

Anaerobic Digestion Briefing

Appendix C

The AD Plant



The diagram below illustrates a single vessel AD plant with biogas output to road vehicles.

The plant includes:

- Predigestion facilities for
 - Mixing incoming material from MSW and agricultural sources
 - Creating a uniformly liquid sludge
 - Intercepting non digestible materials
 - Sanitising the sludge
- The digester vessel
- Biogas collection, and upgrading
- Digestate collection and dewatering.

Not shown in this example is a facility for heating the digestion vessel using biogas as the energy source and the layout assumes that the digestate will be available in solid form only. In many cases liquid digestate will be preferred as easier to spread.

As explained in the main briefing, there are many variations in the detailed process, it is potentially misleading to give examples of specific plant layouts. Layouts will vary dependent on feedstock type, the energy exploitation arrangements (e.g. if the biogas is to be used to power electricity generation on site), adjacent MRF requirements, and the design throughput. In addition there are a large number of plant suppliers who will have differing approaches to a specific contract.

The efficiency of any waste processing plant will be judged in part on its ability to receive and store waste prior to processing. Incoming waste, particularly food waste, will cause odour problems if it is not kept in fully enclosed storage.

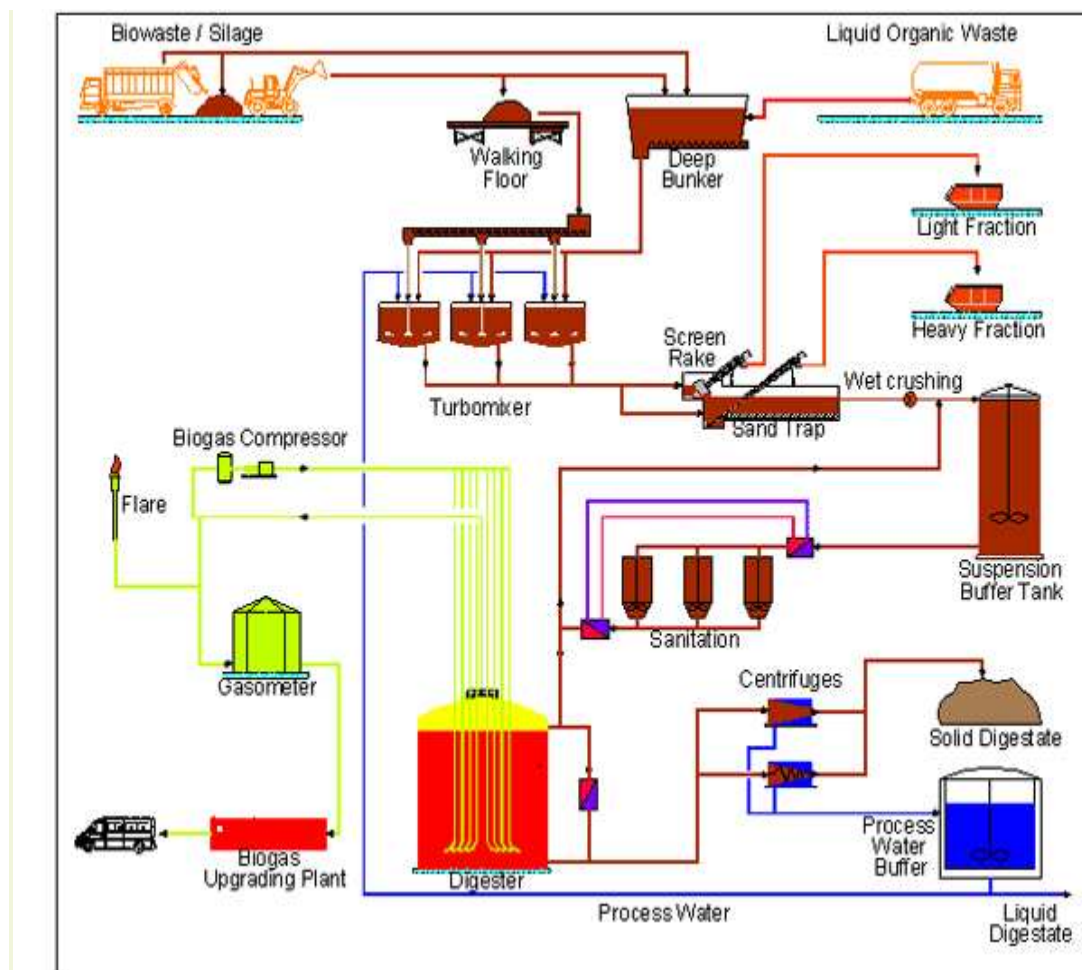
Current AD developments in the UK suggest that feedstock specific AD plants need to be capable of processing 40 000 tonnes annually in order to achieve economies of scale.

Within an MBT facility the AD plant would be preceded by the mechanical / electrical equipment necessary to remove, as far as possible, non biodegradable material.

For example purposes only, the process flow diagram for a plant being installed in Sweden is shown below. Note that many plants will include multiple digester vessels.

More details of this plant, can be found on:

<http://www.rosroca.com/en/detalle>



For details of different AD suppliers and their process variations, see:

<http://www.anaerobic-digestion.com/index.php>

This link is for general information and does not imply approval of all, or any, of the organisations listed. See also:

http://www.regensw.co.uk/downloads/RegenSW_119.pdf

http://divacreative.com/biomethane/downloads/UK_Anaerobic_Digestion_Developments-Lucy_Lewis-Biogen-Greenfinch.ppt#480,5

These links provide access to photographs of actual plants and commentary on farm based and commercial AD plants as well as visual summaries of the process.

A typical AD plant might cover from about 10 acres but individual plant acreages will vary widely dependant on the technology, capacity, waste reception etc.

For examples of AD Plant process flow diagrams see

http://www.anaerobic-digestion.com/html/anaerobic_flow_diagram.html

<http://www.andigestion.co.uk/content/the-holsworthy-process>