

## Energy from Waste



Waste which cannot be recycled or composted can often be used to generate energy, heat and to collect residual materials for recycling. This is carried out through the Energy-from-Waste (EfW) process. EfW is the recovery of renewable energy in the form of electricity and/or heat from the controlled incineration of residual waste that might otherwise be disposed of at landfill.

90,000 tonnes of non-recycled household waste collected from homes in Northumberland every year is now diverted from landfill and transported instead to SITA UK's EfW facility on Teesside.



Vehicles delivering waste to the site enter a large reception hall and discharge their loads into a bunker. The waste is then mixed up to ensure it burns evenly in the furnace.

A system of water sprays and extraction fans are used in the reception hall to ensure dust and odours are controlled.

The mixed up waste is then loaded by a crane into a feed hopper, where it then travels down a feed chute into the furnace.



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A series of grate bars then move the waste through the furnace where it is dried and burned at temperatures of 1,000 °C. Burning waste in the furnace creates two different materials:

- 1) Hot flue gas, which is used to create energy. This is known as renewable energy.
- 2) Incinerator Bottom Ash, which can be recovered for use in construction.



Incinerator Bottom Ash (IBA) drops into a quench tank to cool it, then along a conveyor to a storage pit. Magnets above the conveyor extract ferrous metals from the ash which can then be recycled. The remaining IBA is then sent to an Ash Recycling plant and is subsequently used as a construction material.

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The hot flue gas then travels through a boiler. This allows the heat of those gasses to be transferred to water that runs through the boiler pipes. The combination of heat and water creates steam, which is then used to drive turbines, which in turn generates electricity.

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The gasses from the burned waste are thoroughly cleaned by a system that adds lime to neutralise acid gasses and carbon to remove dioxins and heavy metal. The gas then passes through a fine fabric filter to capture any remaining particles before being released through a chimney. Emissions are continuously monitored and must comply with the rigorous demands of the European Waste Incineration Directive. Particles that are filtered out by the cleaning system are ultimately disposed of at a licensed, special waste disposal facility.

