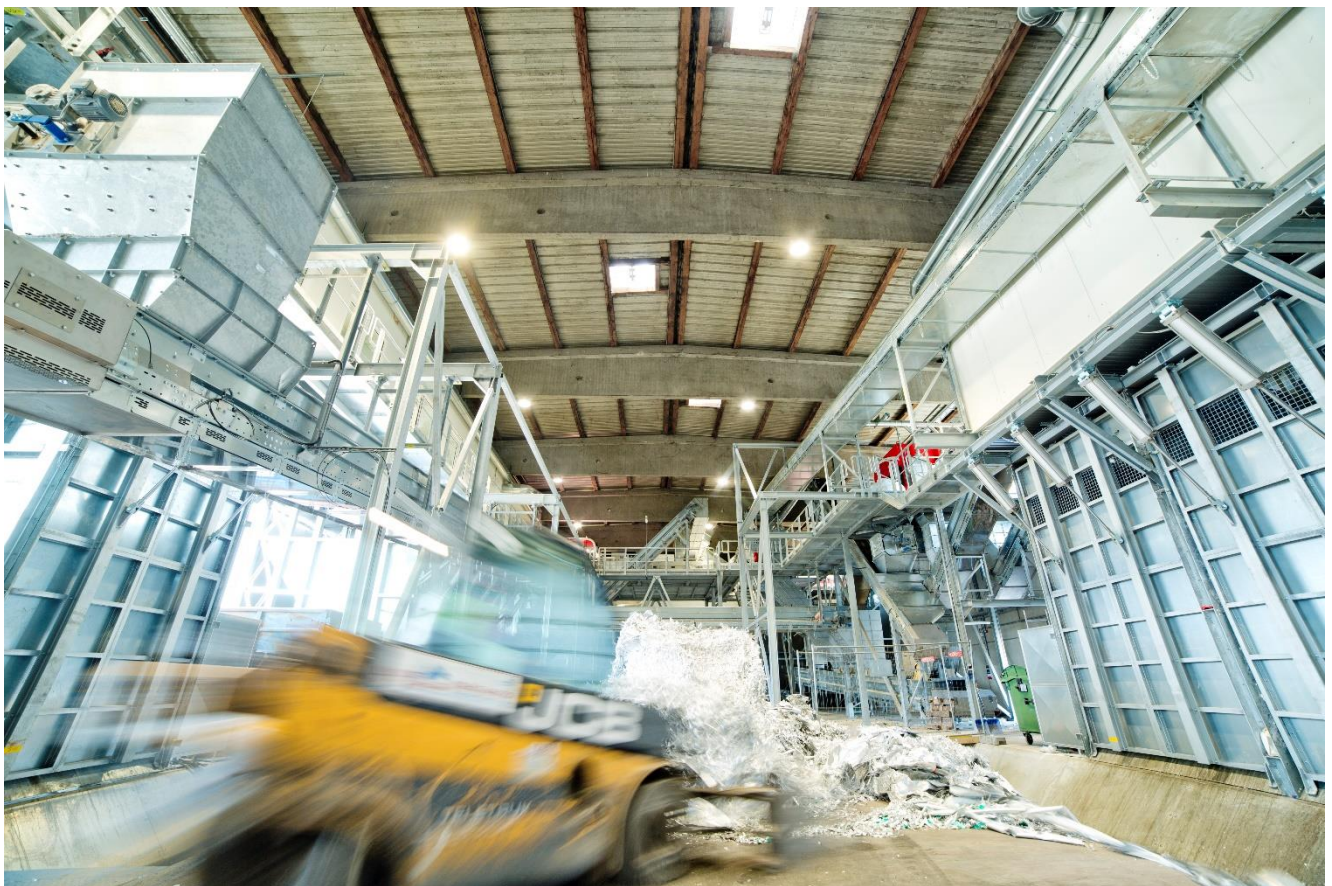


# CASE STUDY

OSWALD HACKL E.U.  
PLASTIC PROCESSING PLANT



REDWAVE®



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OSWALD HACKL E.U. – PLASTIC PROCESSING PLANT

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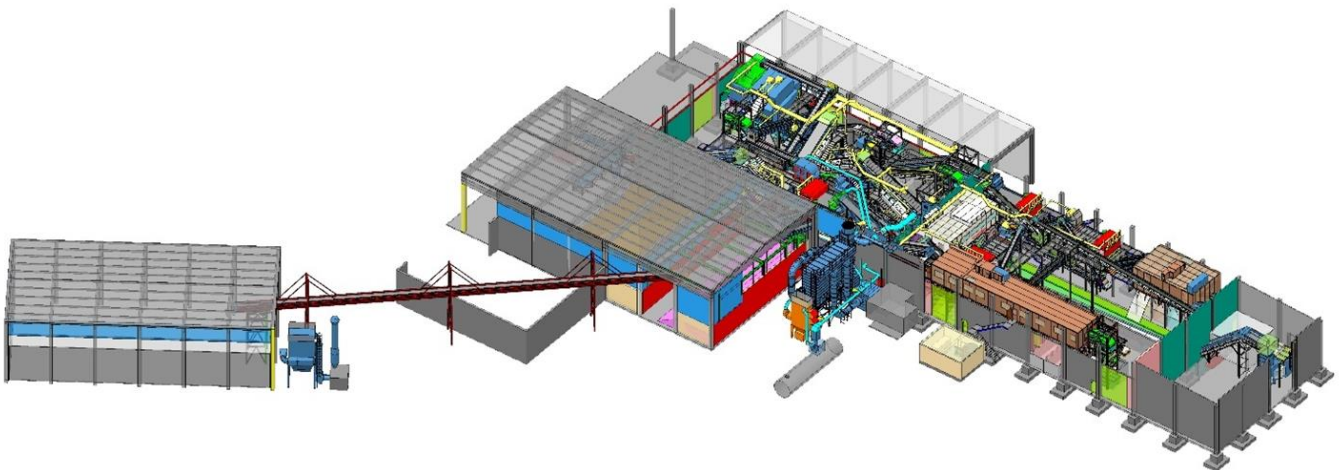
## CUSTOMER

The Hackl family founded their company in Zagersdorf with a small waste material collection centre. Today, Hackl e. U. has more than 50 highly qualified employees and is well known as a flagship family business in Burgenland. The company processes around 45,000 tons of recyclable materials and refuse each year. As much as possible of the refuse is recycled (e.g.: industrial waste, plastics, construction rubble, waste paper and scrap iron).



## SITUATION

Following a devastating fire at the substitute fuel plant, Oswald Hackl opted to turn the disaster into an opportunity. Together with REDWAVE, he planned one of the most state-of-the-art recycling plants in Austria. The system that was completely destroyed in the fire was not simply replaced. It was further developed to be fit for the future; processes were improved, many cycles were closed, and so it became one of the most highly innovative flagship plants in Europe.





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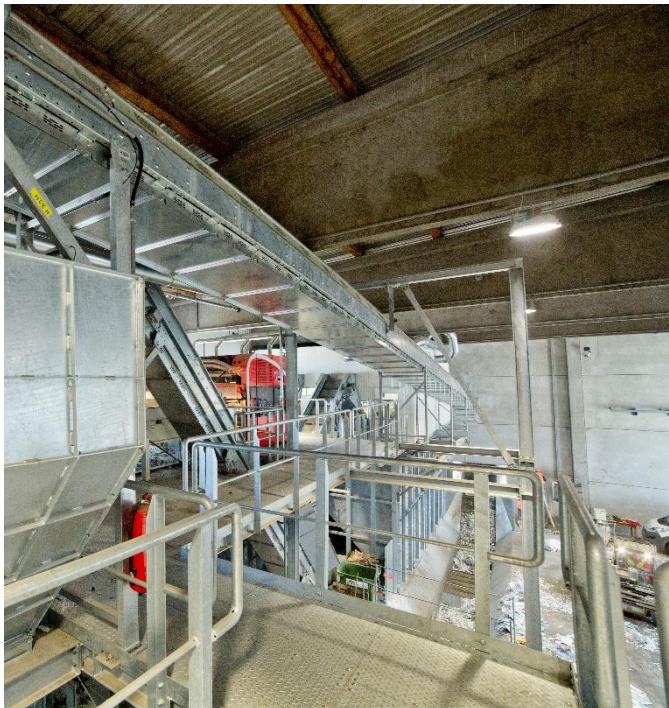
REDWAVE

## SOLUTION

A treatment system tailored to customer requirements was designed, built and commissioned by REDWAVE after highly focused planning and consulting sessions. The main advantage of the new system is its suitability to two different types of refuse: one for lightweight packaging (yellow bag) and one for industrial waste. One important goal was to improve the sorting depth significantly.

The system was handed over to the customer in 2020. More than 100 individual units were installed; 650 tons of steel, more than 1 kilometre of belt conveyors, 50 kilometres of cables and four optical sorting machines from REDWAVE were integrated into the system. The REDWAVE sorting machines of the latest generation, REDWAVE 2i, constitute the technological centrepiece of the system. They ensure a high level of sorting accuracy of the individual recyclable material fractions, for example: PET / PS / PP / HDPE, etc. The machine is cutting-edge and future-proof, equipped with tablets, so operators of the machines are not bound to a fixed place.

For the first time in Austria, sorting robots are used, which help to optimise the recovery of recyclable materials in the case of mixed refuse and improve the purity of the end products considerably.



## TREATMENT PROCESS

### *One system – 2 sorting tasks*

To feed the different input materials into the system in the best possible way, two separate feed lines were installed. One line for lightweight packaging, consisting of a feed hopper with bag opener; one line for commercial and industrial waste starting with a feeding area for pre-sorting coarse material and an appropriately dimensioned dosing belt.

Then comes fractioning in several successive screening machines. In a first step, the material with a particle size greater than 240 mm is separated. Materials of this fraction are pre-sorted manually and subsequently recovered. Materials of a size smaller than 240 mm are further processed in the following step; undersize particles smaller than 50 mm are separated by screening technology. The fine material fraction is further treated in the substitute fuel (EBS) treatment line. Ferromagnetic substances are separated from the fraction of 50-240 mm by means of a magnetic separator. Afterwards, the 2D and 3D fractions are separated from each other by a

ballistic separator.



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The 2D fraction from the ballistic separator is split by a wind sifter into a light and heavy fraction. After further sorting steps, the fractions thus pre-treated are transported to the hand sorting station to sort out any recyclable materials still contained in them in the best possible way. The fraction smaller than 240 mm goes to the EBS treatment line.

All materials are guided across magnetic separators followed by eddy current separators to recover all metals.



Then a 3-stage optical sorting begins.

The following sorting concept applies to lightweight packaging in the input:

The first REDWAVE 2i in the 3D line has the task of separating PET from the material flow. The PET fraction is transported by belt conveyors to another REDWAVE 2i, which works like two independent sorting machines thanks to an innovative division of the belt conveyor – a device that saves time and costs. In the first step, blue PET is sorted out; in the second throughput, by returning the material to the second half of the REDWAVE 2i, green PET is sorted out. The so-called throughput of the second sorting stage is, in this case, clear PET. The remaining material flow in the throughput is guided to a hand-sorting booth. A special feature of this stage is the use of a sorting robot to sort out or purify the transparent recyclable beverage bottles. An optional manual quality control station is located downstream of the sorting after the sorting robot.

The third REDWAVE 2i is also a divided sorting machine that sorts out HDPE and beverage boxes in the first stage. This fraction is separated by another sorting robot and by manual quality control.





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In the second stage, the PS/PP fraction is separated and fed to a manual post-sorting station. The remaining throughput of this stage contains almost no recyclable material any longer and is shredded. This material is then supplied to the nearby cement plant, for instance, as substitute fuel.

For the sorting of the 3D fraction of the industrial waste, a slightly modified sorting method is applied. Here clear and coloured PET is sorted by the first two optical sorting machines. The third REDWAVE 2i separates PS/PP and HDPE from the rest in the first stage. In the second stage of this divided sorting machine, wood can be separated, for instance.

The EBS treatment system consists of a single-shaft shredder to break down the remaining material; two screens for fractioning into an oversize fraction larger than 80 mm, which is returned to the shredder; an EBS fraction 30-80 mm; and an EBS fraction 0-30 mm. The proportion of PVC in the 30-80 mm fraction is separated by a fourth REDWAVE 2i.

The recovered materials are stored intermediately in containers and boxes. From these boxes, these products are baled automatically and can be loaded onto trucks or railcars on site and transported away for further use.



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*REDWAVE demonstrated patience and tenacity, uniting their comprehensive experience and know-how with our vision. We can all be very proud of the result.*

*Oswald Hackl, Managing Director*

