the representative office of the state of Northrhine-Westfalia in Germany's capital Berlin. The system will work in conjunction with a 28 kW micro gas turbine to augment the electricity, heating and cooling system in the building. Contacts: IdaTech, Harol Koyama, 541/322-1102, koyama@idatech.com; RWE Fuel Cells, Anja Ludvig, 49/40/1292917, ludvig@rwe.de.

* PSA America, Inc., Cleveland, OH says it has signed an agreement with the U.S. Energy Department's National Renewable Energy Laboratory to develop new standards on an accelerated schedule for hydrogen gas dispensing systems and pressure relief devices for hydrogen fuel containers. Under