

Managed Services Powerprofile

Customer: Thames Water Utilities

Location: Long Reach, Dartford, Kent

Customer requirement: 20 year full operation and maintenance contract. Payments to be on an availability basis so as to match with the revenue generation and reduce commercial exposure.

Services: Engineering planning, equipment testing, delivery, set-up and installation, 24/7, 365 day remote monitoring, 20 year full operation and maintenance contract with 90%+ availability guarantee including planned downtime.

Power Need

Following the destruction by fire in 2000 of an original power station at Thames Water's Long Reach sewage treatment plant, the requirement was to provide a complete CHP biogas power station. This was to enable the site to be fully self powered.

By using methane gas resulting from sewage, 2.3 MW of green electricity is produced, enabling the site to be fully self powered. In addition to the electricity, 2 MW of heat is needed to supply the digester load.

As well as an equipment supplier Thames Water Utilities needed a company that could provide the full range of services to manage the project from conception through to completion.

Due to the critical nature of the application, the site demands 90% uptime, so it required a highly dependable solution from Finning. Beyond routine maintenance, remote monitoring was seen as essential, to facilitate repairs rapidly.

In addition, a complete finance package was required.

Solutions

This project is unusual in that Finning fully financed this power station and the site, and Finning supplies power and heat to the parent site on an hourly fee, on a 20 year contract.

Within this agreement, Finning is responsible for the ongoing operation and maintenance of the CHP station. In addition to the daytime shift, the Finning provides 24 hour manned,

remote monitoring, a resource that is unique to Finning.

Integration of power generation into a site-wide monitoring and control system was important: Finning is responsible for the continual operation and maintenance of the CHP power station, and providing remote 24 hour monitoring of all generators. This PC-based LIMA system is coordinated from Finning's Slough Service Centre, and uses touch-screen technology: it provides the service team with real-time, remote interactive control over all engines at the site.



Whilst a significant proportion of faults must be tackled by a visiting field engineer, these remote diagnostics enable swift and accurate remedial action. It eliminates the need for two visits—one to assess the problem, another to bring the required component.

This project posed a number of challenges, as Finning engineers had to perform installation around a working site which could not be interrupted. Project teams from both Thames Water and Finning worked together to ensure successful implementation.

In addition to the original brief, a full switchgear solution was installed on the live site. Robust engines are necessary to burn the aggressive sewage gas, and for this reason, the two main generator sets are fully 'hardened,' using special lubricants with high temperature cooling jackets.

Results

All electric output is used to power the 1.8 MW sewage works load, mainly to operate its pumps. The power station imports or exports electricity to or from the National Grid, depending on the tariff available at any given time.

This £3 million project was approached on the basis of a partnership between Thames Water and Finning. The project was put out to competitive bid, and was awarded not only on the Cat/Finning credentials, but the fact that it provided a total solution, integrated into the entire Long Reach site. The site has received an engineering award from Thames.

Thames Water has a high level of confidence in Finning—at the time of awarding the contract, there was a 15 year relationship, with Cat generators located at 12 other sites.

Says Finning Power Systems General Manager Mark Barnes: 'This is a unique project which conveys our knowledge and expertise of applications in the utility sector. It demonstrates our ability to work with a customer from conceptual design through to implementation, including full managed service capabilities and industry leading remote monitoring support. Plus, the innovative method of financing and operating this project is, we believe, a UK first.'