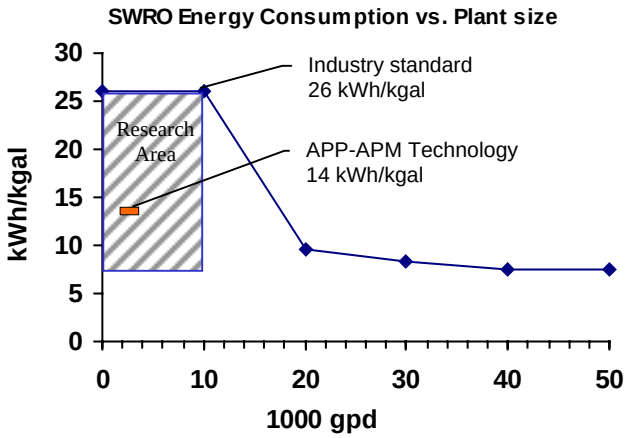
OPT Uses Grant to Lower Energy Consumption of SWRO Systems

Ventura, CA (*June 15, 2006*) – In late 2005, Ocean Pacific Technologies was awarded a grant from the Office of Naval Research (ONR) to develop energy efficient technology for small seawater desalination (SWRO) systems in the range 1000-10,000 gpd (4-40 m3/day). Despite the advancements in energy efficiency that have occurred in larger seawater desalination systems over the past 25 years, improving smaller SWRO systems has been almost entirely overlooked. In fact, no suitable energy recovery technologies have been developed and successfully applied to these smaller systems and they still consume power at typical rates of 26 kWh/kgal (7 kWh/m3). The graph below shows the current state of energy efficiency verses system size and the focus of Ocean Pacific Technology's development program in cooperation with the Office of Naval Research (ONR).

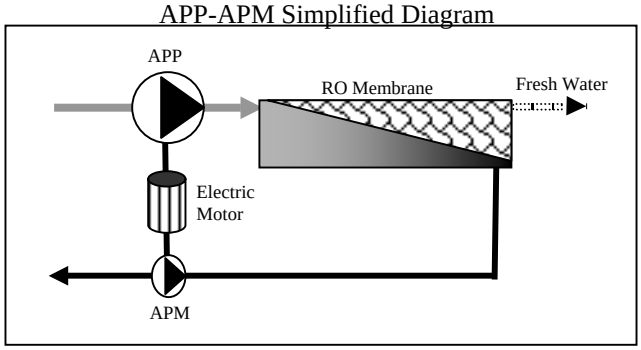


Notes: 1. Energy numbers are for the RO process only. 2. Industry standards and averages are for ASTM seawater at 800 psi.

The ONR's specific interest is an 1800 gpd portable military system called the Lightweight Water Purifier (LWP). Currently, the main HP pump for the LWP unit is driven with a five horse power diesel engine. Reducing the power requirements of this system will greatly improve its portability and simplify its logistical requirements.

The initial technology OPT has employed to achieve a 50% energy savings has been a Danfoss axial piston pump (APP) in combination with an axial piston motor (APM). The figure below shows a diagram of the system.

APP-APM Simplified Diagram



The Danfoss APP's have been very successfully and widely applied to the SWRO market over the past five years, but the application of APM technology is relatively new. The APP's employ water hydraulics, which uses the process water as the lubricating fluid. This eliminates much of the maintenance associated with traditional positive displacement pumps, which use oil, packing, and seals. The APM is essentially an APP running backwards and there have been a few successful applications of this idea. For example, in Baja, Yan Kunczynski has been operating several similar systems and has accumulated over 70,000 operating hours. Because of the efficiency of the SWRO systems, Mr. Kunczynski is able to operate the equipment and run the entire estate on solar energy alone.

As part of the grant OPT is also developing a hybrid approach that promises further improvements in efficiencies and specific power numbers. John MacHarg, President of OPT is optimistic, "We have shown good progress thus far and we are now moving in a new direction that may even be applicable and help to improve some of the larger system efficiencies.¤

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