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Company floats offshore desalination plan

Fleet of conversion vessels would process water while out at sea

By KEVIN HOWE

Herald Staff Writer

Environmental issues are deal-breakers for shore-based desalination plants, according to advocates of a shipborne desalination system they hope to market worldwide.

But the proposed seawater conversion vessels being promoted by Water Standard Co. and PBS&J Engineering provide "an environmentally responsible, 'green' solution," said PBS&J senior vice president Charles "Skip" Griffin.

Griffin pitched his desalination project for Monterey County to a group of business and water agency leaders over breakfast Wednesday at the Embassy Suites Hotel Monterey Bay, and at Wednesday's meeting of the Association of Monterey Bay Area Governments.

"We have a solution that can actually get a permit," he said.

PBS&J is an engineering company specializing in program management, process design and construction supervision of large water purification and wastewater facilities, including seawater desalination plants and aquarium life support systems.

Water Standard, headed by founder and CEO Andrew Gordon, holds patents for turning seawater into fresh water that provides environmental protection for marine life with the intake of seawater and a system for deterring "plumes" of brine and heated water emissions.

They say their approach provides a reliable, safe water source while avoiding many environmental issues that crop up when a land-based desalination plant is proposed.

"Those are the things that stop projects," Griffin said.

An oceangoing seawater conversion vessel doesn't need intake and outfall lines on the seabed, Gordon said. It draws its water a short distance through a telescoping snorkel that can be set to the optimum depth to avoid damage to sea life and get the best-quality water.

Brine -- water with a concentrated salt content that is left after freshwater is processed -- doesn't get pumped out of an outfall onto the near-shore seabed, he said. The proposed ships would be able to mix the brine with raw seawater and discharge the diluted brine in the deep ocean, where it would be further diffused.

There would be no need to pair the desalination plant with a power plant, as most projects do, Gordon said. The ships would generate their own power with jet turbine engines of the type used on jumbo jets, fueled by clean-burning biodiesel oil or marine gas oil, neither of which produce sulphur emissions.

Such engines, he said, have demonstrated their reliability on aircraft, ships and land-based electric power generating plants.

With their own power source, Gordon said, the ships would be immune to power failures, could operate at cheaper rates than land-based plants because of fuel costs, and operate over the horizon to avoid visual impact from the shore.

They aren't vulnerable to earthquakes or tsunamis, and can sail away if a heavy storm looms.

The freshwater would be brought ashore in "food-grade" tankers similar to those used for bulk transport of

orange juice concentrate or wine, Gordon said, or by modular tug barge tankers.

The ships would be U.S.-flagged, he said, automatically under the protection of the Navy and Coast Guard, and would be far less vulnerable to terrorist attack or sabotage than a land-based plant.

"This would be supplemental water," Griffin said, not a primary water supply.

The group is looking to build ships capable of processing 20 million to 200 million gallons of water a day, he said. Such a vessel could be built in two years.

Plying the coast of California, a Water Standards seawater conversion ship could provide water to a consortium of companies and relieve pressure on land-based water supplies, Gordon said, such as the Carmel River. If their product isn't needed in one place, it could be delivered to another.

The ships would be equipped with helicopter landing pads. The ships would be big enough, he said, to provide room for marine research facilities, conference facilities, aquariums, and even serve as an emergency operations base with a plant capable of producing bagged water and space for storing MREs -- meals ready to eat -- and other emergency supplies.

The ships' communication facilities could be made available to local officials in the event of a major disaster.

Water Standard Co., Gordon said, would be willing to deliver a ship and recruit and train crews, then sell it to the water management district or other public agency if the area wants the water plant under public ownership.

"We're not interested in profiting on water," he said.

Gordon and Griffin said they have assembled a team of industry leaders for the project, including:

- Pall Corp., a leading company in water filtration and separation technologies, with annual sales of \$2 billion and 14,000 employees worldwide.
- V Ships, the world's largest maritime technical management company, with 25,000 employees at sea on a fleet of 700 ships, with experience in procuring, retrofitting, provisioning and crewing vessels.
- Bureau Veritas, the world's largest "classification society," one of several organizations that inspect and classify oceangoing ships under regulations similar to those of the Federal Aviation Administration.
- GE Energy, builders of the gas turbine engines to power the ships.
- Siemens Marine for shipborne operating systems.
- Arthur J. Gallagher & Co., the third largest insurance brokerage and risk management services firm in the U.S. and fourth largest in the world.

While no water treatment ships on the scale the group envisions have ever been built, Griffin said, "I like to say we have 2,000 prototypes" operating on cruise liners and Navy ships that turn seawater to freshwater while plying the world's oceans, designed by Pall Corp.

montereyherald.com.

Kevin Howe can be reached at 646-4416 or [khowe@](mailto:khowe@montereyherald.com)