



NEWS RELEASE

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

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

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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.

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.

### About Power+Energy

Power & Energy is headquartered in Pennsylvania, USA. Established in 1993, the company's mission is to enable the hydrogen economy and promote energy efficiency through the application of micro-channel technologies. The company provides a full range of micro-channel hydrogen purifiers to ultra-high purity users across the U.S., Asia and Europe.

Power & Energy is leading the way to the hydrogen economy with proprietary manufacturing and patented hydrogen purification, separation and generation technologies. Power & Energy's Micro-Channel palladium-alloy hydrogen purifiers purify any grade of hydrogen to nine-nines purity, meeting the most stringent requirements for semiconductor fabrication processes, including light emitting diode manufacture, solar cell manufacture and the manufacture of other compound and silicon semiconductors. Power & Energy's Micro-Channel hydrogen purifiers are also ideal for metallurgy, R&D, and instrumentation applications. Power & Energy's Micro-Channel membrane systems can also be used to efficiently separate hydrogen from reformed fuels and synthesis gas mixtures.

Power & Energy is now applying its hydrogen expertise to the fuel cell vehicle refueling market. Power & Energy has recognized that highly compact, low cost, and efficient hydrogen generators that can convert existing liquid fuels to hydrogen at the refueling station will enable the rapid development of the hydrogen refueling infrastructure that fuel-cell

vehicles will require. The company's expertise in the design and manufacture of micro-channel gas processors provides the basis for this exciting new venture.

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