

Deluge Inc., An Arizona Company, And Department Of Interior Test Hot Water Engine's Potential For Desalting Use

New, low cost, solar-powered fresh water supply from the ocean

For Immediate Release

PHOENIX/EWORLDWIRE/Aug. 12, 2004 --- A Phoenix inventor has developed a new way to economically take salt out of water, and it depends on a readily available resource - hot water. Ancient mariners boiled seawater to extract drinkable water. That process, distillation, is still used today. Newer technologies include reverse osmosis, but both RO and distillation require lots of power - and that makes them expensive.

Deluge Inc. and the Department of the Interior have signed an agreement to test the new technology, called a Thermal Hydraulic Engine, at Interior's water research facility in Yuma. The engine will be tested as a new high pressure pump for desalting ocean water. Deluge expects to use salt water from the Mexican Gulf of the California coast only 50 miles south of Yuma. "We're excited about the potential of this project; desalting is a critical piece of the water supply picture. If the testing is successful, we'd expect to see significant applications for the thermal engine," said Mike Norris, Director of the Water Quality Improvement Center.

Brian Hageman, Deluge president and the inventor of the Thermal Hydraulic Engine, claims that the new technology can revolutionize the desalting industry. "Pressurizing ocean water uses lots of electricity," said Hageman. "Our new engine can do the same job as an electric motor, and run on solar heat or geothermal hot water." Nearly 75% of the operating cost for current desalination methods is for electricity.

The engine has been proof-tested in the Wyoming oil fields under a research agreement with the Department of Energy. Deluge recently finished a 30-day test of the engine, pumping crude oil out of the ground using geothermal hot water as the engine's "fuel." As a result of this test, Prince Manufacturing Corporation, located in South Dakota, has begun design and cost analysis on a prototype for production.

Under the agreement with Interior, the engine will be concept-tested at Deluge's lab in Phoenix. Later testing will involve hooking up the specially designed pump to desalting equipment sited in the Interior test facility, the Water Quality Improvement Center, located in Yuma. Testing at the WQIC will refine the engine's design and provide information about operating costs.

"We think many companies around the world will want a license for use of the new desalting system," Hageman predicted. He says the equipment cost is much lower than any other alternative energy system, "And operating costs are very low; all the engine needs is hot water to make it work, no electricity." Deluge expects to begin licensing the technology this year.

Deluge has been developing the technology in Phoenix for seven years. The mission of WQIC is to advance the state of water treatment through more united research efforts by government, academia, and private industry.

Deluge's first research agreement has led to discussions in the oil industry with companies considering using the new engine technology to lower operating costs associated with removing crude oil from the ground. The technology's ability in enhanced recovery is much more cost effective than the electric motor versions. Applications for the technology exist today in refining crude oil. It is expected that someday the Thermal Hydraulic Engine will power automobiles.

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