

Odour from Anaerobic Digestion (Milton Keynes)

Renewable Power Systems Ltd proposed to build and operate an organic waste treatment process at Pineham, Portway, Milton Keynes, processing 35,000 tonnes of municipal solid waste (MSW) per annum. The MSW would be collected within the Milton Keynes area. The process would treat mixed garden and kitchen MSW by dry anaerobic digestion (AD) followed by in-vessel composting (IVC). All operations would be conducted within enclosed buildings held under negative pressure. The proposed AD process was based on dry fermentation which allows the collection of biogas, which can then be used to generate electricity. The waste residues from the AD process would then be treated in a series of IVC tunnels to meet the requirements of the Animal By-Products Regulations. Odour from the building would be captured and treated using a bio-filter.

Following public consultation with the local community, Renewable Power Systems Ltd appointed The Airshed to conduct an odour impact assessment for the proposed scheme and to advise on what further mitigation measures might be required to protect local amenity. The main public concern was the nearest dwellings were already affected by odour from the adjacent wastewater treatment works (WwTW) operated by Anglian Water. Milton Keynes Council (MKC) were about to initiate statutory nuisance proceedings against Anglian Water. The existing environment therefore had very limited capacity to receive additional odour without causing further loss of amenity.

Rather than seeking to quantify baseline odour from the WwTW, the approach adopted by Airshed was to conduct dispersion modelling for the proposed AD process and to use the results to help specify the level of abatement necessary to ensure that the AD/IVC process odours would be insignificant at all residential receptors. The design for odour abatement plant was based on the aim of ensuring that odour from the AD/IVC process would not exceed $1.0 \text{ OU}_E/\text{m}^3$ 1 hour 98%ile at the nearest residential area.

Odour impacts were assessed in accordance with Environment Agency draft Guidance (H4). Emission dispersion was predicted using a dispersion model (ADMS 4.2) and five years of hourly sequential meteorological data from Bedford, the nearest Met. Office site with suitable observations. A model sensitivity analysis was conducted for release conditions, surface roughness, building effects and meteorological variability.

The dispersion model results indicated that a high level of odour abatement would be required if the emissions were to be released from the surface of the bio-filter. However, covering the bio-filter and releasing from a stack would increase the efflux velocity and the initial release height, improving dispersion. This approach would ensure that odour was unlikely to exceed $1.0 \text{ OU}_E/\text{m}^3$ 1 hour 98%ile at the nearest residential area, without requiring a very high level of odour abatement within the plant. Additional mitigation measures included improved containment of the waste reception hall to reduce the rate of odour emission, and a door management system within the building to provide an effective airlock. The assessment also considered the potential impacts of NO_x from the gas engines.

The project was granted planning permission in 2011.

