



OVERCOMING WATER RESTRICTIONS

By Jorg Menningmann

Whether it is drought, government restrictions or quality issues, golf courses around the world may suffer from a lack of the most abundant resource on our planet—water. Florida has been suffering under drought conditions for more than two years. Irrigation water has not been plentiful, and summer rains do not always replenish the state's water resources. The drop in aquifer levels has prompted water managers to further restrict the use of Florida's water supplies.

RO supplies Florida's Jupiter Island Golf Club with an alternative water source

Problem: Water Shortage

Florida's Treasure Coast golf courses rely on large amounts of water from different sources. Municipal water, poor to fair quality reclaimed water, or a limited supply of shallow well water are sources commonly used in irrigation. Much of the well water contains high amounts of chlorides. Salt water is harmful to the majority of the grasses used in golf course applications.

Jupiter Island Golf Club in Hobe Sound, Fla., is one of a growing number of success stories in overcoming water restrictions in South Florida. This private and exclusive golf resort is a silent leader in adopting new technology, conserving Florida's limited water supply and capitalizing on state funds available for alternative water sources.

Solution: RO System

In March 1998, ITT Water Equipment Technologies, West Palm Beach, Fla., installed a 200,000 gal per day (gpd) reverse osmosis (RO) plant at Jupiter Island Golf Course. In July 1999, the plant expanded to 400,000 gpd. This RO system delivers a continuous water supply for a substantially lower cost than the previous municipal supply. A year and a half after the installation of the RO plant, more than 193 million gal of irrigation water was produced. The accumulated savings, from the use of RO water versus city water for irrigation, was almost

\$300,000 in just 18 months—reducing costs by an estimated 27%.

Jupiter Island Golf Club justified the RO plant by comparing the cost of water from the city versus operation, maintenance and capital costs for the RO plant. Estimated operation and maintenance costs (e.g., chemicals, electrical and replacement parts) are \$0.80 per 1,000 gal at the most. Time taken for readings and system checks averages only 20 minutes per day. (This still allows staff the time to fish out an occasional gator from a pond.) Membranes for this application may last five to seven years with proper pretreatment. This is especially true considering the club's proactive philosophy toward preventative maintenance.

Project Overview

Permits were obtained for drilling a 1,300-ft well to the Floridian Aquifer—an unlimited source of irrigation water. The RO plant runs 24/7. The Floridian aquifer is considered brackish water, a mixture of salt water and freshwater. This source has not been popular for municipal or industrial applications due to its depth and high salinity. Feedwater total dissolved solids (TDS) is approximately 4,000 parts per million (ppm) at this location in the aquifer. The RO reduces this salinity to about 150 ppm—a 96% reduction in TDS.

Results

A five-year return on investment was originally estimated for the project. The efficiency of the RO plant, the creative management by golf course staff and the cost of buying city water allowed the payback to come within two years. This includes operation and maintenance costs within that time frame. In addition, the golf course was awarded two state grants for using an alternative water source for irrigation. They were able to apply an additional \$200,000 toward the capital investment from the state grants. These significant savings have initiated a plan for additional expansion to 600,000 gpd. Converting from city water irrigation to RO has reduced water costs substantially more than originally anticipated, according to Facilities Manager Ron Merriam. These green fees are way under par.

With RO water, club members are pleased that the golf club is able to use exotic grasses for their plush greens. Many exotic grasses do not thrive when irrigated with chlorinated water. The continued success of Jupiter Island Golf Course in avoiding the drought and providing perfect greens is due to several factors, including Florida's natural resources, the creative management of the Jupiter Island Golf Course staff, the technology and service from the RO plant supplier, and the support from the local government. *wqp*

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A dual RO system installed at Jupiter Island Golf Club.

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