FOOD WASTE DISPOSERS (FWDs)

"Good for the environment and good for council taxpayers' pockets."
Jeremy Howell-Thomas, Worcestershire County Council

- Efficient management of kitchen food waste and a rich source of renewable energy.
- Make recycling easy for householders and landfill targets achievable for local authorities.
- Significantly reduce waste sent to landfill.
- In flats and densely populated areas, posing the greatest waste challenges, they offer the most convenient and hygienic means of managing organic waste.
- Use minimal energy and water.
- Offer significant carbon and other cost efficiencies.

The Product

FWDs are devices fitted under the kitchen sink. They quickly and simply grind kitchen food waste into tiny particles (less than 2mm) and flush them into the wastewater system, to be treated with the rest of the sewage. Driven by electric motor, they are easy and safe to use.

The grinding mechanism has no knives or blades. Instead, impellers (or lugs) mounted on a spinning plate use centrifugal force to continuously force food waste particles against a stationary grind ring. The grind ring breaks down the food waste into very fine particles - virtually liquefying them. Once they are ground the running water flushes the particles through the grind ring into the wastewater pipe.

FWDs are typically rated between 0.4 – 0.5 kW. Requiring a very short run time, their energy and water use is minimal. The Market Transformation Programme (MTP) estimated that on average food waste disposers run for just over 15 seconds per use and use just 2-3 kWh of electricity a year. At current average electricity prices this represents a cost of less than 50 pence p.a. The water use at 6 litres per day, is less than the equivalent of one extra toilet flush.

Unlike composting they demand no radical change in consumer behaviour. With no requirement to store odorous food waste for weekly or fortnightly collections, they are a popular solution with householders.

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Waste management benefits

FWD's remove kitchen food waste (KFW) – 20% of household solid waste – from the municipal waste stream. In 2005/6, this alone was estimated to save the local authority an average £20 per household per year. Today, with increases in transport and landfill charges this would be around £50 per household per year.

They reduce the need for separate waste collections, which is set to rise. They offer the potential to recoup value from food waste, and reduce traffic congestion, fuel consumption and vehicle emissions.

They eliminate human error from the waste separation process and help to avoid cross contamination of waste streams. Packaging can be rinsed under the cold tap and potentially damaging food residues washed away at source.

They reduce landfill and the resulting methane emissions from sites that do not recapture this harmful gas.

Energy capture

FWDs can make a significant contribution to renewable energy.

Most UK sewage sludge is treated using anaerobic digestion (AD), this allows for the creation of the biogas equivalent to 76 kWh of electricity per household per year, from their kitchen food waste.

If only 10% of London homes were equipped with FWDs, the renewable energy created every year from kitchen food waste would be sufficient to power approximately 5,000 homes. London would be saving approximately £10m p.a. in waste handling and generating 24 gigawatt hours of renewable energy, at little or no cost. At the current average electricity price of 15.3 p/kWh this represents a market value of over £3 million a year.

The knowledge gap

FWDs were invented over 70 years ago in the USA, where they are used in 50% of homes. In some major cities their use is now mandatory. In Milwaukee, Wisconsin, people are urged to put more food waste down their "garbage disposals" because the district sewerage company is eager to increase the amount of food waste that it converts to electricity. For decades they have also been widely used in Australia and New Zealand.

In Surahammar, Sweden, where the proportion of homes using FWDs has increased from 0 to 50% since 1997, this has had positive impacts on waste management costs, sewage flows and energy capture. Surahammar's wastewater treatment works is now producing 46% more biogas than before citizens used FWD. Partly as a result of Surahammar's experience and their own research the city of Stockholm is encouraging the use of FWDs to increase biogas production and improve recycling figures.

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In the UK FWDs are currently only used in about 6% of homes. As a result, the relatively small community of waste management and alternative energy policy makers is largely unfamiliar with the role that FWDs can play.

Concerns do arise from an assumption that FWDs could contribute to fat, oil and grease [FOG] in the sewers. Yet research from the United States, Germany, Italy, Japan, the Netherlands and most recently Sweden has consistently demonstrated that the output of FWDs flows easily through the sewers, does not settle and does not contribute to FOG.

The proposition

AMDEA does not present FWDs as the sole solution to the kitchen food waste stream but as one of a toolbox of options. They do represent a valuable addition to recycling solutions, particularly in densely populated urban areas with multi-occupancy housing.

If we are going to achieve the UK's ambitious targets for reducing landfill and finding alternative sources of energy, citizens need choices of solutions that suit their individual preferences. The wider take-up of FWDs could play a significant role in improving the sustainability of both new homes and the existing urban housing stock.

AMDEA wishes to inform the waste management debate, promoting a greater awareness of the benefits of FWDs among sewerage undertakers, local authorities and government policy makers.

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