

Reverse osmosis hasn't taken the golf industry by storm, but that doesn't mean some golf courses haven't had success with the irrigation technology

By Larry Aylward, Editor in Chief

Worth Its Salt?



The last time we spoke to Rob Kloska, superintendent of the Jupiter Island Club in Hobe Sound, Fla., he was singing superlatives about his golf course's reverse osmosis system.

That was nearly three years ago, and Kloska still lauds the system. In fact, Kloska, who has been at Jupiter Island for 10 years, says the course plans to upgrade the system so it can make more water to satisfy the course's needs and keep it from spending about \$3.30 per 1,000 gallons for potable water.

Reverse osmosis, or desalinization, is the process of extracting salt and other minerals from brackish salt water and converting it to irrigation-quality water. Kloska says Jupiter Island decided to

build the \$1 million reverse osmosis plant because of soaring potable water costs and water restrictions imposed by the city's utility company. Kloska figured if the course manufactured its own water, it wouldn't be at the mercy of the utility company during droughts and wouldn't be affected by soaring water prices.

Other golf courses in Florida have experienced success with reverse osmosis, but the technology hasn't taken off in other regions of the country.

A concern with reverse osmosis is how to dispose of the salty brine extracted during the conversion process. But what effect the brine, which resembles water, has on an environmental area depends a lot on geographic location. Brine disposal doesn't present a problem at Jupiter Island, Kloska says. The brine is simply dumped in a gravel swale, where it

percolates into the ground. The salinity of the brine is similar in parts per million to the water in the Intercoastal Waterway, which is only 200 yards from the swale, so it makes for safe disposal.

The key, Kloska stresses, is that the disposal area for the brine is not a foreign area to the substance. No matter where the dumping area is located, it's vital that the brine is a good match for it in terms of salinity and salt concentration.

"Being on the coast, there are natural salt water environments that offer a good match [for disposal]," Kloska says. "The water company that services Hope Sound recently started up a reverse osmosis plant. It makes a lot more water than our system does. [The plant] has a pipe that goes under the Intercoastal and into the ocean. That's where it dumps

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the brine. But the salt concentrate that it's dumping in the ocean is less than the salt concentration already in the ocean."

Despite some environmentalists' fears of brine disposal in Florida, Kloska says the substance is nothing to fear.

"Let's break down the chemistry," he says. "It's just salty water. It's not loaded with radioactivity, and there are no concentrations of lead."

Thankfully, Kloska says, brine disposal for the most part has been a non-issue in Florida. But that's not true in other areas of the country.

Brian Vinchesi, proprietor of Irrigation Consulting in Pepperell, Mass., believes reverse osmosis is a ways off for golf courses in the Northeast. At issue is what to do with the brine. "It's a big concern because you just can't [dispose of] it anywhere," Vinchesi says.

Several New England states are still not

allowed to use reclaimed and effluent water for irrigation. When the time comes, however, Vinchesi believes regulators will allow the use of reclaimed and effluent water before allowing reverse osmosis.

Irrigation consultant Dave Davis, president of Lake Arrowhead, Calif.-based David D. Davis & Associates, says reverse osmosis is being experimented with in areas on the West Coast, such as Southern California, to see if it can create usable irrigation water and be cost-effective. "But I don't think it's there yet," he adds.

Brine disposal is a big issue in California, as well. Coastal residents want it disposed as far out to the sea as possible.

Cost is also a big issue, probably more so in California than in Florida. It rains more often in Florida, so golf courses there can use rain for irrigation more than courses in California.

"If you're using [reverse osmosis] as your main source of water, the volume

used would be substantially greater, and I suspect the size of the reverse osmosis treatment plant would have to be considerably larger," Davis says. "Therefore the investment required would be substantially greater."

What if the potable water crisis comes to a head in the Northeast and in the West and golf courses are looking for alternative irrigation methods? Could reverse osmosis be made to work despite its red flags? "I don't see why it wouldn't work," Kloska says.

But he stresses that two issues must be met. First, the source of the water to be desalinized must remain the same. Manufacturers of reverse osmosis systems require a constant quality of water to push through a system's vessels and separate the brine from the clean water.

"If you design a system to clean water that's 2,000 parts per million and you start running 4,000 parts per million into the system, it's not going to function right," Kloska says.

The second issue is safe disposal of the brine. You don't want to introduce salt into an environment that's not used to it, Kloska stresses.


Also, reverse osmosis can pose problems because it can create water that's too clean. A reverse osmosis system can clean water so thoroughly that it takes ions out of the water, which can make the water more corrosive than salt water. The treated water can also disrupt sprinklers and irrigation sensors.

"I've been told by a number of agronomists that if you're going to use water from reverse osmosis, it needs to have some minerals added back to it," Davis says.

Kloska is sold on the technology and remains a satisfied customer. His course's reverse osmosis system has performed well and paid for itself in four years.

Kloska said it before and he'll say it again: The best thing about having a reverse osmosis system is being in control of your irrigation needs.

"If I have to buy water," Kloska says, "that means I'm relying on an entity that's out of my control. If I make my own water, I have total control." ■



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