HUBER TECHNOLOGY
WASTE WATER Solutions

HUBER Solutions for the Dairy Industry

- Tailored overall solutions from one source
- Wealth of experience in industrial waste / process water and sludge treatment
- Well-proven products
- Global presence

The situation

Every manufacturer is forced to produce at low cost. The cost factors wastewater fees and disposal costs have in recent years increasingly become a topic for consideration as such fees and surcharges for heavy pollution are currently also increasing year on year. Such costs naturally have some influence on product calculations but the question is how can this cost spiral be interrupted?

The requirements

Wastewater is characterised by the parameters COD, BOD, grease and solids content. These parameters determine the weighting of wastewater fees payable and surcharges for heavy pollution.

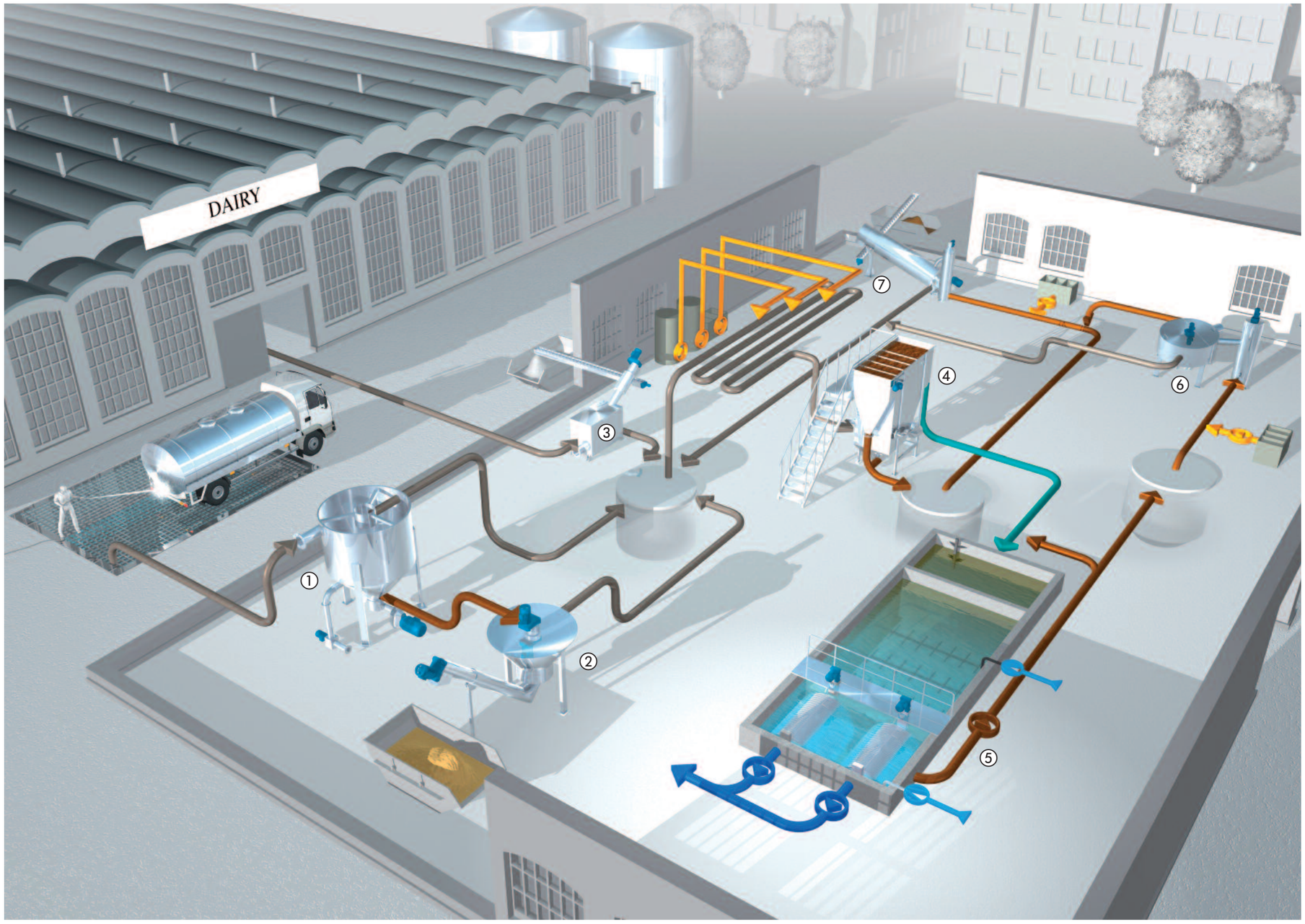
The requirements will also differ according to company size and product range. Whereas some companies require or request only grease elimination, bigger companies frequently wish to or must clean their wastewater up to a specified discharge quality. This entails another requirement in that the wastewater treatment process itself produces waste material, such as flotate or biological sludge that requires disposal.

The concept to be developed must therefore include for both treatment of wastewater and disposal of waste material. An integrated design must therefore take place within the production process and should include the following points:

1. Avoiding production and cleaning wastewater
2. Reliable and low-cost reduction of wastewater loads
3. Volume reduction of the produced flotate sludge, biological sludge and sediments through thickening/dewatering and drying
4. Safe disposal routes
   (flotate sludge to bio-fermentation for example)

HUBER is an experienced, reliable partner for such concepts and will develop them in cooperation with its customers. The final design and process will combine the reliability of well-proven HUBER products coupled with intelligent and innovative engineering and technical solutions.

The overall concept



Equipment description

Grit removal

The HUBER Circular Grit Trap HRSF ① separates the grit from the wastewater flow. Grit is then carried into the milk acceptance system via the tyres of delivery trucks and from there into the wastewater system and is especially prevalent during the autumn and winter months.

Such grit pollution can be significant, especially in large milk processing companies, and can cause problem in subsequent processes .

The COANDA Grit Washer RoSF4 ② removes the organic matter from the separated grit thus providing for reuse of the treated grit.

Screening

The screenings in milk processing industries are very heterogeneous and consist not only of rice or other organics, e.g. yoghurt production, but also of fine cullet or packing material. Such material should be retained and discharged prior to any flotation or biological wastewater treatment to protect subsequent facilities and increase the treatment efficiency. The ROTAMAT® Rotary Drum Fine Screen Ro 2 ③ has a proven track record and efficiency for this specific purpose.

Sometimes it is necessary to pump the wastewater from its source of production up to the treatment system and the pumps must be protected against coarse material. The ROTAMAT® Screen RoK 4 removes such coarse material from the wastewater flow and transports them out of the pumping station. The RoK 4 Screen can also be installed into existing sump shafts.

Flotation and flotate sludge dewatering

After mechanical treatment by means of the ROTAMAT® Rotary Drum Fine Screen Ro 2 the wastewater is further treated within a HUBER Dissolved Air Flotation Plant HDF ④ where free grease and undissolved solids are removed. This intermediate step is sometimes necessary to protect the following biological treatment system against free grease.

As an option the flotation plant can be installed prior to a chemical treatment stage to increase its efficiency. This solution if frequently selected if indirect discharge quality is sufficient for the effluent. Elimination of grease, proteins and undissolved material of up to 95% will also reduce the BOD/COD load. The BOD/COD reduction is very much dependent on the lactose concentration within the wastewater. As lactose cannot be removed by means of flotation, a biological treatment stage is therefore required.

Biological wastewater treatment

Mechanical-chemical treatment of wastewater protects the subsequent biological treatment stage against free grease. The wastewater can then be cleaned to a specified discharge quality by means of the HUBER VRM® Plant ⑤. The compact design of this plant minimises the space requirements for the biological treatment system. The membranes produce a solids-free effluent and guarantee thus a high operational reliability.

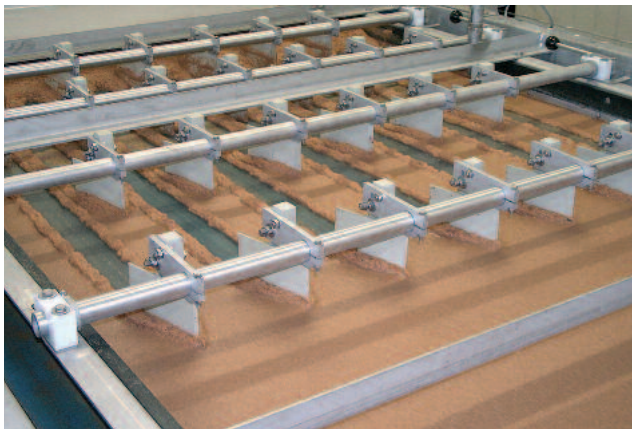
Sludge treatment

Biological wastewater treatment of course includes sludge treatment, which consists of the thickening and dewatering of sludge. From our experience of sludge from milk processing industries it is regarded frequently as difficult to treat. The ROTAMAT® Disc Thickener RoS 2S ⑥ and HUBER Drainbelt DB have a proven track record with regard to their suitability for sludge thickening.

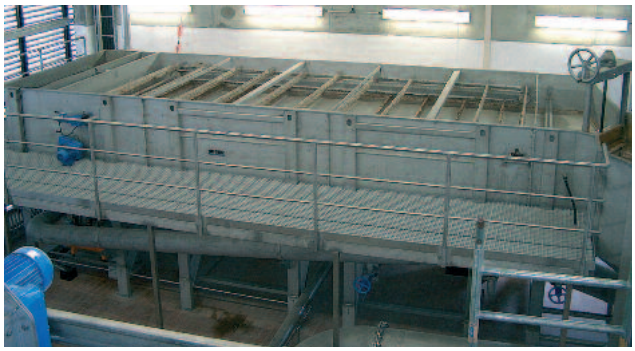
The HUBER ROTAMAT® Screw Press ⑦ has proven its high efficiency in dewatering flotate and excess sludge.

Installation examples

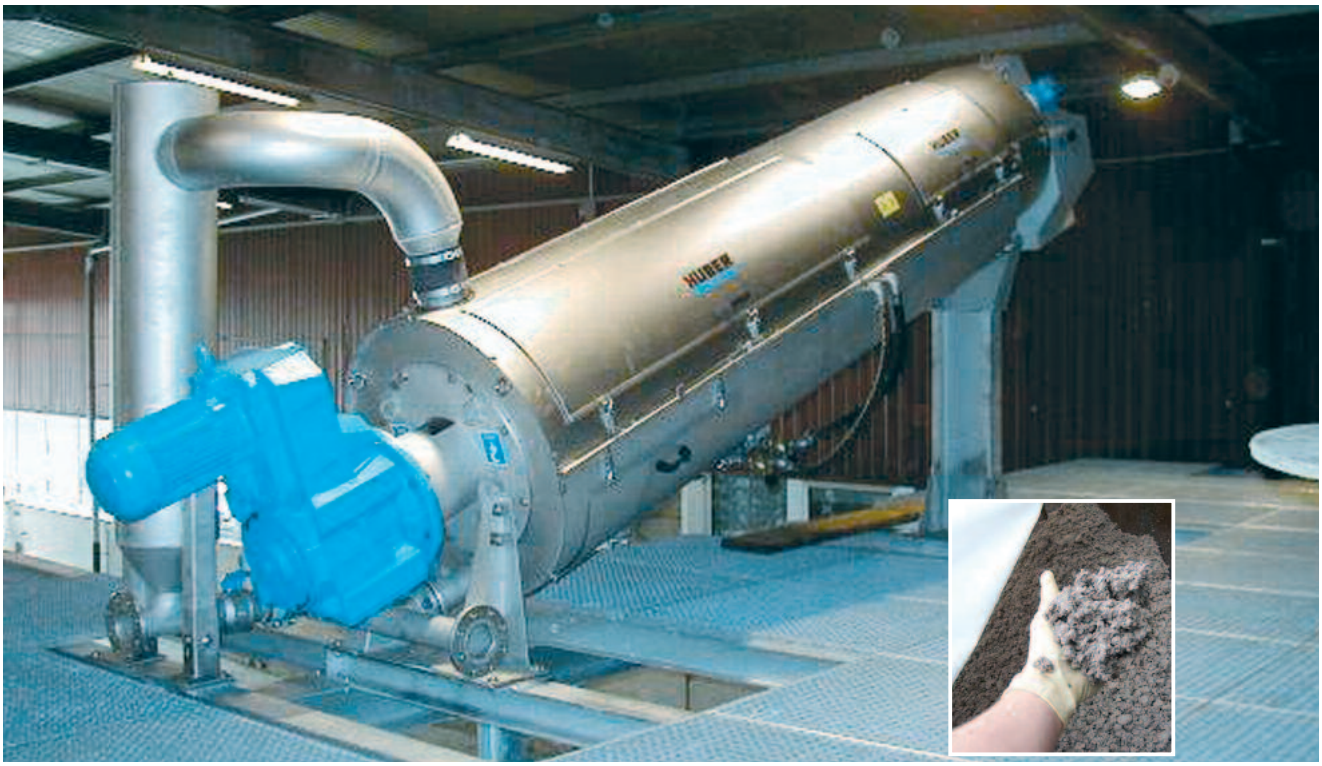
HUBER Flotation Plant HDF 7 with chemical treatment stage for up to 70 m³/h



HUBER Drainbelt – Uncomplicated, efficient biological sludge thickening



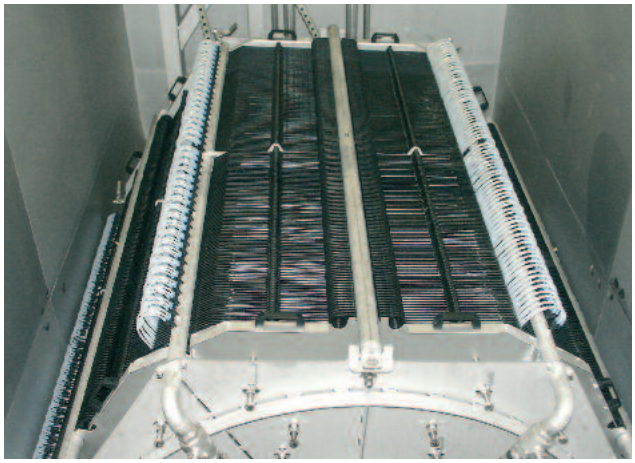
HUBER Dissolved Air Flotation Plant HDF without chemical treatment stage for up to 400 m³/h



Flotate sludge dewatering with HUBER ROTAMAT® Screw Press RoS 3
Image detail: Dewatered flotate sludge with > 30 % DS content

HUBER ROTAMAT® Rotary Drum Fine Screen for wastewater screening installed in an equalising tank

HUBER Flotation Plant HDF with chemical treatment



HUBER Vacuum Rotation Membrane VRM® Bioreactor

HUBER SE

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Subject to technical modification
1,0 / 3 – 8.2010 – 4.2005

Dairy Industry