



South Coast Steam Power – Puerto Rico

FEDI Model: FEDI-2 HF 30X

No. of Streams: 3 x 400 gpm (3 x 91 m³/hr)

No. of Stacks: 45

Silica as SiO₂: < 0.02 ppb

Conductivity: < 0.1 mS/cm

Project Background

Puerto Rico Electric Power Authority (PREPA) is the owner of South Coast Steam Power Plant located at Guayanilla in the island of Puerto Rico, about 150 KM south of San Juan. This power station is one of PREPA's oldest units and uses an oil fired boiler as part of its generation process.

The plant decided to replace an old, antiquated ion exchange-based demineralization plant with a membrane-based demineralization system. This would avoid chemical regeneration and waste as well allow the plant to be more environmentally friendly. The membrane process also would allow easier environmental permitting for the client.

The feed water to the system is brackish well water and the treatment consists of double pass reverse osmosis system with final polishing by electrodeionization. The polished demineralized water is used for high pressure boiler feed water.

QUA Solution

QUA's Fractional Electrodeionization FEDI-2 HF stacks were chosen for the electrodeionization polishing step of the process due to their capability to handle variable feed conditions with a patented two-stage design. Additionally, the FEDI stacks provided a high quality, compact solution due to their high flow capacities.

The FEDI system is designed to treat 1200 gpm of double pass RO feed water to be used for the plant's production purposes. Due to FEDI's enhanced two-stage design, water containing lower silica and conductivity levels is being produced than could be accomplished by conventional technologies.

The water treatment system is key to the long-term success of the power plant's production process. QUA's FEDI successfully delivered a powerful electrodeionization solution that allowed the plant to be more productive and environmentally compliant.

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 advanced 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 electrodeionization concentrate chamber. This patented design reduces mineral scaling in the first stage and enhances silica removal in the second stage.

QUA-FEDI-Project-Profile-PREPA-01