

Ensuring a Continuous Supply of High Quality Boiler Feedwater for Fertilizer Production

Challenge

This leading Egyptian company with fertilizer works in El Tabia, 25 km (16 miles) east of Alexandria, utilizes hydrocarbon feedstocks for manufacturing nitrogen-based fertilizer products including ammonia, urea, nitric acid, and ammonium nitrate. (See Figure 1.)

In the early 1990s, Abu Qir began to experience decreased operational productivity, resulting from the high degree of variability in TDS in their raw water. Their existing demineralization plants, used for producing water for feeding the boilers, were simply unable to efficiently handle the high chlorides and high organic load in the raw water. Abu Qir needed a superior water treatment alternative.



Figure 1: Egyptian fertilizer works company

Solution

After extensive research on a range of alternatives to increase their fertilizer plants' demineralization capacity—including using electrodialysis reversal (EDR), reverse osmosis (RO), and adding additional

ion exchange units—Abu Qir's water treatment specialists selected GE Water & Process Technologies' EDR system.

Results

In addition to eliminating the possibility of a shortage of boiler feedwater in Abu Qir's fertilizer plants, GE's membrane-based EDR system offered other significant benefits. Most notable was a 60% decrease in acid and caustic regeneration chemicals consumption, which translated into annual cost savings of approximately US \$600,000. Additional benefits included improved safety of operations and reduced manpower requirements. In addition, EDR's high water recovery allowed for a reduction in the amount of discharged water.

For many customers in the chemical, petrochemical and power industries, GE has come to mean cost-effective dependability, even with TDS swings. For Abu Qir, GE's advanced membrane technology has played a critical role in ensuring uninterrupted fertilizer production.

End-user:	Abu Qir Fertilizer and Chemical Industries Comp
Location:	Alexandria, Egypt
Commissioned:	1993
Application:	Boiler feedwater
Feedwater source:	River water (El Mahmoudia Cana)
Feedwater quality:	250-850 mg/l TDS
Product quality:	62 mg/l TDS
Water recovery:	80%
Capacity:	4080 m ³ /day (1.1 million gpd)
Technology:	Electrodialysis reversal (EDR)

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