



California startup makes plans to install second desal device

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Tustin, Calif.-based DXV Water Technologies is planning to move into the second installation of its deep-sea desalination device in a matter of weeks.

The company's President Michael Motherway told the Cleantech Group the news comes on the heels of its first, small installation of the technology in the San Joaquin Reservoir near Newport Beach, where the maintenance cycle of the device is currently being tested.

"You go into the lake and drop it in and turn on the pump. It's incredibly simple. We liken it to a virtual aquifer," he said.

DXV says it has proven that its water treatment system harnesses natural pressures found at depth in the ocean to drive a membrane process, pushing the seawater through a filtration process and then pumping the clean water to the surface.

The patent-pending technology, branded Demwax, is aimed at the seawater desalination and water treatment markets, with the testing is being done in freshwater.

The company expects to commercially launch its system in 2010, with potential applications for industrial and municipal water treatment. The company envisions licensing out its technology in the long-term, rather than being the manufacturer.

Motherway said the company is focused on freshwater because it's less costly, although it has done some seawater testing. The device would be anchored 50 to 100 feet above the ocean floor.

If the capital markets were better, he said the company would be doing freshwater and seawater testing in parallel.

"The reservoir is unique in that it's man-made. It holds reclaimed water, which is treated wastewater used for irrigation," Motherway said. "It is reclaimed water that can't be used for drinking."

Because it is nutrient rich, membrane fouling occurs rapidly—where particles are deposited onto the surface of the membrane or its pores and can cause its performance to deteriorate. Because his company can't pre-treat an entire lake, it is looking into how to keep clean the fouled membranes and also keep them from being fouled.

“We are looking at ultrasonic vibration as a method for cleaning them, which could be used to keep them from being fouled,” he said. “Bacteria don’t like to settle in turbulent areas.”

DXV said its process offers 70 percent reduction in energy use and 50 percent reduction in the total cost of water over traditional membrane processes. It also eliminates the need for water pre-treatment, which uses chemicals.

The technology was invented by CEO Diem X. Vuong, who previously worked for the Long Beach Water Department where he invented the dual-stage nanofiltration desalination process known as the “Long Beach Method.” The startup’s name features his initials.

DXV's second installation is expected to be in a California-based site that’s cleaner compared to San Joaquin Reservoir. By being less biologically active, it is expected to cause less fouling on the membranes, Motherway said, without disclosing the exact location.

The company has raised \$2.8 million to date from private, high-net worth investors, and expects to be raising its first institutional round toward the beginning of 2010 to commercialize its technology and bring a small, pre-engineered packaged version to market.

Motherway said no other companies are pursuing the same technique as DXV, citing competitors such as [Oasys](#) [1] and [NanoH2O](#) [2]. He said existing seawater osmosis companies are DXV’s target to beat in the field.

“It’s the configuration of the members that makes this different, not the membranes themselves,” he said.

DXV’s process utilizes flat sheets of membrane that are aligned vertically. The membrane spacing allows for water to flow naturally between the filters.

Earlier this year, Oasys said it had developed a low-cost, low-energy desalination and purification technology for seawater, wastewater and industrial waste streams (see [Oasys develops energy-efficient osmosis for desalination](#) [3]).

The Yale University spinout has raised \$10 million for its technology that uses forward osmosis technology, in which a draw solution of high concentration induces a net flow of water through the membrane, also called an osmotic pressure gradient (see [Biopesticides make a killing this week](#) [4]).

NanoH2O is advancing desalination by combining proven polymer technology with novel nanomaterials to enhance current reverse osmosis membranes. The company recently made the Guardian and Cleantech Group’s Global Cleantech 100 (see [Surprises abound in first Global Cleantech 100 ranking](#) [5]).
