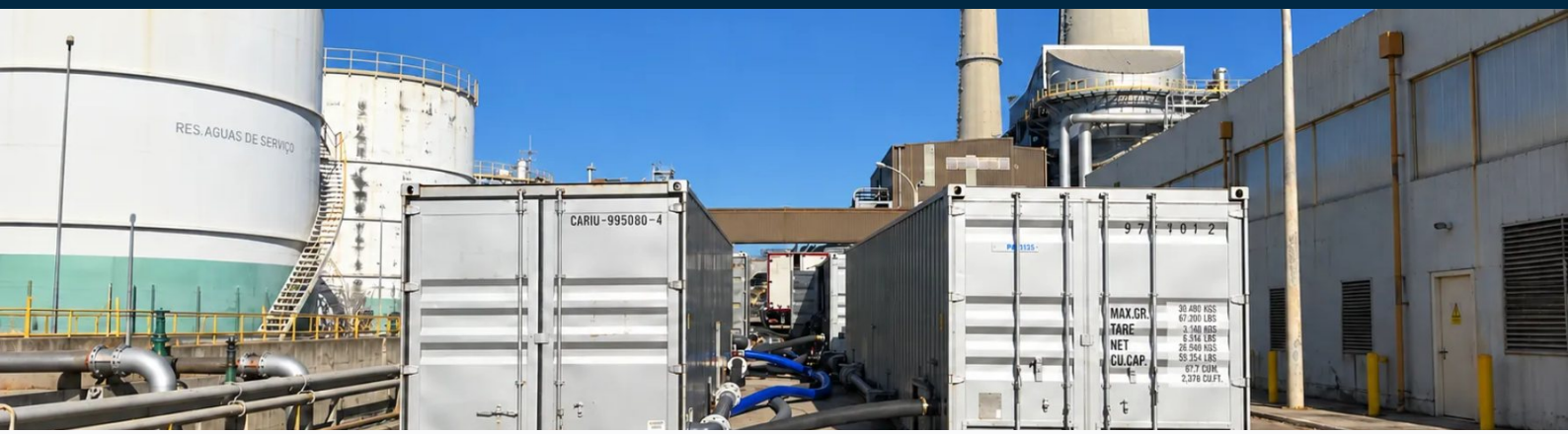
POWER GENERATION

Temporary three stage treatment for coal power station

An aging coal power station on the Portuguese coast was sending untreated feedwater straight to its ion-exchange resin. A three-stage mobile treatment plant, remotely monitored by Ecolutia teams in Spain, UK, Philippines and USA was implemented.



CLIENT
Coal-fired power station

LOCATION
Portugal

SERVICE
Temporary: demin water production
Multi-year: RO permeate production

DURATION
3 years

130 m³/h
PERMEATE PRODUCTION

2 months
NO RESIN REGEN NEEDED

23.5 h/day
PLANT UPTIME, 7 DAYS A WEEK

THE CHALLENGE

Feed water going straight to the resin

Unexpected changes in the raw feedwater supply began to cause problems for a coal power station built in the 1980s. Historically, feedwater pre-treatment was never required so the raw feedwater went straight to the customer's ion-exchange treatment process. With increasingly lower demin water quality production the customer could no longer put off repairs needed to their ion-exchange system.

Requiring a temporary solution, with the root cause of the feedwater changes uncertain, Ecolutia accepted the challenge of providing a three-step demineralisation process so the power station could continue producing electricity whilst the onsite investigation and refurbishment work continued.

KEY DATA

Application
Filtration, RO permeate and demineralised water production

Industry
Power generation

Feed water source
River water via reservoir

Feed quality
1100–1300 µS/cm, 1 NTU

The power station was on a preliminary shortlist to close, but output was secure for the next three years. However, constraints on site investment meant the customer insisted the Ecolutia solution had a high level of system automation and limited site visits to once every two weeks.

THE SOLUTION

Filtration, high-flow RO, and remote monitoring

Ecolutia filtration, reverse osmosis and ion exchange systems were installed and configured for remote monitoring, backed up with scheduled site visits. The site visits presented the only opportunity to undertake general maintenance or necessary changes so the automation needed to be robust.

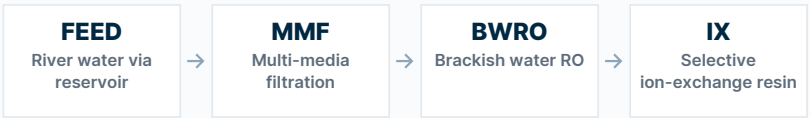
The first step was the Ecolutia Proteus multi-media filtration system to remove contaminants in the feedwater taken from a nearby reservoir, fed by a local river. The close monitoring of the feedwater allowed adjustments to the volume and type of chemical dosing needed to remove the contaminants.

The second step was the Ecolutia Triton brackish water high-flow reverse osmosis system operating at 75% recovery, with a minimum of 97% rejection to produce up to 130 m^3/h of permeate water.

The third step was an ion-exchange demineralisation system used whilst the customer completed maintenance work to their own demineralisation plant. Two months later when the customer completed their work the Ecolutia system was taken offline, but the Ecolutia filtration and RO systems continued operating to feed the restored customer ion exchange plant.

The capacity of the filtration system and smooth operation of the RO allowed the refurbished ion-exchange plant to operate almost 24 hours a day, 7 days a week. Less than 30 minutes of filtration backwash was needed as the Proteus filtration tanks were set up to work in a duty/standby configuration.

TREATMENT FLOW PATH



THE RESULTS

A three-month contract that became three years

Initially contracted as a 3 months temporary project, the customer continually extended the contract as Ecolutia systems helped reduce ion exchange regeneration frequency from once a day to once every 2 months. This saving in chemical use and deployment of manpower was notable.

Production flow rate
Up to 130 m^3/h

Product water quality
<0.1 µS/cm

Treatment flow path
MMF, BWRO, IX

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The Ecolutia field service team continued with site visits every 2 weeks and the remote monitoring team kept operations under review 24/7. The customer also completed daily visual readings and feedback.

Following confirmation of the plant's closure, the customer retained Ecolutia's systems for a further 2.5 years until the remaining coal stock was used and electricity generation ceased. This helped avoid a capital investment needed for a new filtration system had the Ecolutia contract come to an end.

NEED PRE-TREATMENT?

Protect the plant you already have.

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