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# HEET: The Hawaii Energy and Environmental Technology Initiative

Renewable energy resources, new energy technologies, and global environmental issues are playing an increasingly important role in shaping national energy policy. Nothing makes this clearer than the President's recent announcements of the Freedom Car and Freedom Fuel Programs to accelerate development of fuel cells and hydrogen fuel. In anticipation of these needs, the Hawaii Natural Energy Institute (HNEI) at the University of Hawaii (UH), in partnership with the Naval Research Laboratory (NRL) [1] has established the Hawaii Energy and Environmental Technology (HEET) Initiative. Initiated in July 2001, HEET addresses the development and testing of advanced fuel cell systems including fuels processing, and the characterization and development of sea-floor based methane hydrates. The HEET Initiative is funded through the Office of Naval Research and managed by HNEI. A member of the hydrogen research community since 1985, HNEI was designated a U.S. Department of Energy (DOE) Center of Excellence for Hydrogen Research and Education in 1996.

The HEET initiative was founded on the premise that it would serve as a hub for partnerships among the community, local and national industry, and national and international research organizations and could serve as a vehicle to stimulate economic development in the State of Hawaii while serving critical Department of Defense needs. HEET has been very successful in meeting these objectives. Under Phases 1 and 2, HNEI established strong partnerships with UTC Fuel Cells and Hawaiian Electric Company to develop the Hawaii Fuel Cell Test Facility [2]. Announced in January 2002 and opening for operations in April 2003, this facility with its state-of-the-art test stands for full-size single cells is attracting interest from other industrial and Department of Defense partners. The expertise and partnerships developed under HEET are also serving as catalysts for other, independently funded fuel cell and hydrogen related projects. These include the $3 million DOE funded multipartner project to develop a Hydrogen Power Park [3] incorporating a commercial hydrogen fuel cell; potential precommercial demonstrations of fuel cell technology for stationary power plant and transportation applications; and a pending agreement with Lawrence Livermore National Laboratory for work on solid-oxide fuel cells.

While the Hawaii Fuel Cell Test facility has garnered much of the public attention, exploratory work on novel fuel cell systems and into the development of methane hydrates, a significant component of HEET, continues to be of strong interest to the U.S. Navy. Recent assessments show that hydrogen-rich methane hydrates in undersea basins may be an enormous energy resource that could satisfy the energy needs of the world for centuries. Recent accomplishments in this area include discovery of a new methane hydrate bed on the Cascadian Margin off the coast of British Columbia, Canada and formation of an international partnership, which was initiated with a joint NRL/UH workshop in March 2001.

For more information on the research activities in these areas go to Fuel Cells [4] and Methane Hydrates [5].

Contact: Richard E. Rocheleau [6], HNEI Director

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**Links:**
[1] http://www.onr.navy.mil/

[2] http://www.hnei.hawaii.edu/research-development/fuel-cells/fuel-cell-testing
[3] http://www.hnei.hawaii.edu/research-development/hawaii-hydrogen-power-park
[4] http://www.hnei.hawaii.edu/research-development/fuel-cells
[5] http://www.hnei.hawaii.edu/research/ocean-researches/methane-hydrates
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