Sohar Refinery - Sohar, Oman

Project Background

Orpic (Oman Oil Refineries and Petroleum Industries Company) required a thermal seawater desalination solution as part of its Sohar refinery improvement project to ensure an uninterrupted supply of fresh feed water to for its boilers.

Orpic decided that a Multi Effect Distillation with Thermal Vapor Compression (MED-TVC) Seawater Desalination system was suited for its water needs. Once desalinated, the water is to be demineralized to serve as boiler feed water.

QUA will provide its FEDI technology for the demineralization component of this project. The plant is expected to be commissioned in early 2016.

FEDI Model: FEDI-2 30X
No. of Streams: 3 x 616 gpm (3 x 140 m^3/hr)
No. of Stacks: **105**
Silica as SiO2: < 20 ppb
Conductivity: 0.1 mS/cm

QUA Solution

Sohar's water supply system consists of MED-TVC for the seawater desalination, followed by FEDI for boiler feed water demineralization, and a remineralization step for service and potable water.

The FEDI system is expected to successfully treat MED distillate to be used for boiler feed water. Due to FEDI's enhanced design, a higher removal of silica and reduction in conductivity than by conventional techniques is expected.

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

Fractional Electrodeionization (FEDI) is an advancement of 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 to reduce 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 electrodionization concentrate chamber. This patented design reduces mineral scaling in the first stage and enhances silica removal in the second stage.