

Anaerobic Digestion (AD) for Hospitality Sector Food Waste

BACKGROUND

The UK produces more than 20 million tonnes of food waste per annum. Whilst the majority of this waste is produced by householders, a significant proportion - 15% - is generated by the hospitality sector. (Source: Wrap 2008)

What is your company currently doing with food waste from kitchens, canteens and front of house? Are you throwing it all into general waste? Perhaps you are separating out your compostable waste, but throwing away fish and meat products and cooked foods?

Did you know that:

- **All** your food waste can be recycled to generate electricity and fertiliser?
- It will become **illegal** to put food waste from catering into landfill. A Defra consultation currently taking place will lead to the introduction of a ban on catering waste to landfill.

Food waste is inevitable: no matter what type of food you work with, how skilled your chefs or how delicious your menu, there will always be some waste. What is not inevitable is the environmental damage caused by the release of harmful greenhouse gases as food waste decomposes in landfill.

A range of environmentally-friendly and legislation-compliant alternatives to landfill already exists. These include Anaerobic Digestion (AD), which has been hailed as the future of food waste management by both WRAP and the UK Environment Minister.

WHAT IS AD?

Anaerobic Digestion (AD) is the process by which plant and animal material (biomass) is converted into useful products by micro-organisms in the absence of air. Biomass is put inside sealed tanks and naturally occurring micro-organisms digest it, releasing methane that can be used to provide heat and power. This means AD can help reduce fossil fuel use and reduce greenhouse gas emissions. The material left over at the end of the process is very rich in nutrients so it can be used as fertiliser.

AD is not a new technology - it has actually been used in the UK since the 1800s - and there are a growing number of AD plants in the UK processing waste and producing energy. However, the UK still lags a long way behind many other European countries, such as Germany and the Netherlands, in the widespread adoption of AD.

Almost any biomass can be processed in AD including food waste, energy crops, slurry and crop residues. AD can accept waste from our homes, supermarkets, industry and farms, meaning less waste going to landfill.

The following steps describe the AD process for food waste recycling:

- Biodegradable waste, including food waste that is still in its packaging, is sent to a biogas plant where it is de-packaged and mixed with pig manure, which provides a stable medium in which the AD process can work.
- The waste is pasteurised at 70°C for one hour and passed into a fermenter for AD.
- New food is introduced as an equal amount of residue is transferred into storage tanks: AD is a continuous process and the fermenter is rarely emptied.
- The methane that is produced is transferred to a generator and converted into electricity and heat and introduced into the National Grid.
- The heat generated is reused for the process of pasteurisation.

WHAT CAN AND CAN'T GO TO AD?

The waste that can go into the AD process includes:

- Leftover food waste, including cooked or uncooked meat or fish
- Tea bags, coffee grounds
- Paper plates and napkins
- All bio-degradable packaging
- All food in packaging because de-packaging equipment at the plant will remove the plastic, tins, card and paper from food before it is processed. The removed packaging can then be recycled.

The waste that cannot go in to the AD process includes:

- General waste
- Empty plastic and glass bottles
- Very large bones or animal carcasses

WHY SHOULD HOSPITALITY CARE ABOUT FOOD WASTE?

Consumer Pressure

Consumers care about waste. High-profile campaigns such as WRAP's "Love Food, Hate Waste" have stimulated increased awareness about food waste. The restaurant and food service sector generate over three million tonnes of food waste each year. (Source: Cawleys) Consumers are taking steps to reduce food waste at home and they expect the hospitality sector to do the same.

An independent research report commissioned by Cawleys, a UK waste management business, investigated consumer attitudes towards food waste. The final report, entitled "*Eco-Eating: consumer attitudes to commercial food waste*", found that:

- 94% of people try not to waste food at home
- 78% of people believe that where food waste ends up is as important as where ingredients come from when they dine out
- 69% of people care about food waste in restaurants and the workplace
- 44% of restaurant diners would be willing to pay more in a restaurant with exceptional environmental credentials
- Given a choice between restaurants of equal food reputation – 69% would opt for the one with the best environmental credentials
- 85% of people care about what goes on behind the scenes in restaurants

Customers and Loyalty

People eating outside the home want to know that they are making environmentally-responsible choices as well as having a good meal out. By demonstrating that you are taking care of your food waste, you increase the opportunity to attract new customers and build a loyal customer base.

Food waste is an issue that cannot be ignored by the hospitality sector. Top chefs such as Raymond Blanc of Le Manoir aux Quat' Saisons and Oliver Rowe, the BBC's "Urban Chef", have been quick to recognise the benefits of AD and are early subscribers to food waste recycling to AD. Oliver Rowe says: "In restaurants the focus is often on the front end of the business; the fresh food that comes in, what it looks like and what it tastes like. We don't usually look at the other end of the business and what happens to the food waste that is generated in a restaurant. By tackling this important element, the food waste collection service helps environmentally conscious restaurateurs get closer to achieving zero landfill."

Stay Ahead of the Law

If your business produces catering waste, it is your responsibility to ensure that this type of waste is disposed of correctly. It must not contaminate the environment or be fed to livestock. The UK Department for Environment Food and Rural Affairs (Defra) and similar agriculture and environment agencies in your country or region can provide further information regarding the legal responsibilities of businesses with regard to waste disposal.

The Government's target to reduce the volume of food waste sent to landfill by 2015 is exerting unprecedented pressure on food services and restaurants. A 2010 Defra consultation will expand this regulation to ban all catering waste being disposed of to landfill. Caterers who send their waste food to AD will meet environmental requirements voluntarily and comply with legal requirements.

Do the Right Thing

At present, just 0.4% of food waste is sent to AD. The vast majority of waste from commercial kitchens, restaurants, pubs and cafés still goes to landfill where it rots and generates methane gas, which is 22 times more powerful as a greenhouse gas than carbon dioxide. By increasing the amount of food waste sent to AD, this devastating environmental damage can be significantly reduced.

Defra confirms its "commitment to making the most of AD", a process that is better than carbon neutral and produces renewable energy and fertiliser. Using the AD route will not only help businesses to meet carbon emission targets and contribute with confidence to carbon reduction schemes, but will also enable businesses to address customers' concerns about the destination of food waste in the 21st century.

WHAT DOES SWITCHING TO FOOD WASTE RECYCLING TO AD INVOLVE?

Adopting food waste recycling is straightforward and need not add to the cost of waste management for an organisation. Waste management companies have worked hard to ensure that the process is made as straightforward as possible for the client. By conducting waste audits, waste management companies can ensure that adopting food waste recycling to AD is:

- **Time efficient** - recycling food waste takes no more time than throwing it away.
- **Easy to adopt and follow** – staff are given training to segregate the food waste properly and supplied with clear signage, posters and biodegradable cornstarch bags for food disposal.
- **Cost efficient** - food is heavy and with landfill tax set to rise every year by £8 per tonne, the more weight diverted from landfill the better for both business and the environment. The AD route need not be more expensive if a holistic view of waste is taken and all waste (cardboard, glass, tins, food waste, etc.) is handled in one contract. By incorporating food waste collection as a new extra element it can be cost neutral so it makes commercial sense to look at the whole recycling picture.

CONCLUSION

As the world's population grows and pressure on finite resources increases, we all have a responsibility to adopt the mantra “reuse, reduce and recycle” when it comes to resources and waste. In the hospitality sector, some food waste is always inevitable but the massive environmental damage caused by dumping waste food in landfill is not. Through the use of green technologies like anaerobic digestion, our industry can avoid the emission of harmful greenhouse gasses and make a positive contribution to environmental targets.



*This guide has been produced by the Institute of Hospitality with content provided by **Cawleys**, a UK specialist in recycling and waste management. Cawleys offers a professional and expert waste management and recycling service for businesses. Family owned and run, Cawleys retains a core ethos of excellent customer care and employs experienced industry professionals*

and a dedicated team of support staff. For more than 60 years, Cawleys has consistently invested in state-of-the-art recycling and waste management technology and now offers a nationwide food recycling service to AD for the commercial sector. To learn more, please ring Cawleys at +44 (0)845 260 2000 or email: info@cawleys.co.uk or visit Cawleys' website at www.cawleys.co.uk

FURTHER RESOURCES

Biogas Information - a portal to information on anaerobic digestion, biogas and digestate.
www.biogas-info.co.uk

Biomass Energy Centre – extensive biomass info, supplier data and documents supporting use of biomass as fuel. www.biomassenergycentre.org.uk

BusinessLink – renewable energy and AD information for businesses.
www.businesslink.gov.uk/bdotg/action/detail?type=RESOURCES&itemId=1081290675

Cawleys – a UK waste management and recycling specialist. Free copy of “Eco-Eating: consumer attitudes to commercial food waste” at: www.cawleys.co.uk . WasteSolve - www.wastesolve.co.uk

Defra – Extensive free information on the disposal of catering and food waste. See:
www.defra.gov.uk/foodfarm/byproducts/wastefood/index.htm
Anaerobic Digestion - www.defra.gov.uk/environment/waste/ad/index.htm
Catering Waste - www.defra.gov.uk/foodfarm/byproducts/wastefood/caterwaste.htm
International Catering Waste - www.defra.gov.uk/foodfarm/animaltrade/icw/index.htm

Friends of the Earth – AD briefing www.foe.co.uk/resource/briefings/anaerobic_digestion.pdf

Institute of Hospitality - ebooks collection, available to members in the Online Catalogue.
Corporate Environmental Management (2008), Darabaris, John.
The Business Guide to Sustainability: Practical Strategies and Tools for Organizations (2006), Hitchcock, Darcy E.; Willard, Marsha L.

NetRegs – environmental guidance for the hospitality industry. See:
www.netregs.gov.uk/netregs/businesses/62641.aspx

WRAP - Recycling information business case studies. See: www.wrap.org.uk

DISCLAIMER - This Institute of Hospitality Management Guide is intended as a brief summary of the topic. While the information it contains is believed to be correct, it is not a substitute for appropriate professional advice. The Institute can take no responsibility for action taken solely on the basis of this information.

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