



RUDDER
INDUSTRIES

PRODUCT CATALOGUE

rudderindustries.godaddysites.com

WHO ARE WE?

- We are a traditional manufacturer of durable, highly efficient machines and structures that are related to the water and wastewater industry.
- We are very experienced in steel and stainless steel processing. Moreover, we offer technical assembly and services in the field.

LETTER FROM THE TEAM

In Rudder Inds. We are always driven by the knowledge of engineering for the purpose of presenting the finest and the most convenient solution for our customers. We do this by blending the experiences of our own team with our partners and other endeavors' knowledge. We are very believing that continuous improvement and working on efficiency are the key answer to delivering the ultimate service for our customers and gaining their trust.

GROW UP WITH US



6-13

SHUT-OFF DEVICES

- **Penstock**
- **Penstock details**
- **Anti-flood valves**
- **More products on demand**
Rotary weir, distribution weir, stop logs & stop plates

DIGESTER TANK EQUIPMENT

- **Gas equipment**
Gas hood, over and under pressure protection, water header, gas dome, gravel filter, inspection glass, manhole, ball spray nozzle
- **Sludge equipment**
Tube heat exchanger

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STEEL ENGINEERING & CONSTRUCTION

- **Inlet & outlet systems**
Drainage channel, inlet dip tube, overflow barriers, lamella curtains
- **Railings**
- **Stationary ladders**
- **Built-in parts & pipes**
- **More products on demand**
Tipping bucket, chute covers with or without air vent, chute covers rainwater-tight made from treadplate patterned sheet, certified lifting davits, certified ceiling hooks

SCRAPER EQUIPMENT & DISCHARGE SYSTEMS

- **Circular scrapers**
Bottom scrapers, discharge of floating material
- **Longitudinal scrapers**
Bottom scrapers, discharge of floating material
- **Discharge of floating material**
- **Rabble rakes**
- **More products on demand**
Discharge systems, chain scrapers

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22-25

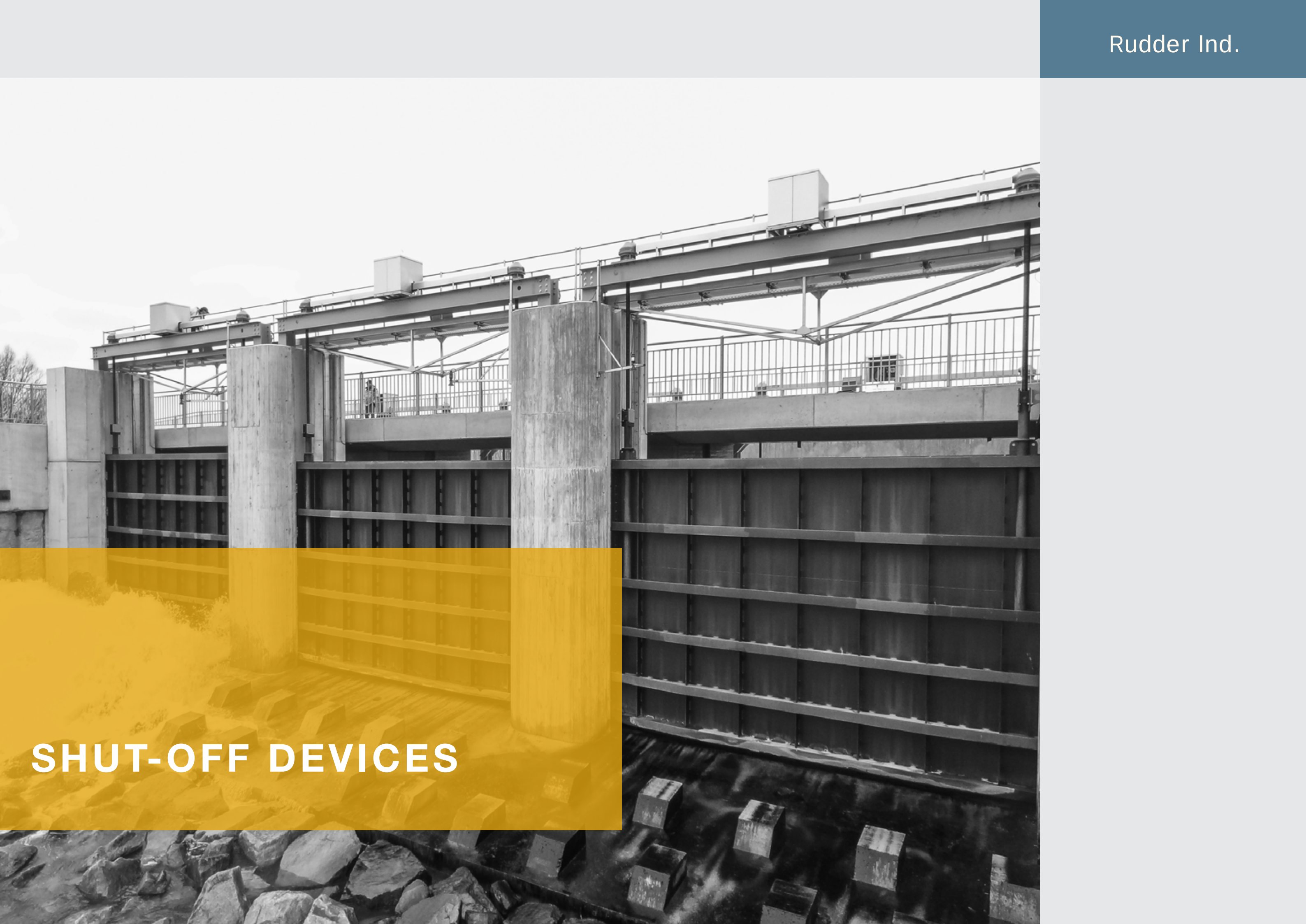
SCREENING & CONVEYING TECHNOLOGY

- **Rake screens**
- **Conveyor systems**

SPECIALS

- **Tank manufacturing & spool construction**
- **Completion of compact systems**
- **Contract manufacturing & installation**





SHUT-OFF DEVICES

PENSTOCK

GENERAL INFORMATION

Designed to meet the requirements in water technology and waste water technology, penstocks are devices that enable to shut-off and regulate in water flow. These devices are installed in inlets and outlets to open gutters, channels, shafts, tanks, and pipelines.

This product enables to regulate volume flow rate, set and hold water levels, reduce discharge rate and direct water flows. Channel and weir type channel penstocks are typically sealed on 3 sides, whereas conventional penstocks are sealed on 4 sides.

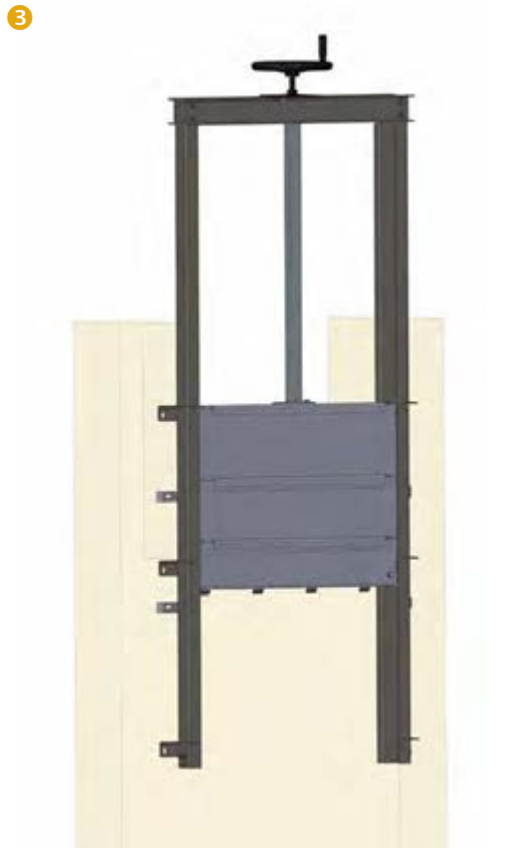
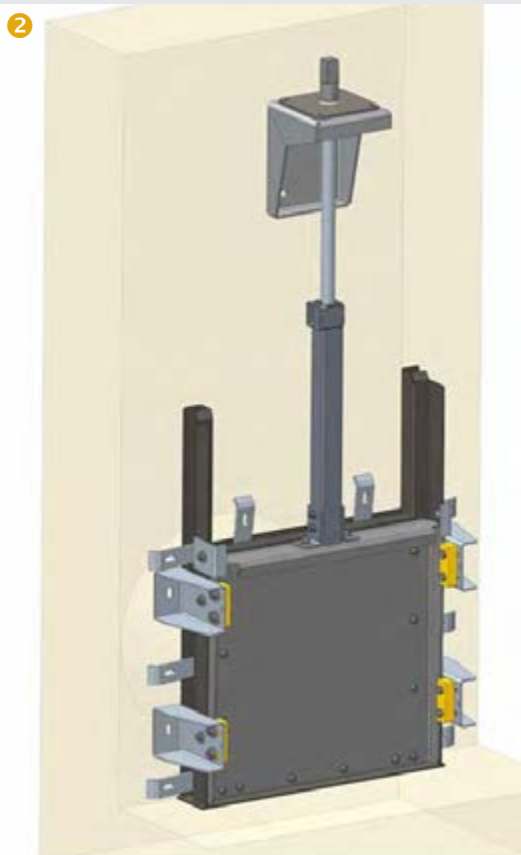
- Easy to assemble and compact design
- Frame and gate are resistant to rust and acid
- Custom materials available on demand
- Excellent sliding properties at the seals prevent from running dry
- Channel & weir type penstocks are maintenance and service friendly having their sealing gasket located on the gate
- Spindle nut with corrosion-resistant copper alloy allowing for optimal sliding properties
- Separate sealing between frame and masonry
- Reliable sealing according to DIN 19569-4
- Constructed in accordance with EN 1090-2

TECHNICAL SPECIFICATIONS

Materials	V2A, V4A, others on request
Installation procedures	For grouting in the recess, for anchor bolting to walls
Sill shape	Straight, round, profiled, channel bottom
Stress conditions (gate)	One-sided or two-sided accumulation of water
Types of drive	Manual, electric, others on request
Lifting unit	Trapezoidal thread spindle, others on request
Actuator	Wall console, column stand, transverse bar

⇒ For more details on penstocks, please see page 12 and 13

- ① Channel penstocks
- ② Weir type channel penstocks
- ③ Penstocks
- ④ Weir type penstocks



PENSTOCK DETAILS

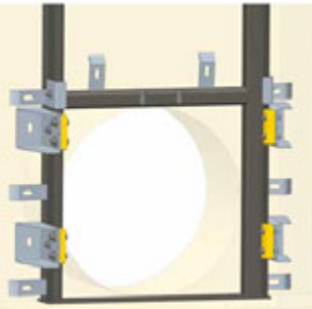
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Actuator

Wall console	Transverse bar	Column stand
		

2

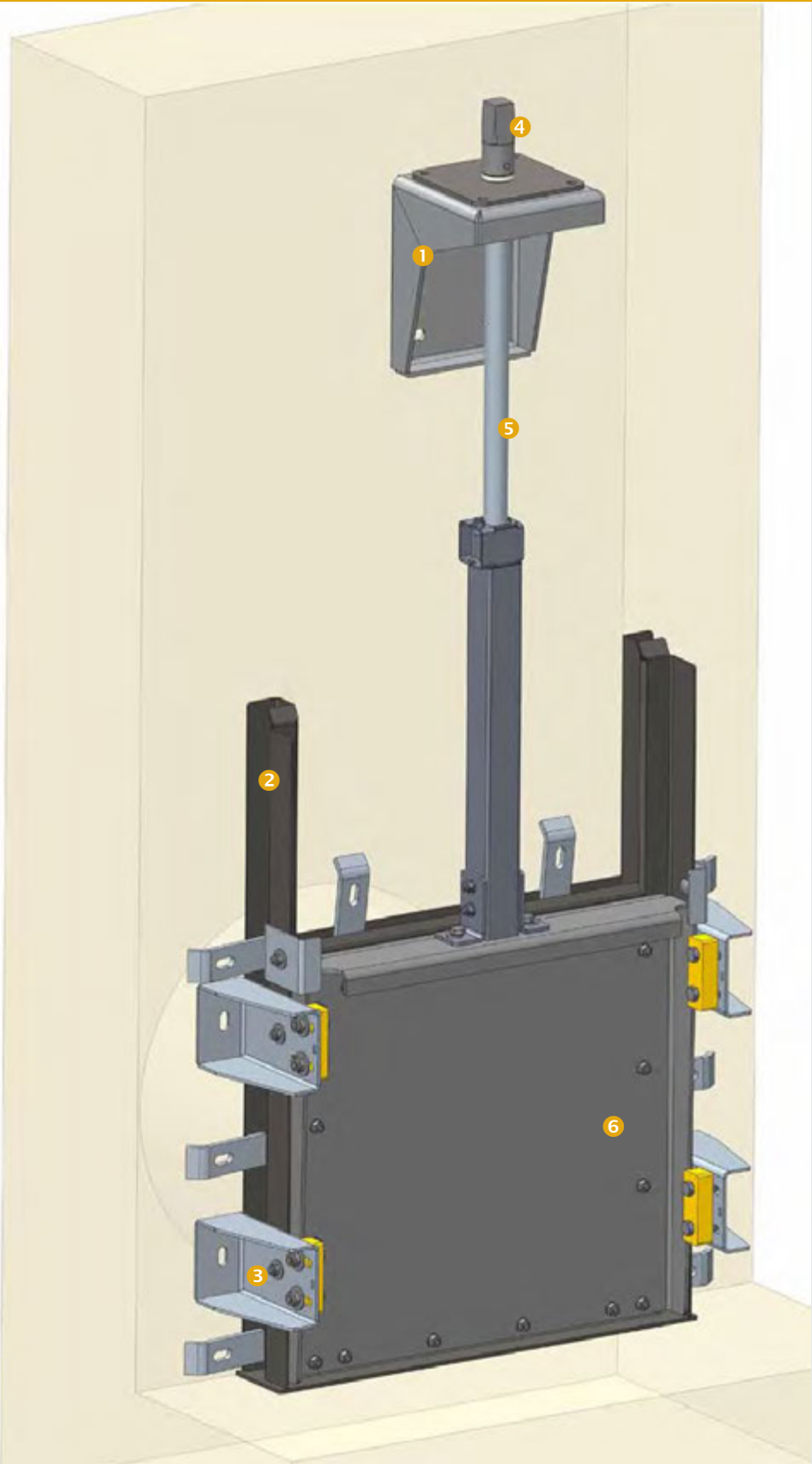
Installation procedures

Front side fastening	Channel mounted	Grouting
		

3

Sill shape

Profiled	Round	Channel bottom
		



4

Types of drive

Electric drive	Hand wheel	Standard square sizes
		

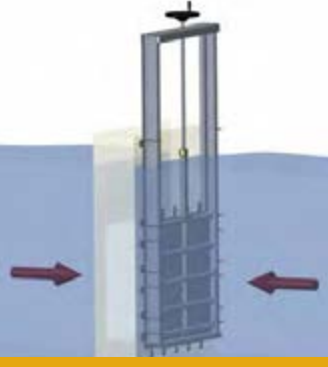
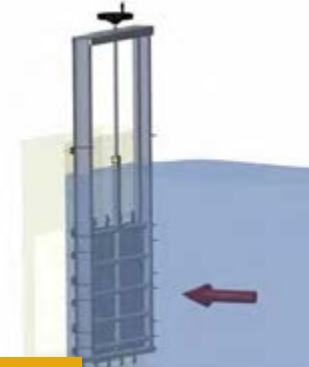
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Lifting unit

Trapezoid spindle single-strand	Trapezoid spindle double-strand	Cylinder
		

6

Stress conditions (gate)

Compressive stress and tensile load	Compressive stress	Tensile load
		

ANTI-FLOOD/NON-RETURN VALVES

MORE PRODUCTS ON DEMAND

ALLGEMEINE INFORMATIONEN

Anti-flood (or non-return) valves are designed to prevent a return flow of water. These valves let water flows stream in the desired direction, while simultaneously blocking water flow in the opposite direction.

Anti-flood valves are installed at inlets or outlets and designed to open when water pressure is very low. Anti-flood valves can be used in rain retention, flood protection systems, water storage, orifices from ponds or channels, etc.

- Adjustable lid and optional bob weights available
- Plain bearing hinges by default
- Construction made from steel resistant to rust and acid
- More materials available on demand
- Reliable sealing according to DIN 19569-4
- Constructed in accordance with EN 1090-2

① Anti-flood valve with collar plugs/dowels

② Standard flange anti-flood valve

③ Anti-flood valve with welded end

MORE SHUT-OFF DEVICES WITHOUT CASING

① Rotary weir

② Distribution weir

③ Stop logs

④ Stop plates

SEALING DETAILS

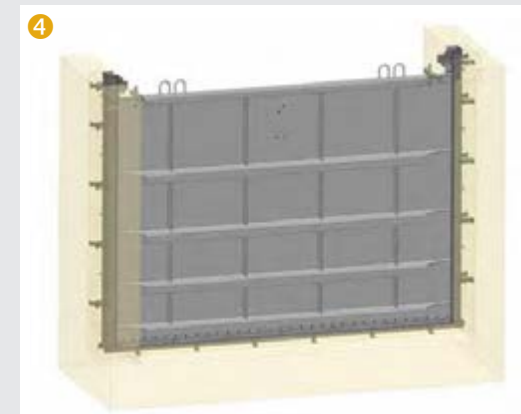
- One-sided sealing



- Two-sided sealing



- Two-sided sealing at a low head of water





STEEL CONSTRUCTION & ENGINEERING

INLET AND OUTLET SYSTEMS

1) DRAINAGE CHANNELS

Drainage channels collect overflowing water in a sedimentation tank and convey water flows towards the outlet.

- Specifications of the drainage channels: one-sided or two-sided inlets, polygonal, round, straight
- Available with or without baffle
- Drainage system mounted on console or anchor-bolted directly to the tank wall
- Serrated overflow edge (DIN 19558 – Type “A” or “B”)
- Segment length up to app. 4m
- Further elements can be combined through sheet metal flanges or welding

① Drainage channel with one-sided overflow

② Drainage channel with lid wall-mounted

OPTIONAL

- Drainage channel also available in circular shape

2) INLET DIP TUBE

Inlet dip tubes convey water from a tank and when correctly positioned below water surface, they prevent sludge and floating materials from spilling.

- Star-shaped by default with wall pipe
- On-site welding allows perfect positioning
- Individual diameters of drainage holes

③ Inlet dip tube polygonal

④ Inlet dip tube star-shaped

INLET AND OUTLET SYSTEMS

3) OVERFLOW BARRIERS

Overflow barriers allow a specific and deliberate regulation of water overflow towards drainage channels, which can be made from concrete or stainless steel.

- Shape according to on-site requirements: polygonal, circular, or straight
- Barrier connected to concrete wall through steel brackets
- Infinitely variable
- Available with straight or serrated overflow edge (DIN 19558 – type “A” or “B”)
- Individual length up to app. 4m, connection of individual lengths through splice plates

① Overflow barrier straight with baffle

② Overflow barrier serrated type A

③ Overflow barrier serrated type B

4) LAMELLA CURTAIN

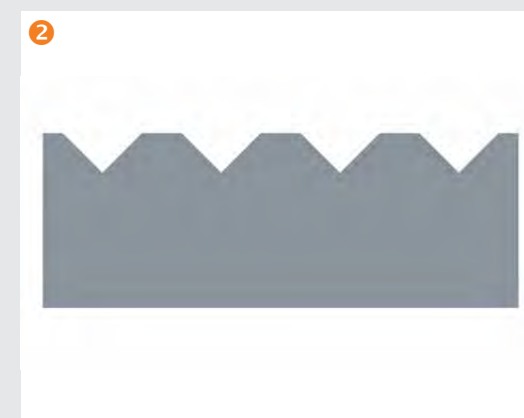
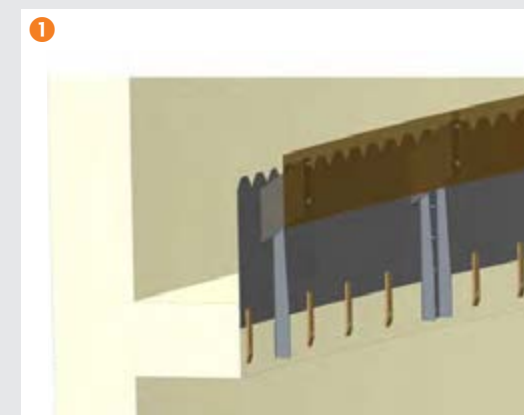
Lamella curtains or suspension rods are designed to separate and abate flows in sedimentation tanks. They are mainly used in the primary sedimentation tank, the secondary sedimentation tank or the sand trap. Intake pipes are equipped with baffle plates or baffles.

- Stable lamella profiles
- Easy to assemble screw-fastened construction

④ Lamella curtain between grease trap and sand trap

OPTIONAL

- Circular shaped model for inlet area



Construction made from stainless steel 304

RAILINGS

GENERAL INFORMATION

Railings are protective devices that prevent from plummeting at stationary points where machines are accessed or in danger areas where unauthorized staff is not permitted.

- Standard height 1,100mm
- 500N/m horizontal load up to 1.5m in distance between posts
- 350N/m horizontal load up to 2m in distance between posts
- Mounted laterally on the construction or mounting on top
- No detailed planning required – individual configuration on-site
- No weld seams required for the installation
- All-in-one solution also applicable at stairways and round objects
- Minimum efforts concerning transportation and packaging
- Screw-fastened construction
- 100 % self-assembly possible

1 Railing with rectangular posts

TECHNICAL SPECIFICATIONS
RAILING WITH RECTANGULAR POSTS

Posts	65x35 mm
Hand rail	Ø 42,4x2 mm
Knee rail	Ø33,7x2 mm
Toe board	100x16 mm

2 Railing with circular posts

TECHNICAL SPECIFICATIONS
RAILING WITH CIRCULAR POSTS

Posts	Ø 42,4x2 mm
Hand rail	Ø 42,4x2 mm
Knee rail	Ø 42,4x2 mm
Toe board	100x16 mm

STATIONARY LADDERS

GENERAL INFORMATION

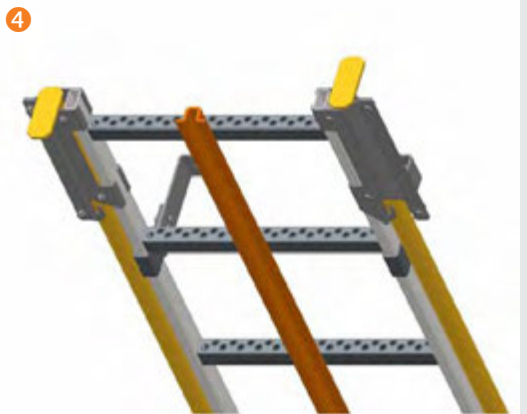
Stable stationary ladders in accordance with DIN EN 14396, suited to safely access tanks, chutes and buildings. Constructed in accordance with EN 1090-2 EXC1 and CE-certified according to EN 1090-1.

- Slip-proof bottom step by default
- Safe to step – rungs with spray hole profile
- Easy for self-assembly due to modular construction
- Individual adjustment of length on-site
- Comfortable to grip ladder stringers

TECHNICAL SPECIFICATIONS

Tread width	400 mm
Stringer profile	40x20 mm oder Ø 42,4 mm
Rung distance	280 mm
Wall distance	195 mm

- 1 Ladder with easy-to-enter device extension
- 2 Ladder with crossing
- 3 Ladder with safety cage
- 4 Ladder with fall protection



BUILT-IN PARTS & PIPES

MORE PRODUCTS ON DEMAND

GENERAL INFORMATION

Our customers benefit from our long-term experience in manufacturing and installing pipes. On the basis of our plans and sketches we manufacture all different kinds of pipelines with regard to the transportation and treatment of water, waste water and gases.

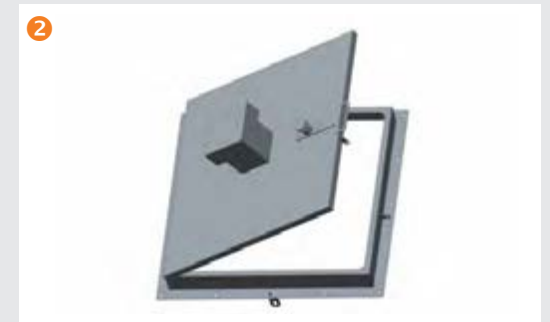
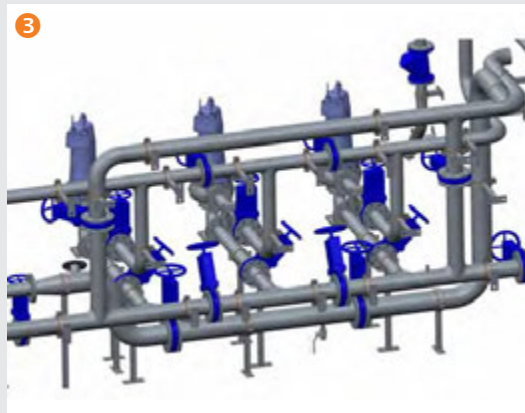
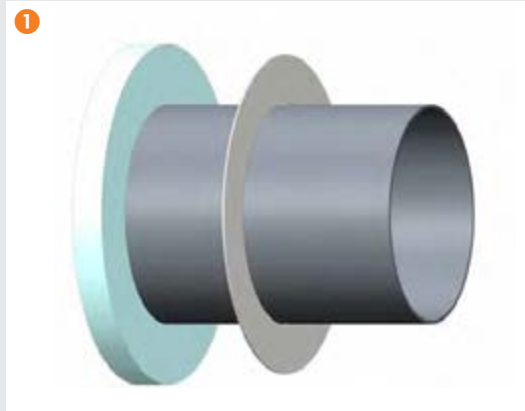
Using adequate means of connection technology, such as TIG, orbital or manual welding and glueing, screw-fastening, pressing or clipping, we manufacture pipeline systems for all industries.

- Wide range of installation variants and technical solutions
- State-of-the-art CAD systems for planning pipework and components
- Manufacturing of all materials and quality requirements, such as alloy steel, duplex steel, carbon steel and synthetic materials
- Certification of materials in accordance with EN 10204 3.1. or 2.2. by default
- Certified welders in accordance with EN ISO 9606 and state-of-the-art machining capability
- Production control system in accordance with ISO 9001:2008
- Staff for welding seam inspection in accordance with DIN EN ISO 9712
- Welded stainless steel constructions pickled or passivated
- Packaging and preparation for transport loose or in boxes

- ① Single wall pipe with or without weld collars
- ② Penstock support or loose pipe clamps with or without rubber insert starting at DN 50
- ③ Pump piping DN 300
- ④ Complex conduit fitting ready-made DN 900

MORE STEELWORK PRODUCTS

- ① Tipping bucket max. 1,200 L/m
- ② Chute covers with or without air vent
- ③ Chute covers rainwater-tight made from treadplate patterned sheet
- ④ Certified lifting davits max. 1.250 kg
- ⑤ Certified ceiling hooks max. 1.000 kg



Construction made from stainless steel 304



SCREENING & CONVEYOR TECHNOLOGY

RAKE SCREEN

GENERAL INFORMATION

Rake screens are constructed for municipal and industrial treatment of waste water and process water. Depending on the gap width, screen fields hold back coarse material in the water. Rakes attached to the chain system convey coarse material and strip it to the release area in a closed loop circulation.

- Reliable and robust frame construction
- Screen bars with rectangular profile
- Very high discharge rates affecting the capacity of the rake screen
- Mechanical torsional monitoring by default
- Screen field segments independently changeable
- Service-friendly housing equipment
- Low hydraulic loss due to trapezium rods
- Baffle holders (guide plates) for wall connection in channel

- ❶ Rake screens
- ❷ Hard-wearing of lower sprocket baffle
- ❸ Container system

TECHNICAL SPECIFICATONS

Installation angle	70 –80 °C
Channel width	ab 300 mm
Gap width	ab 5 mm
Frame, screens, cover	Stainless steel 304
Conveyor chain	Special steel with slide rollers made from polyamid
Sprocket baffle	High wear-resistance synthetic material

OPTIONAL

- Closed housing with exhaust support (extractor connections)
- Conveyor chain made from stainless steel
- High wear-resistance of lower sprocket baffle
- Trapezium rods profile

CONVEYOR SYSTEMS

GENERAL INFORMATION

Spiral conveyors are mechanical conveyors with shaftless worm screws. They are best suited for conveying bulky, entangled, jammed as well as wet, sticky and bridge forming material. They are used primarily in environmental and disposal technology for conveying sewage sludge and screenings.

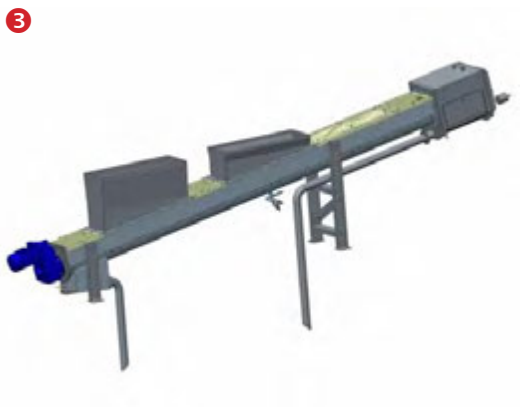
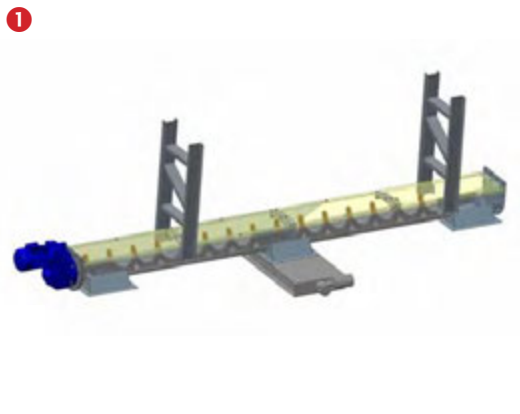
The spiral conveyor consists of a spiral which rotates in the tray and conveys the material. Releasing the material can be configured so that it is either vertically downwards or axial out of the tray.

- Mechanical simplicity and long service life
- Default transition coupling for strainless actuation of the spiral
- Spiral made from special steel
- Applicable for horizontal and inclined conveyance
- Multiple loading and discharge points possible along the conveyor lane
- Easy to change wear plates
- Variable flow rate depending on diameter and revolutions per minute (rpm)
- Wear inlay: 10mm HMPE 1000 by default

- ❶ Horizontal conveyor with 3 discharge points
- ❷ Inclined screw conveyor with distribution system
- ❸ Spiral conveyor with hydraulic jack
- ❹ Screw conveyor for bottom sludge

OPTIONAL

- Spiral made from stainless steel
- Different loading and discharge variants
- Ejection pusher for vertical discharge, manual / electrical / pneumatic
- Wear inlay two-coloured
- Customised systems and materials on demand





TANK EQUIPMENT

GAS EQUIPMENT

1) GAS HOOD

The gas hood is the lid on top of the digester and seals the upper revision opening. Other components, such as pipes, industrial valves, measuring instruments, machines, etc. are attached to the gas hood. As an explosive atmosphere builds up in this area of the digester, compliance with increased safety requirements is necessary.

- Installation of mixing equipment possible
- Connecting flange for components on request
- Gas-proof sealing tape
- Manufacturing and CE certificate

① Gas hood curved model

② Gas hood heavy-duty model

OPTIONAL

- Flat or curved models
- Installation on the digester by the means of a flange frame for grouting or anchor-bolting

2) OVER AND UNDER PRESSURE PROTECTION, WATER HEADER

The water header protects the digester from damages due to over or under pressure. Regulating the height of the head of water determines the maximum deviation. When maximum values are exceeded, the water is sucked into the digester or blown out causing pressure compensation. It is necessary to maintain the water headers in regular intervals, refilling can be done manually or automatically.

- Visual level control and level measurement
- By default 40, 50 or 60 mbar
- Customised pressure levels possible

③ Water header (cross-sectional drawing)

OPTIONAL

- Self-refilling with magnetic valve (time- or level-oriented)

GAS EQUIPMENT

3) GAS DOME

Digester gas enters the conduit system via gas dome. On the other hand it aims to prevent digester foam from streaming into the conduit system.

- Pressure gauge (-100 / +150 mbar)
- Gas probe unit
- Gas-proof sealing tape

④ Gas dome with baffle holder (cross-sectional drawing)

⑤ Gas dome with cage for filling material (cross-sectional drawing)

⑥ Foam trap

OPTIONAL

- Filter cage for filling material, such as gravel or Raschig rings
- Spray nozzles for cleaning the filter cage
- Foam trap for problematic systems

4) GRAVEL FILTERS

Gravel filters separate the coarse material and hold back solids. By ducting through the gravel fill the wet digester gas cools down and condenses. The condensed water is released via the water header.

- 1" flush connection by default
- ½" connection for differential pressure measurement

⑦ Gravel filter with tubular base and integrated water header

OPTIONAL

- Alternative filling material (stainless steel rings, Raschig rings)



Parts that come in touch with gas from the digester are made from stainless steel 316 by default

GAS EQUIPMENT

5) INSPECTION GLASS

Depending on the dimension of the digester tank, more inspection glasses can be built into the tank's ceiling or the gas hood for monitoring purposes. The openings built for entrance and exit or for ventilation and exhaust air may be used for revision works.

- EX-protection quick release fastener
- Internally located wiper
- Aluminum lid for protecting the inspection glass

8 Inspection glass with pipe wall socket

OPTIONAL

- Two sided wiper
- Inspection glass lamp
- Fastening bracket for steel or concrete ceiling

6) MANHOLE

Manholes are openings for entrance in digester towers or tanks.

- Mounting on concrete using a pipe wall socket with sealing collar
- Standard dimension DN 800 and DN 1000, other dimensions on demand
- Gas-proof sealing

9 Manhole DN 800 with pipe wall socket

10 Manhole with restraint bracket and swivel device

7) BALL SPRAY NOZZLE

11 Ball spray nozzle for foam control

SLUDGE EQUIPMENT

TUBE HEAT EXCHANGER

Tube heat exchangers heat up the sludge inside the digester tower and are actuated by circulation pumps. The pipe located outside ensures energy input using heating water. The pipe located inside the digester is responsible for feeding and follows the counterflow principle.

- Turbulent flow for optimal heat transfer
- Easy-to-clean due to the large dimensions of the cross sectional area
- Tube bends flanged or demountable
- Customised dimensions
- Complete insulation against loss of heat due to the isolation of pipe strings
- Parts in contact with medium are made from stainless steel 316
- Horizontal or vertical

1 Compact tube heat exchanger

2 Tube heat exchanger for wall-mounted installation

OPTIONAL

- Compact design fully insulated
- Pipe connections with quick-release (quick coupling)

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10



11



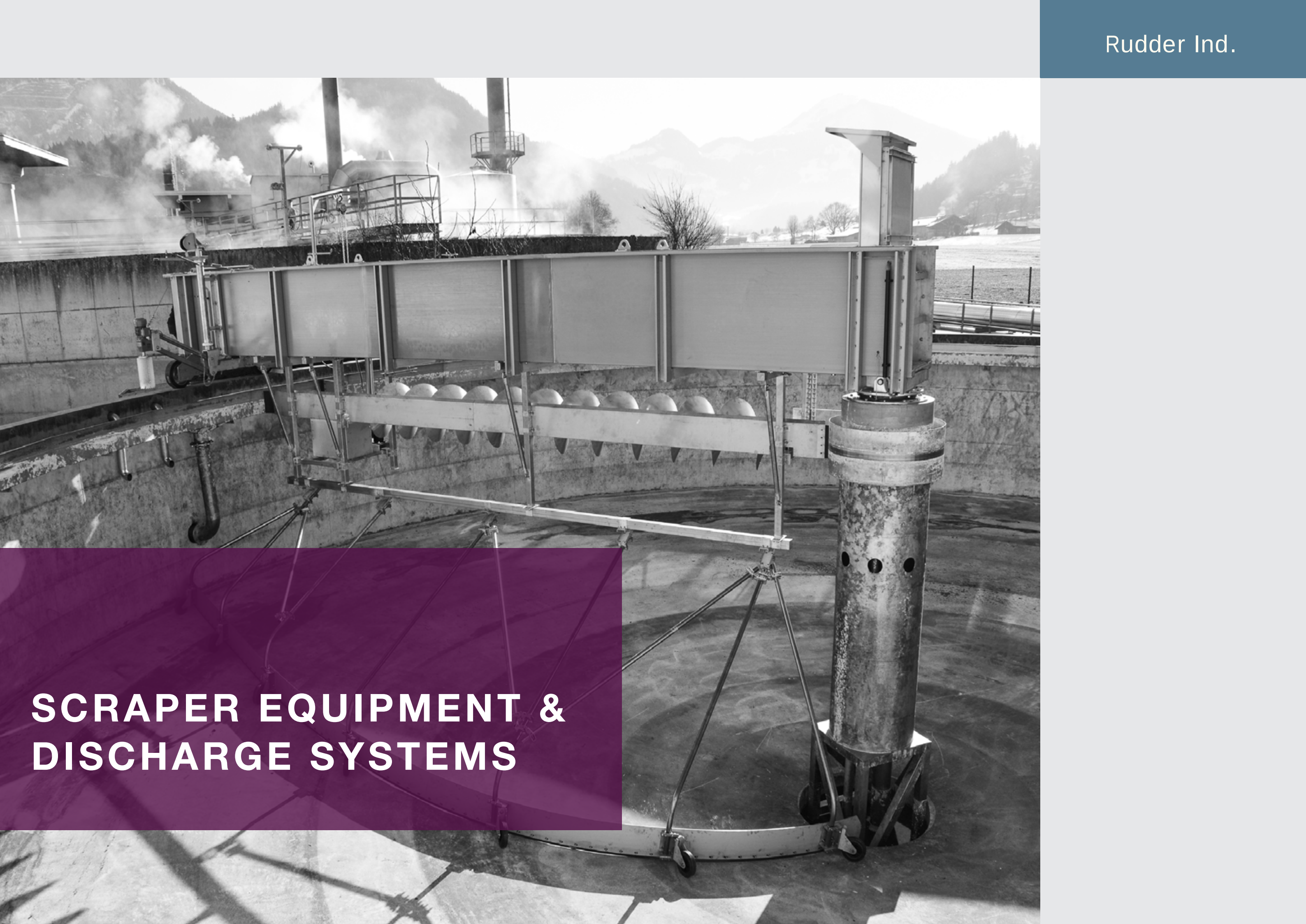
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Parts that come in touch with gas from the digester are made from stainless steel 316 by default

A black and white photograph of a large industrial scraper and discharge system. The system is a circular structure with a concrete basin. A long, horizontal metal frame with several large, rounded scrapers is mounted on a central vertical axis. The scrapers are positioned to move material along the bottom of the basin. A large, vertical metal column is visible on the right side, supporting the structure. In the background, there are industrial buildings with smokestacks and mountains. A purple semi-transparent box is overlaid on the bottom left of the image, containing the text "SCRAPER EQUIPMENT & DISCHARGE SYSTEMS".

SCRAPER EQUIPMENT & DISCHARGE SYSTEMS

GENERAL INFORMATION

Scrapers are used to remove sludge from the sedimentation tank continuously and automatically . Furthermore, scrapers separate sediments and floating material from the tank bottom and water surface without having a detrimental impact on the settling process.

Scraper bridges are deck plate girder constructions by default and can be customised as profile steel construction depending on the individual requirements.

1 Deck plate girder bridge

- Screw-fastened construction
- Low dimensions for transportation
- Complete assembly possible on-site

2 Truss bridge

- Long span width possible
- Low windage
- Low dead load (self-weight)

TECHNICAL SPECIFICATIONS

Scrapers are customised constructions manufactured to meet the demands of our customer. The following values are calculated on the basis of standard constructions:

Maximum load	Primary sedimentation tank: 250 N/m Secondary sedimentation tank: 400 N/m Sand trap: 10.000 N/m²
Clear width	900 mm for deck plates 800 mm for truss
Railing height	1.100 mm
Frame sizes	Longitudinal scraper: 2 to 20m bridge length Circular scraper: 8 to 45m in bridge diameter
Traffic loads	1.500 N/m²
Compressive strength of concrete	250 N/cm²
Materials	Bridge steel galvanised Parts in touch with medium are made from stainless steel V2A/V4A
Power supply	Sliding ring body for circular scrapers Trailing cable system for longitudinal scrapers

CIRCULAR SCRAPERS

1 Overview plan

- Scrapers in the secondary sedimentation tank consist of a deck plate girder bridge, a logarithmic shaped bottom scraper blade and a funnel-type skimmer

1) BOTTOM SCRAPING

In order to scrape sediments, circular scrapers can be customised with the following systems.

2 Scrapers with logarithmic shaped blades

3 Scrapers with hydraulic suction units

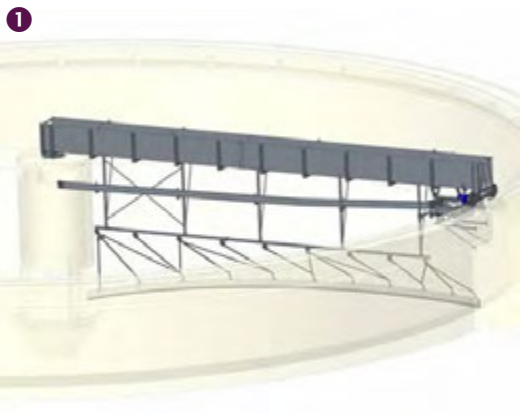
4 Scrapers with submersible pumps

2) REMOVAL OF FLOATING MATERIALS

⇒ please see page 39

OPTIONAL

- Wheel monitoring
- Defroster
- Channel cleaning device
- Control cabinet



LONGITUDINAL SCRAPERS

1 Overview plan

- Sand trap scrapers consist of a truss bridge with scraper blades, a grease skimmer and a trailing cable system

1) BOTTOM SCRAPING

In order to scrape sediments, longitudinal scrapers can be customised with the following systems.

2 Scrapers with blades/skimmers

3 Scrapers with hydraulic suction units

4 Scrapers with submersible pumps

2) SURFACE SCRAPING

⇒ please see page 39

OPTIONAL

- Monitoring of synchronisation
- Wheel monitoring
- Defroster
- Channel cleaning device
- Control cabinet
- Spring- and motor-driven cable reels

REMOVAL OF FLOATING MATERIALS

Depending on the shape of the tank, structural conditions and the volume of the floating sludge, we offer various reliable options that can be mounted directly on the scraper bridges or the tank wall in case of rectangular tanks.

1 Funnel-type skimmer

- Floating sludge is directed towards the edge of the tank due to the rotary movements of the inclined skimmer
- The flap tag scrapes the floating material into the funnel/hopper
- Inclined discharge funnel and connecting flanges

2 Worm screw with discharge system

- The rotating worm screw conveys floating sludge towards the outlet box
- Floating materials are discharged via skimmer when the pump is switched on
- Control through throttle valve and pump

3 Paddle mixer with pump chamber

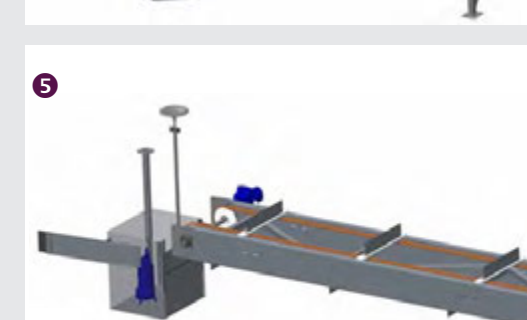
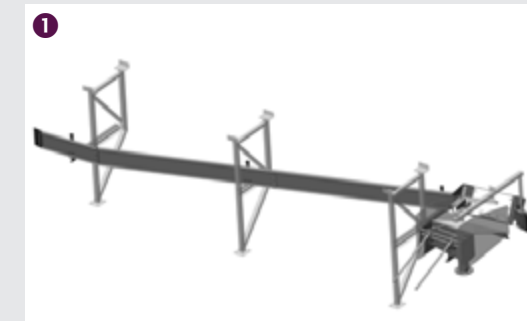
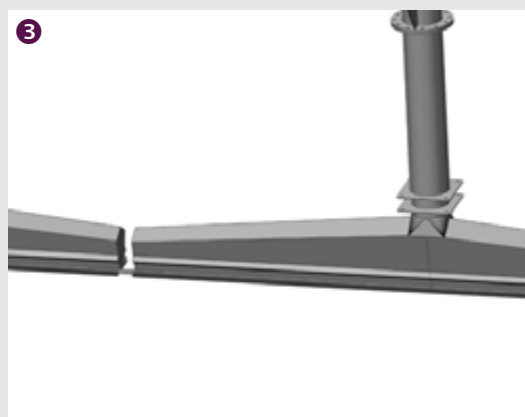
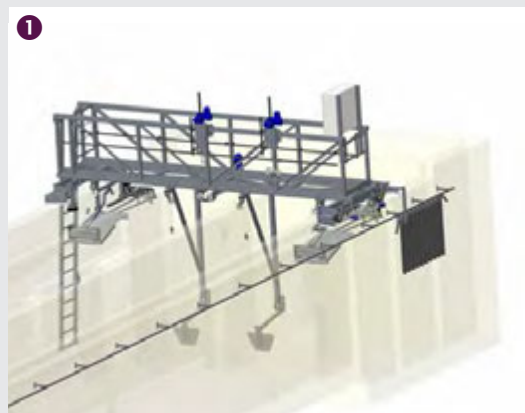
- The paddle mixer scrapes the floating sludge and collects it in the drainage, which is equipped with a pump chamber
- Removal of sludge inside the pump chamber through the pump
- Control through paddle mixer and pump

4 Skimming channels with pump chamber

- Discharge of floating sludge via submerged skimming channel into the pump chamber
- Removal of sludge in the pump chamber through the pump
- Control through skimming channel and pump

5 Cross collector with pump chamber

- The cross collector conveys floating sludge towards the pump chamber
- Pump chamber with height-adjustable overflow edge
- Removal of sludge in the pump chamber through the pump
- Control through cross collector and pump



RABBLE RAKES

Rabble rakes are designed to thicken and remove sludge in the thickener. Rabble rakes are mounted centrally in the thickener on bridges made from concrete or steel. The centre drive consisting of a gear motor and slewing ring enables the rabble rakes to make rotary movements. Overload protection is carried out electronically by default. Bottom scraper blades convey the sludge into the suction funnel. Using raking rods improve the degree of thickening. Various models guarantee the removal of sludge, even when the blade load class is high and the diameter large.

- 1 Rabble rakes for thickeners
- 2 Industrial rabble rakes
- 3 Rabble rakes for digester towers
- 4 Rabble rakes for lamella clarifiers

TECHNICAL SPECIFICATIONS

Blade load class	< 8 % dry matter contents: 630 N/m < 12 % dry matter contents: 1.000 N/m
Frame size	4 bis 28 m tank diameter
Torque	2.000 bis 430.000 Nm
Material	Centre drive galvanised/coated Parts in touch with medium are made from stainless steel V2A/V4A

OPTIONAL

- Funnel scraper plate
- Removal of floating sludge
- Raking rods
- Cyclone cylinders
- Guide bearing
- Overload protection with spring package

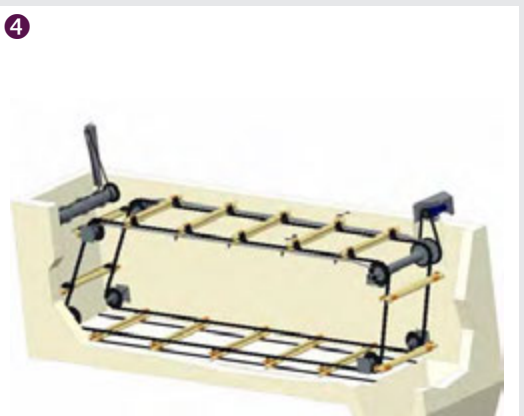
MORE PRODUCTS ON DEMAND

DISCHARGE SYSTEMS

- 1 Pipe decanter
 - < 300 l/sec with hand rope winch or electronic drive
- 2 Decanter with drain tray
- 3 Floating decanter with drain regulation
 - no additional control unit or electrical drive required

CHAIN SCRAPERS

- 4 Chain Scraper made from steel or synthetic material



EGYPT

RUDDER INDUSTRIES FOR ELECTRO MECHANICAL OPERATIONS

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