

# CASE STUDY E - PROJECT BROOK

## Maintaining Performance Under Feedstock Flexibility

| £153,397 Saved | 7% + Biomethane | 4% + CH<sub>4</sub> content | - 14% Ammonia | Reduced FOS/TAC |

### OVERVIEW

This 800 kW site operates a 3,000 m<sup>3</sup> double-ring digester. The plant processes a heterogeneous feedstock mix, including variable and biologically challenging food waste streams, and was already achieving ~90% operational efficiency before the trial.

With a new gas-to-grid facility under development, the operator used this site to test whether CreChar® could maintain performance under more flexible, lower-cost feedstock strategies.

CreChar® stabilised the digestion process, enabling consistent performance despite increased feedstock variability and reduced average substrate quality.

### KEY OUTCOMES

- Biomethane increased by 6-7%
- Methane content increase of 3-4%
- Ammonia reduction 10-14%
- FOS/TAC ratio reduced from ~0.32 to ~0.25
- Total annual savings:
  - Lower-cost feedstock utilisation
  - Reduced chemical additive usage
  - Lower digestate handling requirements
  - Increased energy revenue

Difference

£153,397

£1,031,512

£878,115

Before CreChar®

After CreChar®

Annual Savings

### ROI ASSUMPTIONS

- Feedstock cost: £15 → £12 per tonne (fresh weight)
- Digestate disposal: £10 per tonne
- Energy revenue (FiT + RHI): £180/MWh
- Operating period: 365 days per year
- Reduced ferric dosing included
- CreChar® applied at full commercial cost

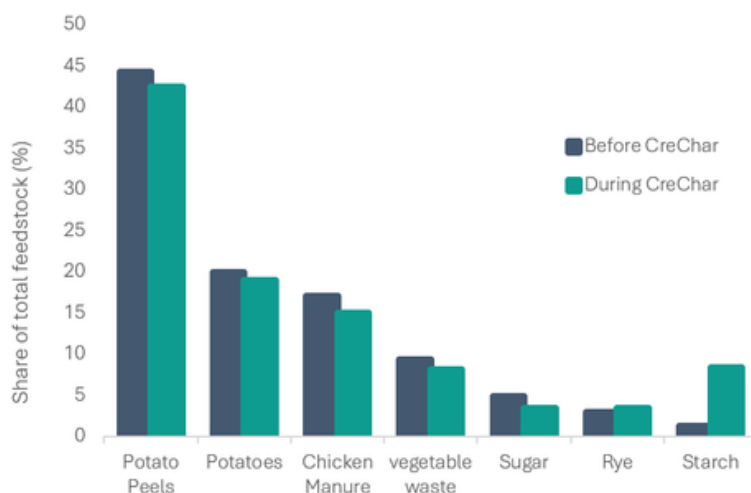
### NOT INCLUDED IN CALCULATIONS

- CO<sub>2</sub> sequestration and carbon credits
- Sustainability reporting benefits
- Heat recovery from CHP units

### FEEDSTOCK STRATEGY

During the trial, the feedstock mix shifted towards lower-cost, more variable substrates, including increased use of liquid starch and reduced reliance on higher-energy materials.

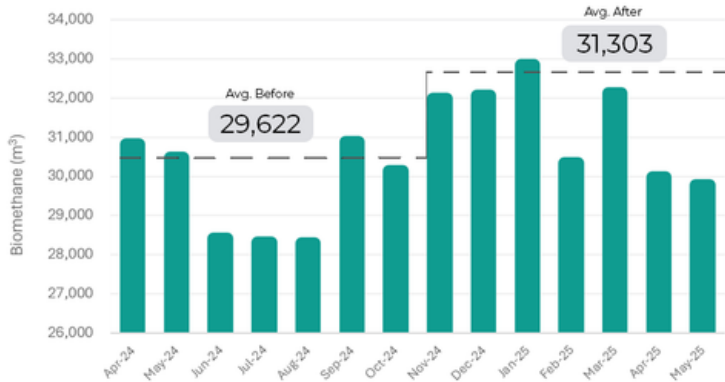
Despite a shift in feedstock, energy output was maintained, indicating improved substrate conversion efficiency and enhanced biological resilience.



## BIOMETHANE

With CreChar®, methane content increased by 3-4%, and overall biomethane output rose by 6-7% compared to the pre-trial baseline. Higher-quality gas offers clear advantages for future gas-to-grid sites, where increased methane content drives upgrading efficiency and value.

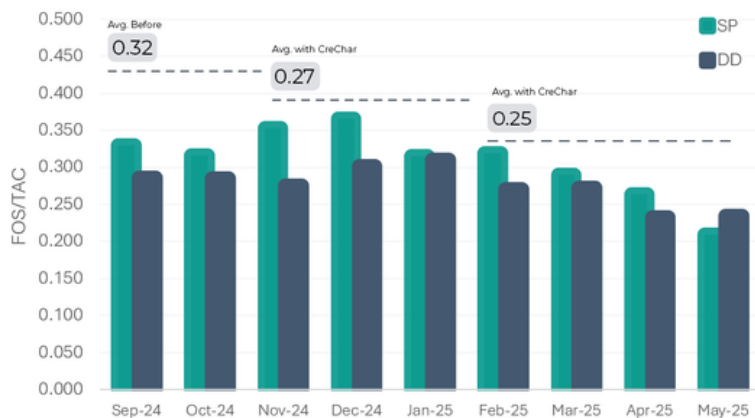
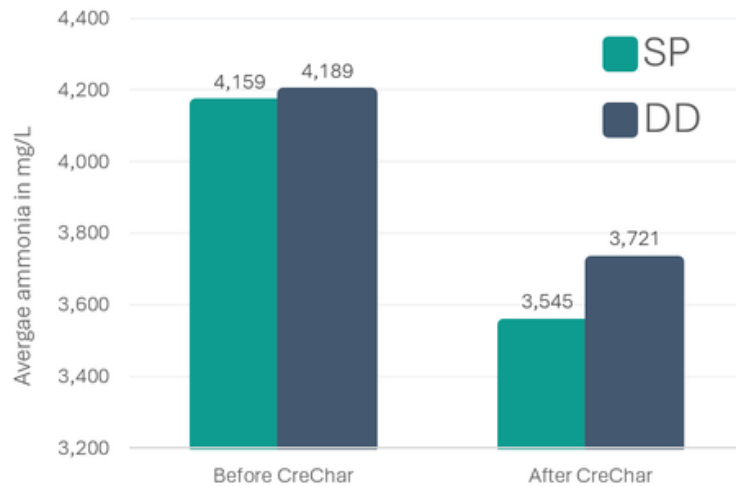
- CH<sub>4</sub> Avg. pre-trial = 52%
- CH<sub>4</sub> Avg. during trial = 56%
- CH<sub>4</sub> Increase of 3-4%
- Biomethane increase = 6-7%



## AMMONIA & PROCESS STABILITY

Over the six-month trial period, the feedstock mix changed- at times quite rapidly- and under normal conditions, such fluctuations would be expected to cause inhibition and biological stress.

However, with CreChar®, the ammonia levels were reduced by 10-14%, helping to protect the biology of the plant and support a more resilient process.



## FOS/TAC

Improved stability is also evidenced by the reduction in the FOS/TAC ratio. Prior to CreChar®, the plant operated at an average of 0.32, which decreased to 0.27 and further stabilised at 0.25.

This reduction in FOS/TAC ratio reflects improved buffering capacity and acid-base balance, enabling the system to tolerate higher variability and increased loading rates without process upset. Combined, this supports higher biogas production and improved revenue potential.

## OUR APPROACH

We run large-scale trials for at least 6 months to capture true operational patterns and deliver reliable, proven results - using a structured process to maximise outputs and gather key performance data, with minimal operator input and full expert support.

Our team assesses operations and data throughout, filling gaps where needed.

CreChar® is supplied in 20 kg digestible bags and added daily with no disruption.

## CRECHAR® TRIALS

To find out how CreChar® can support your Anaerobic Digestion plant please reach out to us at:

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