

FROM GARBAGE TO FERTILIZER

ACS 300 and ACS 601 assure a trouble-free operation in the composting plant Stammham

By the directions for household refuse of 1993, the separated treatment of organic waste is stipulated as an essential measure for the utilization of waste products in Germany. Since that time the biological waste treatment is booming. Today, the major part of the biological waste is treated in composting plants.

The Büchl Entsorgungswirtschaft GmbH is operating the composting plant Stammham near Ingolstadt. The plant has been put into operation in 1998, the total investment was 5.5 Mio. €. Envital Umweltsysteme GmbH, Hösbach, supplied the plant to Büchl. It consists of five composting drums with a total volume of 120 m³. Thus, 50 tons of biological waste can simultaneously be transformed to a valuable fertilizer in the Stammham plant.

Rotting drums are used very often for composting overall waste. Due to the rotation of the drums, the rotting stuff is mixed thoroughly and at the same time it is ventilated continuously.



DTC assures a trouble-free operation

The actuation of the rotting drums in Stammham is effected by gear motors as well as ACS 601 with DTC technique (Direct Torque Control). For reasons of the process, the drums are filled at approx. 80 % with biological waste and chopped green stuff. During rotation an uneven torque is caused by pulling up the green stuff. When the mass reaches the top and falls down, the drives are suddenly relieved or dynamically loaded. Based upon this, regarding the converters which



have been installed before by Envital in their installations, disturbances, excess current switch-offs, etc. have permanently been caused. But the ACS 601 converters with DTC technique from ABB Automation Products cope with the quick torque changes of the drums without any problem.

The selection of the frequency converters is optimized by "Drive-Window". The software tool changes, loads and stores parameters such as torque and speed and records signals by means of monitoring and data loggers. The data recording of the ACS 601 has shown that for the next installation to be built by Envital, smaller drive packages would be sufficient. For that company this is a competitive advantage compared to others.

The ABB converters are PROFIBUS-compatible. The networking of the drives and the control via the 2-channel optical fibre connection saves a lot of wiring effort and eliminates possible trouble sources. All parameters can be set, influenced and read out.

Oxygen stimulates the rotting process

ACS 300 converters actuate the ventilating blowers of the plant in Stammham. The blowers supply air to the drums depending on the drying and rotting condition of the green stuff. In this way, oxygen is optimally supplied to the partly very heterogenous material (wet, frozen, etc.); the biological rotting process is performed quickly and completely – up to rotting degree II. The waste heat produced during the process is led as "start-up aid" to the just filled drums, if necessary.

After seven days the filling is hygienic and can be discharged. Subsequently, impurities like foils, metal sealing caps and others are removed in a separating plant, before feeding the biological waste to an exhausted plate for another two weeks. Then there are further shifts to triangle and plate stacks, where the material is composted again during 16 weeks. Thereafter the sieved compost is stored in the Stammham plant before being distributed on useful agricultural areas.

By means of the composting process in the Stammham plant an optimally treated compost is generated. Compared to a compost obtained by the natural process on storage stacks, it offers essential advantages with respect to purity, sterility and consistency. Moreover, this process is considerably faster.

Meanwhile the company Envital has realized further plants with ACS 601 and the successor devices of the ACS 300, the ACS 401, near Bremen and Weißenfeld in Saxony-Anhalt (Eastern Germany).

Equipment:	Five rotting drums, in operation since 1998
Capacity:	Total volume of 120 m ³
Filling:	80 % biological waste and chopped green stuff
Production:	50 t composting during each cycle
Cycle period:	Seven days
Ventilation:	Blower with ACS 300
Drive of rotting drums:	Gear motors as well as ACS 601 with DTC technique
Connection:	PROFIBUS-DP via 2-channel optical fibre junction

