

# Unlocking Hidden Energy Savings in Waste Treatment

## At a Glance



- £100,000 in annual fuel savings
- 400 tonnes of CO<sub>2</sub> emissions eliminated per year
- Less than 6-month capital payback
- Heat exchanger restored to design performance

## ► Hidden Inefficiencies in Thermal Systems

A large sludge treatment facility was experiencing high fuel oil usage despite having a CHP unit and biogas-fired boilers. Our initial audit revealed:

- Thermal energy was not being effectively transferred to the process
- CHP unit was underperforming, with only 25% thermal efficiency
- Excess heat was being rejected to the atmosphere due to poor system alignment

This inefficiency was costing the site thousands annually in fuel and emissions.

## ► Mapping the Problem with Precision

Using our Process Energy methodology, we conducted a detailed mass and energy balance across the site. This revealed that the EEH plant's batch heating needs were not aligned with the CHP's continuous output and the heat exchanger was underperforming.

### Key diagnostic steps:

- On-site inspections of heat transfer systems
- Analysis of fuel consumption vs. thermal demand
- Identification of operational mismatches and mechanical faults

These insights helped us build a clear picture of where energy was being lost and how to recover it.



## Solution Summary



**Heat Transfer**  
Optimised  
Exchanger optimised



**Energy Saved**  
Less fuel, lower  
emissions



**Fast Payback**  
£100k saved in 6  
months

### ► Engineering the Fix with Minimal Disruption

Rather than recommending costly infrastructure changes, we focused on restoring existing assets. The heat exchanger was remediated to its original design condition and operational adjustments were made to better match heat generation with process demand.

This low-capital intervention delivered a high-impact result, improving system reliability and unlocking significant energy savings.

### ► Results That Speak to the Bottom Line

The intervention delivered tangible improvements that directly support operational and financial goals. By restoring heat transfer efficiency and aligning energy generation with process demand, the site unlocked significant value from existing infrastructure.

- £100,000 saved annually in fuel oil, a direct reduction in operating costs without major capital spend
- 400 tonnes of CO<sub>2</sub> emissions eliminated, supporting sustainability targets and compliance efforts
- Capital payback achieved in under six months, making this a fast-return investment with long-term benefits

This project is a clear example of how targeted engineering can uncover hidden inefficiencies, deliver rapid ROI and future-proof operations, all without disrupting production or requiring large-scale upgrades.

