

Premier

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Technology type: Aerobic Digestion, vertical in-vessel composting



Project Description

Based in Thornley, Durham this advanced biological treatment Demonstrator uses aerobic digestion to process up to 20,000 tonnes of MSW per year through a vertical in-vessel composting tower.

Developed by Premier Waste Management and CiViC Environmental Systems, the Premier Advanced Recycling Centre (PARC) is an integrated system which uses a proven rapid bio-processing technology to process Municipal Solid Waste (MSW), recycling metals, glass, plastic and aerobically-digesting biodegradable materials into a compost/compost-like output which is used to manufacture a range of products including a topsoil called Parc-gro. The system is highly flexible with the capability of processing both source segregated and un-segregated waste streams.

Previously operating with two towers, through the Demonstrator Programme Premier has added a third three chamber digester tower processing biodegradable waste, using pre-cast concrete as opposed to the usual steel fabrication.

Technology Background

The process starts with the loading of MSW into a shredder for size reduction. Shredded waste is then loaded by conveyor into the top of three composting compartments. Each composting compartment contains a large 3 limbed aeration and mixing assembly and a set of 'bomb' doors down which the processed material drops as it moves from one level to the next.

Waste spends two days sealed in each level, its temperature being controlled between pre-set thresholds by addition of air, agitation and

the rate of extraction of compartment atmosphere through the bio-filtration system. After 6 days the bio-waste fractions have been substantially stabilised and composted. The mixed stabilised material is unloaded and goes through a multi-stage segregation process, incorporating trommels, air-knives, ferrous and eddy current segregation. The compost is then 'polished' in windrows for a period of six weeks and there is a final washing stage for extracted plastic film.



Inputs / Outputs

Parc is a flexible system which processes Municipal Solid Waste, recycling metals, glass and plastic fractions and aerobically digesting bio-degradable waste using a proven rapid bio-processing technology to produce composted outputs.

The major output fractions consist of a compost-like output, ferrous and non-ferrous metals, glass and stone fragments and a light contrary stream which is then further processed to extract and separate plastic film, hard plastics and textiles, all of which are recycled or recovered. The topsoil product that is manufactured from the composted waste output of the Parc process has the same specification and characteristics of an ordinary soil and is used in brownfield remediation projects, such as colliery or landfill restoration, on which short-rotation coppicing plantations or forestry can be grown. Plastics are

returned for new extrusion applications, metals are smelted and re-used and the glass and stone outputs are used in Premier's aggregates programme to manufacture a high quality pipe bedding. Any remaining residue that does go to landfill is largely inert.



Emissions

A five-year operational trial of the system in Durham and research conducted in association with Durham University has shown the Parc system releases substantially less carbon dioxide into the atmosphere than either of the two current methods of waste disposal - incineration and landfill - over both the short and long-term.

The Parc system allows the capture of around 40% of the carbon in waste, thus massively reducing emissions and the carbon footprint of any Local Authority.

Status

Demonstrator project began commissioning May 2007.

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Information on the Premier aerobic digestion demonstrator and visits to the plant can be obtained through the Programme by emailing Wastetech@enviros.com or visiting the Defra website: <http://www.defra.gov.uk/environment/waste/wip/newtech/index.htm>