

BATTERY POWER PRODUCTS & TECHNOLOGY

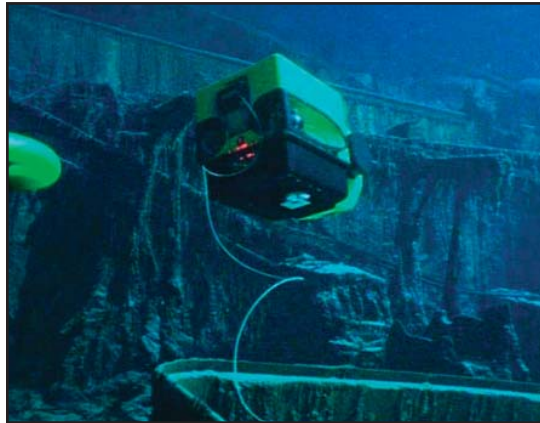
Solutions for OEM Design Engineers, Integrators & Specifiers of Power Management Products

Lithium Technology Corp. Takes Unmanned Underwater Vehicles To New Depths

Lithium Technology Corp. (LTC) has developed, in conjunction with Phoenix International, Inc., a marine services contractor, a high performance pressure-tolerant battery for unmanned underwater vehicle (UUV) applications. UUVs are increasingly used to perform underwater work faster and more efficiently while removing the need for a manned presence from an inherently dangerous environment.

LTC's pressure-tolerant lithium-ion cells are integrated into Phoenix-designed battery packages and can withstand ocean pressures greater than 10,000 per square inch (psi), which is equivalent to a water depth exceeding four miles. The US Navy funded the battery project for use in military UUVs, which have also been applied to scientific as well as commercial applications including oil exploration, water tunnel inspection and cinematography.

In a collaborated effort, each LTC cell is equipped with integrated electronics, which are married to a battery management system (BMS) developed by Phoenix International. Additionally, each cell is replaceable, making the battery serviceable and cost effective while providing a solu-



tion to other available products.

"We have tested and logged over 800 hours of pressure testing on LTC's final cell design without a single failure," said Andrew Resnick, engineering manager at Phoenix International, Inc. "A result that shows the great promise the battery has to satisfy the stringent standards for military applications."

The first commercial operation, using the jointly developed pressure-tolerant batteries, occurred in July 2005, when Phoenix-designed xBot Remote Operated Vehicles were used

on multiple dives to record previously unexplored areas within the RMS TITANIC for a live program televised on the Discovery Channel. The batteries were the sole power source for the five xBots used in this mission and operated flawlessly in water depths of 12,500 feet (5,419 psi).

"LTC's cells proved impeccable performance during the expedition, enabling the xBots to maneuver further into the deep-water wreck, than ever before, despite the harsh environmental conditions of high pressure and low temperatures," commented Resnick.

As a result of the project's success, Phoenix International has contracted LTC to develop its next generation of pressure-tolerant lithium-ion cells for its UUV battery development program. The US Navy will conduct qualification testing on these batteries for use in all of their pressure tolerant vehicles.

