ENERGY INNOVATIONS
ENGINEERING BIOMASS SOLUTIONS

CASE STUDY

Theberton Hall Farm

> We are thrilled to be heating all of the properties here with one boiler, running on home grown woodchip

Theberton Hall Farm owners decided to install a Gilles boiler to heat the farm house, offices and a swimming pool. With various barns and other stores to chose from it was decided to install the boiler in part of the garage, leaving sufficient room for car parking whilst the sweep collector has been placed in an adjoining barn. It was important for the owners to separately heat their home, offices and swimming pools at different times during the various seasons. The system installed allows for all elements of the district heating scheme to be operated independently.

The system centres on a Gilles HPK-RA 70 woodchip boiler

SYSTEM SUMMARY	
Boiler:	Gilles HPK-RA 70
Heat Output:	70kW
Fuel:	G50, W30 Woodchip, sourced from the farm
Fuel Storage:	Converted grain store with 5m sweep collector
Fuel Storage Capacity:	100m³
Fuel Delivery Method:	Bulk tipped
Annual Heat Load:	147MWh
Annual Fuel Requirement:	42 tonnes
CO_2 Saving:	39 tonnes
Boiler Features:	- Automatic ignition - Automatic heat exchanger cleaning - Automatic ash removal
System Features:	- Variable flow district heating - Small scale district heating, heating house, offices and swimming pool - Isopex pre-insulated underground pipes - Plate heat exchanger - SAV (house interface unit)

THE BOILER

Image 1

The Gilles boilers feature automatic feed system, automatic ignition, daily automated heat exchanger cleaning and automated ash removal. This means they are designed to run for up to a month at a time with no further input other than monthly maintenance, which is merely to empty the ash bin. They also have remote maintenance access as an option extra.

THE FUEL STORE

Image 2

The hinged arm sweep collector fuel transport system designed and built by Gilles specifically for woodchip transport has a robust construction incorporating a 50mm solid steel shaft and 8mm continuously welded progressive auger to ensure smooth transport from the fuel store through to the boiler, for woodchips up to G50.

The woodchip is stored in a disused store situated adjacent to the boiler room. Access is such that bulk deliveries up to 30 tonnes at a time can be accepted. The woodchip is then merely pushed up onto the 5m sweep collector around once every 6 weeks during the heating season.

DISTRICT HEATING MAINS

Image 3 & 4

Energy Innovations are market leaders in the design and installation of district heating systems and they use Isoplus pipes due to their flexibility and ability to carry hot water with minimal heat loss. As the main building, office and swimming pool are situated some 50m away from the boiler the Isopex district heating pipes have been used to transfer the heat with minimum heat loss.

SAV UNIT AND HEAT EXCHANGER

Image 5

At each property termination a heat exchanger has been installed to maintain a separation between the existing heating systems and the new biomass boiler system. Return temperature limiting valves and a variable flow pumping system increases the efficiency of heat distribution.

In the office premises a SAV unit is installed. As well as a heat exchanger for the heating system, this also includes an instant hot water heat exchanger which negates the need for a separate storage cylinder. Hot water is simply heated instantly as required, ideal where the usage is low.

GRANT

This installation was supported by a grant awarded under stream 2A of the DTI's Low Carbon Buildings Programme.

If you would like to arrange to see this or any of the systems installed please contact Energy Innovations

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