Case Study

Severn Trent Upgrades Ammonia Treatment to meet tighter consents

Tighter European controls about the release of ammonia into the environment made it necessary to upgrade the treatment plant which serves the English village of Great Glen in Leicestershire.

Ammonia is potentially hazardous to the environment due to its toxic impacts on fish and macro-invertebrates. Sewage effluent from treatment works is a major source of ammonia in rivers, along with diffuse run-off from agriculture.

When the existing ammonia removal system was put in place, regulations stipulated there should not be more than 10mg/l of ammonia in the treated effluent. The new standards imposed by the Environment Agency, in accordance with the European

Water Framework Directive, lay down a minimum level of 3mg/l as a 95th percentile standard.

Ammonia removal

Great Glen is in a hard-to-reach location in the middle of rich farming land, which made it important to find an easy-to-assemble replacement for the existing system for removing ammonia.

Severn Trent Water chose to install a single-stream, nitrifying submerged aerated filter – N-SAF – tertiary treatment plant for ammonia processing. The N-SAF system, which was manufactured in steel by WPL.

There were a number of reasons why assembling a pre-manufactured system made sense for contractor MWH, the capital investment delivery partner of Severn Trent.

Restricted access and limited manoeuvrability made it impractical to use a fixed crane to install a single unit. Therefore the replacement plant was manufactured in four modular units, which were lifted into place by a truck-mounted Hiab and connected to form a single plant.

Whole-life cost

MWH required a whole-life estimate of costs – which meant the system had to be manufactured to a high specification, economical to install and easy to maintain. Because the plants are manufactured offsite and installed as complete individual units, the four component tanks could be delivered and in position within one-and-a-half days – keeping down onsite labour costs and disruption from inclement weather.

The entire system was fully fitted and ready for testing within eight working days. The WPL N-SAF is self-scouring, with no need to desludge units. It has no internal moving parts, which makes it easy to maintain.

Energy efficient

The financial constraints and the need to manage operational as well as capital costs made it important to look at energy use during the life of the equipment. The WPL N-SAF is fitted with variable speed drive (VSD) on the blowers to enhance the plant's energy efficiency. The VSD is linked to dissolved oxygen and ammonia monitors, enabling the client to continually optimise air demand automatically, reducing energy wastage.

Andrew Haywood, Utility and Industrial Sales Manager states "WPL were approached by MWH to tender for the provision of a WPL SAF sewage treatment plant designed for tertiary/nitrifying duty. Pre contract several sites for other clients with similar bespoke WPL solutions were visited by both Severn Trent Water and MWH. WPL were successful in their tender based on both price and the ability to deliver the plant to Severn Trent Waters demanding specification. WPL was awarded the project in 2014."

WPL has supplied the UK utility market for more than twenty years and has a track record for manufacturing bespoke treatment plants that are easy to maintain, reliable and robust. Manufacturing offsite and assembling in place means work can be carried out quickly and that treatment is carried out to the highest environmental standards.

About WPL

Environmental wastewater treatment solutions

We offer a comprehensive range of wastewater solutions designed to deliver long term cost-effective on-site treatment at even the most challenging sites; meeting customer specific requirements in terms of stringent environmental discharge consent standards, physical footprint, site access, ease of installation and refurbishment.

Our packaged wastewater treatment systems are designed by an expert team of process engineers and manufactured at our dedicated quality controlled UK facility.

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