

Ashford Sludge Treatment Centre

improvements to meet anticipated population rise to 150,000 by 2020

by
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The Ashford area of Kent is growing rapidly and has been earmarked by the Government for significant future growth. The population of the town is around 100,000 and this is expected to rise to 150,000 by 2020. Southern Water planned a series of improvements to increase the capacity of Ashford Wastewater Treatment Works (WTW). The WTW includes a sludge treatment centre (STC) that treats all indigenous sludge and receives and treats imported sludge from other WTWs in Kent.



Ashford Sludge Treatment Centre

Courtesy of 4Delivery

The project involved installation of an additional cake reception facility to receive imports from other sites, new blending and storage facilities, a new anaerobic digester, new post digestion storage tanks, new sludge dewatering facilities and a seven tonne evaporative capacity thermal dryer. The project also included the refurbishment and upgrading of other parts of the treatment works.

The scheme was part of Southern Water's AMP4 programme carried out by 4Delivery (4D), which is a consortium comprising United Utilities, Costain and MWH, and is carrying out a programme of environmental improvement and water quality schemes for Southern Water until 2015. The improvements are taking place across Kent, Sussex, Hampshire and the Isle of Wight.

4D was the principal contractor for the scheme and principal sub-contractors were Black and Veatch and Andritz. Ashford STC processes around 10,000 tonnes of dry solids of sludge a year. In line with Southern Water's strategic plan, the project doubled the sludge treatment capacity of the STC, as well as providing thermal sludge drying for the whole throughput.

Southern Water has a number of thermal sludge dryers at STCs in its region. The specification for the dryer was developed following consultation with Southern Water staff to ensure the project benefited from experience gained from the installation at other sites.

A single dryer stream, sized at 150 per cent of required capacity, was installed to allow for annual maintenance downtime in accordance with Southern Water's standard practice. The dryer was designed to



Ashford STC Dryer

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operate on natural gas, or the biogas produced as a by-product of the anaerobic digestion process, and automatic switchover between natural gas and biogas is possible.

The dryer stream has its own dedicated odour-control plant in the form of a regenerative thermal oxidiser (RTO) which treats the off-gas from the dryer plant prior to discharge to atmosphere. A separate odour treatment plant, based on wet chemical scrubbing, was installed to treat odours from the remainder of the STC.

The WTW releases to the river Stour and has a tight ammonia consent and a temperature consent. In terms of population equivalents (pe) the treatment works has a capacity of 120,000 pe whilst the new STC has a capacity of 500,000 pe.

Tertiary treatment using plastic media nitrifying filters and deep-bed sand filters were added to Ashford WTW, as part of a parallel project and the design team took this into account. Three streams were identified which needed additional treatment prior to discharge to the WTW, the cooling water from the dryer cooling circuit, liquors from the sludge dewatering process and condensate from the drying process.

The dryer produces a substantial amount of waste heat. Due to temperature constraint on releases to the river and the hydraulic limitations of the wastewater stream, the best solution was to dissipate excess heat through a closed secondary cooling circuit and air blast cooler. This minimises the quantity of clean cooling water and dirty liquors from the dryer.

The combined sludge liquors and condensate flows are treated in a new high-rate activated sludge treatment plant (Amtreat) designed to

operate within a temperature range of 25-35°C. Flows are blended within a balancing tank initially to ensure a balanced steady flow is passed to the plant. Health and safety is a high priority and this led to two RoSPA gold awards for the team and 750,000 hours being worked on the site without a reportable accident.

Keeping the existing WTW and STC operational throughout construction was a challenge. Through careful planning and clear communication with the Southern Water's operations team this was achieved.

Note: The Editor & Publishers thank John J Guilfoyle, Design Team Leader with 4Delivery for preparing the above article. ■



Aerial photograph of Ashford WTW and STC

Courtesy of 4Delivery