

# RO System Before Demineralizer Reduces Co-Generation Plant's Spend on Regeneration

## Challenge

A co-generation (co-gen) plant on the East Coast was seeing its expenses increase from the large number of regenerations it had to perform on its demineralizers. While the plant's usage of chemicals was going up, the price of caustic and acid were increasing as well.

The local GE Water & Process Technologies representative had worked with the co-gen facility for several years on boiler treatment. After learning about the issues surrounding the demineralizer, the GE rep worked with his Equipment Sales Group (ESG) rep to develop an equipment solution to reduce the labor, chemical and other costs associated with constantly regenerating the demineralizer.

The co-gen facility wanted to reduce the use of acid and caustic exchange systems in the boiler room and improve on the steam boiler system's efficiency as a cost savings measure. Given the scale of the facility, it was apparent that the cost savings could potentially be dramatic.

## Solution

GE designed a 2200 GPM Reverse Osmosis (RO) system to meet the needs of the facility. The RO system removes up to 98% of the dissolved minerals in the incoming city water. The treated water is then fed to the existing demineralizers for polishing before going to the steam boiler system.

To document the savings to the plant, the local rep worked to develop a model to estimate the changes in costs using RO. The co-gen facility, which was new to RO technology, wanted to understand the areas where costs would be reduced as well as where additional costs would have to be incurred with the RO system.

To enhance the value and savings created by the RO equipment, a PlantGuard\* agreement was signed that guaranteed cost savings to the customer. Within this agreement, GEWPT will supply all RO membranes, filters and chemicals for the RO system. In addition, GE will provide regular service to monitor the system, clean the membranes and exchange the membranes. This agreement allowed the facility to have more confidence what the ongoing cost of the RO would be.

The PlantGuard contract was structured so that if the system did not produce the cost savings as planned, GE would reimburse the customer. At the same time, if the system performance exceeded expectations, the customer would increase the payments to GE, but the realized savings by the co-gen facility would be much greater. This agreement aligns the incentives of GE and the customer to constantly improve the performance of the RO system and reduce plant costs, directly benefiting both GE and the customer.

## Results

The RO system has been installed and has recently started to produce water. The plant has seen the number of regenerations decrease significantly and is realizing the promised cost savings. Projected savings using conservative estimates for future prices of acid and caustic show an annual ROI of over 25% (initial investment includes equipment and installation costs).



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