Innovative Technology for Wastewater Treatment
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Product Overview

Compact Pre-Treatment Plants
with automatic screen, solids washing and dewatering press

Fine Bubble Aeration Systems
type "HyperClassic" for trouble-free fine bubble aeration

Surface Aeration Systems
Powerful BSK Turbines for high-load reactors and further special needs

Decanter Technology for SBR
for discharge of purified wastewater during a SBR process

Additional mechanical Treatment
of wastewater or sludge for removal or cracking of larger solid material

Sludge Dewatering
For a optimal dewatering and compacting of the residual sludge
Compact Pre-Treatment Plants

The objective of the pre-treatment is the mechanical purification of the wastewater to prepare it for an efficient biological treatment. Solid and insoluble particles like sand, paper, textiles and organic material up to diameter of 1 mm have to be removed, washed, compacted stored and finally disposed to a waste collection point.

Highly performance and compact technology substitutes the traditional sedimentation process completely and helps decisive to increase the quality and efficiency of the entire purification process.

BIOGEST International compact solutions are robust efficient and reliable and they work full automatically, with out any man power during the separation and waste handling process.

Advantages
- Short Menstruation length
- Outstanding efficient separation of solids, sand and grease
- Further use of the sand (with sand washer)
- Hydraulic capacity up to 300 l/s – parallel operation of two and more stations possible
- Completely made of stainless steel – robust, resistant, durable
- Compact, small construction surface
- Short construction time
- Turn-key delivery ("plug and operate")

Performance:
- Robust fine screen with a slot width between 1-10 mm
- Return of organic components by intensive washing before dewatering of the solids
- Exceptionally short construction combined with perfect separation of sand and grease by patented drum flow (grain diameter Ø0.20 mm => 95 % separation)
- Efficient grease separation by asymmetrical aeration
- Hydraulic capacity up to 300 l/s – parallel operation of two and more stations possible
Fine Bubble Aeration for SBR Processes

The Fine bubble aeration is a combined process of pressed air input, its division and the homogenisation of the reactor content.

A pipe leads the air from the air compressor station into a circular aeration device situated on the flour of the reactor tank. Some centimetres above operates the HyperClassic fine bubble aeration turbine.

The special design of the turbine rotor section effects the diffusion swirling and distribution of the air stream into finest bubbles as well powerful turbulences in the surrounding volume and with this a permanent circulation of the reactor content.

The homogeneity and efficient oxygen supply is the most important base for a preferment and stable biological treatment process. The optimal design of the HyperClassic turbine guaranties an maximal hydrodynamic effect and a minimal energy consumption.

The Innovation:

- Mechanical smashing of coarse air bubbles: The rotating mixer body with special shear rips effects an additional dispersing of the Oxygen
- The patented HyperClassic-stirring body (GRP) effects a perfect mixing of the reactor contents The special design realize also a powerful vertical stirring
- The special Stirring body design guaranties a high alpha-value and prevents wearing depending loss of the oxygen supply capacity during the entire operation time.

Important Process-Advantages:

- Aeration and mixing circulation with one aggregate
- Perfect conditions for nitrification and denitrification
- No sedimentation of sludge at the reactor bottom
- Ideal for changing water levels in the SBR process
Surface Aeration Systems

As the HC Technology the BSK Surface aeration process includes two necessary operations, the oxygen input and the permanent homogenisation of the reactor volume. A swimming support keeps the aeration turbine in an exactly adjusted semi submersible position. The rotating turbine plates effect strong hydrodynamic turbulences on and under the wastewater surface, pressing and swirling the air from outside into the reactor volume. The turbulences under the water surface course a strong circulation of the entire reactor content and with that, an optimal distribution and absorption of the oxygen.

The patented BSK aeration technology is a excellent stand-alone solution, needing not any additional pressed air supply, pipes or input devices. Its development has been directed to a high oxygen input performance and efficiency as well as the reduction of maintenance and energy costs. By a additional electronic oxygen measure and drive controlling system the efficiency and economy of the system can be further optimized.

And not at least - the BIOTECH BSK surface aeration technology is practicable in several other biological treatment processes as nitrification, de-nitrification and sludge stabilisation.

Typical Applications for BSK®-Turbines:

- Nitrification-Reactors (permanent aeration)
- Sludge aeration, sludge stabilization
- Biological high load reactors (e.g. sugar factory)
- SBR-WWTP’s / carrousel stations

Advantages:

- Completely made of stainless steel
- Optimized geometry of the vanes for high oxygen input capacity
- No efficiency loss at operating conditions (α-value = 0.9)
- Outstanding heavy-duty drive systems for challenging operating conditions
- Various turbine sizes are available(Ř 900 mm up to Ř 3,150 mm)
Decanter Technology for SBR

Compared to traditional coagulative purification processes the clear water outlet of a SPR process is subjected to some special requirements. During the outlet operation the water surface sags and with it residual swimming biomass and foam, what can be captured by the outlet pipe easily. The out streaming water can also induce turbulences, squiring the settled sludge back in the clear water zone. Both unwanted effects would reduce the clear water quality dramatically.

So the outlet facility has to make sure, that a high quantity of clear water can leave the reactor in a short period, but with out capturing contaminating particles from the surface or the sludge zone. For that reason the patented BSK-Decanter contacts the clear water zone some centimetres below the water surface. A horizontal inlet pipe evacuates the clear water carefully, with out turbulences by a big number of discharging ports.

An electronic control system leads the movable pipe construction synchronic to the lowering water level, keeping the relative outlet point stable. After the clear water evacuation the discharging pipe moves up automatically above the maximal filling level of the reactor tank.

Beside the application in a SBR-process, the BSK decanter is also well practical to evacuate residual water in a sludge stabilisation and dewatering process.

Advantages:

- Turbulence-free discharge of purified wastewater out of the clear water zone
- High hydraulic discharge capacity
- No trapping of floating sludge
- Maintenance-free components below water level
- High reliability, Long lifetime
- Completely made of stainless steel

Performance:

- Moveable decanter body with maintenance-free underwater joint
- Floating sludge deflector
- Automatic justification to the water surface
- Outlet capacity of 50 up to 400l/s
- With dry-mounted, service- friendly electrical winch
- For hydraulic capacities up to 300 l/s

The BSK Decanter before dipping into the clear water zone after the aeration process

The BSK Decanter installation in the typical lifted waiting position

The BSK decanter after the clear water extraction

View at a BSK Decanter drive., moving lifting and lowering the operation level of the outlet pipe synchronic to the water surface
The efficient management of big sludge quantities is an important technical aspect of each integrated wastewater treatment process. The quality of the sludge stabilisation, dewatering and compacting effect the following disposal or recycling process decisively. In the course of the stabilisation process the organic compounds have to be reduced that the intensity of the biological digestion process slow down permanently. The dewatering and compacting processes reduces the mass of the sludge on 10% and increase the solid matter from 3% to up to 28%.

BIOGEST offers highly efficient technology for an ecologic and economic optimal sludge treatment. As for the SBR process the BSK Surface aeration technology is a excellent solution to suport an efficient aerobic sludge stabilisation processes. Our modern dewatering concepts base on the addition of polymeric coagulants and the application of high performance and compact technological components as thickening drums, filter presses or centrifuges. include dosing systems, conveyers, solid material storage and electronic control system.

Sludge Thickening Drums
With a capacity up to 100 cbm sludge flow per hour represent a economical and compact way to realize a sludge thickening up to 10% solid matter.

Heavy Duty Centrifuges
with a capacity of up to 30 cbm/h realize a thickening of 28% solide matter. They will be applied, if a high performance technology is asked for.

Filter Presses
of many different sizes and capacities are a reliable and economical technology for a sludge dewatering up to 28 % solid matter.
In many cases wastewater stream contents larger particles as stones, textiles or parts of wood or metal. Clogging and serious destructions of grids, screens, pumps and other electro mechanic devices can be coursed. Each of these events can result in fatal technical, economical and environmental consequences. An mechanical pre-treatment is often the only way to prevent an unmanageable disaster.

There are two practicable opportunities: The crushing and macerating of the unwanted solid material as well as its remove from the wastewater stream before it can enter into any sensitive devices.

The solid material macerating can also be applied as a pre-treatment of the excess sludge before it enters in the stabilisation process.

The reduction of fibres and other solids accelerate the biological stabilisation and conditioning process and with this the capacity of the sludge treatment section in a very economical way.
BIOGEST International GMBH
Competence and Experience by more than 500 realized Projects since 1976

- WWTP in Beloslav, Bulgarian, 20,000 IE
  Project value: 2,900,000 EUR

- WWTP in Virje, Croatia, 5,000 IE
  Project value: 1,600,000 EUR

- WWTP for an industrial zone with domestic areas in Hululudao, Northern China, 150,000 IE
  Project value: 16,000,000 EUR

- WWTP in Celaya, Mexico, 21,000 IE
  Project value: 2,500,000 EUR

- WWTP in Koprivnica, Croatia, 100,000 IE
  Project value: 15,500,000 EUR

- WWTP in "Sunny Beach", Bulgaria, 100,000 IE
  Project value: 7,500,000 EUR
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WWTP in Amreya, Egyptian 6.000 m³/d,
Project value: 6.800.000 EUR

WWTP in Nessebar, Bulgaria, 100.000 IE
Project value: 7.500.000 EUR

WWTP near Cairo, Egypt
Project value: 3.400.000 EUR

WWTP in Muju, Corea, 15.000 IE
Project value: 2.400.000 EUR

WWTP of the university-city of Tetovo,
Macedonia
Project value: 650.000 EUR

WWTP in Beloslow, Bulgaria
Project value: 130.000 EUR
Help also you, to protect our nature.