

Case Study

RMR takes a look at Cawleys commercial food waste collections



Combined Service

Food Waste: Pioneering Landfill Alternatives

Established in 1947 by Frank and Reg Cawley, Cawleys' waste-recycling company is pioneering an alternative to landfill for caterers and hoteliers in the south of England.

The company collects around 350-400 tonnes of food waste per week and delivers it to be processed at Biogen's Anaerobic Digestion plant in Bedford. Cawleys conducts a range of different food waste collections. Bulk collections are carried out for large quantities of food from manufactures such as Hain Celestial, which produce sandwiches for companies including Marks and Spencers, and bulk liquid collections are also made from companies such as Alpro UK which produces soya milk.

Food Round

Cawleys also collects small amounts of food waste from the hospitality industry and large businesses with canteens on its 'Food Round'. Customers are provided with cornstarchbags, which they can source separate the food waste in. The bags are biodegradable and can be easily digested in the Anaerobic Digestion plant. The Food Round includes companies such as Raymond Blanc's Brasserie Blanc in Milton Keynes, and Luton Hoo Hotel. A split RCV is used for the food round, allowing Cawleys to collect glass waste at the same time as food. The vehicle is run on bio-fuel to boost the scheme's sustainability. Kate Cawley, Business Development

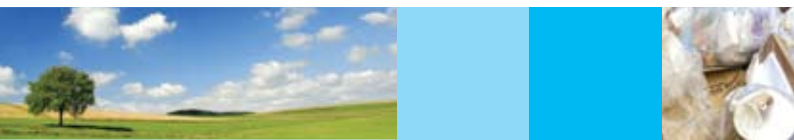
Manager explains. "Many of the companies we collect from on the round are restaurant or hotels, therefore they also produce large amounts of glass waste so it is like killing two birds with one stone and it also helps to reduce road mileage by conducting separate glass collections." Luton Hoo golf and spa hotel in Bedfordshire has been working with Cawleys since its construction phase in 2005. Estate Manager Richard Biffen says: "We have set out to ensure that this site has the smallest possible carbon footprint, and using Cawleys Food Recycling Round is a wonderfully simple and effective step in that process. For both the bulk collections and the Food Round, Cawleys offers daily collections and also provides

www.cawleys.co.uk



Source: Resource Management & Recovery April 2008

▶ Local recycling, global responsibility



reports which can detail the weight of food waste collected and the amount of energy it creates at the plants.

The Process

When the food arrives at the reception area at the biogas plant, the food waste is placed through a de-packaging unit which separates any plastic, tin, card and paper from it before being processed. The food waste is then mixed with pig manure to form a substrate which is pasteurised and passed into a fermenter for Anaerobic Digestion. 12,000 tonnes of pig slurry is pumped into the Anaerobic Digestion system via an underground pipeline and is mixed

with around 30,000 tonnes of food waste. The mixture is then pasteurised by heating it to 70°C to remove any pathogens and to meet strict regulatory requirements before being transferred to the digesters. The feedstock remains within the digesters for approximately 30 days before being pumped into one of the two final storage tanks. The digesters are regularly monitored to ensure that the microorganisms are working efficiently. Biogen's plant produces 30,000 tonnes of digestate per annum which is a nutrient rich bio-fertiliser. It is a balanced fertiliser containing nitrogen, phosphate and potash. This is piped to the adjacent arable fields owned by Bedfordia Farms

where it is applied to the land when it is needed. The Methane or Biogas that is generated by the digestion process is captured and piped and fed into CHP generators that have a combined capacity of 1.2MW per hour. The majority of the electricity generated is fed back to the National Grid. A small amount is used to power the pig finishing unit and the plant requirements. Heat generated from this is used for the pasteurising process. With AD being the technology of choice for many waste companies, Cawleys' successful model is likely to set a precedent for other companies or local authorities looking to set up plants to process food waste in the future.

▶ Re-use ▶ Recover ▶ Recycle

The Three Stages of AD

Hydrolysis

Carbohydrates, fats and proteins undergo hydrolysis to break them into smaller more soluble molecules.

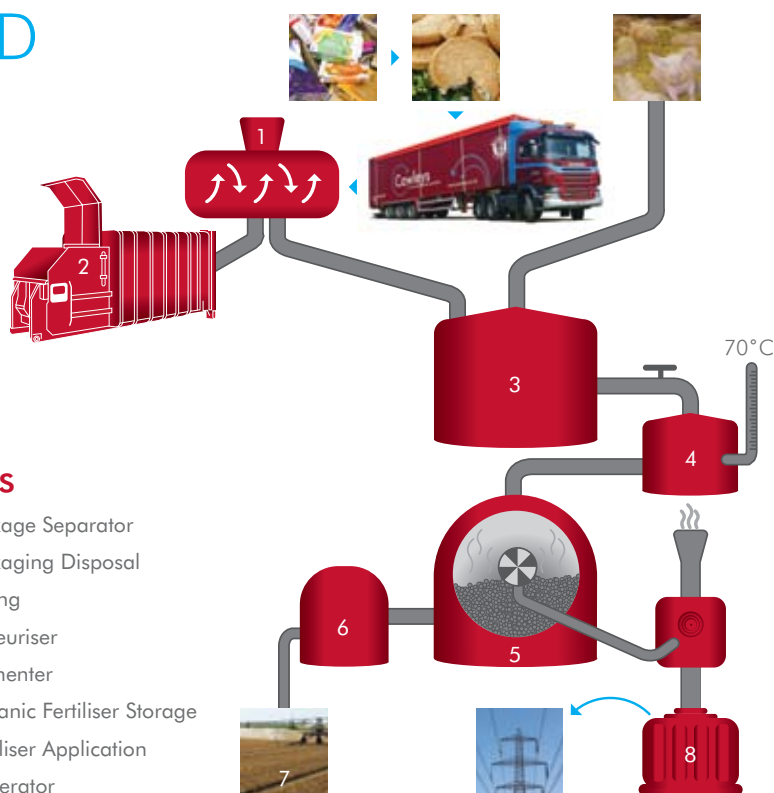
Acidogenesis

Acetogenic bacteria convert the hydrolysis products into simple organic acids (acetic, butyric and propionic), ethanol and volatile fatty acids.

Methanogenesis

Methane is finally produced by methanogenic bacteria breaking down the acetic acid and VFA molecules. The methanogenic bacteria produce a biogas, a mixture of methane (60%) and carbon dioxide (40%) and other trace elements.

A combined heat and power (CHP) engine is used to convert the biogas into electricity and heat.



Keys

- 1 Package Separator
- 2 Packaging Disposal
- 3 Mixing
- 4 Pasteuriser
- 5 Fermenter
- 6 Organic Fertiliser Storage
- 7 Fertiliser Application
- 8 Generator

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