

# CASE STUDY

**HDB RECYCLING GMBH**

soil and  
construction & demolition waste



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HDB RECYCLING GMBH – C&D Waste Recycling

REDWAVE®

## CUSTOMER

HDB-Recycling GmbH in Hünxe has been efficiently managing construction waste and soil for more than two decades. The company, which operates under the esteemed 'R-Gestein' brand, is synonymous with the production of high-quality building materials from complex construction waste. R-Gestein's primary objective is to protect precious resources and ensure their preservation for future generations.



## INITIAL SITUATION

The primary objective was to increase resource efficiency and to replace primary raw materials with high-quality processed aggregates, in particular those produced by R-Gestein Niederrhein.

The project, which started about six years ago, coincided with the first approval processes. The former site, limited to 2.2 hectares, had reached its capacity. The main objective was to build a new treatment plant on a site almost three times the size. This new facility was designed to efficiently process challenging mineral waste, rendering it contaminant-free for subsequent reuse.

The implementation of an innovative plant concept, allowing flexible integration of various process components and incorporating emission-reducing technologies, was intended to promote a circular economy. It also aimed to enable the up-cycling of construction waste into valuable raw materials.

HDB Recycling has been actively addressing the need to maximise the value of mineral waste for some time. These efforts have taken place against a backdrop of increasing competitive pressures, a growing sense of social responsibility and the need to conserve resources. Rather than viewing valuable resources as inexhaustible commodities, the company embraced a commitment to the sustainable use of finite environmental resources.





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The process began with dry processing of building rubble and soil. Unfortunately, the quality achieved did not meet HDB's stringent requirements. This led to the idea of integrating several plant sections sequentially, including a wind sifter, wet processing, and optical sorting. Inspired by methods used in commercial waste sorting, this approach proved instrumental in producing high quality products with optimum recyclability.

## OUR SOLUTION

The project began with successful trials, leaving both parties very satisfied. Using the robust and efficient REDWAVE ROX sorting machine, the sorting trials produced satisfactory results from the outset. The plant process starts with the material being fed into the feed hopper where it is pre-crushed and shredded. Material with a particle size of less than 65 mm is then screened. The material in the 22-65 mm range is then washed, ensuring clear colour identification and facilitating high quality sorting with the REDWAVE ROX.

The material is evenly distributed across the full sorting width and accelerated to the detection plane, where different colours are classified and identified. The REDWAVE ROX reliably identifies and separates unwanted black asphalt components using compressed air, resulting in a pure concrete product.

HDB Recycling serves a diverse clientele within the construction industry, comprising various waste qualities. These include backfill materials such as sand and a range of mineral materials such as asphalt, bricks, and concrete. This mixture is fed into the plant to undergo sorting processes (wet sorting and optical sorting) culminating in the production of high-quality products. These products, which exceed the standards of primary raw materials, are used in the construction industry.



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## Technical Data of the Sorting Machine

Type of machine: REDWAVE ROX

Input material: Construction waste-soil mixtures and heavy mixed mineral construction waste

Capacity: up to 70 t/h (depending to the grain size fraction)

Grain size: 22-45 oder 22-80 mm  
22-32 oder 32-80 mm  
22-45 oder 45-80 mm

Final product: sorted high-quality concrete and brick-asphalt mixture

**VIDEO MATERIAL SORTING**  
<https://youtu.be/o1Sj6yP-Qdw>



Mirco Curic, managing director at HDB Recycling GmbH in Hünxe: *"The REDWAVE sorting solution is a key innovation for HDB and an integral part of the R-GESTEIN NIEDERRHEIN processing system. The separation of sub-streams with the ROX is a reliable and efficient tool for our soil and construction waste processing. This innovative sorting solution makes a reliable contribution to optimising our soil and demolition waste processing plant and works perfectly in practice. With its sorting solution, REDWAVE is the ideal partner for us."*





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## Future developments

The current application of the colour sensor in the RED-WAVE ROX facilitates the identification and separation of bricks, asphalt, and metals from concrete. Future plans include extending the technology to lightweight materials such as gypsum. Although gypsum is typically less than 10%, its presence on construction sites can increase to as much as 70%, depending on the composition of the material. This increased gypsum content compromises the required hardness of the final product, thus reducing its quality. As these products are used in the building, civil engineering and concrete industries, stringent quality requirements are paramount.



Another key focus for future development is the issue of asbestos. Concrete manufactured before 1993 may contain asbestos, which poses an inherent health risk. According to LAGA M 23 guidelines, the recycling of concrete containing asbestos is only viable by using innovative processing technology that effectively removes the asbestos from the material. The issue of asbestos spacers is of particular importance in bridge structures and research is ongoing in this area.

REDWAVE ROX demonstrates the ability to respond flexibly to market dynamics and new requirements.



Martin Krausewitz • 1.

R-Gestein Niederrhein - von Anfang an - ökologisch sein!

1 Std. • 🌐



With the delivery of the sensor-based sorting system at the [#RGestein](#) [#Niederrhein](#) plant, REDWAVE shows what they are capable of in the field of mineral waste processing! A top result, congratulations! Special thanks to Manfred Berghofer for his kind support! 🙌





**REDWAVE**

a division of BT-Wolfgang Binder GmbH  
Wolfgang Binder Str. 4, 8200 Eggersdorf bei Graz, Austria

T: +43 3117 25152 2200, E: [office@redwave.com](mailto:office@redwave.com)

[www.redwave.com](http://www.redwave.com)