PETROCHEMICAL

High flow pure water production with zero downtime, within a fully operating oil refinery

A countrywide sulphuric acid shortage forced a refinery to stretch the time between ion-exchange regenerations. Three mobile RO units were integrated into the live plant at 180 m^3/h, with no interruption to production.



CLIENT	LOCATION	SERVICE	DURATION
Oil refinery	Germany	Temporary: RO permeate production	12 months

180 m^3/h
PERMEATE TO THE IX SYSTEM

>95%
CONTAMINANT REJECTION

3
TRITON BWRO96 UNITS

THE CHALLENGE

An acid shortage, and no room to stop

A countrywide shortage of sulphuric acid was taking place during a higher oil refinery production period. This meant a large oil refinery in Germany could not regenerate its own ion-exchange (IX) resin as normal. A continuous delivery of high-purity water is critical for steam generation, cooling, and process applications at the refinery. Any disruption could force reductions in throughput or unplanned refinery shutdowns.

The refinery urgently sought to integrate temporary brackish water reverse osmosis (RO) systems into its existing water treatment process. With production at full capacity the installation had to be completed without any disruption to the refinery operations.

KEY DATA

Application	RO permeate production
Industry	Petrochemical refinery
Feed water source	Municipal filtered water
Feed quality	Up to 614 µS/cm, <0.5 NTU, <3 SDI

THE SOLUTION

Three mobile RO units integrated within a live operational refinery

Ecolutia smoothly integrated three Triton BWRO96 reverse osmosis systems into the onsite water treatment process. Operational within a few days in a parallel configuration, the high-quality RO permeate, at a flowrate of 180 m^3/h, ensures refinery operations are not disrupted.

Integrating between the onsite filtration and ion-exchange systems allows the ROs to receive a filtered municipal feedwater with lower NTU and SDI levels. This supports high-quality RO permeate production, so the downstream ion-exchange system can run at full capacity with the advantage of regenerating the resin less frequently, thereby significantly reducing chemical and manpower needs.

Precise timings and communication between Ecolutia and refinery engineers were the key to avoid disruption to the water treatment process and other onsite operations. Scheduling backwashes of the upstream filtration feeding the Ecolutia ROs was essential to maintain sufficient pressure and flow within the units so downstream water production could continue.

TREATMENT FLOW PATH



Production flow rate
180 m^3/h

Product water quality
95% rejection of feed contaminants

Treatment flow path
Customer MMF, Ecolutia BWRO, customer IX

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THE RESULTS

Six months planned, twelve months delivered

The initial planned 6-month project was a success and helped improve demineralised water production, such that the customer signed a 6-month extension.

The RO permeate consistently produced water with >95% contaminant rejection at flows of 180 m^3/h, 24 hours a day, 7 days a week. This ensured minimal disruption and downtime to the customer's process, allowing them to focus on other on-site activities.

The remote monitoring system Ecolutia employs has enabled rapid response times when the customer has requested a change in flow conditions, as well as the ability to monitor the process whilst off-site to ensure a smooth operation.

SHORTAGE OR SHUTDOWN?

Keep your plant at full rate.

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