

TYPE SERIES OF HYDROVIT® WASTE TREATMENT PLANTS

HYDROVIT® SBR waste water treatment plants form a type series with the following capacity stages:

Parameter	EO	500	1000	1500	2000
Hydraulic load					
Flow rate Q24	m ³ /d - l/s	66 - 0,8	132 - 1,5	198 - 2,3	264 - 3,1
Daily maximum Qd	m ³ /d	96	180	270	360
Hour maximum Qh	m ³ /h	10	16	23	30
Substance load					
BSK5	kg/d	23	48	77	108
WWTP size					
Reactor diameter	m	6	8,57	10,29	12
Reactor height	m	4,4	4,4	4,4	4,4

HYDROVIT® SI treatment plants from a type series with graduated capacities:

Parameter	EO	2000	3000	4000	5000	6000	7000
Hydraulic load							
Flow rate Q24	m ³ /d - l/s	300 - 3,5	450 - 5,2	600 - 6,9	750 - 8,7	900 - 10,4	1050 - 12,2
Daily maximum Qd	m ³ /d	420	630	840	1050	1215	1418
Hour maximum Qh	m ³ /h	37	55	74	88	101	118
Substance load							
BSK5	kg/d	120	180	240	300	360	420
WWTP size							
Reactor diameter	m	16,29	19,71	21,43	20,57	22,29	24
Reactor height	m	4,4	4,4	4,4	5,9	5,9	5,9
Technology of the activation process		D-N	D-N	R-D-N	R-D-N	R-D-N	R-D-N

HYDROVIT® P treatment plants

Parameter	EO	5 000 - 50 000
HYDROVIT® P treatment plants are formed from combinations of various sizes of technological apparatuses for a particular capacity. The base unit is a biological reactor consisting of a double tank.		



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D-N process

Activation with nitrification and preliminary de-nitrification

The operation is also available without automatic control.
High denitrification efficiency.
Organic compounds are preferably used for de-nitrification.
High sludge load in de-nitrification increases the de-nitrification speed = a lower required volume of de-nitrification.

A TREATMENT PROCESS is based on thorough mechanical pre-treatment followed with biological treatment with complete sludge stabilization. The high efficiency in removal of organic compounds, under a significant decrease in concentration of nitrogen compounds, is achieved by a combination of nitrification and de-nitrification processes. If required, chemical removal of phosphorus can also be included.

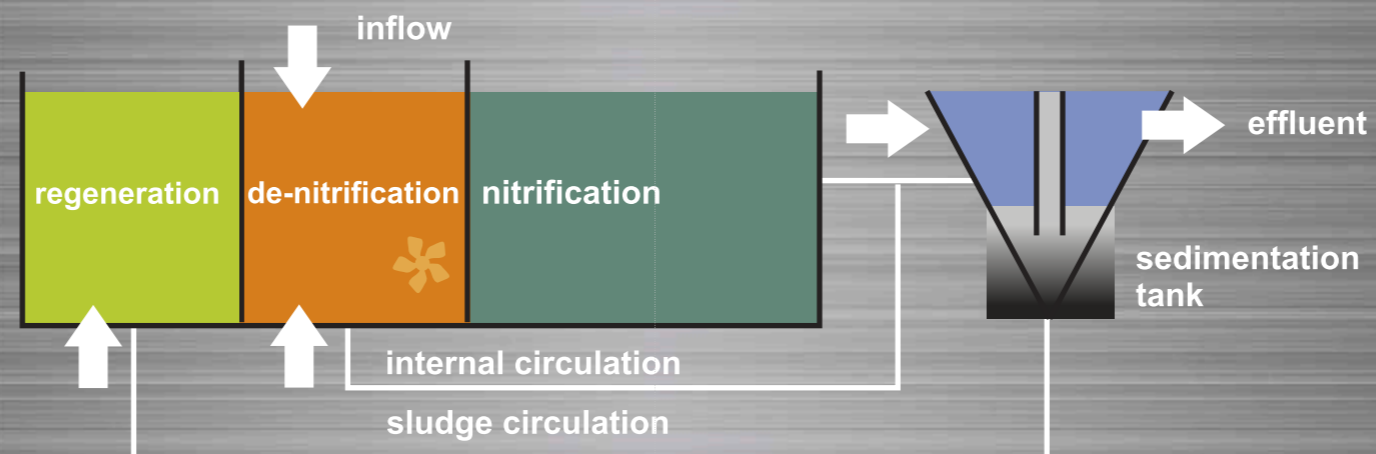
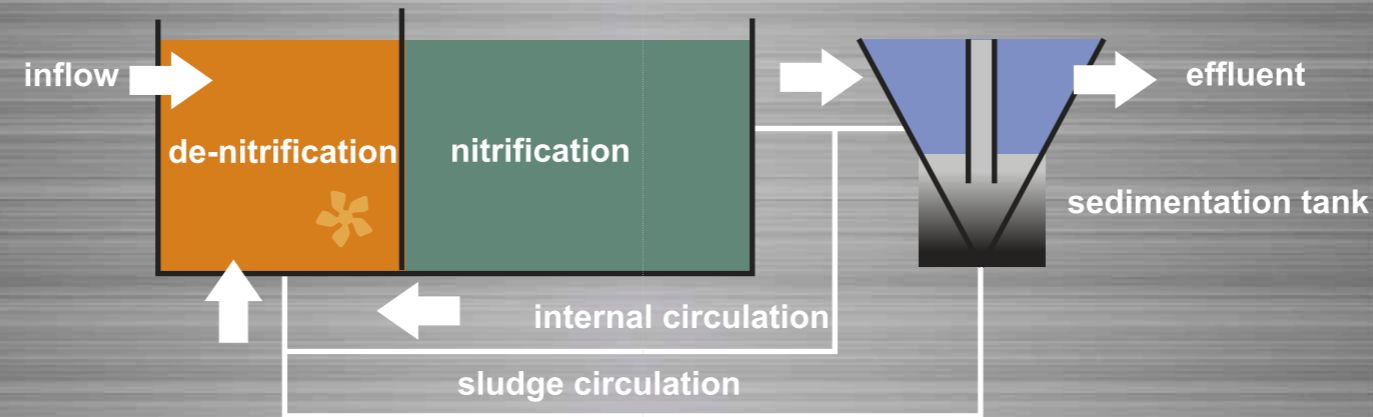
Waste water treatment plants of any type use power-saving soft bubble aeration systems for aeration. Our waste water treatment plants are always supplied with a completed sludge end depending on the requirements and potentials of the Owner.

The HYDROVIT waste water treatment plants are designed in accordance with European standards, meeting the strictest indicators of permissible residual pollution.

R-D-N process

Activation with nitrification and preliminary de-nitrification and regeneration

The operation is also available without automatic control.
High denitrification efficiency.
The inclusion of regeneration increases the sludge concentration in de-nitrification, increases the de-nitrification speed
nic compounds are preferably used for de-nitrification = high efficiency in nitrogen removal.
The regeneration unit decreases a risk of the sludge swelling.



BENEFITS OF WASTE WATER TREATMENT PLANTS FROM ENAMELED PLATES

- **SHORT-TERM CONSTRUCTION PERIOD**
 - delivery in 3 months from the signing of a contract
 - commission in 5 months from the signing of a
- **MINIMAL AND SIMPLE MAINTENANCE**
 - simple facility in terms of structure
 - automatic standby of main units
 - continuous tightness check-up
- **LOW DEMAND FOR CIVIL WORKS**
 - small built-up area
 - minimum site excavation
 - simple concrete basement of biological tanks
- **VARIABILITY OF TECHNOLOGY SETTING**
 - easy modification of above-ground tanks
 - one or multi unit setting of WWTP
 - possibility of step-by-step construction
 - easy modular technology extension
- **EASY LIQUIDATION AFTER THE SERVICE LIFE TERMINATION**
 - tanks and technological facility can be scrapped as metal scrap
 - or tanks can be dismantled and enameled plates can be used to other purposes

BIOLOGICAL TRIPLE TANK

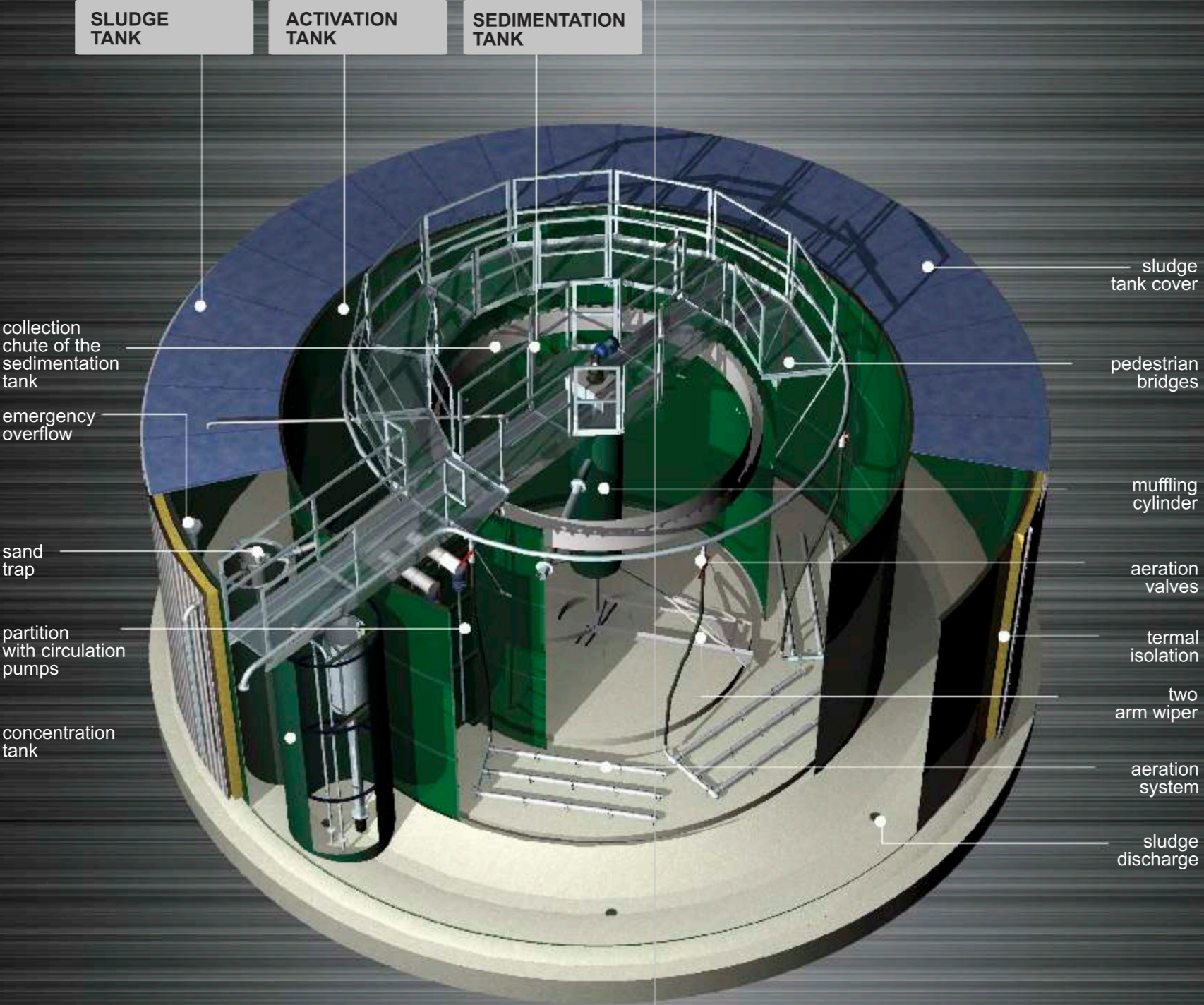
A triple tank consists of centrifugally arranged tanks - sludge, activation and sedimentation tanks of diameters depending on the respective waste water treatment plant size. Each tank can be drained by drainage piping DN 150 within the concrete foundation. The sedimentation and activation tanks are provided with a safety flap valve on the shell in order to restrict external overpressure.

An unroofed triple tank is equipped by clamps on the external shell to fasten thermal insulation if required due to climatic conditions. The thermal isolation is made with mineral wool of 10 cm thickness with an external trapezoid shell, wood, and so on, depending on the Owner's requirements. A circular ring of the sludge tank is covered by the glass-fused roof.

The triple tank is provided with walkway bridges made from porous grids to allow access to aeration valves, drive units for the sedimentation tank wipers, agitators and pumps. Lockboxes for manual operator control are situated on the handrail. A roofed triple tank is provided with a pedestrian platform made from galvanized plates and is located in the circular ring of the sludge and activation tanks on which a floor is placed. The sedimentation tank is also provided with a transverse bridge covered by plates. In a roofed area, there is an operator room created by partition walls at the platform. At the same place there is also a blowing room and sanitary facilities of service.

INSPECTION SHAFT

The inspection shaft is an underground concrete unit in which all sludge pipes placed in the concrete foundation are connected to the sludge discharge register. Each sludge pipe is equipped with a servo flap valve. The register is connected to the piping for overflow device and through manual flap to the discharge pipe from the waste water treatment plant. A sludge pump is attached to the register, discharging into a concentrator. There are manual valves on specific pipes in order to drain all three tanks. Further, the treated-water piping is equipped with an induction flow meter. The inspection chamber can be accessed from the outside and is illuminated.



SEDIMENTATION TANK

The tank bottom is flat, concrete, moderately inclined toward the centre, and wiped with a two-arm wiper.

A wiper drive unit is situated under the pedestrian bridge and is protected against weathering.

From the centre of the tank, there is a pipe leading through concrete basement. This pipe enables outlet of returned and excess sludge.

The activation mixture enters a central cylinder suspended on a pedestrian bridge.

A collection chute with an adjustable overflow edge with 90° cuts is suspended on the upper reinforcing ring of the sedimentation tank. In sedimentation tank the wiping of floating dirt is solved either by two-arm level wiper or by height-adjustable bath with a pump.

ACTIVATION TANK

The internal circular ring of the biological triple tank serves for activation. The tank is separated by partition walls into nitrification, de-nitrification and regeneration segments required by the applied D-N or R-D-N technology. The nitrification and regeneration segments are aerated by fine bubble elements protected with rubber membranes.

The aeration system is either anchored to the tank bottom or in "guided version", which enables extraction and returning back of individual carrying tubes during the operation of the plant.

The air distribution to aeration elements is in the stainless steel tubs. The de-nitrification is blended by a submersible screw agitator on the column.

By a tight partition, there are submersible pumps of sludge reverse and inner activation mixture circulation between nitrification and denitrification. The output of both pumps can be continuously changed by a frequency transducer; and actual flow is measured in both cases by a flow meter.

SLUDGE TANK

The external circular ring of the biological triple tank serves as a sludge tank.

The tanks is separated by the baffles on primary sedimentation area and sludge accumulation area. A sediment is moved from the primary sedimentation area to the sludge accumulation area by agitator. The sludge tank has 6 – 8 discharges in the concrete bottom, through which sludge is removed through the inspection chamber into the concentrator. The sludge tank can be equipped by a sand catcher and thickening tank, according to requirements. The tank is always covered and there are also entrances with trap doors for the access to inner equipment.

WASTE WATER TREATMENT PLANT



HYDROVIT® SBR

Discontinuous mono-block with capacity of 500 - 2000 EO.

The working area of the treatment plant consists of the only tank (reactor) with a discontinuous treatment process. The activation tank and sedimentation tanks are not separated in terms of space, but time. The SB reactor is controlled by the automated system which responds quickly to very large scale changes in substance and hydraulic load. The applied technology of the mechanical-biological treatment with activated sludge guarantees high and permanent pollution removal efficiency. The alteration of anoxic and oxic processes provides very low residual pollution by BSK5 and N-NH4 in the treated water. The facility functionality is guaranteed at 30% inflow. The fine bubble system with blower output control significantly decreases not only consumption of electric power but also generation of aerosols. This, together with the blower of a low noise level, enables our treatment plant to be built in the immediate vicinity of a residential area.

HYDROVIT® SI

Compact flow waste water treatment plant with the capacity of 2000 – 10 000 EO.

A compact treatment plant, based on a biological triple tank that consists of three concentrically arranged tanks made of glass-fused plates. The biological triple tank incorporates space for primary sedimentation, activation and storage of sludge. The triple tank comprises also a vertical sand trap and concentrator. Activation is by aeration with fine bubble elements. The sedimentation tank has slightly conical mechanically wiped bottom. The pump pit design and location, with mechanical pre-treatment, inspection chamber for controlled sludge removal and the sludge drainage system, are adaptable to customer requirements.

The plant is supplied in two primary variants:

- Partially roofed - only the sludge tank is roofed, accessories (blower room, operator room, shower, cloakroom, WC) including sludge drainage, are situated in separate operating building.
- Fully roofed - the cladding of the biological tank is increased by two layers supporting a cone roof (usually glass-fused plates). Accessories are situated at this roofed room above the triple tank, and the sludge drainage and inspection chambers are located in the roofed modules connected to the triple tank.

HYDROVIT® P

Free set of biological tanks of the type and capacity 5 000 - 50 000 EO.

A characteristic feature of this waste water treatment plant is a biological double tank consisting of centrally arranged activation and sedimentation segments. Applying a suitable combination of large scale glass-fused tank sizes, a purpose-built treatment line can be assembled consisting of a precisely respective pollution source. Functional volumes are created in individual or combined tanks for equalization, primary and secondary sedimentation, activation, or concentration and storage of treatment Medias. Glass-fused anaerobic reactors and a biological sprinkling column can be integrated as well. Treatment plants are intended for treatment of community waters as well as industrial waste waters from slaughter houses, breweries, dairies, sugar refineries, conservation works, cider works, and other pollution sources in the food processing industry. The size of the treatment plant is only limited by economical use of our glass-fused steel tanks and is usually designed for substance loading up to 2500 kg/d BSK5.