

# Chemical company - Sharjah, UAE

FEDI Model: FEDI-2-SV-30X Flow: 2.2 m<sup>3</sup>/hr No. of Stacks: 1 Conductivity: <0.06μS/cm Application: Process water for Surfactant and Urea manufacturing

### **Project Background**

UA - FEDI

A specialty agricultural chemical manufacturer required a demineralized water system for its manufacturing facility in Sharjah, UAE. The facility produces a wide range of surfactant and emulsifier products for the pesticide, insecticide, fungicide & herbicide industries around the world.

The client was looking for a reliable pretreatment and demineralization process of municipal source water to achieve the required final product water quality suitable for their process to manufacture surfactants and Urea. The scheme finalized consisted of pretreatment followed by two pass RO followed by electrodeionization (EDI) as a final polisher.

It was important to the client to select the right EDI technology was critical to ensure that the system could operate in varying feed water conditions

without requiring frequent chemical cleaning, and provide a consistent and reliable operation. After a detailed evaluation of various EDI options, the customer found QUA<sup>®</sup> Fractional Electrodeionization (FEDI<sup>®</sup>) to be mostsuitable for their requirement due to QUA's vast experience in successfully treating feed waterwith varying parameters using FEDI.

## **QUA Solution**

QUA supplied FEDI-2-30X SV stack for this application requiring 2.2 m3/hr of product flow. The FEDI system has successfully been in operation since November 2019 and the product water quality has been consistently less than 0.06microS/cm. This client's meets the requirement of consistent, high purity water for manufacturing their chemical process.



# The following graph shows the product water conductivity trend:

FEDI Average Product Conductivity Consistently Less than 0.06 microS/cm



### **About QUA**

QUA is an innovator of advanced membrane technologies that manufactures and provides filtration products to address the most demanding water challenges.

#### **FEDI® Electrodeionization**

Electrodeionization is a continuous, chemical-free process that removes ionized and ionizable impurities from the feed water using DC power. EDI is most commonly used to treat Reverse Osmosis (RO) permeate and replaces Mixed Bed (MB) ion exchange; producing high purity water of up to 18 M  $\Omega$ .cm. EDI eliminates the need to store and handle hazardous chemicals required for MB ion exchange resin regeneration and associated waste neutralization steps. EDI also

has lower space requirement, low operating cost, and a quick payback; and provides constant uninterrupted high-quality water for the process.

QUA's Fractional Electrodeionization (FEDI) is an advancement of the EDI technology, that was developed to address the limitations of conventional EDI. FEDI is a patented two stage process that operates in a dual voltage configuration that reduces hardness scaling that may occur in conventional EDI. FEDI's unique design maintains an acidic condition in the first stage and basic condition in the second stage of the EDI concentrate chamber. This patented design reduces mineral scaling in the first stage and enhances silica removal in the second stage.

