

## **ABSTRACT**

### **THE PRACTICE OF DRY DIGESTION OF ORGANIC WASTE IN THE EUROPEAN CONTEXT**

LUC DE BAERE, ORGANIC WASTE SYSTEMS

Dry digestion was specifically developed for the anaerobic digestion of organics derived from household waste. Operation of the digester at total solids concentrations between 15 to 40% allows for less sedimentation and less formation of a floating layer, difficulties that were frequently encountered with the application of wet digestion applied to MSW-organics. Dry digestion rapidly became the preferred method so that up to 65% of the capacity of the plants for MSW organics was operated under dry digestion conditions by 1994. Since the implementation of source separated organics (biowaste), which provided cleaner and more wet feedstocks, the digestion capacity has been divided around 57% for dry digestion and 43% wet digestion.

Dry digestion of MSW-organics has been limited to 6 suppliers, while a larger variety of suppliers (more than 20) construct wet digestion plants. As a result, the dry digestion providers have been able to build the most plants. The three main suppliers of plants for the digestion of MSW-organics are using a dry technology and each have constructed more than 15 plants. The main reason for this is that dry digestion techniques are more novel, more costly to develop and easier to patent. One supplier has built around 20 plants as well, offering both dry and wet digestion.

Various developments will most likely contribute to further expanded growth of dry digestion technologies. More and more plants are designed to treat mixed or residual waste. Dry digestion has been the method of choice for these feedstocks so that most likely the majority of the capacity will be based on dry digestion. Dry digestion becomes particularly attractive when the production of excess wastewater can be avoided by partial stream digestion (whereby 30% of the organics are not digested but mixed in with the digestate for subsequent aerobic composting) or by drying the digestate with waste heat coming from the biogas engines. Additionally, dry digestion is more easily integrated on existing composting sites and can be used to expand the capacity on the site with the use of limited amount of surface area.

The practice of dry digestion has been the preferred digestion approach for most of the MSW-organics and has the potential to become more important. However, this development will also depend on the performance and reliability of the current dry digestion plants being started up or under construction.