



## Power+Energy™

Fueling the Hydrogen Economy

### Power+Energy Receives Order For Bulk Hydrogen Purifier System

*Major LED Maker in Japan will install in new fab in early 2004*

For Immediate Release

IVYLAND, Pa./EWorldWire/Dec. 19, 2003 --- Power + Energy, Inc. (P+E), based in Bucks County, Pennsylvania has recently received a purchase order for its new modular, bulk hydrogen purification system. This first system will supply seven hundred liters per minute of ultra high purity hydrogen (UPH) for a new fabrication plant under construction by a leading producer of advanced light emitting diodes. Installation is planned for the first quarter of 2004.

Introduced in July 2003, this new system provides customers with a high reliability supply of large quantities of Hydrogen containing less than 1 part per billion total impurities. This UPH gas is typically used in the manufacture of advanced semiconductor devices such as light emitting diodes, laser diodes and silicon carbide semiconductors. The system can be configured to supply from three hundred liters per minute up to ten thousand liters per minute (twenty two thousand cubic feet or 624 cubic meters per hour) of ultra pure hydrogen.

This bulk supply system integrates multiple P+E purifiers with next generation P130 controllers and new Windows-based PC centralized monitoring and control software. The software allows monitoring and remote control of the modular bulk supply system from LAN-connected PC's. Multiple, redundant purifier cells are integrated into module racks. These modules incorporate manifolding designed to allow individual cells to be serviced or replaced without interruption to the facility's UPH supply. The system features integrated sensors, diagnostics and redundant purifier cells to ensure that self-diagnosed problems are isolated and back-up cells are automatically brought on line to prevent yield losses while maintaining UPH system capacity.

Established in 1993, P+E develops, 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 purifiers to many leading producers of advanced semiconductors. The company has recently developed new hybrid hydrogen separation technology specifically designed for fuel cell applications. This new membrane, based on advanced thin film nano-structures will be an enabling technology for the early adoption of fuel cells using hydrogen generated on-demand from liquid fuel sources.

The United States Department of Defense (DOD) is providing on-going funding for research & development. At the request of the DOD, P+E has submitted a proposal for additional funding to develop a hydrogen separation membrane that would be suitable for portable fuel cells. This same technology will also be utilized for future to provide lower cost hydrogen purifiers for an expanded range of semiconductor applications.

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