Innovative Products
Worldwide
HUBER SE, headquartered in Berching, Germany, is globally active in the field of water, wastewater and sludge treatment.

At our headquarters in Berching, more than 700 employees develop and manufacture products, manage projects and develop system solutions for municipalities and industries. They all work towards improvement of water quality.

Founded more than 175 years ago, today HUBER supports its customers through subsidiaries, offices or representatives by providing know-how and innovative products for water, wastewater and sludge treatment.

The family-owned company has a state-of-the-art factory where a wide range of machines and equipment for the international markets is manufactured. Our highly qualified employees use highly sophisticated manufacturing technologies.

To supply our customers with products of the highest quality, it was decided many years ago to make all products from stainless steel. Over the years extensive experience and expertise has been acquired in manufacturing stainless steel products for the water and wastewater industry.

As a result of the ongoing product improvement and our product innovation, we are able to offer a full range of products for the global water and wastewater markets.

This brochure provides a general overview of the HUBER products and their applications.

You can find out more information about all products and applications on www.huber.de. If you wish to discuss your needs, please ask our experts for advice and support.
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Wastewater Screening

Screens for any application

Screening is indispensable as the first step of municipal and industrial wastewater treatment.

Debris must be removed in order to protect subsequent treatment processes from clogging and/or damage. Floating, settling and suspended solids are retained, depending on the bar spacing or perforation diameter, removed and finally discharged.

Based on the same ROTAMAT® principle “screening – washing – conveying – dewatering in a single unit” a family of ROTAMAT® screens has been developed and successfully introduced in the global market of wastewater treatment. In recent years the STEP SCREEN® and later the MAX® and LIQUID families have been added. We offer the perfect HUBER screen for:

➤ any installation condition
➤ any flow rate
➤ any spacing or perforation size
➤ any application

Bar screen

Wedge wire

Rolled perforated plate

Bent perforated plate

Mesh screen
Ultra-fine screens for new applications

Our development of extremely fine screens for the separation of very fine particles permits new wastewater treatment applications for screens.

For the new type of membrane bioreactors increasingly used for biological wastewater treatment improved performance is required, especially for hollow fibre membranes, to ensure reliable separation of hair and fibrous material to allow the process to function effectively.

Another application for ultra-fine screens is river and sea outfalls. Frequently, raw wastewater is only treated mechanically prior to being discharged to rivers or seas. Reduction of the COD/BOD loads from such outfalls is required for the protection of the receiving water bodies if their self-cleaning capacity is insufficient.

These ultra-fine screens are able to remove undegradable and degradable, inorganic and organic material at the same time. Improved environmental protection is achieved by application of this new technology at reasonable costs. Chemical coagulation can temporarily be added to maintain the screening efficiency and high effluent quality even during peak loads. For many regions with insufficient wastewater treatment, if any at all, ultra-fine screening is a quick and affordable first step in the right direction.

CarbonWin® system

The CarbonWin® system recovers carbon from pre-treated raw sewage in a minimum of space, comparable to the application of a primary settlement tank. The high-performance and efficient HUBER fine screening technology makes it possible to produce primary sludge and change the process on sewage treatment plants size 5,000 to 50,000 PE from aerobic to anaerobic sludge stabilisation. This clears the way for such sewage treatment plants to produce energy themselves and use the generated energy. The core part of the system is a fine screening unit. The screenings separated by the fine screening unit are pre-thickened in a continuous thickener prior to being further thickened in a mechanical thickening system for subsequent anaerobic treatment.
**Wastewater Screening**

**HUBER Grab Screen TrashLift**
- Coarse screen system for the most demanding fields of application
- Small space requirement: 70°- 90° installation angle
- Channel width up to 4 m and channel depth up to 40 m
- Bar spacing 20 mm – 150 mm
- Reliable removal of large debris and sediment loads
- Easy to retrofit into existing channels

**HUBER Coarse Screen TrashMax®**
- High-capacity screen rakes
- High operational safety due to efficient and reliable bar rack cleaning
- Reliable removal of even bulky coarse material
- Bar spacing > 20 mm
Wastewater Screening

HUBER Multi-Rake Bar Screen VersaMax®

- Reliable, sturdy multi-rake bar screen
- No bearings, sprockets or guides submerged in the water due to the special design of the rigid-backed chain
- Reliable removal of even bulky coarse material
- Bar spacing ≥ 6 mm

HUBER screen with rigid-backed chain for maximum operating reliability

HUBER Multi-Rake Bar Screen RakeMax®

- High screenings capacity
- Low head loss
- Low installation height above operating floor, even with deep channels
- Suitable for a very wide range of applications due to different design options, e.g.
  - RakeMax® Hybrid
  - RakeMax® J
  - RakeMax® HF
- Bar spacing ≥ 1 mm

HUBER Multi-Rake Bar Screen RakeMax® – robust design for reliable operation
Wastewater Screening

HUBER Multi-Rake Bar Screen RakeMax® CF

- The innovative variant of the well-proven HUBER Multi-Rake Bar Screen RakeMax®
- High hydraulic throughput capacity even with small bar spacings and narrow channels due to a U-shaped bar rack
- Optimal hydraulic utilisation of existing channels
- Unsusceptible to grit, gravel and stones
- Bar spacing ≥ 4 mm

HUBER Multi-Rake Bar Screen RakeMax® CF for small channels and narrow bar spacings

HUBER Detection System Safety Vision

- An innovative building block for your digitisation strategy
- Continuous monitoring and intelligent early detection of critical course material
- On-line recording of screenings volumes for control of downstream systems depending on the pollution load
- Detecting and warning of explosion hazards

HUBER Detection System Safety Vision for increased operational reliability
Wastewater Screening

**HUBER Belt Screen EscaMax®**

- Excellent capture rate provided by two-dimensional screening elements
- Compact and robust design
- Easy to retrofit into existing channels
- For deep channels with high water levels
- Perforation diameter ≥ 3.5 mm

**HUBER Belt Screen EscaMax® – versatile headworks screen with high separation efficiency**

**HUBER Band Screen CenterMax®**

- Maximum retention of fibres and hair
- Operating reliability for membrane bioreactors
- Especially for narrow channels and high throughputs
- High separation efficiency
- Screen perforation ≥ 1 mm

*The HUBER Band Screen CenterMax® combines high separation efficiency and high hydraulic capacity.*
Wastewater Screening

**HUBER Fine Screen ROTAMAT® Ro1**
- Screening, conveying, washing, dewatering and compaction in a single unit
- With integrated screenings press
- With integrated screenings washing (IRGA)
- Positive screen cleaning with rotating rake
- Bar spacing ≥ 6 mm

**HUBER Rotary Drum Fine Screen ROTAMAT® Ro2 / RPPS**
- Screening, conveying, washing, dewatering and compaction in a single unit
- With integrated screenings press
- With integrated screenings washing (IRGA)
- Rotating screen basket with wedge wire or perforated plate
Wastewater Screening

HUBER Perforated Plate Screen ROTAMAT® STAR

- Removal of hair and fibres to protect downstream membrane filtration plants
- Screenings removal, transport, washing, dewatering and compaction
- Increased throughput capacity due to the increased surface area provided by the folded perforated plate
- Very high separation efficiency
- Perforated plate 1 / 1.5 / 2 mm

HUBER Perforated Plate Screen ROTAMAT® STAR protecting downstream membrane filtration systems

HUBER Micro Strainer ROTAMAT® Ro9

- Screening, conveying, washing, dewatering and compaction in a single unit
- With integrated screenings press
- With integrated screenings washing (IRGA)
- XL-version with longer screen basket and for higher flow and water level applications
- Economy version Ro9 Ec without washing and compaction
- Wedge wire spacing: 0.5 – 6 mm
- Perforations: 2 - 6 mm

HUBER Micro Strainer ROTAMAT® Ro9 – the low-cost screen for small flows
Wastewater Screening

HUBER Fine Screen STEP SCREEN® SSF

➤ Efficient removal and lifting of screenings
➤ High separation efficiency
➤ Easy to retrofit into existing channels with no or minimal modification required.
➤ Lifting of screenings from channel floor
➤ 3 or 6 mm spacing

HUBER Fine Screen STEP SCREEN® SSV

➤ For deep channels and high discharge
➤ Space-saving installation with steep 75° inclination
➤ For high flow and low head loss
➤ Lifting of screenings from channel floor
➤ 3 or 6 mm spacing
Wastewater Screening

HUBER Sludge Acceptance Plant ROTAMAT® Ro3

➤ With the robust Fine Screen ROTAMAT® Ro1 or Micro Strainer ROTAMAT® Ro9
➤ With integrated screenings press
➤ With integrated screenings washing (IRGA)
➤ Optional with integrated grit trap (compact version ROTAMAT® Ro3.3)

HUBER Sludge Acceptance Plant ROTAMAT® Ro3.3, well-proven in hundreds of installations worldwide

HUBER Screw Conveyor ROTAMAT® Ro8 / Ro8 T

➤ Custom design and fabrication
➤ With conveyor tube (Ro8) or trough (Ro8 T)
➤ Completely encapsulated, odour-free plant

HUBER Screw Conveyor ROTAMAT® Ro8 / Ro8 T for all types of media to be conveyed and for any installation situation
Wastewater Screening

**HUBER Membrane Screen ROTAMAT® RoMem Pro**
- Removal of hair and fibres upstream of membrane filtration plants
- COD and BOD removal prior to river or sea outfall applications
- Safe screenings transport due to additional suction
- Ideal for installation in existing channels
- Screening, compaction, dewatering and transport in one unit
- Mesh ≥ 0.1 mm

**HUBER Drum Screen RoMesh®**
- RoMesh® for fine, defined separation sizes
- Removal of hair, fibres and suspended solids
- Reduction of COD/BOD from river and sea outfalls
- Further improved performance after precipitation and flocculation
- Mesh 0.2 - 1.0 mm
- Perforations 2 - 6 mm
Wastewater Screening

HUBER Drum Screen LIQUID

- Removal of hair and fibres to protect downstream membrane filtration plants
- COD and BOD removal prior to river or sea outfall applications
- Reduced load on the biological treatment system of sewage treatment plants without preliminary treatment
- Removal of algae from surface waters
- Available screen basket covers: wedge wire, perforated plate or mesh size 0.2 - 3 mm

HUBER CarbonWin®

- System for any application of carbon removal from raw sewage
- Optimises the energy balance on sewage treatment plants
- Change from aerobic to anaerobic sludge stabilisation
- Eliminates the need for a primary settlement tank
- Very high AFS and COD reduction rates achieved by fine screening technology
- Low space requirements

The HUBER CarbonWin® system provides innovative fine screening and can therefore be used to replace primary settlement tanks.
Screenings Treatment

The first step in wastewater treatment is normally the removal of solids from the wastewater flow by means of screens. The removed screenings contain household waste, faecal matter, toilet paper and mineral solids. The screenings volume depends on the separation size of the screen.

The solids content of municipal untreated screenings varies between 5 % and 20 %, depending on the type of screen. Approximately 90 % of the solids are volatile (organic).

To reduce disposal costs and not to endanger the operating staff on sewage treatment plants through the formation of mould, screenings must be treated before they can be disposed of. The best method of screenings treatment is washing and compaction with a wash press. Fecal matter and other organic materials are removed and returned into the wastewater flow. The high load of organic carbon contained within the wash water has a positive impact on the C/N ratio of the entire wastewater flow to the STP.

Depending on the screen separation size and the inflow situation of the sewage treatment plant, the C/N ratio can be improved by up to 6 % with the result of an also improved denitrification performance with unfavourable nutrient ratios on the STP.

After washing, the screenings are compacted to reduce the water content and increase the solids concentration.

Dewatering is improved by the removal of organic materials during washing. Depending on the selected washing process and press type a weight and volume reduction of up to 80 % can be achieved.

A wash press reduces the mass and volume of the screenings and consequently the disposal costs.

HUBER Wash Press WAP®

- Suitable for any application
- Up to 45 % solids content
- Up to 12 m³/h feed capacity
- Completely made of stainless steel

HUBER Wash Press WAP® installed behind a HUBER Fine Screen STEP SCREEN®
Screenings Treatment

HUBER Wash Press WAP® SL

➤ Screenings wash press with a turbulent wash water flow
➤ High washout factor
➤ High BOD₅ return
➤ Quality factor of washed screenings: < 20 mg BOD₅ / g DR
➤ Ideal for launder channels
➤ Dewatering performance of up to 50% DR
➤ Design version WAP® SL HP with automatically controlled conical high pressure unit for dewatering results of up to 50% DR

HUBER Wash Press WAP® SL guarantees maximum washout degree

HUBER Wash Press Launder WAP® L for launder channel operation

➤ Screenings wash press for increased dewatering with launder channel feeding system
➤ Up to 45 % solids content
➤ Up to 12 m³/h feed capacity
➤ Individually adaptable discharge situations due to flexible launder channel arrangement
➤ Up to 40 m launder channel length

HUBER Wash Press WAP® L with launder channel feeding system: Redundant operation and optimal screenings dewatering
Grit Separation

For reasons of operating reliability of wastewater treatment plants it is necessary to separate the grit transported with the wastewater and other mineral materials (an average of 60 l from 1000 m³ of wastewater according to DWA Work Sheet M369) from the digestable organic material.

Separation of grit, gravel and other mineral matter is required to increase the reliability of wastewater treatment plant operation. Good grit separation prevents operational problems, such as grit sedimentation in aeration tanks and digestors, reduces wear of equipment, such as pumps or stirrers, and avoids clogging of sludge hoppers and sludge lines. Furthermore, wear of mechanical equipment, such as centrifuges, can be reduced.

While as much as possible of the mineral matter should be removed, as much organic matter as possible should remain in the wastewater. Testing of the grit capture rate is usually done with a grit particle size of 0.2 mm.

The most common grit separating systems in use are grit channels, circular grit traps and vortex grit traps. Grit is either separated by gravity sedimentation (grit channels) or centrifugal force (circular and vortex grit traps). Scrapers or screw conveyors are frequently used in grit channels for grit collection. Pumps, inclined screw conveyors or integrated grit classifying screws are used for grit removal. Solids removal in the further course of the process is effected by pump, grit classifier or integrated grit classifying screw.

Due to the significant organics content in the classified grit longitudinal grit traps are today additionally aerated to at least partly avoid settling of organic material in the grit trap and cause floating material (grease) to rise to the surface where it is retained in a grease trap chamber. Special grease separation systems remove the grease automatically and pass it on to further utilisation.

Grit channels are normally provided with aeration to prevent sedimentation of volatile solids and reduce the organic content in the grit. In addition, aeration helps to float part of the fat, oil and grease and retain it in a separate grease chamber. Special grease separation systems remove the grease automatically and pass it on to further utilisation.

According to Kalbskopf, detention time is an important factor in the design of aerated grit channels. Unaerated grit channels are dimensioned according to the surface overflow rate. However, even the best aerated grit channel cannot prevent high organic contents in the removed grit slurry. Only a good grit washer can guarantee almost complete separation of organic material from grit and produce clean grit.
Grit Separation

HUBER Complete Plant ROTAMAT® Ro5

➤ Complete mechanical wastewater treatment in a single and compact unit

➤ Screen spacing / perforation from 0.5 mm to 10 mm
➤ Aerated grit chamber designed according to DWA standards for reliable 90% capture of 0.20 mm - 0.25 mm grit particles
➤ For flows of up to 300 l/s
➤ Also available as a dedicated longitudinal grit trap
➤ With integrated grit classifying screw
➤ Optional available with aeration and separate grease trap
➤ Optional integrated grit washing plant

HUBER Complete Plant ROTAMAT® Ro5 HD

➤ With a 0.5 - 10 mm screen
➤ High capture rate of 95% / 0.20 - 0.25 mm
➤ For flows up to 150 l/s
➤ With aeration and large grease trap
➤ Compact unit with small footprint
➤ With integrated emergency by-pass
➤ Optional integrated grit washing plant
Grit Separation

HUBER Grit Trap GritWolf®

➤ High separation efficiency due to the integrated lamella separator
➤ 90% of grit particles of ≥ 75 µm grain size is separated
➤ Optional aeration and large grease trap
➤ Maximum throughput capacity 850 l/s
➤ Stainless steel grit trap or concrete tank design

HUBER Coanda Complete Plant ROTAMAT® Ro5 C

➤ Fine screen, screenings wash press, grit trap and grit classifier in a single unit
➤ Enclosed and compact unit with small footprint
➤ Completely enclosed unit
➤ For flows of up to 25 l/s
➤ With integrated emergency overflow
➤ Ideal for small sewage treatment plants

HUBER Grit Trap GritWolf® with subsequent grit washing plant

Complete headworks in a single, enclosed and compact unit ideal for small plants
Grit Separation

HUBER Circular Grit Trap HRSF

- Available with stainless steel tank or for installation into a concrete tank
- High grit capture rate due to rotating flow
- High grit separation of 95% / > 0.20 mm
- Small footprint
- For flows up to 140 l/s
- Optional grease trap
- Optional integrated grit classifying screw

A pair of HUBER Circular Grit Trap HRSF systems

HUBER Vortex Grit Chamber VORMAX

- Installation in a concrete structure
- Reliable bull gear stirrer drive with large hollow shaft
- High grit capture rate due to controlled vortex generation
- For flows of up to 3000 l/s per unit
- Small footprint
- Inlet and outlet separated by 270° or 360° to provide for the maximum possible flow travel distance within the chamber
- Small pressure loss
- Grit removal by means of airlift or suction pump

HUBER Vortex Grit Chamber VORMAX
Grit Treatment

Grit from grit traps of wastewater treatment plants and grit from sewer and road cleaning are heavily contaminated with organic matter and debris. The high content of organic material, the wide volatile solids ratio of 10 to 80 %, is the reason why such grit slurries do not dewater well. The solids concentration remains somewhere between. The common performance criteria for the quality of grit removal are: The capture rate of 0.2 mm diameter grit particles; and the volatile solids concentration of the removed grit. The end product of excellent grit treatment is a reusable product with a volatile solids ratio of less than 3 % and a water content of below 10 %. Such grit treatment not only reduces the volume and mass of the removed grit, but also the disposal costs. If the clean grit product is reused, e.g. for road bedding, costs for grit disposal could be avoided.

Treatment of grit from wastewater treatment plants

For the treatment of grit from grit traps on wastewater treatment plants, HUBER Coanda grit washers have proven to be the unrivalled best option. HUBER grit washers achieve an outstanding grit product containing below 3 % volatile solids. It is so clean that cost-effective disposal and beneficial use is easily possible, e.g. in civil engineering works.

Regulations requiring certain grit quality criteria, depending on the kind of its disposal and/or reuse, are coming into effect in more and more countries. So far, HUBER Coanda grit washers have easily met all such requirements and will most likely do so in the future, because they have defined the industry standards.
Treatment of grit from sewer flushing and road refuse

The characteristics of grit from sewer flushing and from gully and road cleaning can vary widely. Their treatment must be customized, depending on required capacity, input material composition, output material quality, etc. Main process steps are: storage and balancing with HUBER Grit Acceptance Tank, debris separation with HUBER Wash Drum, grit classifying and grit washing with HUBER Coanda Grit Washer. Where there is no wash water supply available, wash water treatment and recirculation is an option.

Based on their wide ranging experience and expertise, HUBER Engineers will design your customized grit treatment system for your specific needs.
Grit Treatment

**HUBER Coanda Grit Classifier RoSF3**

- High capture rate: 95% of 0.20 mm grit size
- Low organic content due to air injection
- Up to 3 t/h capacity
- Hydraulic capacity up 25 l/s
- Shafted screw with maintenance-free bearing instead of wear bars

![HUBER Coanda Grit Classifier RoSF3](image)

**HUBER Coanda Grit Washer RoSF4**

- High capture rate: 95% of 0.20 mm grit size
- Below 3% volatile solids (organics) in grit product
- Will also process grit slurries from sewage treatment plants
- Up to 3 t/h capacity
- Hydraulic capacity up 25 l/s
- Shafted screw with maintenance-free bearing in place of wear bars
- More than 2000 reference installations
- Low grit disposal costs

![Innovative technology: HUBER Coanda Grit Washer RoSF4](image)
Grit Treatment

HUBER Grit Acceptance System RoSF7

- Grit acceptance system suitable for
  - Sewer grit
  - Road refuse
  - Sink pit contents
- Nonclogging construction
- Different sizes available up to 25 m³ storage volume
- Variable coarse material separator
- No ponding of water inside the tank

Sturdy unit: external grit acceptance made easy

HUBER Wash Drum RoSF9

- Raw material feeding with horizontal or vertical screw
- Removal of coarse material (e.g. 10 mm dia.) without wear
- Low loss of mineral solids due to spray nozzles on both sides
- High solids throughput capacity
- Suitable as sludge acceptance plant for most difficult septic sludge screening (HUBER Sludge Acceptance Plant RoFAS)

Washing of contaminated grit with the versatile HUBER Wash Drum RoSF9
Filtration and Micro-Screening

The requirements on effluent quality in municipal and industrial sewage plants are becoming increasingly demanding and complex.

In order to reliably meet the more stringent effluent criteria, many applications require further stages of treatment.

With the HUBER Disc Filter RoDisc®, the HUBER Sandfilter CONTIFLOW® and the HUBER Active Carbon Filter CONTIFLOW® GAK, three versatile and reliable product solutions are available.

Depending on the requirements and boundary conditions, individually adapted process combinations can be created.

**Sand filtration**
The HUBER Sandfilter CONTIFLOW® is a deep-bed type upflow filter that provides continuous filter bed cleaning without the need to interrupt the filtration process for cleaning or backwashing.

The CONTIFLOW® is available in a stainless steel tank or optionally in a concrete tank. Its modular design ensures the optimal treatment of any throughput.

In addition to mechanical filtration (AFS reduction, phosphorus elimination, removal of microplastics), the sand filter is also used as biological filtration (nitrogen reduction by denitrification, post-filtration in the 4th treatment stage).

**Typical CONTIFLOW® applications:**
- Retention of filterable solids on wastewater treatment plants
- Phosphorus elimination through flocculation filtration
- Denitrification for biological nitrogen reduction
- Police filter upstream of the 4th treatment stage (ozonisation, GAC)
- Post-filtration in the 4th treatment stage (PAC, ozonisation)
- Treatment of process water, cooling water and circulation water
- Treatment of surface waters and removal of algae
- Removal of microplastics

**Activated carbon filtration**
The HUBER Active Carbon Filter CONTIFLOW® GAK is designed for continuous operation like also the Sandfilter described above. As the wastewater flows through the filter bed of granulated active carbon, the solid particles contained within the flow are retained and micropollutants are adsorbed on the inner surface of the active carbon.

**Typical CONTIFLOW® GAK applications:**
- Elimination of trace substances (4th treatment stage)
- Removal of dissolved COD compounds (process waters, condensate treatment)
Disc filter
The HUBER Disc Filter RoDisc® and the HUBER Disc Filter RotaFilt® are used for the separation of very fine particles and suspended matter.

The water flows continuously through the HUBER Disc Filter RoDisc®. The incoming wastewater streams into the horizontally arranged central shaft and is then distributed to the vertically arranged filter discs. The filter discs installed on the central shaft are submerged by up to 65% and covered with a stainless steel or polyester mesh that retains the solids.

The water flows continuously through the HUBER Disc Filter RotaFilt® from outside to inside. The incoming wastewater streams over the completely submerged filter discs into the horizontally arranged central pipe. A special type of pile cloth is used as filter medium, which reliably retains the finest particles.

Typical disc filter applications
➤ Retention of suspended solids from the secondary clarifier
➤ Advanced wastewater treatment with phosphorus elimination and removal of microplastics
➤ Treatment of road run-off (= technical road run-off treatment system)
➤ Pre-filtration for 4th treatment stage
➤ Drinking water treatment
➤ Removal of various helminth eggs
➤ Primary clarifier replacement, for carbon removal (HUBER CarbonWin®)
➤ Treatment of service water, process water
Filtration and Micro-Screening

HUBER Active Carbon Filter CONTIFLOW® GAK

➤ Fourth treatment stage
➤ Combines solids retention and adsorptive elimination of micropollutants
➤ Independent system, modular expandable
➤ In combination with ozonisation applicable as biologically activated carbon

HUBER Sandfilter CONTIFLOW®

➤ Extensive reduction of nutrients through phosphorus elimination and denitrification
➤ Removal of powdered active carbon to reduce micropollutants
➤ Modular design for easy adaptation to any flow rate
➤ No need for wash water tanks, wash pumps and complicated backwashing systems
➤ High operating reliability through constantly high filtrate quality
➤ Additional biological treatment for ozonisation (fourth treatment stage)
➤ Preliminary filtration of fixed bed active carbon adsorbers on sewage treatment plants
Filtration and Micro-Screening

**HUBER Disc Filter RoDisc®**

- Micro screen with rotary stainless steel or polyester filter mesh from 10 μm
- High throughput capacity with low space requirement
- Gravity system, no lifting of wastewater required
- Filtrate is used for cleaning
- Continuous filtration even during backwashing
- Separation of filterable solids, reduction of COD, BOD and Ptotal

**HUBER Disc Filter RotaFilt®**

- Filtration with pile cloth for maximum solids removal rates
- High throughput on a small footprint
- Gravity system, no lifting of wastewater required
- No wash water required
- Continuous filtration even during backwashing
- Separation of filterable solids, reduction of COD, BOD and Ptotal
Storm Water Treatment

Innovative technology and solutions for application in combined and storm water treatment systems

An important part of our efforts to protect the environment in general, and our water resources in particular, is treatment of storm water and of overflows from combined sewer systems. The quality of many rivers, lakes and seas has significantly improved following the upgrading of old and construction of new wastewater treatment plants. However, despite all these efforts and investment, there is still considerable pollution of our water bodies caused by combined and sanitary sewer overflows (CSOs and SSOs) during storm events. For the purpose of specific environmental protection appropriate measures will have to be taken in future to minimize these problems.

Screens for sewer overflows

HUBER screens are used to retain debris and other coarse solids within the sewer systems and to prevent them from overflowing into receiving water bodies during storm events. We have a variety of screens suitable for application at sewer overflows. For such applications bar screens and perforated plate screens can be selected. We offer screens that are installed upstream of, on top, or downstream of overflow weirs. The optimally suited screen is selected depending on the required or desired capture rate, flow requirement and structural conditions. Our global presence and experience allows our experts to propose the best solution to any problem.

Efficient removal of screenings

As a result of climate change and the associated heavier rainfalls with strong screenings flushing in the combined sewer, the focus in the coming years must be placed more strongly on screenings handling. Especially in storm water overflows with unfavourable flow conditions, common system solutions without defined screenings discharge can quickly reach their limits. The result is overflowing of the screenings and discharge of screenings into the nearby watercourse.

In order to be able to work out a reliable solution even for unfavourable hydraulic and structural conditions, the HUBER combined water screening system can be equipped with a cross conveyor. The aim is to discharge the screenings in a defined way from the overflow structure or to return...
them to the combined sewer without circulating the screenings. This is the only way to ensure that combined sewage screening works satisfactorily even with high coarse material loads and to avoid the discharge of unscreened sewage.

**Storm water retention in sewer systems**

Another HUBER focus are intelligent and efficient systems for controlled storm water retention in sewer systems. In order to save investment and operating costs, it is essential to utilize the existing sewer volumes more effectively for storm water retention by controlling the water levels within the system. In many cases, with such an intelligent approach, construction of additional retention tanks can be avoided. Pollution by unavoidable storm water overflows can be minimized by installation of storm screens.

**Discharged flow volume measurement**

Monitoring the utilisation of storm water retention tanks and of overflows becomes ever more important to allow optimising the use of retention volumes and minimizing overflow occurrence and flows. It is essential to be able to measure discharged storm water flows and volumes. In the past this has not been possible where a storm screen was installed. This is now possible with our equipment.
Storm Water Treatment

HUBER Storm Screen ROTAMAT® RoK1

- Automatically cleaned storm screen for combined and sanitary sewer overflows
- Excellent capture rate due to two-dimensional perforated plate design
- Continuous cleaning of the semi-circular perforated plate
- Minimum head loss due to installation at overflow weir invert height
- Easy retrofitting into existing structures

HUBER Storm Screen ROTAMAT® RoK1 TS

- Combination of HUBER Storm Screen ROTAMAT® RoK1 and cross conveyor
- Reliable discharge of screenings back into the combined sewer or optionally into a container
- Reliable solution for high solids loads and/or unfavourable flow conditions
- For problem-free retrofitting into existing structures
Storm Water Treatment

HUBER Storm Screen ROTAMAT® RoK2

- Automatically cleaned storm screen for combined and sanitary sewer overflows
- Excellent capture rate due to two-dimensional perforated plate design
- Continuous cleaning of the semi-circular perforated plate
- Retention of all screenings on the foul water side
- A perfect solution for discharges with limited upstream head requirements
- Suitable for combining with water retention elements
- Optional emergency overflow to avoid backwater
- Optional discharged flow volume measurement

HUBER Storm Screen ROTAMAT® RoK2 installed on foul side of overflow weir

HUBER Pumping Stations Screen ROTAMAT® RoK4

- Screening, vertical lifting, washing and compaction in a single and compact unit
- Prevents blocking of pumps and sewers
- Screenings dewatering and compaction
- Integrated bottom step to prevent sedimentation
- Easy retrofitting into existing structures
- Can be easily removed for maintenance above ground level

HUBER Pumping Stations Screen RoK4 with heating for outdoor installation
Heating and Cooling with Wastewater

**Energy recovery from wastewater**

Right below the ground, in sewers, is a hidden and seldom used source of energy: our wastewater. Generally the temperature of sewage is in the range of 12 to 20 °C. Even during winter the wastewater temperature never drops below 10 °C, or only for a few days. This makes wastewater an excellent heat source for the operation of heat pumps.

Utilisation of wastewater as a heat source is especially suitable to be applied in large buildings, such as nursing homes, hospitals, schools or swimming baths. It is also possible to recover heat from the effluent of sewage treatment plants and use it e.g. for sludge drying.

As a link between the wastewater and heat pump, a heat exchanger is required to extract the heat energy contained within the wastewater. The heat exchanger transfers the thermal energy from the wastewater to the heat pump. The innovative HUBER ThermWin system which has been developed especially for such applications uses the HUBER RoWin Heat Exchanger. The specific feature of this system is that actual heat extraction from the wastewater takes place above ground and not in the sewer. All system components are easily accessible and easy to maintain.

**Functional principle of the HUBER ThermWin:**

A partial flow of the wastewater streaming through the sewer is passed through a screen to remove the coarse material from the wastewater flow. Preceding screening of the wastewater is necessary to prevent blocking of the heat exchanger. The prescreened wastewater is lifted and flows by gravity through the above ground installed heat exchanger, the cooled wastewater flows back to the sewer taking along the separated screenings. Heating of the secondary circuit, which is coupled with the heat pump, takes place inside the heat exchanger. The heat pump lifts the temperature to the requested level.

For applications with contaminated media the HUBER Heat Exchanger RoWin can be used. This type of heat exchanger has been developed especially for such applications and excels with its superior heat transfer capacity and automatic preventive cleaning of the heat exchanger surfaces. Up to 80 % of the useful heat can be recovered from the wastewater and utilized economically.
The HUBER ThermWin system offers the following important advantages:

➤ Efficient use of a regenerative energy source
➤ Cost-effective, ecological system
➤ Fast implementation and utilisation of a rarely used resource
➤ Reduction of CO₂ emissions
➤ Decoupling from fossil fuel use
➤ Permanently available heat potential

➤ Long-term safe, renewable energy source
➤ Independence of sewer geometry
➤ Easy maintenance of all components
➤ Simple but efficient control strategy
➤ Cooling and heating with one single plant

Schematic diagram of heat recovery from raw sewage by means of an above ground installed HUBER ThermWin system
Heating and Cooling with Wastewater

HUBER Heat Exchanger RoWin

➤ Compact, odour-tight plant
➤ Continuous maximum heat transfer capacity
➤ Automatic cleaning of the heat exchanger surfaces
➤ Fully automatic operation
➤ Continuously stable hydraulic conditions
➤ Unsusceptible to floating and coarse material
➤ Automatic removal of sediments
➤ Minimum maintenance requirements
➤ Various possible applications in both the municipal and industrial field
➤ Modular design, system options available
➤ Very small footprint with maximum heat exchanger surface
➤ Batch feeding with small or discontinuous volume flows

Functional model of a HUBER Heat Exchanger RoWin
Heating and Cooling with Wastewater

HUBER Heat Exchanger RoWin C

- Can be installed directly in the wastewater flow
- No additional floor space required
- Ideal utilisation of the WWTP effluent
- Continuous operation of the complete system
- Variable height and width
- Low maintenance requirements
- Minimized wear
- No negative impact on sewers and wastewater treatment plants
- All year round, season-independent solar sewage sludge drying
- Fast utilisation of a rarely used resource

HUBER Heat Exchanger TubeWin

- Installation on the sewer bottom
- Flat, robust heat exchanger
- Modular design
- Low pressure loss
- Minimised sewer cross section narrowing
- Suitable for > DN 1000
Sludge Treatment

Sewage sludge is continuously generated on municipal and industrial wastewater treatment plants during the process of organic pollutant degradation. In the past years, the annual volume of municipal sewage exceeded 10 million tons dry substance in Europe alone, and the trend continues upward. Due to the very different rates of connection in the individual countries, with e.g. a rate of virtually 100 % in the EU member states, and therefore regionally very different sewage sludge volumes it is only understandable that there are controversial approaches as regards sludge disposal ways.

In some countries, due to new legislation and eco-political consideration, some disposal methods have been prohibited or at least restricted, such as landfilling of sewage sludge. For many states the recovery of materials contained within sewage sludge still plays an important role. This applies to both landscaping and sludge spreading on agricultural land.

The fertilization effect of sewage sludge and especially its phosphorus content is normally sufficient to cover the nutrients demand of typical agricultural land. On the other hand, there are a lot of countries where the agricultural application of sewage sludge is met with much scepticism due to its potential heavy metal pollution and content of organic pollutants, such as PFT. In these countries there has been a clear trend towards concepts for thermal sewage sludge treatment for some years already, partly combined with the approach to recover the phosphorus contained within sewage sludge. Against this political and economic background it is understandable that the sewage sludge disposal issue can be discussed quite controversially. Even if there is no generally accepted concept for future sewage sludge disposal existing presently, adequate sludge pre-treatment is required with all concepts described above.

A major pre-treatment step is to reduce the water content of the sludge. Sewage sludge generated on wastewater treatment plants typically shows a DS between 1 and 5% depending on where exactly it is generated. The average DS content of digested sludge is 45 %. This means that one cubic metre of digested sewage sludge contains 950 l, which would permanently have to be transported without prior dewatering.

The major benefits of dewatering and drying are weight and volume reduction and the increased thermal value.

Consequently, the process chain that allows for later thermal utilisation of dried sewage sludge comprises the steps of prior screening, thickening and drying.

**Screening – thickening – dewatering – drying – utilisation – all from one source**
Sludge Treatment

Sludge transport:
➤ Screw conveyor

Sludge screening:
➤ Coarse material separator

Sludge thickening:
➤ Disc thickener
➤ Belt thickener
➤ Screw thickener

Sludge dewatering:
➤ Screw press
➤ Belt filter press

Sludge drying:
➤ Solar dryer
➤ Belt dryer
➤ Disc dryer

Thermal sludge utilisation
➤ sludge2energy
Mechanical Sludge Treatment

Mechanical sludge treatment primarily comprises the processes of sludge screening, thickening and dewatering.

**Sludge screening**
Sludge screening is a mechanical treatment stage that primarily achieves homogenisation and separation of foreign matter and ensures therefore undisturbed further treatment of the sludge, irrespective of the subsequent treatment methods applied. Operating problems, such as clogging of pipelines, pumps, heat exchangers or downstream filtration units, tressering on stirrers and aeration plants, scum in settling and sludge tanks as well as damage in downstream drying units, can reliably be prevented by using HUBER sludge screens.

The STRAINPRESS® is a horizontal, pipe-shaped coarse material separator. The coarse material is separated continuously under pressure and periodical cleaning of the screening zone by backwashing is thereby not required.

**Sludge thickening**
With regard to economical further treatment and disposal of sewage sludge, it is necessary to reduce the sludge volumes produced in the course of the wastewater treatment process. The volume reduction is achieved by separation of parts of the sludge liquor at different points in the sludge treatment process chain. The main field of application of thickening systems is volume reduction of primary and excess sludge prior to stabilisation. In addition to common sludge thickening systems, e.g. belt and drum thickeners, HUBER offers also its optimized own developments, such as screw and disc thickeners. The selection of the most suitable technology for individual applications depends on project-specific parameters, such as throughput capacity or operating and investment costs, but also on other criteria, such as operating reliability, flexibility and process complexity.

**Sludge dewatering**
Sludge produced in municipal and industrial wastewater treatment plants requires dewatering prior to further treatment or utilisation. In view of increasing sludge disposal costs it has become necessary to concentrate the sludge to a high solids content. HUBER offers for this purpose commonly known systems for continuous sludge dewatering, e.g. belt filter presses, but has also developed a machine for smaller and medium-sized wastewater treatment plants, the HUBER Screw Press. It is this wide range of products combined with many years of experience that enables HUBER to select the best suited technology for each individual application.
Mechanical Sludge Treatment

HUBER conveyors

- Customized conveying systems for dewatered sludge
- Transport solution designed to suit all specific requirements of the planned logistics solution:
  - Delivery rates; indoor/outdoor installation; type and arrangement of container, number of containers
- Available with any level of automation
- 100% odour encasement possible

Tailored HUBER solutions for handling dewatered sludge

HUBER Screw Conveyor Ro8 V

- Conveying height up to 15 m
- Throughput capacity up to 6 m³/h
- Minimum maintenance requirements as the screw speed can be adjusted to the operation
- Centrally supported screw conveyor

HUBER conveyors for any installation situation
Mechanical Sludge Treatment

HUBER Disc Thickener S-DISC
➤ Throughput capacity up to 40 m³/h
➤ Minimised operator attention
➤ High operational reliability
➤ Adjustable for varying degrees of thickening
➤ Minimised wash water demand
➤ Low solids load in filtrate
➤ Wear-resistant stainless steel filter mesh
➤ No need for lubrication
➤ Virtually noiseless operation
➤ Specific power consumption < 0.02 kWh/m³

HUBER Sludgecleaner STRAINPRESS®
➤ Throughput capacity up to 150 m³/h
➤ Continuous coarse material separation under pressure
➤ No washwater needed
➤ Suitable for pressure-fed pipelines (in-line installation)
➤ Integrated coarse material dewatering
➤ Two system sizes
➤ Adjustable screen perforation
➤ Completely made of stainless steel

HUBER Sludgecleaner STRAINPRESS® – continuous pressurised coarse material separation
Mechanical Sludge Treatment

HUBER Rotary Screw Thickener S-DRUM

- Feed capacity up to 110 m³/h
- Two sizes available
- High solids capacity
- Enclosed design to eliminate odour nuisance
- Completely made of stainless steel
- Low wash water demand
- Low energy consumption

Extremely sturdy:
HUBER Rotary Screw Thickener S-DRUM

HUBER Belt Thickener DrainBelt

- Feed capacity up to 100 m³/h
- Four sizes available
- Low polymer consumption
- Minimum operating costs
- Extremely high degree of separation
- Variable belt speeds
- Low energy consumption

HUBER Belt Thickener DrainBelt – applications worldwide
Mechanical Sludge Treatment

HUBER Bogenpress B-PRESS
Belt filter press
➤ Feed capacity up to 1000 kg\textsubscript{DR}/h
➤ Three sizes available
➤ Versatile sludge press
➤ High efficiency
(low polymer and power consumption)
➤ High capacity (due to extended pre-
dewatering zone)
➤ Application-optimized design

The HUBER Bogenpress B-PRESS can be combined with the HUBER Belt Thickener DrainBelt unit to further increase capacity.

HUBER Screw Press S-PRESS
➤ Feed capacity up to 500 kg\textsubscript{DR}/h
➤ Two sizes available
➤ Extremely sturdy design
➤ Especially suitable for industrial sludges
➤ Well-proven in hundreds of installations
➤ Virtually noiseless operation

HUBER Screw Press S-PRESS:
Specific power consumption < 0.01 kWh/kg\textsubscript{DR}
Mechanical Sludge Treatment

HUBER Screw Press Q-PRESS®

➤ Feed capacity up to 540 kgDR/h
➤ Four sizes available
➤ High dewatering performance
➤ Low energy demand
➤ Easy operation
➤ Compact, enclosed design
➤ Optional mobile units

HUBER Screw Press Q-PRESS®, mobile demo unit

➤ Original scale demo unit
➤ Complete with dosing station, pumps, mixer, etc.
➤ Customer support from HUBER service experts available
➤ Reliably predictable throughput, dewatering results, polymer consumption

HUBER Screw Press Q-PRESS® – mobile unit for on-site testing
Sewage sludge disposal is becoming an increasing problem, landfilling was prohibited in 2005. Spreading sludge on agricultural land is in dispute and also its use for landscaping is no long-term solution. As all these methods cannot guarantee the reliable removal of contaminants from the material cycle, thermal utilisation remains as best possible alternative.

Sewage sludge consists of more than 95% water that requires transport, disposal or further processing. If the water content is reduced to 10% or less, costs can be reduced significantly. But a lot of energy is required for drying. The energy demand of available drying systems varies, as well as their operation and end product quality. Which system is suitable for the individual sewage treatment plant needs to be clarified for each specific case. HUBER has the suitable drying method with optimal usage of energy for any application.

Solar sewage sludge drying

The basic principle is sewage sludge drying inside a greenhouse. This solution allows for continuous system operation so that the sludge bed in the greenhouse remains constant. Due to the special features of the sludge turning assembly, particularly the backmixing function, an open-pored and slightly wet sludge bed is generated that causes neither odour problems nor unnecessary dust loading.

The sludge is fed manually, with a wheel loader for example, or automatically by means of special conveying units, directly from the dewatering system. The dried sludge can be stored in a ground deposit at the end of the drying hall or mechanically transported directly to a loading station.

The HUBER Sludge Turner SOLSTICE® is the heart of the HUBER SRT drying system. It consists of a rotating double shovel which is used for two different motion sequences. The sludge turning function ensures mixing, breaking up, aeration and transport of the sludge. The second function is the transport of sludge in the turner shovel, i.e. the sludge turner takes up some sludge at a defined point and transports it inside its shovel to another point. This ensures that dry sludge is back-mixed into wet sludge and sludge feeding and removal can take place at the same gable side of the hall.

The HUBER SRT system is not only suitable for pure solar drying but also ideal to be combined with a high performance floor heating or hot air blower. Optimized with such a heating, the SRT system can be used for all year round, season-independent solar sewage sludge drying. This eliminates the need for storage facilities for wet sludge and saves the floor space required for solar drying without additional heating as solar drying alone is unable to dry wet sludge during winter.
Belt dryer

The HUBER Belt Dryer BT is characterized by highest efficiency and reliability. The unique HELIX air flow ensures lowest values for thermal and electrical energy consumption. The feed system developed by HUBER, the pelletizer, guarantees continuously constant drying conditions and a low-dust end product that can be dried to over 90% dry residue without any problems. The pelleting process eliminates the need for costly and wear-intensive backmixing of already dried material. Low process temperatures of approx. 70 to max. 150°C ensure safe operating conditions and open up the possibility of efficiently using waste heat at low temperature levels, such as in CHP plants. The fully automatic plant control system with clear process visualisation reduces the need for operator attendance to a minimum. Over 15 years of experience and more than 50 belt dryers worldwide speak for themselves.

Disc dryer

The new HUBER Disc Dryer RotaDry® completes the HUBER product portfolio with contact drying. In combination with a sewage sludge mono-combustion plant, this dryer can dry sewage sludge to the ideal DR content, for a self-sustaining and energy-efficient incineration. The excess steam from the electricity production is used as heating medium. A reliable condensate removal system, an innovative control system and an optimised feed system make the HUBER Disc Dryer RotaDry® the perfect sewage sludge dryer for subsequent incineration.
Thermal Sludge Treatment

HUBER Solar Active Dryer

Simple, ecological system with the HUBER Sludge Turner SOLSTICE® and with self-regulating climate technology for sustainable cost reduction

➤ Continuous sludge processing by continuous transport of the sludge through the drying line
➤ Spreading, granulation and transport of the sewage sludge for a stable dry granulate
➤ True backmixing of sludge for a perfect drying bed preventing any odour or dust
➤ Suitable both for decentralized solutions from 1,000 t sludge (original substance) per year and large-scale plants
➤ Modular design providing for the option of fully automatic sludge feeding and removal
➤ Sludge feeding and removal can take place at opposite ends or the same end, as requested.
➤ Optional use of exhaust heat to support solar drying
➤ Simple process with robust technology and low primary energy consumption
Thermal Sludge Treatment

HUBER Belt Dryer BT

- Sludge throughput up to 6 t/h per line
- Water evaporation up to 4 t/h per line
- Low-dust high-efficiency drying
- Small exhaust air mass flow
- Utilisation of site-specific exhaust heat
- Conforms to ATEX regulations
- Automatic operation over 24 hours per day
- Thermal energy demand 0.8 - 0.85 kWh/kg\(_{\text{water}}\)
- Electrical energy demand 0.03 - 0.15 kWh/kg\(_{\text{water}}\)

HUBER Belt Dryer BT for sewage sludge drying up to > 90 % DS

HUBER Disc Dryer RotaDry®

- Partial drying to 40 to 45% dry residue (DR)
- Homogeneous drying to a DR required for self-sustaining sludge mono-incineration
- Throughput of approximately 8 to 15 t/h dewatered sludge with 25% DR
- Water evaporation from 3.5 to 5.5 t/h per dryer
- Exhaust steam from turbine as heat carrier or thermal oil

HUBER Disc Dryer RotaDry® for partial drying
Thermal sewage sludge utilisation

sludge2energy GmbH is a joint enterprise of the companies WTE GmbH and HUBER SE. sludge2energy GmbH offers competent support in all phases of a sewage sludge utilisation project, tailored to the specific requirements and requests of its customers:

▶ Concept development and feasibility
▶ Preliminary planning, approval planning and detailed planning
▶ Turnkey supply, installation and commissioning of the complete plant as general contractor
▶ Operation of plants
▶ Operating support
▶ Project financing
▶ After-sales service

The sludge2energy system provides sustainable security of thermal sewage sludge utilisation. The system is designed for energy self-sufficient sewage sludge utilisation based on the combination of a sludge dryer and subsequent incineration in a fluidised bed furnace.

▶ Efficiently combined drying and thermal utilisation of sewage sludge in a fluidised bed furnace
▶ A wide variety of municipal sewage sludges can be utilised thermally due to an efficient use of energy, without the need for any external energy.
▶ Individually planned and customized to specific site requirements
▶ Compact, modular and functional design with minimum space requirements
▶ Low invest and operational costs due to the optimised concept of thermal drying and utilisation
▶ Optimal sewage sludge quantity and mass reduction

➤ Minimised expenses and costs for sewage sludge transport
➤ Long-term cost certainty and disposal safety
➤ Dry flue gas cleaning process without generation of wastewater
➤ Low pollutant emissions, significantly below legal limits (17. BImSch, TA Luft)
➤ Fully automatic operation 24 h/d, 7 d/week with a high plant availability of 8,000 h/a
➤ High flexibility of sewage sludge utilisation
➤ Production of phosphorus-rich sewage sludge ash and optional phosphorus recovery
➤ Optimised flue gas cleaning meeting specific customer requirements (site demands, P-recycling)
➤ Optional power generation taking into account specific individual conditions and plant size
Thermal sewage sludge utilisation

- Decentralised thermal utilisation of sewage sludge
- Efficient combination of drying and thermal utilisation in a fluidized bed furnace
- Individually planned and customized to site-specific conditions
- Long-term cost certainty and disposal safety
- Production of phosphorus-rich sewage sludge ash and optional phosphorus recovery

Concept of a decentralised sewage sludge utilisation plant
Flotation

Principle of flotation

The flotation process is suitable for various applications.

During dissolved air flotation, very fine gas bubbles of 40-80 μm are released, which together with the particles present in the wastewater, form an agglomerate.

This agglomerate has a lower density than water and rises to the water surface. Non-flotatable particles are separated via conical selection chambers. The particle-free clear water passes through an immersion wall and is then available for further use. If a tube flocculator is installed upstream of the flotation plant, so-called precipitants and flocculants can be added, which improve the clarification performance accordingly.

HUBER Dissolved Air Flotation Plant HDF

- Compact and modular design for throughputs up to 200 m³/h
- Simple, reliable saturation system using a multiphase pump
- Low space requirement due to an integrated lamella separator
- Suitable for the pre-treatment of industrial wastewater or secondary treatment of municipal wastewater
- Very high reduction rates for COD, solids and phosphate

The flotation process is suitable for various applications.

Versatile wastewater treatment for numerous industrial applications
Flotation

HUBER Dissolved Air Flotation Plant HDF S

- Flat construction with a large water surface of up to 120 m³/h
- Simple, reliable saturation system using a saturation pump
- Machines can be mounted in standard containers as mobile units
- Suitable for high solids loads and for activated sludge separation as an alternative to conventional secondary clarification

Flotation plant HDF S for high solids loads

HUBER Chemicals Dosing DIGIT-DOSE

- High load fluctuations in industrial wastewater inevitably lead to constant manual adjustments or cost-intensive overdosing of chemicals.
- DIGIT-DOSE for the intelligent regulation of the chemicals dose to be added in flotation plants as required
- Saves operating resources and disposal costs and reduces time expenditure
- Can be retrofitted to all HUBER flotation systems

DIGIT-DOSE saves operating resources and working time
Industrial Wastewater Treatment

Industrial customers earn their money with the production and sale of their products or generation of energy, e.g. biomass energy. Although the treatment of production wastewater and sludges is not their core business but of secondary importance compared to production, orderly wastewater treatment and reuse of residual materials is absolutely necessary not only from the business management point of view but demonstrates ecological awareness and can therefore even be part of a company’s business philosophy.

We understand your needs!

HUBER as partner in the field of wastewater and residue treatment develops solutions and provides advisory service on economically reasonable concepts for wastewater, disposal and energy recovery.

HUBER SE, together with its global locations, is one of only a handful of suppliers worldwide who supply the complete range of technological equipment for wastewater and process water treatment as well as for sludge treatment and reuse of energy and heat. We are able to generate complete processes with our HUBER machines and plants, in other words: we offer complete systems and assume the process engineering responsibility for these systems.

However, wastewater treatment alone is not enough today. The next step to take is ‘Close The Loop!’.

The treatment of clarified wastewater to high quality service water for production processes saves expensive potable water and avoids wastewater.

Our philosophy of leaving no resource unused also includes production sludge. Sludge treatment and utilisation is an aspect to be taken into account with any holistic approach. This should not only include cost-effective disposal of sludge but also its energetic utilisation. HUBER offers therefore also technologies that allow utilisation of the energetic potentials of wastewater.

So you see, there is a variety of approaches for converting a costly wastewater project into a profitable water treatment and sludge utilisation project or energy recycling project.

Our industry team who are specialists, having acquired their specific knowledge in a variety of successful projects, will be pleased to support you with their expertise.

Let us work together with you to develop your projects!
Industrial Wastewater Treatment

Meat processing industry / slaughterhouses:
- Cattle, pigs, poultry processing
- Slaughterhouses
- Meat processing companies
- Convenience food / ready-to-eat products
- Production wastewater
- Screening of wash water from cattle truck washing
- Further treatment of slaughter by-products (animal rendering plants)

Processes:
- Wastewater screening / coarse material reduction
- Removal of grit and settleable material
- Reduction of grease and COD
- Direct and indirect discharge
- Minimisation of sludge and residues
- Water recycling

Equipment:
- Coarse screening > 6 mm
- Fine screening > 0.2 mm
- Grit traps and grit washing
- Dissolved air flotation
- Sludge thickening and dewatering
- Sludge drying
- Filtration, polishing stage
- Energy recovery from wastewater
Industrial Wastewater Treatment

**Milk processing industry / dairies / cheese dairies:**
- Milk of any origin
- Milk production and processing
- Fresh dairy products / cream / milk fat products
- Long-life milk products (milk powder) / cheese
- Processing / mixtures
- Production wastewater
- Vehicle wash water

**Processes:**
- Pre-screening
- Grit and settleable material
- Reduction of grease and COD
- Direct and indirect discharge
- Minimisation of sludge and residues
- Phosphate and solids polishing stage
- Energy recovery and wastewater cooling

**Equipment:**
- Fine screening > 0.2 mm
- Grit traps and grit washing
- Dissolved air flotation
- Sludge thickening and dewatering
- Filtration, polishing stage
- Sludge drying and utilisation

Dissolved Air Flotation Plant for reliable wastewater treatment

RoWin Heat Exchanger for energy recovery
Industrial Wastewater Treatment

Beverage industry / breweries:
- Breweries
- Malt factories
- Distilleries, wine producers
- Non-alcoholic beverages
- Mineral water industry
- Fruit juice industry

Processes:
- Pre-screening (broken glass, bottle labels, ...)
- Removal of settleable solids
- Reduction of COD and solids
- Direct and indirect discharge
- Minimisation of sludge and residues

Equipment:
- Fine screening > 0.2 mm
- Grit traps and grit washing
- Dissolve air flotation
- Sludge thickening and dewatering
- Membrane bioreactor, tertiary filtration
- Energy recovery and wastewater cooling
Industrial Wastewater Treatment

Disposal industry / biowaste / biogas:
- Biogas plants / food waste
- Private disposal companies
- Road refuse and sewer grit
- Waste treatment plants

Processes:
- Coarse screens, special screens
- Removal of coarse material from fermentation residues (plastics,...)
- Special grit traps
- Reduction of COD and solids
- Fermentation residue dewatering
- Complete grit treatment with/without water recycling
- Sludge drying / utilisation

Equipment:
- Grit acceptance tank
- Specially designed coarse screens
- Grit traps and grit washing (special machines)
- Dissolved air flotation plants
- Sludge thickening and dewatering
- Sludge screening machines / coarse material removal
- Energy recovery

Complete treatment system for sewer grit and road refuse

Plastics separated by fermentation residue screening
Industrial Wastewater Treatment

Wood processing industry / paper industry:
➤ Wood processing / fibreboard production
➤ Sawmills
➤ Pulp and paper industry

Processes:
➤ Lumber yard surface water screening
➤ Fine screening prior to indirect discharge
➤ Sludge removal from wet scrubber wastewater
➤ Reduction of COD and solids
➤ Thickening/dewatering of wood and paper sludge
➤ Water recycling

Equipment:
➤ Coarse and fine screens
➤ Grit traps and grit washing
➤ Dissolved air flotation
➤ Sludge thickening and dewatering
➤ Membrane bioreactor
➤ Energy recovery and wastewater cooling
➤ Sludge drying

Screw press for sludge removal from wastewater in a wood processing industry

HUBER Multi-Rake Bar Screen RakeMax® for river water screening in paper industry
Industrial Wastewater Treatment

Water intake systems

Withdrawal of
➤ Sea water
➤ Lake water
➤ River water

For application in
➤ Desalination plants
➤ Power plants
➤ Refineries
➤ Steel and aluminium works
➤ Chemical industry

Process solution:
➤ Treatment for desalination plants
➤ Treatment for cooling water
➤ Treatment for process water

Equipment:
➤ Coarse screen 6 – 60 mm
➤ Fine screen 1 - 6 mm
➤ Finer screening 0.01 -2 mm

HUBER Grab Screen TrashLift for coarse material removal

HUBER Band Screen CenterMax® for deep channels and maximum throughput with high separation efficiency
Industrial Wastewater Treatment

Other industries:
- Tanneries / leather industry
- Textile industry
- Fruit and vegetable industry
- Petrochemical industry / refineries
- Pharmaceutical industry
- Automotive industry
- Metal processing industry
- Chemical industry
- Ships and marine applications
- Airports

Processes:
- Screening
- Grit removal
- Reduction of COD, grease and solids
- Filtration
- Advanced effluent treatment
- Sludge and residue treatment
- Water and heat recycling

Equipment:
- Coarse and fine screens
- Dissolved air flotation plants
- Sludge thickening and dewatering
- Screens with grit trap
- Filtration
- Membrane bioreactor
- Sludge treatment and dewatering
- Energy recovery and wastewater cooling

HUBER Drum Screen RoMesh® for fine and finest material removal

HUBER Heat Exchanger RoWin for energy recovery
MENA-Water MBR package plant

MENA-Water offers complete MBR package plants, pre-assembled as containerized system in standard sizes. This facilitates easy transportation, fast availability and straight start-up of the MBR plant.

**Included inside the package housing are all main components such as:**

- Stainless steel membrane tank with modules and aeration system
- Blowers for aeration tank and membrane cleaning
- Permeate pump, backwash and chlorine dosing system
- Process instrumentation, electrical control cabinet with PLC

**Typical applications**

- Common municipal sewage treatment
- Independent sewage treatment system for stand-alone operation (hotels / business areas / housing complexes etc.)
- Sanitation solution for outlying locations
- Sanitation solution for close and densely populated residential areas due to minimized smell, dirt and footprint
- Process step for industrial wastewater treatment
- Pre-treatment step for reverse osmosis plants

![Compact design and mature technology](image1)

![Adaptable to future demand due to modular system](image2)
Benefits of MBR Package Plants

➤ Well-proven, complete and clean system solution
➤ Compact footprint combined with convenient accessibility
➤ Minimum works for site installation and civil structures
➤ Full automatic system operation with online monitoring facility
➤ Adaptable to future demand due to modular system

MBR Package Plant capacity

➤ Standard range is up to 2,000 m³/d in one container (16,000 PE)
➤ Customized sizes available for bigger capacities
SafeDrink Package Plant

Benefits of SafeDrink Package Plants
➤ Pre-engineered complete system in ISO containers
➤ Small footprint
➤ Simple operation and maintenance
➤ Low energy consumption
➤ Working on gravity sand filter and lamella settler principle
➤ Higher throughputs possible through modular arrangement of units
➤ European quality components
➤ Fast delivery and start-up due to the mobile concept
➤ Very good price-performance ratio
➤ Highly stable process that produces quality water even during peaks
➤ Effectively removes turbidity, suspended solids, colour, odour and TOC
➤ Produces highly pure water that meets WHO Drinking Water standards

Typical applications
➤ Potable water for cities and villages
➤ Grey water treatment

Mobile and reliable drinking water treatment of MENA-Water

SafeDrink Plant capacity
➤ Standard range is up to 2500 m³/d in one container (20,000 PE)
➤ Customized sizes available for bigger capacities
**Plug & Play Reverse Osmosis Plant**

The high quality material and components from leading manufacturers are selected in order to provide quality products for long life time of plant and smooth operation. The system is suitable to purify and treat seawater, high brackish, brackish, and even industrial or municipal water when treated with the Membrane Bioreactor (MBR) prior to the reverse osmosis plant.

**Typical applications**
- Drinking water
- Food industry
- Industrial effluent recycling
- Medical (kidney dialysis)

Reverse osmosis systems are capable of removing dissolved salts and other impurities such as bacteria, sugars, proteins, dyes and constituents with large molecular weight.

MENA-Water plants are designed, engineered, pre-assembled, factory tested with highest quality standards to provide easy and quick shipping, installation in small footprint area and for limited site installation work to save the customer money and time.

**Standard features**
- Filtration and chemical pre-treatment
- 8” & 4” TFC energy-saving membranes
- Membrane FRP pressure vessels
- Corrosion resistant high pressure pumps
- PLC electrical control panel for auto control from HMI
- Panel mounted flow meters, TDS, pH, ORP meter/controller

**Reverse Osmosis Plant capacity**
- Standard range is up to 2,500 m³/d in one container (20,000 PE)
- Customized sizes available for bigger capacities
HUBER stainless steel products are ideal for water and wastewater treatment applications – whether municipal or industrial. It is the material complying with the strictest requirements:

- Unparalleled life
- Optimal corrosion protection after passivation by pickling in an acid bath
- Standardisation saves costs and simplifies design
- Excellent hygienic characteristics for health and safety

It is our objective to offer perfect products to our customers. Our well-trained and highly motivated employees manufacture our products in our state-of-the-art stainless-steel only factory to guarantee consistently high product quality.

We have the philosophy that a high degree of vertical manufacturing integration is in the best interests of our customers.

To prevent any cross-contamination of our stainless steel products with carbon steel rust and dust, we use only stainless steel in our factory. Our machinery and manufacturing processes are specifically designed for the material stainless steel. Every stainless steel product, before it leaves our factory, is passivated by full submergence in an acid (pickling) bath for perfect surface finishing and corrosion protection.

Potable water is a most important resource that should be available for all people in sufficient quantity and quality. We offer the highest quality products for the treatment of drinking water.

Drinking water must be pure, i.e. clear and free of pathogens, odour and colour. To comply with these requirements certain standards have to be met during collection, treatment and distribution of the drinking water.

Many waterworks, however, do not meet these standards and are a danger to our health and environment. It is important to identify such risks as early as possible to prevent further damage.

We have developed systems for waterworks that prevent contamination of drinking water, such as special air filtering systems.

As the water level in drinking water reservoirs changes, air is drawn in and out.

If the air entering the reservoir contains particles, micro-organisms like germs, spores, pollen or fungi, the drinking water becomes contaminated. Our air filter systems, with integrated filter media, retain dust and other fine particles and therefore prevent contamination and health hazards.
All HUBER products are made of stainless steel and exceed the latest standards and quality requirements.

If stainless steel products are manufactured and treated according to best practice, they will provide excellent performance for many, many years of use.
Safe Access Solutions

Manhole covers with a centrally raised profile

➤ Round and rectangular stainless steel manhole covers
➤ Easy to handle by a single person, no maintenance
➤ Attack proof, certified to security of DIN EN 1627, resistance class RC3

Manhole covers flush with the ground

➤ Certified to DIN EN 124, resistance class A15, B125 and D400
➤ Attack proof, certified to security of DIN EN 1627, resistance class RC3
➤ Installation flush with the ground
Safe Access Solutions

Safety climbing systems

HUBER safety access ladder with fall protection

➤ Security tested, with CE label
➤ Access ladders and climbing devices with or without fall protection
➤ Suitable entrance aids

Entrance aids

HUBER Entrance Aid EH VSD, collapsible, with double handle

➤ In accordance with DIN 19572
➤ Safe access
➤ Various design options
Safe Access Solutions

**Stainless steel doors**

➤ Attack proof, certified to security of DIN EN 1627, RC3 and RC4
➤ Single and double doors
➤ Thermally insulated for reduced condensation

![Attack-proof HUBER security door](image)

**Pressure-tight doors**

➤ Pressure-tight up to a water gauge of 30 m (3 bar)
➤ For embedding in concrete or retrofitting through bolted fixing
➤ All materials in conformance with KTW and DVGW standards

![Pressure-tight HUBER doors for safe access to reservoirs](image)
Safe Access Solutions

Hygiene in drinking water reservoirs

- Hygiene in water supply and storage
- Clean air = clean water
- Pathogen and germ retaining filters

HUBER Air Filter Plant for clean drinking water

Active forced ventilation

- Proven complete system with pipe ventilator
- Minimised condensation, prevention of structural damage
- Improved hygiene in reservoirs with little dynamics

HUBER complete system of active forced ventilation
Global Service

Superior technology systems require optimal operation if you want to make use of all economic advantages in the long run and to the full extent. HUBER Service provides support in product operation with a comprehensive package of services to ensure the customer gets back the expected return on investment:

**Maximum performance and plant availability at minimum operating costs.**

**Frost & Sullivan North American Customer Service Leadership Award for HUBER USA service team**

Founded in New York in 1961, Frost & Sullivan are today a renowned market research consultancy. More than 1,800 employees in more than 40 countries around the world work for Frost & Sullivan to analyse branches, markets and their development, and the industrial enterprises which are active in these markets – constantly on the search for best-in-class companies.

In 2013, both municipal authorities and industrial enterprises selected HUBER Technology Service as an outstanding example for best customer service in the North American solid / liquid separation technology market.
Global Service

HUBER Installation and Commissioning Service

Rely on our qualified service staff for installation and commissioning! Their expertise and extensive knowledge ensures the best start for your new HUBER product.

Professional installation and commissioning

HUBER Spare Parts Service

Our service team in Germany is available with advice and support in the selection of the best original spares and wear parts for your machine. A large stock holding guarantees high availability of essential spare parts for your HUBER product wherever in the world.

Service specialists for smooth spare parts supply
Global Service

HUBER Repair Service
Prompt and expert repairs minimise expensive down time.
The highly flexible HUBER service team with their professional competence provides everything required to allow for perfect equipment operation, whether on site or in the HUBER factory.

Quick and professional repairs

HUBER Maintenance Service
Preventative maintenance is without doubt more economical than reactive maintenance!
We offer a wide range of customised service packages, for all markets and industries to ensure maximum performance is achieved in terms of operating reliability and costs.

Special HUBER Guarantee for more operational safety
Global Service

HUBER Optimisation Service

Optimally customised machines guarantee a constantly high performance at low operating costs. The operating conditions of plants frequently change significantly in the course of time without being noticed. The analysis of operating hours, cycle times, consumption of energy and consumables, degree of wear, etc., often leads to the result that a significantly improved plant efficiency can be achieved through equipment optimisation. We provide and guarantee this service with our HUBER product optimisation service.

Experts for optimal system operation

HUBER Condition Monitoring Service

The HUBER Operation Control System (HOC) can be retrofitted into new or existing machines and plants. Via a temporary online connection the system sends all relevant operating data of each machine to the globally accessible HOC portal where they are stored in our own computer centre. Intelligent routines are used to evaluate the data. If the system detects any deviation from the tolerances set as standard our service engineers are notified. The tolerances are individually adjustable. If the service engineers identify any deviation, they immediately notify the customer and suggest measures to take.
Global Service

**HUBER Service for products from other manufacturers**

One contact person for all requests: HUBER Service.

We offer an extensive and professional service for products from other manufacturers, comprising spares, repair and equipment optimisation. A clear logistic and economical benefit for our customers!

![Service competence not only for HUBER machines](image)

**HUBER Consultancy Service International**

Our service consultants visit you on site to provide maximum support, including valuable information about optimal service measures and reliable operation at reduced operating costs.

![On-site advice from HUBER experts](image)
Global Service

HUBER Refurbishing Service

It may often be more cost effective to refurbish an existing plant than build a new one. Our service specialists provide detailed technical analysis on site, including an economic evaluation and offer customised solutions. The ideal implementation of the selected solution on site will be guaranteed by our qualified service technicians.

Analysis and rehabilitation from one source

HUBER Training Service

A well-briefed operating staff is a pre-requisite for ideal and economical plant operation. Whether you want to improve the knowledge of your staff, or train new employees, we offer tailor-made workshops both on site or in our local HUBER service centre.

HUBER Training Service for more competence