



## Petrogas Refinery - Turkmenistan

**FEDI Model:** FEDI-2 HF 30X

**No. of Streams:** 2 x 231 gpm (2 x 52.5 m<sup>3</sup>/hr)

**No. of Stacks:** 16

**Silica as SiO<sub>2</sub>:** < 20 ppb

**Conductivity:** 0.1 mS/cm

### Project Background

Petrogas LLP, one of the world's largest oil rehabilitation companies, required demineralized water for a new boiler component to its Turkmenistan refinery.

Petrogas chose to install a single-pass reverse osmosis system in advance of the demineralization process. For demineralization, Petrogas carefully evaluated their options to determine which one would provide the most reliable and effective solution. Electrodeionization was selected as the best available solution for this application.

QUA provided its Fractional Electrodeionization (FEDI) technology for the RO permeate polishing and demineralization for this project.

### QUA Solution

QUA's FEDI-2 HF was selected for demineralization of the water treatment process at the facility because of its capability to deliver high quality water at a high flow. FEDI enabled the system to be more compact while also providing a robust solution.

The FEDI system is designed to treat 105 m<sup>3</sup>/hr 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 plant's oil refining process. QUA's FEDI successfully delivered a reliable electrodeionization solution, coupled with a modular design that allowed the plant to efficiently operate.

## 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.