

# Major Dairy Producer



Dairy



UK



Flu-Ace

## Overview

This customer runs a 600KW electrical output Combined Heating and Power (CHP) plant, 24 hours a day. The CHP is used to generate electricity for supply to the grid. Thermal Energy International identified that significant savings could be achieved by utilising the waste heat from the waste gasses and the engine cooling jacket.

## Impact

- ▶ 3,282,850 KWh/year waste heat recovered
- ▶ 22% reduction in gas consumption
- ▶ £137,838 a year in fuel savings
- ▶ Over 1325 tons/year of greenhouse gas reduction
- ▶ 1.8 years payback period

## Solution

Thermal Energy installed a FLU-ACE® and Finned Tube Economiser to the existing CHP flue with a modulating damper. This allowed the waste gasses to be drawn off into the recovery equipment. These gasses are then cooled in two stages recovering the energy stored in the gas:

1. Firstly the Finned Tube Economizer recovers the bulk of the sensible heat from the waste gasses.
2. The gasses are then directed into the FLU-ACE® where the gas temperature is reduced to below the dew point in the tower releasing the remaining sensible and latent heat from the gas in the form of hot water.

This hot water is then directed to plant rooms to preheat existing loads, reducing the steam load on the steam boilers. The recovery water is then returned to be reheated with flue gasses and topped up with waste heat from the engine jacket and the cycle repeats. The spent gasses are discharged to atmosphere through a new separate stack at 35 degrees Celsius. Further savings have been achieved by reducing CIP times and other process impacts.

“Our gas bills have reduced significantly and considerable process savings have been realised” said the customer’s Energy and Environment Manager.

### FLU-ACE® HEAT RECOVERY SYSTEM



- ▶ The FLU-ACE® is a direct contact condensing heat recovery system that recycles the heat normally lost through the boiler flue gas exhaust
- ▶ Implementation of the technology typically reduces energy consumption by 10% to 20%
- ▶ Average payback ranges from two to four years

