# 250te Per Day Aerobic Waste Digester Plant

## Thornley, Co. Durham

**The PARC waste digestion plant at Thornley, Co Durham, UK, has grown from a full scale test site to a full commercial operation. The site now boasts three digester towers, capable of accepting batch sizes of up to 200 tonnes. The tower design has undergone natural development as the plant has grown, increasing in diameter from 12m to 15m in diameter and incorporating precast concrete in order to reduce costs and benefit from the thermal properties of the material.**

Each tower is loaded with a batch of bin waste every two days. The waste is shredded and conveyed into the top level of the three level tower, where steps are taken to ensure an even distribution of waste. The waste is quickly brought up to, and maintained at digestion temperatures through the use of aeration and agitation. The control system continually monitors and controls the temperature of the batch as it moves through the tower to ensure optimum digestion and sanitisation of the waste.

The waste spends a total of six days in the tower, two days in each of the three levels. It is then discharged via an Auger and vibrating table to separate the particles before being sorted into Steel, Aluminium, Glass, Plastics and Compost Like Material, with a very small percentage being destined for land fill.

Bennett Associates were responsible for the mechanical design of all three towers on the plant, working with the client to develop the concept as additional towers are added. The obvious process development is the increase in batch size through the towers. Effectively stirring 200te of household waste provides an interesting set of challenges!

Bennett Associates also designed and wrote the full plant control system, incorporating individual PLC control, SCADA operating interface and an advanced batch based logging system. This enables detailed reports to be produced for each batch, both after loading and also after the batch has passed through the system. This enables the strict quality control procedures enforced by Defra, and also provides process information to the plant managers, such as process loss, motor hours run and other maintenance features.

The system is operated by the plant operatives from the main SCADA screen, but additional data processing is carried out off site, by downloading pre-configured reports over the internet.

The first tower for the pilot plant was opened by the then Prime Minister Tony Blair in July 2002, with the third tower coming on stream early 2007, enabling a full commercial operation.