Vertase FLI


# CLOSED LANDFILL, NORFOLK

## Innovative Small Scale Micro-Generation from Landfill Gas

**PROJECT SCOPE**

VertaseFLI was appointed to manage the installation and trial of an innovative system utilising Stirling engines to generate heat and power from a closed landfill in Norfolk as part of a European research project (ACUMEN).

**VERTASE FLI ROLE**

VertaseFLI was appointed by the Environment Agency to manage the design, installation and operation of an innovative system to utilise low flows of landfill gas to generate heat and power as part of a European research project. Working with ACUMEN project partners, VertaseFLI successfully installed a system to generate a continuous load of up to approximately 14kW of electricity and 40kW thermal output with low gas flowrates and methane content. Overall efficiency for energy recovery was above 90%.

The system was installed in parallel with a flare system and we were able to integrate seamlessly into existing onsite infrastructure with minimum disturbance. During operation, excess gas not required by the engines was combusted in the flare system, ensuring no methane was emitted to atmosphere. The system was fully automated and incorporated logging and control systems that can be accessed remotely.

To generate power, the system incorporated two external combustion engines operating on the Stirling cycle. The Stirling engines work on the principle of the compression and expansion of working gas at different temperatures, converting the heat energy to drive the electricity generation. The electricity generated was either utilised further on site or exported to the National Grid. Sustainability was further enhanced by the export of thermal energy via a series of heat exchangers to a woodchip drying system for reuse in the local economy. In the course of the project over 230 000 KWh was exported.

The project was nominated for a number of national awards.

## PROJECT OVERVIEW

**CLIENT**

ENVIRONMENT AGENCY

**LOCATION**

NORFOLK

**PROJECT VALUE**

£300,000

**DURATION**

1 YEAR

**SERVICES PROVIDED**

- Project management & technical consultancy, system installation and integration
- Parallel Stirling engines generating electricity for export as well as heat reuse
- Electricity exported to the National Grid
- Drying of biomass (wood chip) fuel

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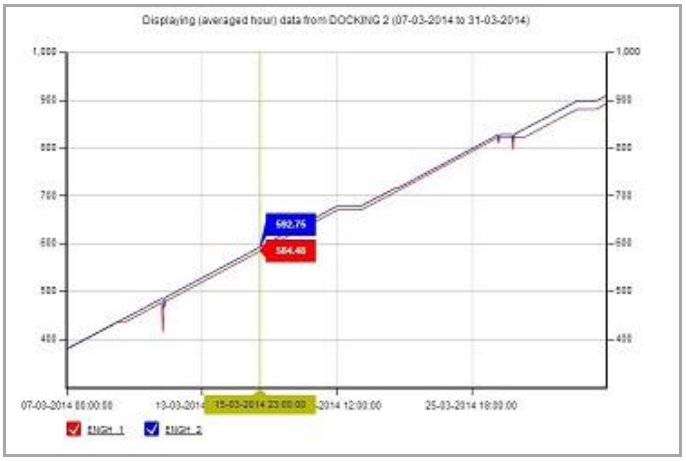
STIRLING ENGINES INSTALLED IN CONTAINER


NETWORKED IN LINE GAS ANALYSER


POWER IS EXPORTED TO NATIONAL GRID




TYPICAL SCREENSHOT OF REMOTE DATA COLLECTION

FULLY INTEGRATED AND MOBILE SYSTEM

INSTALLATION ALONGSIDE EXISTING SITE INFRASTRUCTURE

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