

Finning UK & Ireland

Power Profile

Combined Heat & Power <<
Utilities <<



Customer

Southern Water

Location

Budds Farm sewage treatment plant

Customer requirement

CHP biogas power station

Services

Feasibility studies	<input checked="" type="checkbox"/>	Project management	<input checked="" type="checkbox"/>
Detailed design	<input checked="" type="checkbox"/>	Installation	<input checked="" type="checkbox"/>
Financing	<input type="checkbox"/>	Commissioning	<input checked="" type="checkbox"/>
Mechanical engineering	<input type="checkbox"/>	Ongoing operation	<input checked="" type="checkbox"/>
Civil engineering	<input type="checkbox"/>	Maintenance	<input checked="" type="checkbox"/>
Equipment supply	<input checked="" type="checkbox"/>	Genuine parts supply	<input checked="" type="checkbox"/>
Ancillary equipment	<input checked="" type="checkbox"/>		



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Power Need

Finning were required to deliver a modular combined heat and power (CHP) system powered by biogas that halved the installation and engineering time spent at Southern Water's Budds Farm sewage treatment plant. Before installing the system, the site was using biogas from the digesters as fuel to run a sludge dryer.

Solutions

Finning suggested that this biogas should be used as fuel to power a Cat G3520C generator set to produce 2MW of electrical power. This makes sound economic sense for Southern Water since not only can the site produce its own electrical power, but it can also sell green electricity back to the grid as renewable obligation certificates (ROCs).

The heat recovered from this system and the dryer warms up the digesters to the optimum temperature for biogas production.

Biogas is not a perfect fuel source with the level of contaminants varying from site to site. For Budds Farm the main contaminants were siloxanes and hydrogen sulphide (H₂S).

Finning's system is designed to remove such contaminants so that the generator set can use the biogas as a fuel. The solution was delivered in four modules. The first module was a fully packaged generator set that included synchronised switchgear and the company's LIMA control system.

This connects to and monitors the site's HV switchgear. The second module was a fully packaged heat recovery system designed to capture heat from both the jacket water and exhaust of the high efficiency G3520C generator. Module three was a gas collection and compression station that filters and also removes some of the solids and vapour from the biogas. Finally the fourth module is a gas clean up skid that removes other contaminants. It uses new technology to remove siloxanes, which if left would coat the engine cylinder head with a glass hard surface that would damage the cylinder heads and valves. The filters use a regenerative media instead of activated carbon filters. The charges in these last up to five years and eliminate the problem of waste carbon disposal.

Results

Finning has agreed a commercially guaranteed ten year operation and maintenance contract with Southern Water to optimise the generator's output and heat recovery from the available fuel.

“Southern Water is using CHP technology from Finning across several of its sites. The solution delivered by Finning has proved extremely reliable.”

Martin Ross
Carbon Policy Manager, Southern Water

About Finning

Finning is the sole authorised dealer of Caterpillar engines and generators in the UK & Ireland, and one of the largest distributors of Caterpillar equipment and power systems in the world.

Through our products, people, systems and technology, Finning can provide power generation solutions including mission critical power, renewable power, Combined Heat & Power (CHP) and Uninterruptible Power Supply (UPS).

Our full service includes feasibility studies, detailed design, project management, installation, commissioning, ongoing operation and maintenance and finance capabilities.

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