Case Study: 060

ECS Fabrications

New screw pumps secure long-term sewage treatment

ECS Engineering Services has recently commenced works as part of the latest phase of Scottish Water's £250m city-wide programme to improve sewage management in the Glasgow area. Over the next eight months ECS, in association with Landustrie, will be installing and commissioning 14 new screw pumps at the Shieldhall water treatment works, which serves most of the centre of the city.

Shieldhall is the largest of the Glasgow area's waste water treatment works and serves a population of about 600,000 in the south of Glasgow, Newton Mearns and Renfrew areas.

Case Study: 060

New screw pumps secure long-term sewage treatment

The Shieldhall site has been modernised several times over the years to meet the growing demand of an ever-expanding population in Scotland's largest city. As part of the current programme it was realised that the 14 large Archimedes screw pumps that drive the process were getting towards the end of their service lives and needed replacing.

There are four low level and six high level screw pumps, each weighing 13 tonnes, being 16m long and 2.4m in diameter and capable of pumping 960 litres/sec. There are also four larger RAS (return activated sludge) pumps, each 16m by 2.6m with a flow capacity of 1580 litres/sec.

The recent contract award was to provide like-for-like pump replacements, but ECS realised that this would have meant service engineers working in the original concrete troughs, hand screeding the screw pumps for several weeks to create the formed pumping troughs. This process exposes the engineers to unnecessary risks, so in conjunction with Landustrie in the Netherlands the design team looked closely at the design of the equipment to eliminate as much of this as possible, whilst ensuring the client still received the best standard of equipment currently available on the market.

In conjunction with ESD, Scottish Water's supply partner, several design upgrades were made, the most significant being the alleviation of the requirement to hand screed the new machines into the concrete trough. The pumps were assembled in the factory complete with the new steel coated troughs, these can be moved into position relatively easily, without the fitters having to work in confined and potentially dangerous spaces. Upon successful installation of the new pump and troughs the whole machine will be backfilled with concrete giving both strength and durability far better than the original installations for many years to come. This design upgrade was a major health and safety gain that both Scottish Water, its main contractor ESD and ECS were keen to embrace.

Scottish Water specifications stated that a v-belt drive system should be used, with a direct-on-line drive configuration. This simple but efficient arrangement is appropriate because the slowly rotating pumps run continuously so there are no regular start-up impulses or shock loadings. To compliment this further, ECS has installed new high efficiency motors, which over the course of their long working life will save a considerable amount of energy.

ECS has also delivered further long-term savings thanks to the installation of Landustrie stainless steel ECO, sealed-for-life bottom bearings that are maintenance free for the lifetime of the bearing. Together, the complete installation will provide long-term reliability and efficiency for the treatment works for many years to come.

Landustrie

InfraCore inside

CE NICEIC UVDB empowered by Achilles UVDB verify

CHAS Accredited Contractor BM TRADA CERTIFICATION RoSPA Member

ECS Engineering Services

Water Control · Site Services · Environmental · Fabrications