



Biogest International® GmbH



BSK®-Effluent Decanter (SBR)

Innovative and Experienced Solution for Treated Wastewater Discharge

1. Task and Objective

In contrary to conventional wastewater treatment plants treated wastewater resulting from sequenced batch reactors (SBR) cannot be discharged by use of a traditional overflow weir. Typical for SB-reactors is the fact that purified wastewater must be discharged by moving overflow constructions, which are following the descending water level.

The crucial point of all decanting systems is to avoid the entrance of floated and settled sludge. Moreover, the operation of decanting systems must be extremely reliable due to the fact that it is one of the most important technical components of SBR-wastewater treatment systems.

2. Design-Variations of Clear Water Discharge Systems

The increasing application of SBR-treatment plants motivated several manufacturers to develop systems for discharge of treated wastewater – resulting in very different constructions and methods. The simplest variant is a fixed pipe equipped with an electrical valve being installed next to the min. water level – combined with plenty of disadvantages: only after the sludge is completely settled, the valve could be opened. Moreover, such a fixed discharge-position does not allow a flexible adaption of the discharge level to changing sludge volumes.

More advantages are provided by floating or moving decanting systems. However, they must be designed in such a way that the advantages are not eliminated by complicated trouble-prone constructions.

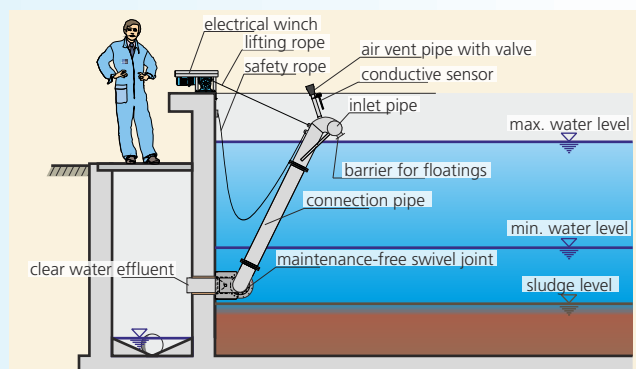
3. Our Solution: The BSK®-Decanter

The focus of our development was the target to create a discharge system for treated wastewater, which avoids the well known disadvantages of effluent systems. More than 100 of worldwide installed BSK®-decanter are proving that our decanter-construction represents an outstanding development, which convinces designers and operators with following features:

- **Completely made of stainless steel**
- **Maintenance-free, corrosion-proof components**
- **Dry mounted robust drive system with comfortable access**
- **No entrance of floating sludge**
- **No whirl-up of settled sludge**
- **Variable hydraulic discharge capacities**
- **Extremely low operation costs**
- **Reasonable investment costs**



BSK®-Decanter of the WWTP Stepanovićevo (Serbia)



Function and general design of BSK®-decanter



Brief Description of Operation

- The stainless steel pipe construction equipped with a maintenance-free submersed swivel joint is moved down to the water level by an electrically driven winch
- Specially designed openings in the horizontal inlet pipe guarantee a symmetrical entrance of treated wastewater – without turbulences
- Floating sludge is successfully prevented to enter the inlet pipe by a specifically designed baffle
- A step-by-step downwards movement will be stopped at a safe distance to the settled sludge level – controlled by limit switches (or sludge sensors)
- As soon as the minimum water level is reached, the BSK®-decanter is pulled up into the “parking position”
- In this parking position, the BSK®-decanter is offering an emergency overflow (automatically generating an alarm signal)

The up and down movement of the BSK®-decanter is reliably controlled by robust limit switches (being part of the winch-drive). Two duty and two stand-by switches guarantee a perfect reliability.

4. Decanter-Types and Hydraulic Capacities

Seven different sizes of BSK®-decanters are offered. Based on a standard application-case (TWL = 5.0 m / LWL = 3.0 m), following capacities are resulting:

Type Code	Capacity Q [m³/h]
BSK® D100	130
BSK® D150	320
BSK® D200	570
BSK® D250	790
BSK® D300	1,180
BSK® D350	1,650
BSK® D400	2,160

Each application of BSK®-decanters will be individually designed in cooperation with our customer – with the target to find an optimized technical and commercial solution.

5. ... some more important details

BSK®-clear water decanters are individually customized with respect to all following subjects:

- Specification of material (stainless steel AISI 304/ 316 or even better)
- Kind of operation (overflow- or siphon-hydraulic)
- Electrical network conditions (voltage, frequency etc.)
- Deep temperature conditions (isolated cover including heating system for electrical winch)
- Control systems (level sensor, sludge level detection etc.)
- Scope of supply/limits of delivery

BSK®-decanters are also offered as a special modified type for discharge of turbid water i.e. from sludge storage tanks – operating automatically or manually.

Our engineers are eager to consult our customers in order to find a proper solution for the application of BSK®-decanters.