

Deionisers help reduce silica at Veolia Environmental Services, UK

The Client



Veolia Environmental Services' Energy Recovery Facility (ERF) in Sheffield incinerates 225,000 tonnes per year of non-recyclable domestic waste. The heat from the incinerator produces 400°C superheated steam in a 46bar water tube boiler. This steam drives a turbine which generates electricity for export to the National Grid. The exhaust steam from the turbine is condensed in a water cooled condenser and returned to the boiler. The now hot cooling water supplies heat for the city's award winning District Energy Network.

Key Facts

- The ERF operates 24/7
- High pressure water tube boiler requires low silica make-up water
- On-site demineralisation plant leaking silica at >20µg/l

The Client's Needs

Make-up water for the boiler is produced in an on-site ion exchange demineralisation plant consisting of cation exchanger, anion exchanger and mixed bed polishing to meet the 0.1µS/cm conductivity and 20µg/l silica. Silica in the make-up water can cause major problems, not only expensive damage to the turbine but increased blowdown frequency which consumes large volumes of water and wastes heat energy. Neil Clark, Maintenance Manager for Veolia Environmental Services, regularly uses ELGA Process Water's AQUAMOVE mobile solutions for support during outages and planned maintenance of the on-site plant. So, when the plant started to leak silica, he turned to ELGA Process Water for advice.

The Solution

ELGA Process Water's solution was to provide three 10m³/h IHF mixed bed deionisers to polish the water from the demin plant to reduce silica to an acceptable level. The units operate as two duty and a standby, this configuration ensures a reliable and continuous supply of pure water. A water quality meter has been installed to monitor the treated water, for added peace of mind. The ionic load on to the IHF units is very low, so regeneration is infrequent. When exhausted they are returned to ELGA Process Water's central regeneration station in exchange for a regenerated unit.



IHF Deionisers are installed in a purpose built extension

The Benefits

- Continuous secure supply of make-up water
- Low silica levels and conductivity
- Reduced boiler blowdown and associated chemical usage