

Wastewater Treatment Business Unit
Technologies and Products



CONSULTING & PLANNING



PROCESS ENGINEERING



MECHANICAL ENGINEERING



AUTOMATION



PRODUCT DEVELOPMENT



MANUFACTURING OF PRODUCT COMPONENTS



OPTIMISATION



INSTALLATION



COMMISSIONING



TRAINING



MAINTENANCE & SERVICE



TURNKEY PLANT CONSTRUCTION



CONSTRUCTION WORK

BUSINESS UNIT

WASTEWATER TREATMENT

PROCESS ENGINEERING SOLUTIONS
FOR OPTIMUM OPERATIONAL SEQUENCES
MECHANICAL & ELECTRICAL ENGINEERING
PRODUCTS, SYSTEMS, COMPLETE PLANTS

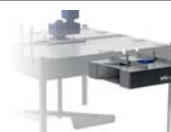
TECHNOLOGIES

- 2** Process-optimised activated sludge process
- 3** Anaerobic wastewater treatment
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- 10** Desalination process
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- 18** Vertical agitator



- 20** Automatic floating sludge extractor



- 22** Automatic floating sludge removal equipment



PRODUCTS

- 14** Clean water removal (decanting)



- 16** Clean water removal (decanting)



- 24** Automatic turbid water removal



- For wastewater, no matter how varied its properties, to be treated effectively and efficiently, we offer continuous and functionally coordinated technologies and products – through to turnkey plant construction.





PROCESS-OPTIMISED ACTIVATED SLUDGE PROCESS

Process and energy-optimised activated sludge process with dynamic process controls resulting in maximum elimination rates with minimised operating costs

APPLICATION

- Municipal wastewater treatment in combined wastewater and separate system for population sizes from 500 to 500,000 inhabitants
- For industrial wastewater treatment in combination with magnesium-ammonium-phosphate (MAP) precipitation and anaerobic pretreatment
- In combination with wks dosing technology
- Can be adapted according to plant size, activated sludge separation with secondary settlement tank with horizontal or vertical through-flow, or by means of pressure release flotation
- Can be implemented as a circular/rectangular form, as a compact TRIUNO tank or as a combination basin

TECHNOLOGY | PROCESS

The activated sludge process is optimised for a wastewater treatment plants continuous operation. The type of aeration used (fine bubble pressure aeration or ejector aeration) is dependent on which particular type of wastewater is being treated. For tank circulation, either pulse aeration, horizontal agitators, ejectors or vertical agitations are preferred. Nitrification and denitrification processes can

be implemented either as intermittent, upstream, downstream, simultaneous or in cascade. Alongside the biological process the chemical phosphorous elimination is implemented as simultaneous precipitation or post-precipitation.

The key point of the optimised process is the intelligent, dynamic control system of nitrification and denitrification depending on the inflow and load of the wastewater, the plant thus always operates at optimum rate and energy efficiency.

The separation of the activated sludge/clean water mixture occurs by means of gravity sedimentation in the secondary sedimentation tank or in case of poor settling properties, by means of pressure release flotation.

PROCESS ENGINEERING COMPONENTS

- Process-relevant equipment for aeration, circulation, secondary sedimentation and flotation
- Automation technology incl. RBS activation control module for optimisation of the nitrification, denitrification and phosphorous elimination processes
- Intelligent networking of the individual process engineering steps



ADVANTAGES

- By using the RBS activated sludge control system the plant operates at all times at the optimum process rate and economically
- Maximum possible nitrogen elimination with optimised operating costs and energy efficiency
- Largely biological and chemical phosphorous elimination

ANAEROBIC WASTEWATER TREATMENT

Application-optimised anaerobic wastewater treatment and energy recovery with efficient pre and post-treatment

APPLICATION

- Industrial wastewater treatment
- Can be used for COD concentrations of 1,500–20,000 mg/l COD
- In combination with MAP precipitation and aerobic post-treatment (SBR or aeration plant)
- In combination with wks dosing technology
- Biogas recovery with CHP or micro gas turbine

TECHNOLOGY | PROCESS

COD in the wastewater is converted into biogas and a small quantity of surplus sludge. The biogas is separated and, when necessary, cleaned or desulphurised. Biogas is

recovered by means of CHP or micro gas turbine.

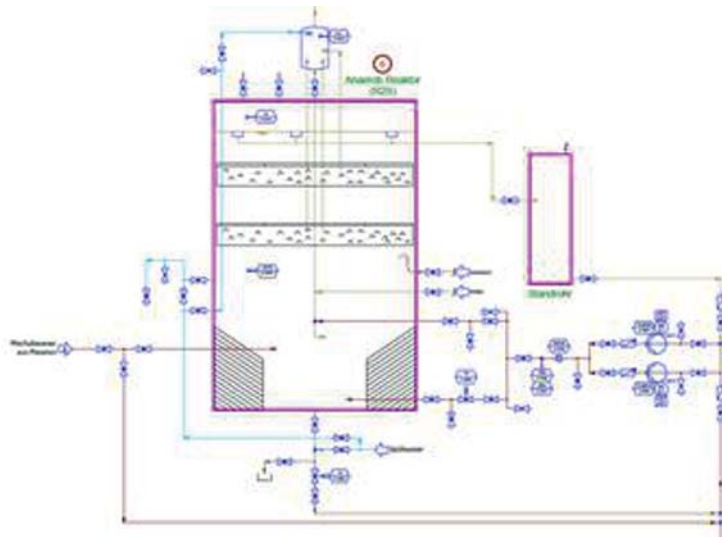
The optimum pretreatment, process selection and optimum gas treatment and gas recovery for the respective application is selected, dependent on the wastewater characteristics. According to specific requirements, tried and tested anaerobic reactors of European manufacturers are used, for example, UASB, R2S and IC.

As a result of process integration of the anaerobic process and energy technology a high degree of process efficiency is achieved.



ADVANTAGES

- Manufacturer-independent, best process management for special application
- Process-optimised pretreatment and post-treatment of the wastewater
- High process efficiency and process safety
- Operating cost savings





SBR-TECHNOLOGY

Intelligent, dynamic, wastewater load and quantity-controlled SBR technology

APPLICATION

- Municipal wastewater treatment of mixed or separated wastewater system for population sizes from 500 to 300,000 inhabitants
- Industrial wastewater treatment
- Especially suited to industrial wastewater treatment in combination with MAP precipitation and anaerobic pretreatment
- In combination with wks dosing technology
- One to 4-lines, optional combination with inlet/discharge storage tank, adaptable to plant size

TECHNOLOGY | PROCESS

The SBR process is a form of activated sludge process. The spatially separated functional components of a conventional aeration plant are implemented in phases within the same tank (Sequential Batch Reactor) SBR process. Wastewater treatment takes place during the reaction phase. During the subsequent sedimentation and decanting phase the activated sludge is separated from the treated wastewater. Depending on the wastewater to be treated, the aeration is implemented through fine bubble pressure aeration or ejector aeration. The tank contents are shaken up-either by pulse aeration, horizontal agitators, ejectors or by means of vertical agitators

mounted on the clean water decanter. Depending on the overall configuration, batch charging to improve the sludge settling properties and biological phosphorous elimination are possible.

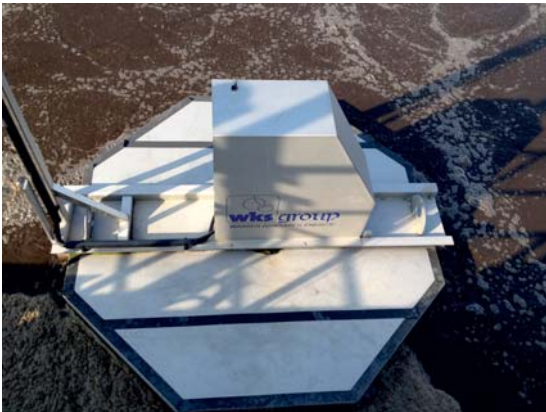
The innovative key point of wks SBR technology is the intelligent, dynamic and load-dependent control of the process phases and technical system with turbidity-controlled clean water removal, water level-dependent vertical agitator and automatic floating sludge removal.

Clean water removal follows the phase boundary layer of clean water/activated sludge, in this way the sedimentation and decanting phase is limited to a minimum.

PROCESS ENGINEERING COMPONENTS

- HydroSys equipment system with:
 - AW-HydroMix vertical agitator
 - AW-HydroDek clean water removal (decanter)
 - AW-HydroKlar PLUS optional clean water removal
 - AW-ASSS floating sludge removal
- Automation technology incl. RBS-SBR control module for process optimisation
- Energy-optimised aeration system

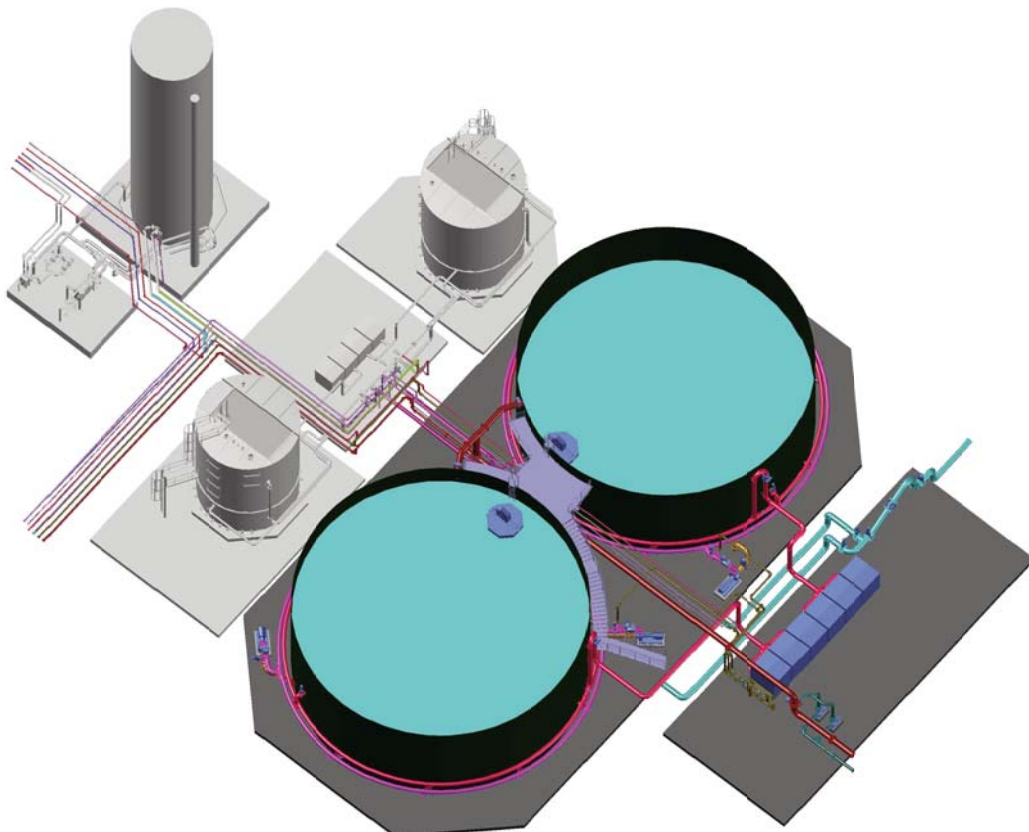




ADVANTAGES



- By using the RBS SBR control system the plant operates economically, and at optimum performance
- Maximum possible nitrogen elimination at optimised operating costs and energy use
- Extensive biological phosphorous elimination
- Prevention of unwanted phosphorous redissolution at the end of the reaction phase
- Turbidity controlled, extensive and laminar clean water removal
- Precisely matched functional characteristics of the components for an optimum process workflow to ensure the specified effluent discharge values
- Reduced energy cost





MEMBRANE BIOREACTOR

Highly effective membrane filtration process as an alternative to the conventional activated sludge process

APPLICATION

- High cleaning capacity equipment used in municipal and industrial wastewater treatment to save space
- Phase separation through use of membranes instead of settling process – leading to high total solids in the activated sludge
- A compact design solution without the need for a secondary settlement tank is therefore possible

TECHNOLOGY | PROCESS

In the MBR process the membrane module replaces secondary sedimentation. Construction volume can be reduced due to increased mixed liquor suspended solids in the aeration tank.

The aeration tank is combined with a membrane filter to separate the water from the activated sludge. The biologically treated wastewater is drawn in through the mem-

brane. The biomass remains in the aeration tank or in the filter chamber and must be removed separately.

The process engineering design of the MBR plant is carried out optimised with the design of the aeration tank (tank volume, mixed liquor suspended solids, sludge age, air requirement, etc.) and design of the membrane filtration unit (membrane area, number of filtration units, filtration volume, permeate flux, etc.).

Various process steps are necessary for membrane cleaning: backwashing with filtrate, creation of turbulences at the membrane surface through air flow (cross flow), chemical intermediate and intensive cleaning with substances such as sodium hypochlorite, citric acid or similar.

Mixed liquor suspended solids in the activated sludge: 8–15 kg/m³

Membrane pore size: 0.1–0.4 µm

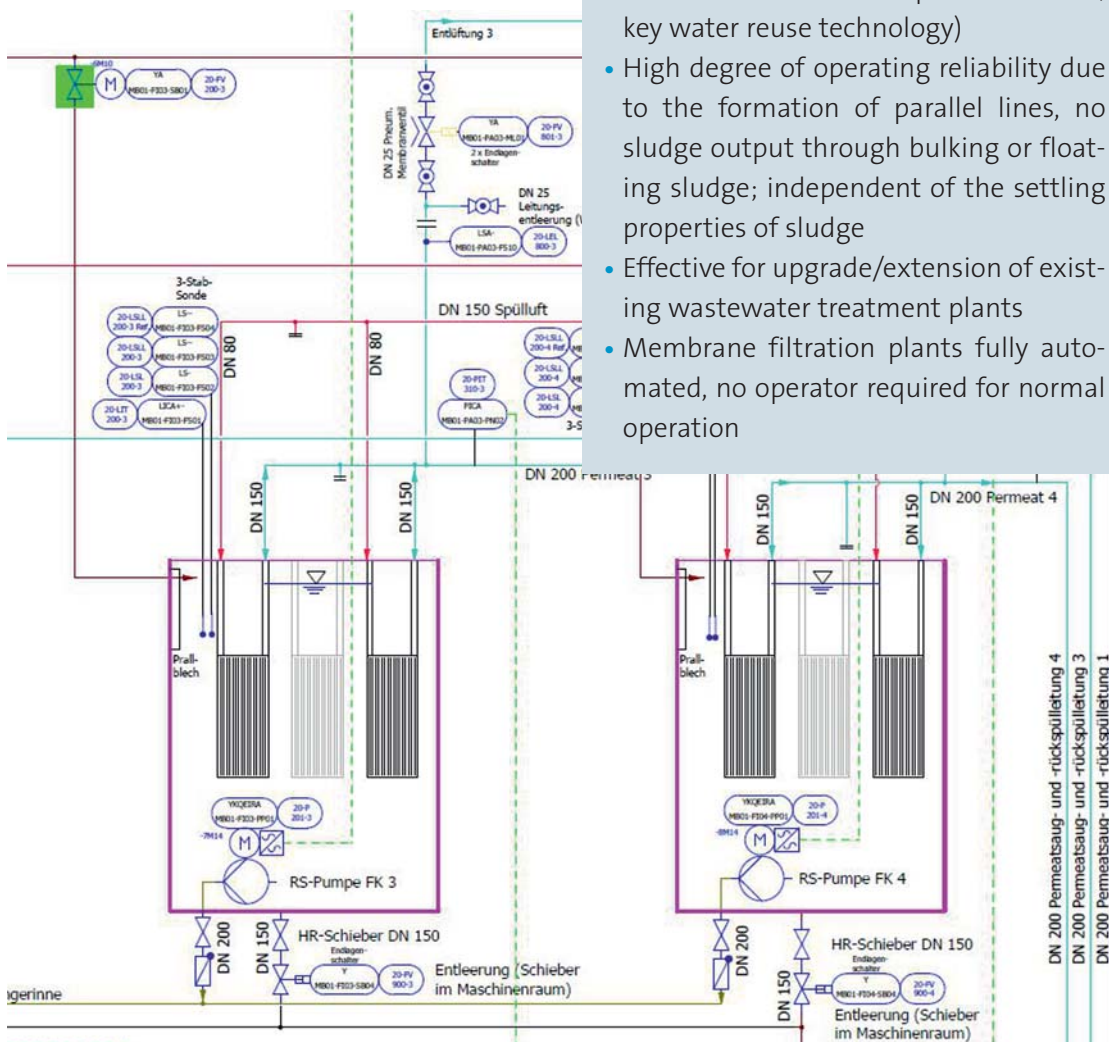


PROCESS ENGINEERING COMPONENTS

- Extremely fine screens for mechanical pre-cleaning
- Aeration tank, if applicable with filtration units (integrated MBR system)
- Membrane filtration tank (for separate MBR system)
- Permeate/backwashing pumps, return activated sludge pumps (with downstream filtration tanks), surplus sludge removal
- Cross-flow blower
- Chemical dosing for membrane cleaning

ADVANTAGES

- Compact solution with high biomass content in the activated sludge stage making secondary settlement tank unnecessary
- Easily extendable
- Outstanding treatment capacity with regard to carbon and nutrients as membranes are partially permeable structures, which retain organic and inorganic solids, bacteria and substances attached to solids (solids 0 mg/l, COD < 30 mg/l)
- Extensive disinfection of the treated wastewater (bathing water quality, water reuse as non-potable water, key water reuse technology)
- High degree of operating reliability due to the formation of parallel lines, no sludge output through bulking or floating sludge; independent of the settling properties of sludge
- Effective for upgrade/extension of existing wastewater treatment plants
- Membrane filtration plants fully automated, no operator required for normal operation





PHOSPHOROUS RECYCLING USING MAP PRECIPITATION

Eco-effective phosphorous recycling of wastewater containing phosphorous for cost-effective use of the nutrients in agriculture

APPLICATION

- Use in phosphorus containing wastewater ($\text{PO}_4\text{-P} > 70 \text{ mg/l}$, $\text{PO}_4\text{-P} > 100 \text{ kg/d}$)
- Very effective in combination with anaerobic pre-treatment
- Optional batch or continuous flow operation
- Depending on the MAP quality requirement, various options available for the treatment of the separated MAP

TECHNOLOGY | PROCESS

The formation of magnesium – ammonium phosphate crystals ("MAP", struvite) is achieved by pH adjustment ($\text{pH} > 8.1$), dosing of magnesium hydroxide ($\text{Mg}(\text{OH})_2$) and if necessary by adjusting the concentration of ammonium ($\text{NH}_4\text{-N}$). The tank is shaken up by means of medium bubble aeration which causes intensive chemical mixing as well as extension of the MAP crystal contact time.

To retain the MAP crystals, a parallel plate separator is used at the tank overflow in the continuous flow process. In the batch process the crystals are retained by gravity sedimentation. The demand-orientated ammonium dosing is achieved by determining the ammonium concentration through means of ion-selective measurement. The necessary magnesium dosing is determined by measuring the phosphorus concentration. Positive-displacement pumps are used for cyclical MAP removal. MAP dewatering using a screw extruder, in combination with MAP scrubbing to improve the MAP quality (reduction of the mixed liquor suspended solids). Optimisation of the MAP crystallisation is achieved through turbid water return. Use of the RBS-MAP control module ensures optimum efficiency of phosphorus elimination with the lowest possible operating costs.



PROCESS ENGINEERING COMPONENTS

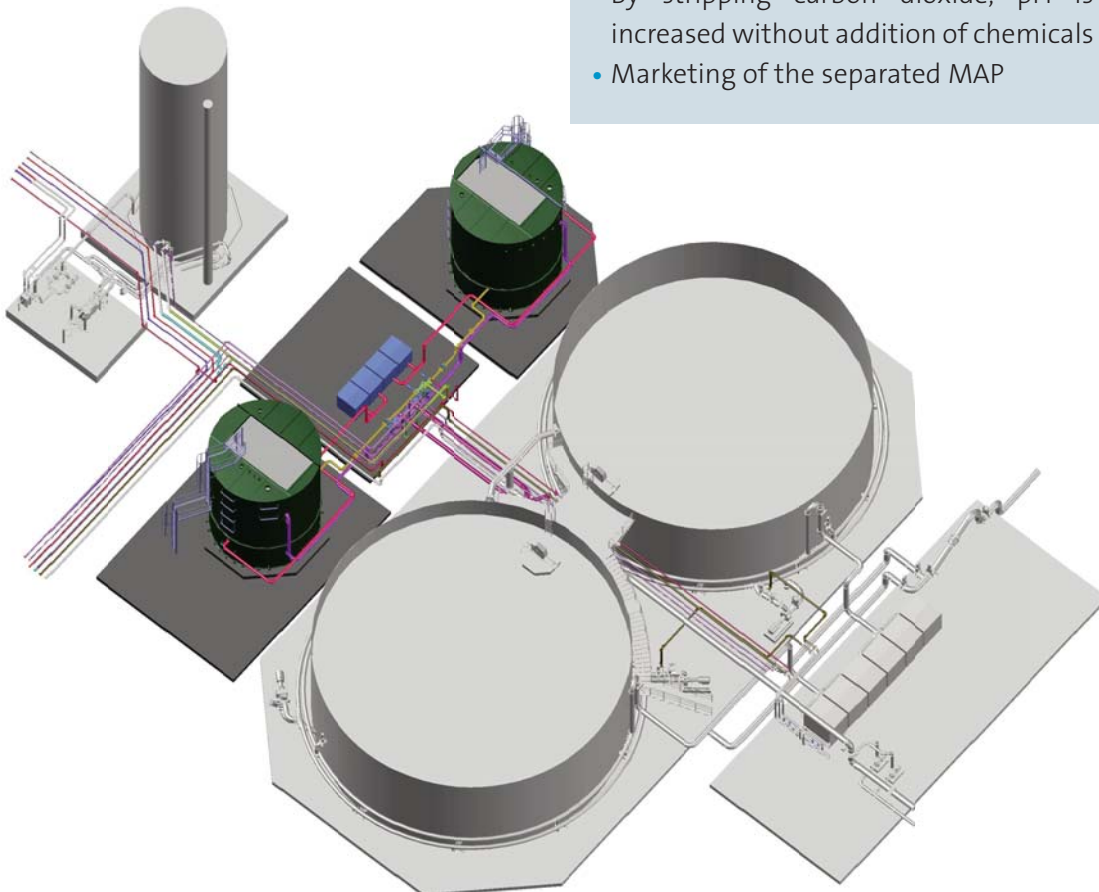
MAP set consisting of:

- Process-relevant equipment of reaction tank (aeration, inlet and discharge system, MAP removal, MAP dewatering)
- RBS-MAP control module for process optimisation

ADVANTAGES



- Eco-effective phosphorous recycling
- More economical use of supplies through control module for process optimisation
- Reduction in surplus sludge produced in the downstream aerobic treatment stage (reduced precipitated sludge quantity)
- Increase in the mixed liquor suspended solids of the downstream aerobic treatment stage (clearly reduced precipitated sludge)
- Increase in the operational reliability of the downstream aerobic treatment stage (increase in the sludge age)
- Reduced energy costs of the downstream aerobic treatment stage (ammonium is incorporated in struvite)
- By stripping carbon dioxide, pH is increased without addition of chemicals
- Marketing of the separated MAP





DESALINATION PROCESS

Salt load reduction of highly saline industrial wastewater by using the innovative electro dialysis process

APPLICATION

- Industrial wastewater treatment
- For wastewater or wastewater partial flows with a conductivity of 50 mS/cm or higher, can be used effectively for wastewater quantities of 50 to 500 m³/d
- In combination with wks dosing technology
- Modular structure
- Concentrate treatment with membrane distillation through to material recovery possible
- Seawater and brackish water desalination

TECHNOLOGY | PROCESS

The desalination takes place by means of an electrochemically driven membrane process. Ion exchanger membranes are used in combination with an electrical potential difference for partial desalination. A wastewater-dependent realisation with pole reversal is possible so that, in combination with suitable treatment chemicals, the treatment can take place under energised conditions. The process is characterised by conductivity-dependent, batch operation of the concentrate, diluate flow and electrode rinsing.

Depending on the wastewater characteristics, the wastewater is pretreated by suitable filtration processes. The concentrate (10–20%) is fed into a concentrate store. The diluate (80–90%) is added to the treatment process. An appropriate conductivity-dependent control system ensures automatic treatment with wastewater-specific treatment chemicals (Cleaning in Place "CIP").

PROCESS ENGINEERING COMPONENTS

- Process-relevant equipment for pretreatment
- Electrodialytic equipment
- Membrane packages, CIP
- Automation technology

SERVICES

- Plant piloting to determine the suitability of the process, to determine the optimum membrane and to select the best treatment strategy
- Detailed design of the process engineering, the plant and EI&C technology
- Realisation of complete plant
- Commissioning, optimisation, training and service



ADVANTAGES

- Energy-efficient partial desalination
- Depending on the membrane selection, selective desalination of monovalent ions possible
- Increase in membrane service life by operating with pole reversal
- Wastewater-specific manufacturer-independent membrane selection
- Wastewater-specific selection of the optimum CIP recipe

CHEMICAL DOSING STATION

Achieving the required treatment targets with minimum consumption through intelligent linking of mechanical engineering and automation

AREAS OF USE

- Municipal and industrial wastewater treatment
- Water treatment
- Sludge treatment

APPLICATION

- Minimisation of the phosphorus discharge values
- Improvement in sludge sedimentation and sludge dewatering properties
- Neutralisation
- pH adjustment
- Optimisation and levelling out of the nutrient balance
- Pretreatment through flocculation in the primary sedimentation
- Water treatment

CHEMICALS USED

- Acidic dosed chemicals such as: Iron chloride, iron chloride sulphate, aluminium sulphate, polyaluminium chloride (PAC), iron (II) sulphate, ammonium sulphate, phosphoric acid, hydrochloric acid, etc.
- Alkali dosed chemicals such as: Sodium aluminate, sodium hydroxide, lime water (CaCO_3), magnesium hydroxide, sodium hypochlorite

- Urea
- Anionic and cationic polymers
- Defoaming agents
- Organic acids: Formic acid, citric acid, acetic acid
- Methanol, ethanol and other carbon sources
- Oxidants: Potassium permanganate

TECHNOLOGY | PROCESS

Chemical dosing requires a complete system consisting of storage tank sensors and dosing stations. Dosing stations, their switches and control systems are housed in protective cabinets. The housing materials are carefully selected according to the chemicals used.

The pulsation damper is positioned downstream of each pump and ensures that there are no pressure peaks or low-pulsation flow. Overflow valves protect the pumps, which theoretically can build-up very high pressure.

Pressure maintaining valves ensure a constant pressure within the dosing system.

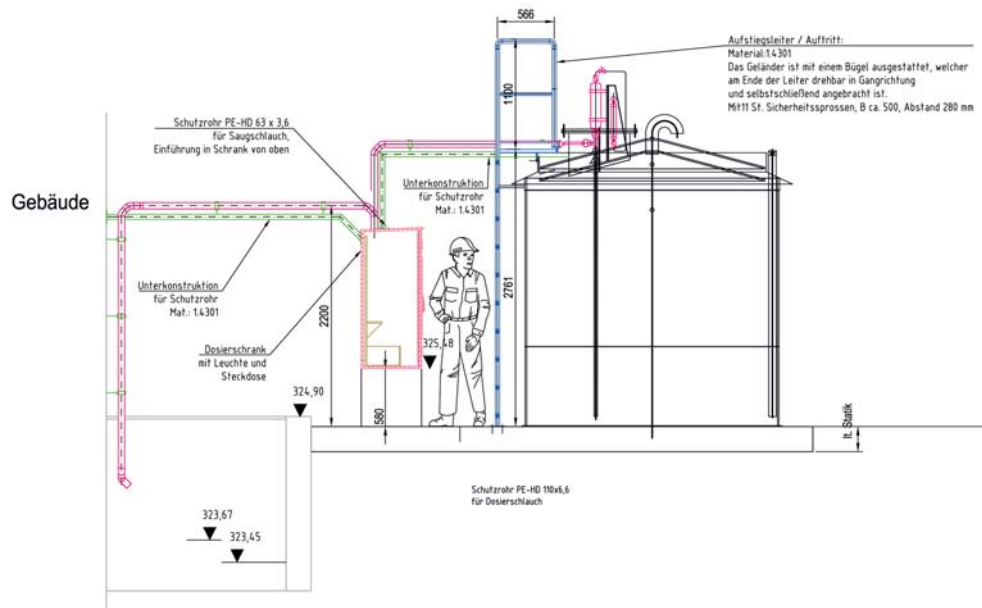
The quantity of chemicals to be dosed can be measured using an optional MID or oval-gear meter. The control pumping system is activated by a means of a measuring device within the tank and ensures optimum addition of dosing chemicals depending on the wastewater level.



The requirements for integration in a process control system are fulfilled.

PROCESS ENGINEERING COMPONENTS

- Storage tank and dosing station for outdoors and indoors
- Outdoor installation:
 - Storage tank with or without insulation/heating
 - Dosing station switches and control gears in weatherproof housing
- Indoor installation:
 - Storage tanks with or without exhaust air treatment
 - Supply and exhaust air routed to the outside
 - Dosing station with splash protection
 - Lifting units for tanks
 - Dosing station with dosing plate, switch and control cabinet as a preassembled unit
 - Compact dosing station safety
 - Module container with Intermediate Bulk Container (IBC) as chemical store
 - Control systems for delivery rate adjustment
 - Linkage to process control system possible





ADVANTAGES

- Optimum combination of mechanical, electrical and automation components
- Control system for economical chemical consumption
- Modular system ensuring optimum station size and therefore reduced investment and operating costs
- Integration into an already installed process control systems is possible
- Easy operation
- Fault/failure management
- Can be easily retrofitted





CLEAN WATER REMOVAL AW-HYDRODEK

Water-level guided floating clean water removal device for large discharge quantities up to 1,500 m³/h with optimum process integration and turbidity-dependent control of clean water outflow

APPLICATION

- SBR wastewater treatment plants
- Pond wastewater treatment systems
- Industrial wastewater treatment plants
- Water supply plants

PRODUCT DESCRIPTION

The task of the clean water removal (decanting) in SBR technology is, after adequate sedimentation of the activated sludge, to separate out the clean water phase, without accidental intake of activated or floating sludge during decanting. The new type of design solution guarantees this requirement is fulfilled to a high degree. The system consists of a floating body combined with an underwater draw-off funnel. Following the time schedule of release or turbidity measurement the draw-off funnel is lowered and clean water is drawn off via the movable discharge pipe. Due to the floating design, the discharge equipment follows the water level. Thanks to the tried and tested wks control system (according to the discharge quantity and turbidity), the clean water is removed during the sedimentation phase and thus reduces the process time. After the removal time has elapsed or following increased turbidity measurement the outlet closes again automatically and a new SBR cycle begins.



DESIGN FEATURES

- Automatic adaptation to rising and falling water level as a result of swivel joint construction
- Homogeneous, horizontal and low-turbulence clean water removal
- Clean water removal below the water surface in combination with a scumboard prevents the intake of floating sludge
- Completely closed system during the reaction phases
- Recording of discharge quantities without additional discharge measurement
- Dynamic, turbidity dependent control system, which is adjusted to the sedimentation and removal phase of the actual sludge settling properties
- Static support for securing the minimum water level
- Sizes available for discharge quantities from 250 to 1,500 m³/h

ADVANTAGES

- Unsinkable construction, water level-guided for wastewater replacement volumes up to 50%
- Arrangement of the inlet opening prevents floating sludge removal
- Optimum process sequence with synchronisation of the control schedule within the process control system, resulting in reduction of process duration
- Increase in process efficiency and consequent cost reduction
- Bus and ethernet link
- Easy maintenance access
- Substantial reduction in storage volume
- Suitable for plant extension or retrofitting





CLEAN WATER REMOVAL AW-HYDROKLAR-PLUS

Automatic clean water removal from SBR and sedimentation tanks with compact design for discharge quantities up to 300 m³/h

APPLICATION

- SBR wastewater treatment plants
- Industrial plants with sedimentation tanks

PRODUCT DESCRIPTION

Clean water removal from the sedimentation phase is an important step in the SBR technology process. Following adequate sedimentation of the activated sludge, clean water is separated, without accidental removal of activated or floating sludge.

The Hydroklar-Plus is designed as a compact removal system based on a weir type channel penstock with outlet shaft.

Outside of the removal phase, the overflow edge of the gate is located above the water level. The start and end of the removal phase can be set according to a time, level or turbidity regime. The time-controlled or turbidity-controlled start signal switches on the drive motor and the gate is opened via the spindle. The clean water flows over the overflow edge of the gate into the outlet shaft. The scumboard connected to the gate ensures that the floating sludge is held back. The inlet area of the scumboard is designed to ensure horizontal, laminar inflow. In this way it is possible to get very close to the sedimentation boundary and to achieve a maximum exchange volume, without the sludge sediment being swirled up.

On reaching the specified fill level or exceeding the turbidity limit the drive automatically stops and removal is ended. The gate is moved to its top end position or reverts to the turbidity schedule so that it continuously moves ahead of the rising water level.

DESIGN FEATURES

- Preassembled weir type channel penstock with outlet shaft (made of stainless-steel) of compact design is anchored onto the tank wall
- Flow-optimised laminar inlet prevents inlet turbulence
- Front-mounted, floating sludge repelling scumboard
- Controllable electric motor drive
- Control system by time, discharge quantity and turbidity possible
- Dynamic control system simultaneously adjusts the overflow edge to the falling sludge layer
- Heating band surrounds the gate guide (optional)
- Device for sampling within the outlet shaft
- Discharge quantities from 80 to 300 m³/h

ADVANTAGES



- Simple, compact design with high degree of functional safety resulting in shortening of the removal times and maximisation of the exchange volume
- Sludge barrier prevents the removal of floating sludge
- Turbidity as the control variable results in controlled clean water removal as well as reduced response time due to the overlapping of sedimentation and removal times
- Functions as an emergency overflow and can be optionally equipped with heating and sampling
- Easy access for maintenance and inspection of the discharge
- Can be used with new wastewater treatment plants or can be retrofitted





VERTICAL AGITATOR AW-HYDROMIX

Floating, vertically acting agitator with flow-optimised arrangement in the tank

APPLICATION

- SBR wastewater treatment plants
- Conventional wastewater treatment plants
- Pond wastewater treatment systems
- Industrial wastewater treatment plants
- Other mixed processes

PRODUCT DESCRIPTION

The AW-HydroMIX is a floating surface mixer in the form of a vertical agitator for complete mixing of the reactor content. Due to the automatic adjustment of the circulation capacity and the tank fill-level, an optimum flow is generated, which essentially prevents oxygen input during the anoxic and anaerobic phase. At the same time floating solids are pumped to the unit where automatic mixing then occurs. Automatic control of the circulation output increases process effectiveness and reduces energy costs.

DESIGN FEATURES

- Floating, unsinkable system with attached electric drive, measuring probes and railings, easy access
- Agitator is operated by an attached electric motor
- Optimally arranged within the tank with the help of flow simulation
- Designed as a low-speed motor
- Frequency control of the circulation output is level and turbidity dependent, according to the sludge settlement properties
- The size is individually adjusted to the tank volume



ADVANTAGES

- Automatic adjustment to rising or falling water level
- Removal rate during operation adjustable and variable
- Individually adjustable flow rate
- Excellent anti-corrosion protection due to specially selected materials
- Delivered ready for use
- Low-maintenance design
- Very suitable for retrofitting





AUTOMATIC FLOATING SLUDGE EXTRACTOR

AW-ASSS

Floating, vertical extraction with flow-optimised design, constant removal of floating sludge independent of the wastewater level

APPLICATION

- SBR wastewater treatment plants
- Conventional wastewater treatment plants
- Pond wastewater treatment systems
- Industrial wastewater treatment plants
- Other mixed processes

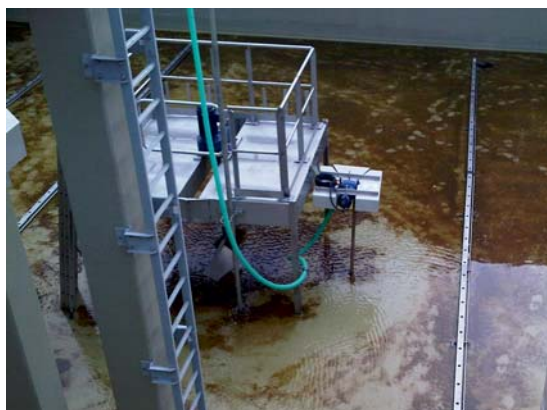
PRODUCT DESCRIPTION

The automatic floating sludge extractor is a floating surface media removal device, that works most effectively in combination with vertical agitator (AW- HydroMIX) and has been tried and tested in flow simulation.

A special fixing to this effect is provided for fitting to AW-HydroMIX. All kinds of different floating media can be easily extracted thanks to the electrical submersible pump, even in case of water level fluctuations. The pump type is especially designed and produced for use with the extractor. Special acid protection ensures maximum resistance to chemical exposure and provides good protection properties against all liquid materials.

DESIGN FEATURES

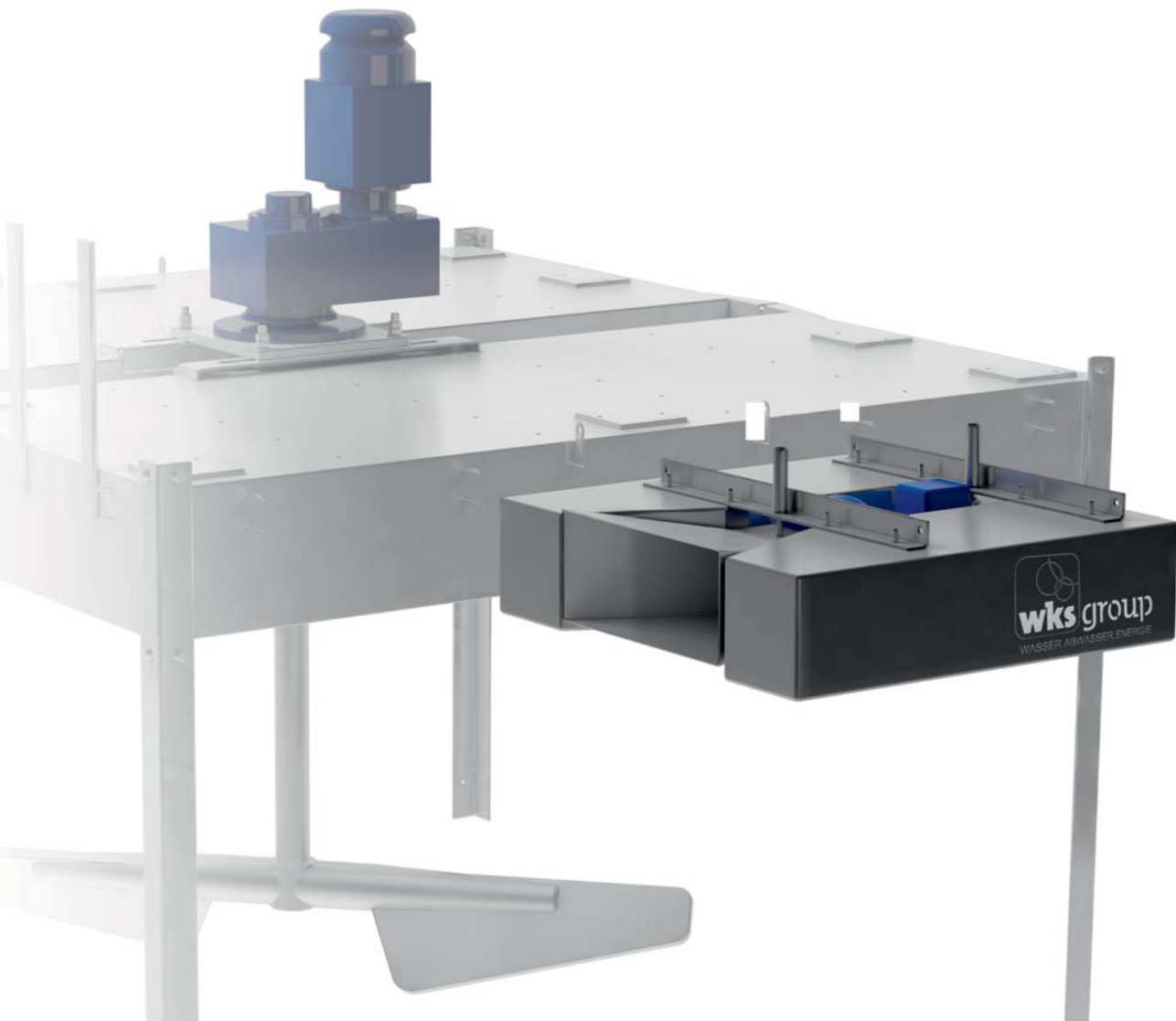
- Floating, unsinkable system with attached free-flow impeller submersible pump
- Optimally positioned within in the tank thanks to flow simulation
- Adjustable height suction inlet for optimisation and fine tuning
- Sizes are adjusted individually, according to the tank volume



ADVANTAGES



- Automatic adjustment to rising or falling water level
- Uniform mixing of the tank contents as a result of preceding flow simulation
- Control system ensures optimum circulation capacity (speed) by recording the level and turbidity
- Increase in process effectiveness and reduction in energy consumption compared to conventional agitators
- Individually adaptable activation
- Good, safe accessibility to drive and measuring probes
- Highly suited for retrofitting



AUTOMATIC FLOATING SLUDGE EXTRACTOR AW-ASSS



AUTOMATIC FLOATING SLUDGE REMOVAL EQUIPMENT AW-ASSA 200/E

Effective solution for the removal of floating sludge

APPLICATION

- Primary and secondary settlement tank for wastewater treatment without scraper equipment
- Industrial plants with sedimentation tanks

PRODUCT DESCRIPTION

The AW-ASSA 200/E automatic floating sludge remover is used to remove floating sludge from settlement tanks (primary or secondary sedimentation tanks). According to the tank size, the position of attachment and flow conditions, one or several decanters can be installed.

The sludge is drawn in by a pulsating pipe system and is pumped into the sludge storage tank. A submersible pump is installed underneath the pipe system. The floating intake pipe equalises the usual water level changes in the primary and secondary sedimentation tanks. The intake capacity and water level are easily adjusted via a ball valve. Sludge removal can take place in either automatic or manual modes.

DESIGN FEATURES

The removal device is mounted to an adjustable height position on the edge of the tank or on the operator platform, which makes retrofitting easy.

The sludge removal is carried out by means of a submersible pump and a "pulsating pipe" system. The interaction between intake and the drive forces causes the dipping and lifting of the intake port. The sludge intake area has a diameter of approx. 4 m.

Depending on the tank size, position of attachment and flow conditions, one or several decanters can be installed. In automatic mode the pause/running schedule can be adjusted on any conventional control system.



ADVANTAGES

- Simple design and high functional reliability
- Can be easily retrofitted
- Compatibility with conventional control systems
- Minimum operator work





AUTOMATIC TURBID WATER REMOVAL AW-ATAB-21

Turbid water removal for sludge storage tanks with automatic detection of the turbid water zone

APPLICATION

- Sludge storage tanks in municipal and industrial wastewater treatment plants

DESIGN FEATURES

The key point of the device is a compact function block with integrated sensor system and cable routing. The submersible pump is fixed onto the underside of the block. This design solution forms a closed unit without the usual approaches (e.g. float switch) for entanglement and entwining.

A flexible discharge pipe carries the turbid water to the outside. The cable of the lifting device is fixed to the top part of the function block. The cable made of stainless-steel is routed via the arm of a small crane to the winch. The cable winch is situated in a housing.

The control system uses the reflection principle, thereby ensuring automatic detection of all turbid water layers and their position in the tank. The whole tank fill is recorded according to the predefined schedule. The data recording enables optimisation of schedules. Pumping operation is activated and stopped according to the threshold values for the turbid water.

PRODUCT DESCRIPTION

After initial release, the combined removal and sensor unit moves slowly over a freely movable lifting device from its resting position and vertically through the sludge storage tank.

As soon as a turbid water layer is detected the unit pauses until the turbid water has been pumped away through a flexible discharge pipe.

After the tank has been scanned successfully and the turbid water layers have been removed, the unit returns to the predefined resting position.

Turbid water limits, start times and cycles as well as other parameters can be determined using the hand-held panel or via the control room, depending on the version.

ADVANTAGES



- Fully-automatic, reliable removal through innovative solution (reflection principle) for turbid water and position detection
- Optimised tank utilisation and improved thickening
- Compact design largely prevents entanglement and entwining
- Full integration in the control engineering equipment of the wastewater treatment plant
- Safe operation due to standard ATEX certification
- Suitable for any tank type or tank shape, including tanks with agitators or rabble rakes
- Easy accessibility, almost maintenance-free
- Installation possible during on-going operation
- Substantial savings in sludge disposal costs



Innovative products,
integrated technologies
and intelligently networked
systems for municipalities
and industries

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Group memberships/partnerships

SIEMENS

DWA

DVGW

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