



## Power+Energy™

Fueling the Hydrogen Economy

### Power+Energy Inc. Receives Contract To Develop Hydrogen Separation Technology For Fuel Cells

*SBIR to Address Use of Diesel in Shipboard Fuel Cells*

For Immediate Release

IVYLAND, Pa./EWorldWire/Aug. 24, 2004 --- Power+Energy Inc., located near Philadelphia, has been awarded a contract to develop hydrogen separation membranes as part of a system for generating hydrogen from diesel fuel. The Phase II SBIR program issued by the Office of Naval Research will provide technology to the NAVSEA center located at the Philadelphia Navy Yard. Under this program, P+E and another firm will deliver components critical for the Navy's plan to utilize logistical diesel fuels as the feedstock for surface vessel shipboard proton-exchange-membrane-based fuel cells.

Diesel presents two major challenges as a fuel for PEM fuel cells. First, diesel fuel contains high levels of sulfur, which damages fuel-reforming catalysts. Second, reforming diesel fuel generates large quantities of carbon monoxide, which damages PEM fuel cells. This project is intended to address both issues by efficiently separating pure hydrogen from a gas stream consisting of reformed diesel fuel.

Power+Energy Inc. will develop a compact, high efficiency, sulfur-tolerant hydrogen separation membrane that will remove all impurities including the carbon monoxide and sulfur from the fuel stream. The system is intended to deliver the hydrogen needed to operate the ship-board fuel cells. The contract calls for P+E to deliver hydrogen separation module with an output capacity of 50 kW of hydrogen.

In March, P+E was awarded a DARPA-funded SBIR contract to develop hydrogen membranes for the Army for portable fuel cell applications using methanol as a fuel. The Department of Defense envisions numerous requirements for this technology ranging from 100 Watt back-pack fuel cells to large capacity 500 kiloWatt fuel cells for distributed electric power generation for surface ships.

Power+Energy Inc., established in 1993, is a privately held firm based near Philadelphia. P+E develops and manufactures hydrogen purifiers and separators for a number of applications including semiconductor fabrication, laboratory applications, and for fuel cell development. P+E has a worldwide customer base and supplies hydrogen purifiers to many leading producers of advanced semiconductors.

The company intends to produce hydrogen separation membranes for a variety of applications including the generation of hydrogen from alternative (non-petroleum derived) fuels. P+E is seeking additional collaboration partnerships with firms developing reformers, hydrogen generators, fuel cells and integrated power generation systems.

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**KEYWORDS:** fuel, cell, hydrogen, membrane, renewable, energy, ethanol, automobile, Navy, Diesel, Reformer, separation

**SOURCE:** Power+Energy, Inc.