Press release

BIBKO® INFRA*TEC* - Reduction of prime costs through above-ground installation

Recycling systems for sewer flushing material, drilling fluid, street sweepings and other wastes

Concrete is considered a durable and very resilient building material. Only a few materials are capable of absorbing such high loads and transferring them into the subsoil. But what is a great advantage in the construction of floor slabs and buildings can, under certain circumstances, also cause great difficulties at a later date. It is not only when demolishing a structure made of concrete components that its durability can become a real challenge. It also requires some effort to remove it during conversions or alterations. This usually requires heavy equipment. The result is high prime costs.

Recycling systems and construction measures

To ensure that collection vehicles such as suction/flushing vehicles, silo vehicles and skips can be emptied reliably, completely and economically into a recycling system, the in-gound installation is often chosen. In this case, either only the material feed (feed hopper/ bunker) is installed in-ground or the entire system. The reason for this is the low discharge height of the vehicles, which can lead to collisions if the system is installed above ground.

Feed hopper at in-ground machine installation

Recycling process

Depending on the individual requirements and objectives, the recycling process consists of up to 4 process stages:

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

Process stage 1: Material feed

The above-ground material feed, as an alternative to the in-ground material feed, is described further below.

Further process stages

Process stage 2: Material recycling

The actual recycling process takes place in the BIBKO® INFRA*TEC* recycling machine as a wet-mechanical process. This produces recycled material with a particle size >250 µm as well as process water with mineral components and impurities ≤250 µm, which is discharged from the machine.

Process stage 3: Fine particle separation

With the fine particle separation, additional mineral components in the range of 60...250 µm as well as still contained impurities are separated from the discharged process water. The process water with mineral components ≤60 µm is then either discharged after analysis *and release* or fed to *process stage 4: process water recycling*.

Process stage 4: Process water recycling

The process water from *process stage 3: fine particle sparation* is first fed into an intermediate buffer. This intermediate buffer serves as a feed tank for the subsequent filtration process.

Either filter presses or centrifuges are used for filtration. This produces solids and filtered water (filtrate/ centrate).

Solids from centrifuge

Above-ground installation - Reduction of prime costs

A significant reduction in construction costs can be achieved by installing the system above ground on an existing floor slab. There are no civil engineering costs, as would be the case with an in-ground installation or a new floor slab.

Crucial point: Low discharge height

In order to ensure the reliable, complete and economical emptying of the collection vehicles described above despite a low emptying height, the following criteria must be met:

- The upper edge of the material feed (feed hopper/ bunker) must not exceed 500 mm. This is therefore below the vehicle discharge height.
- Despite the limited feed height, sufficient buffer volume must be available to accommodate the material from the collection vehicles.

Project example

The following project shows an example of the installation of a recycling system on an existing floor slab.

Initial situation

In this project, a BIBKO® INFRA*TEC* recycling system is to be used as the first stage of a chemical-physical treatment plant. The recycling system serves to separate mineral components and impurities from oil separator waste.

The customer's existing industrial hall with an existing base plate should be used as the location.

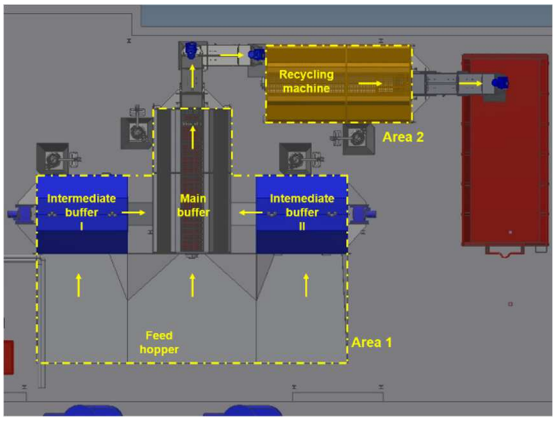
An in-ground installation was ruled out for two reasons:

- High costs for the civil engineering work in the existing hall
- Destruction of an intact (concrete) floor slab

The customer required a buffer volume of at least 7 m³. In addition, the width of the hopper should be chosen so that two vehicles can empty at the same time.

Machine concept

In order to meet the criteria for the material feed and the buffer volume, a machine concept was developed that essentially consists of a feed area (area 1) and a recycling area (area 2).



Machine layout with material flow (yellow arrows)

The feed area consists of the following components:

- Feed hopper 8.400 x 3.000 mm

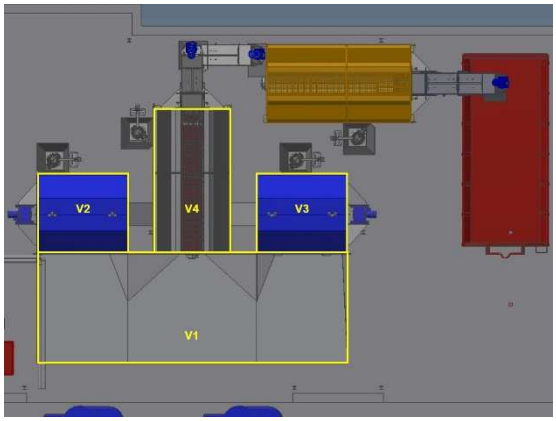
- Intermediate buffer I/ II
- Main buffer

The recycling area consists of the recycling system with the spiral conveyor as the discharge system. The capacity of the recycling system is 25 m³/h.

This machine concept results in the following buffer volume for the feed area:

- Feed hopper V1: 4,3 m³
- Intermediate buffer V2: 1,0 m³
- Intermediate buffer V3: 1,0 m³
- Main buffer V4: 1,7 m³

The total buffer volume is thus 8 m³. The selected hopper width of 8.400 mm provides sufficient space for two vehicles for emptying.



Buffer volume

Material feed sequence

First, the oil-water-solids mixture is fed from the vehicle to the feed hopper. From there, the mixture passes either via the two intermediate buffers I/ II with built-in bucket elevators into the main buffer or directly into the main buffer. Excess oil-water mixture (liquid phase) is collected via pump sumps and fed to the holding tank of the customer's CP treatment plant. The remaining oil-water-solid mixture is removed from the main buffer via another bucket elevator and transported to the recycling machine via screw conveyors. There, the wet-mechanical recycling process takes place.

Material flows after recycling process

Two material flows result from the recycling process:

- Material flow 1:
  Mineral components >250 µm with oil residues

- Material flow 2:
  Process water with mineral components ≤250 µm and oil residues

Processing of the material

The material from material flow 1 is either incinerated or, if the limit values are complied with, sent to a soil washing plant.


Material from material flow 1

The material from material flow 2 is fed into the chemical-physical treatment plant (CP plant) provided by the customer.

Summary

The project example shows a possible solution for an above-ground recycling system that meets the *criteria of low feed height* and *sufficient buffer volume* for reliable, complete and economical emptying of the collection vehicles. By using the existing floor slab, the costs for civil engineering work are eliminated.

Depending on the required buffer volume and recycling capacity, the modular design of the BIBKO® INFRA*TEC* - recycling systems makes customer-specific system configurations possible without any problems.