

Purifying Hard, High-sulfate Groundwater into Fresh Drinking Water

Challenge

The rapidly growing County of Sarasota on the West Coast of Florida needed an additional source of potable water. A 24,000 acre wellfield and ecological reserve with eleven 400-foot production wells was a possible feedwater source. However, these wells had water with variable salinity, over 2 ppm hydrogen sulfide, and were saturated with calcium sulfate and calcium fluoride. In demineralizing these brackish well waters, the wastewater volume—which would be sent to injection wells for disposal—needed to be minimized.



Figure 1: electrodesialysis reversal (EDR), Sarasota

Solution

In Sarasota County, the largest municipal water treatment facility of its type in the world, GE Water & Process Technologies electrodesialysis reversal (EDR) was selected to demineralize the brackish well water to drinking water standards. (See Figure 1 which shows the EDR installation.) While pilot stud-

ies also evaluated ion exchange (IE) and reverse osmosis (RO), GE EDR was chosen because of its ability to maximize recovery of fresh water and minimize wastewater volume.

Results

The robust GE EDR plant has produced over five-billion gallons of drinking water during its first three years of operation, and the plant operates at 85% water recovery, limited by the supersaturated calcium sulfate concentrations (over 250% or 6.25 x Ksp) in the brine stream. This impressive 12 MGD installation, controlled by a central SCADA instrumentation system, consists of ten individual EDR systems, each controlled by a PLC. The GE brand is alive and well in Florida, where desalination is increasingly addressing the burgeoning fresh water needs of a growing population.

End-user:	County of Sarasota
Location:	Sarasota, Florida
Commissioned:	January, 1995
Application:	24,000 acre wellfield and ecological reserve
Feedwater source:	Well water
Feedwater quality:	1,300 mg/l TDS
Product quality:	less than 250 mg/l TDS
Water recovery:	85%
Capacity:	12,000,000 gpd
Technology:	Electrodialysis Reversal (EDR)

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Find a contact near you by
visiting ge.com/water or
e-mailing custhelp@ge.com.

Global Headquarters
Trevose, PA
+1-215-355-3300

Americas
Watertown, MA
+1-617-926-2500

Europe/Middle East/Africa
Heverlee, Belgium
+32-16-40-20-00

Asia/Pacific
Shanghai, China
+86 (0) 411-8366-6489

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