Decanting technology
Type SBR–DEKA
Sewage treatment

Decanting technology

SBR-DEKA

Application
Specially developed for SBR systems:
The clear water discharge phase at the end of a process cycle is a crucial process step in ensuring the quality of the treated sewage using effective phase separation. Only the cleaned sewage and not, for instance, the sedimented or floating sludge may be drained off. Clear water must not be contaminated.

Structure
The design of the SBR-DEKA decanter allows for a reliable technological structure which is stripped down to the essentials. This decanter is a positive control system decoupled from the “fluid water” and not a floating solution.

This decanting technology enables effective discharge of clear water, and floating matter is reliably kept back.

In terms of dimensions, the decanting unit is designed on a project basis and on the basis of design parameters. The decanting technology can be universally customised and modified for all process technologies.

Special features/product advantages
→ Effective phase separation and high quality of the cleaned sewage due to clear water discharge
→ High process reliability owing to permanently installed system which is decoupled from the water
→ Effective discharge of clear water by holding back floating matter
→ Universally customisable and modifiable decanter technology owing to individually project-tailored design
→ No contamination thanks to adjustable lowering speed using frequency converter, for example, which matches the available extraction volume

Technical data

<table>
<thead>
<tr>
<th>Drive unit</th>
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</thead>
<tbody>
<tr>
<td>Drag</td>
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<tr>
<td>rec. rope DIN 3060</td>
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<tr>
<td>Power</td>
</tr>
<tr>
<td>Current consumption</td>
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<tr>
<td>Voltage</td>
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<tr>
<td>Protection class</td>
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<tr>
<td>Load securing</td>
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<tr>
<td>Brake</td>
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<tr>
<td>PTC thermistor</td>
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<tr>
<td>Rope speed</td>
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</tbody>
</table>

Materials

| Decanting unit | Stainless steel 1.4301 or 1.4571 |
| Ropes and accessories | Stainless steel |
| Substructure | Stainless steel 1.4301 or 1.4571 |
| Gear motor | EN-JL 1030 (GG20) |
Function
The SBR-DEKA decanter, positioned with safety clearance over the maximum water level, is lowered by a rope winch, for example, via a variable-frequency or pulsed drive unit with a three-phase current brake motor in order to remove clear water. The lowering speed is adjusted to the system, determined by the discharge amount (m³/h) and the available extraction volume of the system. In this way, present floating matter does not enter the outlet because discharge is always carried out below the water level at a defined immersion depth.

After the decanting process, the decanter is immediately driven up into the start position above the maximum water level so that no sludge mixture can enter during the subsequent operating phases. Clear water is drained by gravity via an opening provided below the minimum water level.

The drainage quantity depends on the pressure head of the drain pipe. As the clear water level falls, the pressure head is reduced, the flow rate falls and the flow turbulence at the inlet of the decanting pipe is minimised: The clear water cannot be contaminated by sludge flocks and uncleaned water is not drained off.

The drain pipe is connected to the decanter SBR-DEKA via a joint in order to compensate for the different tilt angles of the decanter drain pipe.

System components of the decanting technology SBR-DEKA
The decanter consists of a horizontally arranged clear water discharge pipe, generally produced as a round pipe. A structural device with variable design is arranged on the discharge pipe for holding back floating solids and preventing them from entering the pipe. Ropes are used to lower and raise the decanter, which are, for example, connected to a variable-frequency drive unit. This drive unit mainly consists of a geared brake motor and a hoisting drum with control components. These components are built on a substructure which is positioned on the wall of the basin or platform.

Frequency converters can be optionally included to control the drive unit. Alternatively, control can be performed via a level sensor installed in the basin and cyclic operation.

All system components are tailored to the system concept.

Subject to change without prior notice.
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Illustration
Decanting technology type SBR-DEKA

Electric winch
Floating sludge barrier
Clear water discharge pipe
Clear water drain pipe
Max. water level
Min. water level
Wall fixation
Assembly aid, end limit
Swivel joint
Installation example
Decanting technology type SBR-DEKA

Installation example for 4 SBR basins together with drainage chamber arranged in the centre
Volume: 4 basins with 2200 m³ each
Discharge amount: 800 m³/h per decanter

Subject to change without prior notice.
The safe position of the decanter above the maximum water level is chosen in such a way that, even under adverse conditions, no sludge/water mixture can enter the decanter during the aeration process.

The discharge device is lowered for the decanting process. The lowering speed is adjusted for this so that the decanter moves ahead of the falling water level within the cycle time. After the decanting process, the decanter is immediately raised to its starting position above the maximum water level.

Floating sludge can be optionally removed from the system using a separate device.

The electric rope winch is a drum winch comprising a bevel gear drive and is used to raise and lower the water discharge device. The load is held by the brake motor. The mounted geared limit switch sets the upper and lower cut-off points.
Decanting technology
The size of the discharge opening is tailored to the individual requirements of the available basic data.

<table>
<thead>
<tr>
<th>Characteristics</th>
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<tbody>
<tr>
<td>Type</td>
<td>Drainage quantity m³/h</td>
<td>Decanting pipe</td>
<td>Drain pipe</td>
</tr>
<tr>
<td>SBR-DEKA - 200</td>
<td>200</td>
<td>DN 200</td>
<td>DN 200</td>
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<tr>
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<td>DN 350</td>
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<tr>
<td>SBR-DEKA - 1000</td>
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<td>DN 300</td>
<td>DN 400</td>
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There are also versions available which differ from the standard product range. The decanter SBR-DEKA can be customised and modified to any design. Drainage quantities greater than 1000 m³/h on request.

Decanter in combination with disc diffuser ELASTOX®-T

Combination of several parallel running decanting units to reach greater exchange volumes