



## **PPS Selected by US Department of Energy to Develop Advanced Power Electronics for Grid-connected Hydropower Applications**

**September 24, 2009-** Princeton Power Systems was awarded a Phase I Small Business Innovative Research (SBIR) contract from the US Department of Energy (DOE) Office of Science to develop advanced power conversion systems for commercial tidal, wave, and other hydropower applications.

Using a high-power converter design and silicon carbide (SiC) semiconductor switches, enabled by PPS' patented AC-link circuit design, will allow for a much higher power-density and allow direct connection to 12 kV or higher power lines without a transformer. This will drastically reduce the space and logistics requirements for the power electronics in tidal, wave, and other hydropower systems, and increase the efficiency of transmitting power and interconnecting with the utility grid. Ultimately, this will reduce the cost of ocean and hydropower sources and make them more efficient and more compatible with the existing electric grid.

Darren Hammell, Co-founder and Executive Vice President of Business Development stated, "We are excited to expand the use of our AC-link power electronics technology to the rapidly growing sector of grid-connected hydropower applications. Our history of providing rugged components for Navy applications will ensure that our designs can endure the unique environmental requirements of these systems."

Hydropower generators face unique problems transmitting power to shore and integrating with the electric grid, due to long transmission distances, high-voltage interconnections, and corrosive outdoor operating environments that lead to unique form-factor requirements. As grid-integration standards evolve, power electronics are often required, and can provide substantial improvements in efficiency, communications and monitoring capabilities, and grid-integration. There is currently an unmet market need for advanced high-power electronic converters that are small, water-cooled, and efficiently and cost-effectively tie in to high-voltage transmission lines for hydropower systems; this need will be addressed under this research program.

Wave, tidal, and other hydropower generation systems are a clean, non-polluting energy generation source, and have the potential to displace large amounts of polluting, non-renewable power plants.

## **About Princeton Power Systems**

Princeton Power Systems is a manufacturer of advanced power conversion products, including AC link, with patented control methods that provide a more reliable and cost-effective means for converting electric power cleanly and efficiently. We have solutions for motor control, renewable energy, distributed power generation, and military power supplies. Our products reduce energy consumption, lower peak electric usage, and provide clean, renewable energy sources with superior performance.

## **About the US Department of Energy's Office of Science**

The Office of Science is the single largest supporter of basic research in the physical sciences in the United States, providing more than 40 percent of total funding for this vital area of national importance. It oversees – and is the principal federal funding agency of – the Nation's research programs in high-energy physics, nuclear physics, and fusion energy sciences. Furthermore, the Office of Science manages fundamental research programs in basic energy sciences, biological and environmental sciences, and computational science. In addition, the Office of Science is the Federal Government's largest single funder of materials and chemical sciences, and it supports unique and vital parts of U.S. research in climate change, geophysics, genomics, life sciences, and science education.

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