CASE STUDY

LINZI (PRC)

MECHANICAL – BIOLOGICAL WASTE TREATMENT

REDWAVE

WASTE SORTING

CASE STUDY

LINZI (PRC) – MECHANISCH – BIOLOGISCHE ABFALLBEHANDLING

CUSTOMER

The customer is a modern, large private group of companies, primarily active in the most important industrial sector, namely environmentally friendly energy, as well as in the non-ferrous metal and chemical industries. The total assets of the group and its associated companies have reached RMB 30 billion (approx. € 4 billion). Headquartered in Jinjiang Mansion in downtown Hangzhou, the group has established itself as one of the industrial companies that have the greatest economic growth and offering the best economic benefits for the state's research centre. Since the introduction of environ-mentally friendly power generation in the early 1990s, the customer has been involved in the research and development of eddy current combustion for municipal solid waste. It has had considerable success with this technology and now operates almost 20 power plants. Since then, the group has developed into the largest waste recycler to produce energy, with the greatest pro-cessing capacity of waste similar to household waste.

SITUATION

The customer is aiming to operate a 657,000 Mg/yr MBT plant. Due to the fact that the waste has a high moisture content and a certain amount of impurities, the waste should be dried and pre-processed before incineration in order to re-cover valuable materials and make the generation of energy from the waste more efficient.

The required MBT technology is based on the fully automatic RED-WAVE drying technology in combination with mechanical waste treatment.

This mechanical treatment includes, among other things, PVC sorting that is carried out by REDWAVE NIR sorting machines.

SOLUTION

The newly constructed plant produces approx. 840 Mg/day of RDF, which is transported directly to the adjacent fluidised bed furnace using conveyors.

REDWAVE has set up a fully automated waste treatment plant as a turnkey complete solution. The plant first dries the very wet waste and then separates out the valuable materials and contaminants.

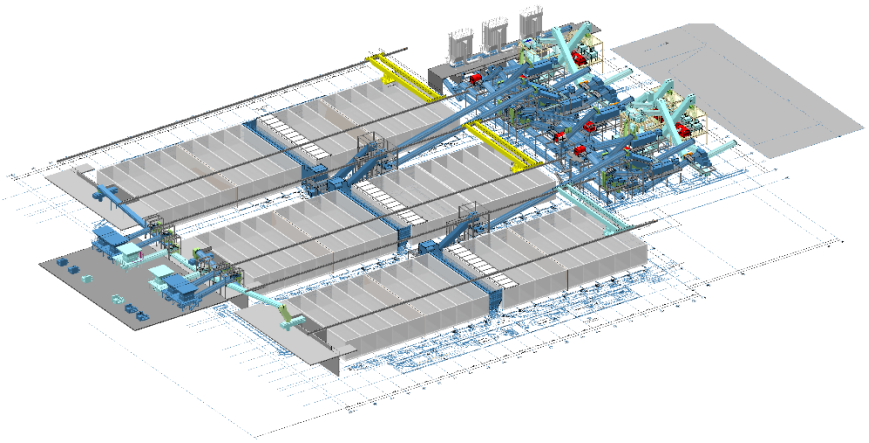
This allowed the customer's requirements for the RDF obtained in this way to be fully met.

CASE STUDY

LINZI (PRC) – MECHANISCH – BIOLOGISCHE ABFALLBEHANDLUNG

WASTE TREATMENT PROCESS

The 1,800 Mg/day of waste is supplied to a deep bunker. The delivery crane ensures the bunker volume is used to its best by moving and mixing the waste and filling the preshredder.
Ferrous waste is separated from the pre-shredded waste, which is transported to the intermediate bunker via a belt conveyor. The fully automatic process crane transfers the preshredded waste from the intermediate bunker into the 36 drying boxes.



The tasks of the **process crane** are:

- Transport of the shredded waste from the intermediate bunker to the drying boxes
- Raising and lowering the box lid
- Transporting the dried waste from the box onto the walking floor.
- Cleaning the box lid using a special cleaning unit

The **biological drying** carries out the following tasks:

- Reduction of water content in the waste (drying)
- Degradation of biological components and their use in energy generation
- Improving the separation properties for the mechanical treatment that follows
- Reduction in moisture content from ≤55% to ≤30%

After the biological drying process, the pre-treated waste is transported by a process crane to a "walking floor" bunker system. From here, the waste is automatically transferred to mechanical processing. As a first step in the process, the material passes through a dosing unit that ensures a uniform, continuous distribution of the material to the subsequent screening stage. The waste screen separates the waste stream into two fractions. The material is loosened, and smaller parts fall through the screen. The oversize (approx.> 50 mm) elements are transported to the downstream wind sifter, which separates the material flow into a heavy and a light fraction. The heavy fraction that remains is transported to a container shipment location. The light fraction is transported to the warehouse for RDF. The undersize (approx. <50 mm) elements are first removed using a metal over belt magnet. The ferrous metals are ejected into a roller container. The PVC sorting area is intended to greatly reduce the amount of PVC in the output. To achieve this, a heavy material separator and another screen cut with a flip-flop screen are used so that there is an efficient sorting process using the fully automatic, optical sorting system by REDWAVE. The medium-sized 3D fraction (approx. 15-50 mm) is first separated from the non-ferrous elements and then conveyed to the PVC sorting station. The glass fraction is ejected into a container. The cleaned material is transported to the RDF warehouse together with the <15 mm fraction.