

Press release

BIBKO® INFRA TEC - Replacement building material from waste

Nehlsen Berlin-Brandenburg GmbH & Co. KG inaugurates new recycling plant

Following an extensive planning and construction phase, the inauguration of the new recycling plant in Neuenhagen near Berlin was celebrated on 21 March 2025.



Official inauguration with representatives of Nehlsen and Mayor Ansgar Scharnke (centre)

Waste-based substitute building material

The special feature of the plant is that different types of waste are recycled in such a way that the mineral components they contain can be reused after the recycling process in accordance with the Substitute Building Materials Ordinance (EBV) for road construction or cement production, among other things (secondary raw material). This creates a closed material cycle.

Types of waste and objectives

The recycling plant recycles the following types of waste in a total of four areas:

- Area 1 Drilling fluid
- Area 2 Sewer flushing waste
- Area 3 Sand trap waste
- Area 4 Leftover concrete

The objective of the recycling process is to recover the minerals contained in the waste as secondary raw materials and to classify them into fractions:

- Sand 0...2 mm
- Fine gravel 2...8 mm
- Medium gravel 8...16 mm
- Coarse gravel >16 mm

The process water produced during the recycling process is filtered using membrane filter presses. The filtrate produced in this process is then reused for the recycling process, thus creating a closed cycle.



Recycling plant with containers for mineral fractions

Recycling process

Recycling in the individual areas is carried out as a 4-stage recycling process.

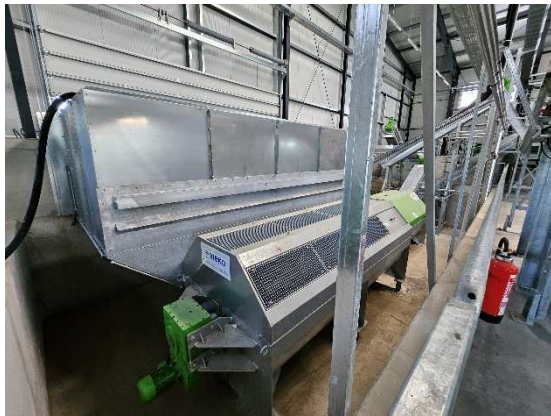
- Process stage 1: Material feed
- Process stage 2: Material recycling
- Process stage 3: Fine particle separation
- Process stage 4: Process water recycling

- »» Process stages 1 and 2 represent the process stages for processing the solids (minerals).
- »» Process stages 3 and 4 represent the process stages for processing the process water.

Processing of solids

Process stage 1: Material feed

The material is fed into the recycling machines from the vehicles via dose buffer (area 1), feed bunker (area 2) or feed hoppers (area 3+4). Unlike feed hoppers, feed bunkers and dosing buffers are systems for indirect material feeding. Both initially serve as buffers from which the material is then continuously fed into the recycling machine. This ensures a consistently high quality of the recycled material, regardless of the feed quantity and feed rate.



Recycling machine area 1 with dose buffer

Process stage 2: Material recycling

In the recycling machines, recycling takes place in a wet-mechanical process. A rotating spiral conveys the material through a water bath and separates it. At the same time, water flows through the washing chamber in a counterflow principle.

The washed minerals $>250 \mu\text{m}$ are removed from the washing chamber by a bucket elevator and fed to the spiral conveyor. This conveyor partially dewateres the material and feeds it to the conveyor belts.

Process stage 3: Fine particle separation

In order to further reduce the proportion of minerals $\leq 250 \mu\text{m}$ in the process water, the process water is fed to the fine particle separation stage in the next step.

There, the mineral components $>63 \mu\text{m}$ are separated, as are floating and impurities.



Fine particle separation

This process recovers additional minerals and reduces the amount of precipitating and flocculating agents required for the treatment and recovery of the water content in process stage 4: process water recycling.

From the fine particle separation, the remaining process water with minerals $\leq 63 \mu\text{m}$ enters an agitator tank. From there, further processing takes place as described under process water (see below).

Further processing of solids

The minerals from process stage 2: material recycling are first conveyed together via conveyor belts and fed into the magnetic separation system. There, the magnetic components are separated.



Magnet separation system

The remaining material is transported from there to the wet classification machine via screw conveyors. There, it is separated into the four fractions described above.



Wet classification machine with containers

Conveyor belts distribute the individual fractions into the containers provided. The minerals from process stage 3: fine particle separation are also fed into the appropriate containers via conveyor belts.



Fine sand from fine particle separation

Processing of process water

While the solids from the various areas are brought together and processed, the process water is separated according to its different chemical and physical properties:

- Process water I - from:
 - Area 2 Sewer flushing waste
 - Area 3 Sand trap waste
 - Area 4 Leftover concrete

- Process water II - from:
 - Area 1 Drilling fluid

After the fine particle separation, the process water enters two separate tanks with agitators. The intermittent operation of the agitators prevents the mineral components from settling.

A membrane filter press is fed from each of these tanks. For this purpose, the process water is conditioned by adding precipitating and flocculating agents.



Flocculating agents dosing station

In the membrane filter presses, the solids are separated, pressed into filter cakes and discharged into individual containers.



Filter cake in container

The filtrate (recycled water) from both membrane filter presses flows into a common tank and is reused in a closed circuit in the recycling machines.

Material flows and reuse

The recycling process described above results in a total of six material streams.

- » Sand 0...2 mm
from recycling machine
- » Fine gravel 2...8 mm
from recycling machine
- » Medium gravel 8...16 mm
from recycling machine
- » Coarse gravel >16 mm
from recycling machine
- » Filtrate
from filter press
- » Filter cake
from filter press

Sand, fine gravel, medium gravel, coarse gravel and filtrate are either recycled (filtrate) or reused as substitute building materials in accordance with the Ersatzbaustoffverordnung (EBV/ Substitute Building Materials Ordinance).



Recycled material – coarse gravel >16 mm

Only the solid material from the filter presses (filter cake) is currently still disposed of. Possibilities for reuse are still being investigated.

Summary

A small idea that emerged back in 2017 has become a forward-looking innovation for the recycling industry. Following a test phase, the new recycling plant is now in regular operation.

As a supplier of raw materials for the construction industry, among others, Nehlsen Berlin-Brandenburg GmbH & Co. KG now operates a plant that represents a milestone in the circular economy and an innovative step towards sustainable resource use.

Further information

The following QR-Code will take you to the **BIBKO® INFRA TEC** - YouTube-channel.



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