

CASE STUDY

Recovered Water Plant



▶ CLIENT OVERVIEW

The Uskmouth Power Station located at Gwent, South Wales is operated by Alstom on behalf of Carron Energy. Uskmouth is a 360MW power station with three independent coal-fired units. These units underwent significant refurbishment in 2000, giving a 25 year life extension to the plant and allowing compliance with the latest environmental standards.

The site comprises 96 hectares of land and has a 1,250MW connection to the National Grid, presenting opportunities for further development.

▶ CLIENT'S REQUIREMENTS

Make-up water for the high pressure boilers which are feeding the power conversion turbines is piped from Nash wastewater treatment plant as tertiary treated effluent. It must be treated on site to reach ultra pure water quality.

The Uskmouth power station was looking for a partner able to supply process water with guaranteed quality and continuity in service delivery.

▶ OUR SOLUTION

In order to meet Uskmouth's requirements Veolia Water has designed and built a plant consisting of ultrafiltration and base exchange softening pre-treatment followed by three reverse-osmosis units, with three mixed-bed demineralisation units (two regenerable and one cartridge unit for use during the regeneration of the mixed bed plants).

The treatment line consists of:

- One chloro-amination plant (ammonia and chlorine dosing)
- One ultrafiltration plant
- One duplex (service standby) base exchange softening plant
- Three reverse-osmosis streams fed with recovered tertiary treated effluent
- Two mixed-bed ion exchange units and cartridge mixed-bed unit
- Regeneration of the mixed-bed resins with acid and caustic chemicals.

Veolia Water Industrial Outsourcing has also been contracted by Uskmouth to operate and maintain the facility, in order to continuously produce demineralised water with an average flow of 45m³/hr (2 off plants in service and 1 off unit in standby) with a 25m³/hr flow rate at low generation periods with 1 plant on-line and 2 in standby.

Originally using potable water as feed, the revised configuration was signed in 2006 to increase the capacity of the plant utilising a cheaper form of feed water, namely tertiary treated effluent. This long-term contract has provided the Uskmouth Power Station with a reliable ultra pure water supply to continuously feed its boilers, including during peak periods.

“**Veolia has had an excellent track record with us since Uskmouth Power was re-commissioned, and we are delighted to be the first power station in Wales to introduce this groundbreaking ultra-filtration technology. Not only will this project deliver substantial financial savings over the next ten years, it will benefit the environment by enabling us to replace a premium product, mains drinking water, with a waste by-product.**”

Alex Lambie, Chief Executive of Carron Energy

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