Investing In Onsite AD - The Financial Argument
Introduction

Clearfleau designs and builds on-site anaerobic bio-energy plants tailored to your site and the liquid effluent stream produced. Generation of renewable energy adds value to unwanted process residues and we have a track record of delivering complex projects on time and to budget.

“Britain’s Leading Supplier of Digestion for Industrial Sites”

Our proven approach offers an attractive ROI, generally under 5 years. As UK market leader for on-site industrial Anaerobic Digestion (AD), we believe passionately in helping manufacturers become more sustainable by adding value to unwanted materials.

Benefits of our on-site treatment process are:

- Lower residue disposal costs
- Long-term incentive revenue
- Reduced fossil fuel purchase
- Better environmental status
- Decreased carbon emissions
Tackling Industry Challenges

Energy is a major cost for most manufacturers. As your energy costs escalate, can you reduce your fuel bills by generating value (and renewable energy) from your process residues. Mitigate rising costs by using bio-degradable residues to power your factory.

How about using your biogas, upgraded to bio-methane, to supply the gas grid and your boilers? At our latest project for First Milk at Aspatria, the biogas will help power the factory and supply local gas users.

Clearfleau’s plants generate renewable energy on factory sites – could your site be next? You could supply your production processes with renewable power or heat from a CHP or dedicated boiler. Or like Lake District Biogas, upgraded the gas for grid injection.
Mobile On-Site Trials Unit

Clearfleau has experience with a range food and beverage feedstocks but if we are unfamiliar with your process residues we have the capability to undertake on-site trials with your materials. Our on-site AD plants consistently deliver a COD reduction of greater than 95% (see table below) and full scale plants have replicated the performance achieved in trials.

<table>
<thead>
<tr>
<th>Waste Source</th>
<th>Bio-Diesel refinery</th>
<th>BV Dairy</th>
<th>Dairy 2 (whey conc.)</th>
<th>Nestle</th>
<th>Dairy 3</th>
<th>Biofuels UCO -1</th>
<th>Biofuels UCO - 2</th>
<th>Diageo</th>
</tr>
</thead>
<tbody>
<tr>
<td>Waste water COD (mg/l)</td>
<td>64,000</td>
<td>27,000</td>
<td>120,000</td>
<td>25,000</td>
<td>To 12,000</td>
<td>64,000</td>
<td>255,533</td>
<td>33,000</td>
</tr>
<tr>
<td>COD removal (%)</td>
<td>98</td>
<td>99</td>
<td>98</td>
<td>99</td>
<td>98</td>
<td>95</td>
<td>99</td>
<td>97</td>
</tr>
<tr>
<td>CH₄ content (%)</td>
<td>78</td>
<td>68</td>
<td>50</td>
<td>50</td>
<td>&gt;57</td>
<td>64</td>
<td>60</td>
<td>54</td>
</tr>
<tr>
<td>CH₄ yield (m³CH₄/Kg COD)</td>
<td>0.36</td>
<td>0.39</td>
<td>0.32</td>
<td>0.36</td>
<td>&gt;0.30</td>
<td>0.34</td>
<td>0.30</td>
<td>0.32</td>
</tr>
<tr>
<td>Hydraulic retention time (days)</td>
<td>10</td>
<td>6</td>
<td>16</td>
<td>7</td>
<td>2.5</td>
<td>15</td>
<td>6</td>
<td>6</td>
</tr>
</tbody>
</table>
Case Study - Sweet Success for Nestlé

At one of Europe’s largest confectionery factories, an example is being set that other food processors are looking to emulate. Nestlé chose Clearfleau in 2013 to install an anaerobic digestion (AD) plant at its confectionery factory at Fawdon, Newcastle. The plant processes over 200,000 litres of wash-waters per day and 1,200 tonnes of residual products per year, to supply renewable energy to the site.

This resulted in:

- 8% of power requirement supplied from biogas
- 10% reduction in site’s overall carbon footprint
- £300,000 in incentive revenue / energy savings
- £200,000 savings on disposal and discharge costs
- Nestlé recognised in Dow Jones Sustainability Index’s as industry leader
Case Study - Lake District Biogas – Green Gas from Cheese Residues

First Milk’s Aspatria creamery produces award winning cheddar cheese under the Lake District brand. The creamery, located in rural Cumbria, is Europe’s first dairy processing site to feed bio-methane (up-graded biogas) generated entirely from cheese process residues to the gas grid.

- Generating 5.35 Megawatt hours (MWh) thermal energy
- Treating 1,650m3 per day of process effluent and whey
- Producing around 1,000 Nm3/hour of biogas
- Revenue for energy generated from FITs and RHI
- Reducing costs by cutting fossil-based fuel purchase
Each on-site AD plant is tailored to the specific site and its feedstocks. Clearfleau’s on-site industrial projects deliver:

- **Robust Plants**: built on time / within budget
- **Rapid Payback**: target ROI of at least 20%
- **Energy Costs**: up to 25% fossil fuel savings
- **Govt. Incentives**: 20yr index linked payments
- **Residue Disposal**: at least £100k in savings
- **Effluent Charges**: cost-effective treatment
- **GHG Emissions**: carbon footprint reduction
- **Sustainability**: enhanced green credentials

On-site AD offers a priceless combination of cost savings, revenue and resource efficiency, with CSR and PR benefits.
Can Clearfleau help you?

Are you facing higher energy or disposal costs? Does adding value to your production residues make sense? Do you have an outdated effluent treatment system? Do you want to cut carbon emissions?

Investing in our proven on-site digestion can help your manufacturing sites become more sustainable and efficient by reducing your disposal charges and optimising energy output from residues. In our versatile, robust plants, deployed on a number of sites in the UK microbes that thrive without oxygen convert fats, sugars and proteins into biogas.

For more data, or to have an in-depth conversation on how Clearfleau can help

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