IN BRIEF

Sludge Treatment

Due to the great response we receive from the market to our RoS 30 Screw Press units we have developed a new RoS 30 model with a higher throughput capacity. The new RoS 30 size has a 620 mm dia. screen basket to allow for a sludge throughput up to 15 m³/h. With our RoS 30-620 we aim at the target group of wastewater treatment plants designed for up to 50,000 PE.

Filtration & ReUse

New modern buildings prevent the loss of heat to a great extent but it often happens that wastewater has to be used to replace the lost through wastewater pipelines. A special heat exchanger is required to recover this energy. We have therefore added the HUBER TubeWin Heat Exchanger to our product portfolio.

Local Government

Bavarian State Minister Marcel Huber speaks at official opening of sludge2energy project at Straubing

The Bavarian State Minister for the environment, Bavarian State Minister Marcel Huber, and Dr. Markus Pan- nemayr, Chief Executive Officer of HUBER, spoke to the invited guests. Dipl.-Ing. Dieter Rein gave their blessing to the new plant. The guests of honour symbolically pushed the start button for the new project as a role model for the world.

The HUBER stand at IFAT ENTSORGA 2010

IFAT ENTSORGA is the most important international trade fair for innovati ons and services for water, wastewater, refuse, and recycling. More than 2,700 exhibitors will show their products and innovations for sustainable water management in industrial nations and adapted technologies for developing and emerging countries. Conferences, symposia, workshops and excursions to WWTPs will be held to show how technology for maintenance and cont rol. Because practice is always better than theory alone we offer an excursion to WWTP Straubing where you can experience live our innovative sludge2energy system for thermal sludge utilisation. On more than 1,100 m² stand area (hall A2, stand no. 333) we will show you innovative products and solutions of the high standard which HUBER is known. We definitely be the centre of attention:

Official opening of sludge2energy project at Straubing

The guests of honour symbolically pushed the start button.

HUBER exhibits at IFAT ENTSORGA 2012

HUBER will show its product portfolio on an area of more than 1,100 m² stand area (hall A2, stand no. 333) we will show you innovative sludge2energy system for thermal sludge utilisation. On more than 1,100 m² stand area (hall A2, stand no. 333) we will show you innovative products and solutions of the high standard which HUBER is known. We definitely be the centre of attention:

Editorial

Dear Reader,

National and international experts and thousands of visitors from all over the world will come to Munich again in May to visit IFAT ENTSORGA, the most important international trade fair for water, wastewater, reuse, and recycling, where they can see and discuss new products and solutions to be applied and implemented in the coming years. It will certainly be exciting again to see which new technologies and trends show up or have established themselves. Two subjects, which have also been the focus of our business in the past years, will definitely be the centre of attention:

- Closed water loops, through utilisation of heat energy or decentralised wastewater treatment for example, and improved integration of mechanical systems and communication technology for maintenance and control. Because practice is always better than theory alone we offer an excursion to WWTP Straubing where you can experience live our innovative sludge2energy system for thermal sludge utilisation. On more than 1,100 m² stand area (hall A2, stand no. 333) we will show you innovative products and solutions of the high standard which HUBER is known. We definitely be the centre of attention:

- International trade fair is of great importance also for HUBER. The HUBER stand on an area of more than 1,100 m² will be about environment and recycling, where they can see and discuss new products and solutions to be applied and implemented in the coming years. It will certainly be exciting again to see which new technologies and trends show up or have established themselves. Two subjects, which have also been the focus of our business in the past years, will definitely be the centre of attention:

- Closed water loops, through utilisation of heat energy or decentralised wastewater treatment for example, and improved integration of mechanical systems and communication technology for maintenance and control. Because practice is always better than theory alone we offer an excursion to WWTP Straubing where you can experience live our innovative sludge2energy system for thermal sludge utilisation. On more than 1,100 m² stand area (hall A2, stand no. 333) we will show you innovative products and solutions of the high standard which HUBER is known. We definitely be the centre of attention:

Very sincerely yours,

Georg Huber
The new machine has been tested on a real wastewater treatment plant to prove its qualities under continuous operation conditions:

- Problem-free continuous operation even at the capacity limits
- Competitive dewatering efficiency
- Minimum energy consumption
- Easy to operate

The mobile RoS 3Q unit is continuous-
ly operated on a 70,000 PE wastewater treatment plant where the unit dewatered digested sludge with an organic content of approximately 65\%. The mobile screw press is fully integrated in the local system so that it can be operated 24 hours. After intensive briefing of the local opera-
ting staff they have operated the screw press on their own.

The results of the 8-week opera-
tion period:
The screw press has been operated both during the day and, without any operator attention, during the night. After optimisation of the press opera-
tion by the local staff the unit achie-
ves the following results:

The continuously operating screw press needs a specific polymer dose of 14 to 15 kg/DR to achieve dewater-
ing degrees of 27 to 29\% with a throughput of 9.5 m³/h and a solids load of 260 kg/h. Operation with the same throughput but a significantly reduced polymer dose of 10 to 11 kg/DR has resulted in a dewatering degree of 23 to 25\%. The performance data of a mobile centrifuge unit are listed additionally for comparison. This centrifuge was tested for several weeks just before our RoS 3Q screw press.

The test results of the RoS 3Q 620 are a complete success:

- Problem-free continuous operation managed by the local operating staff on their own
- Significantly better dewatering results than a centrifuge with comparable polymer doses
- Comparable dewatering results with a significantly lower polymer demand of the RoS 3Q screw press
- The energy demand of the RoS 3Q screw press is by a factor of 10 lower

In addition to the above performance data the new screw press excels with virtually noiseless operation and minimum wear – the same qualities for which our well-proven basic RoS 3Q models have been known for years. The very simple maintenance concept of the RoS 3Q 620 shows that the focus of our development work has not been limited to just increa-
sing throughput capacity.

Drying the sewage sludge of more than 120,000 PE

Two-stage HUBER Belt Dryer on WWTP Balingen – first operating results

The wastewater of more than 120,000 people is treated on WWTP Balingen, Baden-Württemberg, Ger-
many. The generated dewatered sludge, along with other sludges from that region, is dried in an innovative HUBER Belt Dryer.

The heat required for the drying pro-
cess is provided by the thermal post-
combustion unit of a sewage sludge gasification plant and a block heat and power plant operated with diges-
ter gas, with the result of two diffe-
rent temperature levels. It is defined as primary goal to most efficiently use these two heat sources in the dry-
ing plant. The HUBER BTplus 2-2 dry-
er installed at Balingen is therefore the first HUBER Belt Dryer with two different temperature levels and additionally insulated head pieces.

The dryer is divided into two tempe-
rature zones to ensure the higher dry-
ning velocity at high temperatures is adequately used. The low temperatu-
re zone is supplied with the approxi-
mately 90 °C flow from the block heat and power plant, while hot water from a synthesis gas burner of the sewage sludge gasification plant is utilized in the high-temperature zone. Thus, most of the energy requi-
rmed for drying can be generated from dry sewage sludge.

The rest of the heat required to cover the total energy demand is provided by the biogasa from the digester or
with natural gas. A part of the energy (up to 260 kW) is extracted downto-
ream of the dryer and returned to the WWTP’s heating system so that virtu-
ally the complete exhaust heat from the WWTP is utilised with a minimum input of primary energy.

After start-up of the gasification plant in spring 2011 the belt dryer success-
fully passed the performance test. The plant was officially put into ope-
ration in September 2011, which was celebrated with an Open Day. The HUBER Belt Dryer has proven its effi-
ciency right from the beginning. Even difficult to treat sludges from five dif-
ferent external sewage treatment plants have been no problem, neither for the dryer nor for the pelletising system developed by HUBER.

No wonder Dipl. Ing. Joachim Hölle of the engineering office Dr. Götzel-
mann+Partner (Stuttgart-Balingen) and Siegfried Sauter, manager of WWTP Balingen, have only good things to say. They are fully satisfied with the dryer performance although they had some doubts initially if the HUBER feeding and pelletising system would be able to handle the external sludges. Now they are espe-
cially happy that the results the dryer achieves even exceed the guaran-
teed performance results. Furthermore, they have never experienced any dust or odour problems.

We would like to use this opportunity to thank the engineering office Dr. Götzelmann+Partner and the Balin-
gen association for sewage treat-
ment for their perfect cooperation in the complete project. The vision of the Balingen association for sewage treatment is an energy self-sufficient wastewater treatment plant. We are proud to contribute our share with HUBER products.

Technical data of the HUBER Belt Dryer on WWTP Balingen
Sludge Treatment

Targeted marketing of sewage sludge utilisation plants

HUBER and WTE plan to found new sludge2energy GmbH

In cooperation with WTE in Essen HUBER have used their experience to develop the sludge2energy system as a turnkey solution for sewage sludge utilisation.

The comprehensive expertise of both companies in the fields of sludge treatment, sewage sludge drying, incineration, and manufacture and operation of plants has been used to develop a cost-effective and reliable modular system which meets specific customer requirements.

The planned joint enterprise sludge2energy GmbH will be based in Berching. It will develop and implement customised solutions for sewage utilisation and offer them on the global market.

The sludge2energy GmbH provides engineering support, manufacture and operation of turnkey plants and financing of sewage sludge utilisation plants. The managing directors of the new sludge2energy GmbH are Mr. Jörg König (WTW) and Mr. Harald Plank (HUBER SE).

Both have gathered broad experience over many years in their mother companies and will for the first time represent their new company at the IFAT 2012 (hall A2, stand no. 333, and hall B1, stand no. 115).

Solar dryers are in demand worldwide even for big and medium-sized wastewater treatment plants

Sludge drying with solar power

Solar drying of sewage sludge is a technique that is increasingly used by operators of medium-sized and large wastewater treatment plants to reduce sludge disposal costs and at the same time protect the environment. Previously, primarily smaller sewage treatment plants and particularly plants in Germany and France had used solar sewage sludge dryers. Today, even operators of medium-sized and large wastewater treatment plants from all over the world are solar dryers.

For more than a year a HUBER solar dryer has been in operation in a tropical climate zone at Cali, a large city in Colombia. The dryer handles a wastewater flow in excess of 5 m³/h. High solar radiation combined with an additional heating render it possible to process up to 60 m³/day press sludge on some days. Four type SRT 9 machines are installed at Cali to dry the sludge directly at source and use it as fertilizer for the production of sugar cane. Previously, the sludge had to be transported to a landfill by trucks, which was quite an expensive solution. First tests seem to prove that the sun makes sludge a valuable resource: the solar dryer at Cali produces fertilizer for the production of sugar cane.

After 100 m in the drying bed the sludge is all dry and automatically transported to a storage tank. Again, the dryer remains operable even if automatic dry sludge removal should fail. The sludge bed in the greenhouse would then grow and serve as a buffer. The dry sludge, reduced in mass and volume, is hygienic, visually harmless in hygiene/epidemic terms, and easy to process because it is a stable, free-flowing, pea size granulate. The dried sludge has become a valuable resource. After intermediate storage the dry sludge is further transported by trucks. Another HUBER dryer is installed at Tooele, Utah on a dry high plateau near Salt Lake City. This medium-sized plant removes 1,000 tons dry mass a year from wastewater.

Solar dryer under construction at Utah – a reasonable solution even in climate zones with cold winters

In all three projects HUBER cooperates with local contractors who build the greenhouses and adjoining or auxiliary buildings or carry out concrete work, foundation work, wiring and installation. HUBER supports the contractors with technical drawings, checks lists and consultancy to ensure problem-free product execution on the satisfaction of all parties involved. More than half the investment costs for the projects relate to local work. This percentage is even higher where feed and discharge automation is provided by the local contractor as it is the case at Cali for example.

All three projects show that solar drying works even in very different climate zones and under very different conditions. Solar drying can be an economical and sustainable solution in all regions of the world. The HUBER system provides flexibility in the level of automation, it can easily be planned and installed by contractors. Also all the inquiries we receive from different countries indicate that solar drying on medium-sized and bigger wastewater treatment plants can be a reasonable sludge treatment solution.

With our excellent core products we are able to offer HUBER solutions for any application.

Solar sewage sludge drying is the same simple principle as drying clothes on a line. It is easier to use the power of the sun to remove the water from the sludge than to apply complex technical systems.
New TrashMax® screen for the reliable removal of bulky coarse material

Sturdy screen for coarse material removal

HUBER is in the fortunate position of having a wide range of screens which allows us to offer every customer the perfect solution for his specific requirements. This guarantees our customers problem-free plant operation. On the basis of the function principle of our multi-rake bar screen we have developed the new coarse material screen TrashMax®. The TrashMax® screen offers all the benefits of our multi-rake bar screens and in addition on an extra sturdy design for the removal of coarse material. The screen is ideal to be used in pumping stations, as first treatment stage of wastewater treatment plants or industrial plants, and in the inlet to power plants. It removes coarse and bulky material and therefore protects downstream systems.

An important functional element of the screen is its bar rack which retains the coarse material. The screen rakes of the TrashMax® screen mesh with the rack bars at the bottom dead centre, at first with the back cleaned screen and then with the behind front cleaned screen. This avoids the accumulation of material in front of the screen and even extremely bulky objects are reliably removed by the screen rakes and transported upwards out of the channel. As the screen rack gets more and more blinded, flow resistance increases and consequently the water level in the channel in front of the screen rises due to the accumulating material. The HUBER TrashMax® screen is able to remove this material very quickly and thus reduce the water level within a short time. The TrashMax® achieves this with its cleaning elements. Attached to the chain system, these elements can easily be adjusted to different requirements and are therefore able to reliably remove even heavy loads and bulky screenings. As the cleaning rakes can be variably adapted, removal capacity is then adjustable. The benefit of high cleaning efficiency is especially favourable for heavy solids loads.

30% increase in screening surface with star-shaped screen drum

Further developed ROTAMAT® Rotary Drum Fine Screen with increased hydraulic capacity: ROTAMAT® Perforated Plate Screen RPPS-Star

These screens with a two-dimensional perforated plate rely on the unique system of HUBER ROTAMAT® machines which combines screening, washing, transport, compaction and dewatering in a single unit. Additional advantages, such as shear-force resistant and wear resistant screen surface cleaning and a high frequency of screen surface cleaning per minute, guarantee maximum efficiency and operating reliability. Perforated plate for two-dimensional screenings is primarily used for screens with apertures > 1 mm. For filter opening < 1 mm we use the newly developed ROTAMAT® Membrane Screen RotMem with filter mesh. HUBER ROTAMAT® Perforated Plate Screen RPPS units are equipped with 1 to 5 mm perforated plate. The selection of the mesh size or perforation depends on what extent hairs and fibres must be removed to meet the specific requirements of the downstream clarification systems. Two-dimensional perforated plate screens achieve a high removal of hairs and fibres, i.e. two to four times the amount of solids are removed than one-dimensional screens are able to separate. The significantly increased separation efficiency is accompanied by a high level of screen surface cleaning and requires larger dimensioning of the fine screens compared to other commonly known wedge wire screens. Conventionally, a screen basket with larger external dimensions is used to achieve larger dimensioning with the result of significantly increased investment costs and even building costs as a bigger channel is required. We have solved this problem with our ROTAMAT® Perforated Plate Screen RPPS-Star. The perforated plate of the screen basket is folded in axial direction like an accordion. The zigzag folds form the star-shaped screen basket (RPPS-Star). This increases the screen basket plate by about 30% with still the same nominal diameter.

The filter drum of the ROTAMAT® Perforated Plate Screen RPPS-Star is cleaned by a water jet spraying against wastewater flow direction. This ensures that fibres and screenings are reliably washed from the drum surface and removed by the centrally arranged conveying screw. With this innovation we have made a "traditional" machine fit for the future. We are well prepared for higher future requirements related to separation efficiency and hydraulic throughput. The extensive experience gathered from real size installations is reflected in the continuous development and optimisation of our fine screens.

Compared to one-dimensional wedge wire screens, the two-dimensional perforated plate screen achieves a significantly higher separation efficiency. Due to the star-shaped screen drum the ROTAMAT® Perforated Plate Screen RPPS-Star has a by about 30% larger screening surface, with the same small nominal diameter and with the result of a significantly increased hydraulic throughput capacity.
HUBER USA successfully placed the company’s largest HUBER RakeMax® screens to date into the market in Louisville, Kentucky

**HUBER project in Louisville, USA**

The plant in Louisville, Kentucky

HUBER USA successfully placed the company’s largest HUBER RakeMax® screens to date into the market in Louisville, Kentucky. The three RakeMax® 22300 x 2752 x 13 screens were installed at the Derek R. Guthrie Water Quality Treatment Center in Louisville, KY with official startup currently scheduled for spring 2012.

Along with the growing awareness of the reliability and robustness of HUBER products in the USA market, the inclusion of our equipment in large-scale projects has become increasingly popular. As evidence of this trend, HUBER USA received the order to supply 3 RakeMax® size 22300x2752x13 to the Derek R. Guthrie Water Quality Treatment Center which is situated 30 kilometers south of Louisville, Kentucky, 136 meters above sea level. Each screen is rated for 7.6 m³/s and this installation is part of a $850 million Integrated Overflow Abatement Plan intended to improve water quality in the greater Louisville area. These improvements are mandated (but not funded) by the United States government (EPA).

During dry weather the Derek R. Guthrie Water Quality Treatment Center receives approximately 0.88 m³/s of wastewater flow. All sewers that serve this plant are separate from the storm water system. However, a portion of the greater Louisville wastewater collection system utilizes a combined sewer system and, during wet weather flows, those areas direct flow to the City’s Morris Forman Wastewater Plant located a few kilometers west of Louisville. When maximum permitted flows are reached at the Morris Forman Wastewater Treatment Plant, additional flow is diverted to the Derek R. Guthrie Water Quality Treatment Center where up to 13.1 m³/s will be treated through the HUBER RakeMax® screens.

The expansion of the Derek R. Guthrie Water Quality Treatment Center to handle wet weather flows will benefit everyone in the Louisville community. Large wet weather flows will be treated and discharged to the Ohio River rather than allowed to overflow into the region’s streams. This project represents the second largest capital expenditure in the Louisville Metropolitan Sewer District’s history and is a major component of a federal consent decree to clean streams, eliminate sanitary sewer overflows, and minimize combined sewer overflows in the Louisville area. At the planned start-up date in spring 2012, the improved Derek R. Guthrie Water Quality Treatment Center will handle wet weather flows will benefit everyone in the Louisville community.

**Tertiary filter stage to upgrade wastewater treatment plants with insufficient effluent quality**

HUBER RoDisc® Rotary Mesh Screen as tertiary filter stage

The plant in Louisville, Kentucky

The HUBER RoDisc® Rotary Mesh Screen is a quick and efficient solution if you want to upgrade your wastewater treatment plant and ensure to produce a virtually solids-free effluent. Upgrading is especially required if the secondary clarifier does not work effectively and flocks pass into the channel. Our micro screen prevents concentration of suspended material, significantly improving effluent quality and thus substantially contributes to the protection of our waters.

The installation of a filter stage downstream of the secondary clarifier is an efficient and inexpensive option to upgrade a wastewater treatment plant. Insufficient tank depth, high hydraulic loads or the poor settling behaviour of activated sludge are the most frequent reasons why wastewater treatment plants are sometimes unable to reliably meet today’s minimum requirements on the concentration of filterable solids in the effluent. The overflow of flocks increases COD, BOD, N and P loads in the effluent and receiving water course with the result of increased discharge fees. A HUBER RoDisc® Rotary Mesh Screen as tertiary filter stage is able to guarantee a virtually solids-free WWTP effluent. Due to the gravity flow through our RoDisc® Rotary Mesh Screen and its low pressure loss the screen can easily be integrated into existing sewage treatment plants. Due to its small space requirements and modular design the RoDisc® Micro Screen can be tailored to suit any specific site requirements and keeps the structural alteration work required to a minimum.

An ineffectively working secondary clarifier is however not the only reason for upgrading a wastewater treatment plant with a downstream micro screen. Especially the accumulation of the nutrients phosphate and nitrate in surface waters can lead to eutrophication, growth of algae and water plants, oxygen depletion, and to fish dying and death of other water animals. Combined with precipitation and flocculation the micro screen can reduce phosphorus to a very low concentration. Precipitants transform the orthophosphate contained within the wastewater to hardly water-soluble materials. Flocculants transform the produced micro flocks to macro flocks which can be removed by the micro screen.

The HUBER RoDisc® Rotary Mesh Screen meets not only the requirements of today but sets the course for the future. Many of the methods for advanced wastewater treatment which are increasingly used today, such as disinfection and reduction of organic trace substances, require prior micro screening. UV disinfection systems for example need a virtually solids-free effluent to work effectively. Frequently, activated carbon powder is used to reduce organic trace substances to release the load in our waters. Reliable removal of the activated carbon powder laden with the removed organics is then required. The HUBER RoDisc® Rotary Mesh Screen ensures that virtually all suspended materials are removed from the wastewater so that additional downstream treatment stages can be operated. Investment and operation costs for micro screenings are usually more than compensated because micro screening saves the money for additional plant components. Micro screening substantially contributes to the protection of our waters, today and in the future. So, the option of a filtration stage should definitely be considered when planning to expand or upgrade a wastewater treatment plant.
Separate the wheat from the chaff

What should a good grit washer be able to do?

Separation efficiency:
The separation efficiency of a grit washer depends on the feeding arrangement, surface loading and efficient quality. But what needs to be available as well is a separation chamber, i.e. a water volume which allows the solids (here grit and organics) to settle quickly. An efficient grit washer achieves a constantly high separation of organic material. We have carried out measurements on our own test stand. Both our results and external measurements at a university prove that central feeding through a vortex chamber and a COANDA Tulp provides optimal preconditions for good separation results. This advantageous feeding arrangement, combined with a large water surface (low surface overflow rate) and a circumferential overflow weir, significantly reduces the velocity from the inlet to the outlet weir so that grit particles > 200 µm are reliably separated. The use of an overflow weir avoids the suction effect, i.e. the acceleration of outflow water. However, even the best dimensioned grit washer will not achieve satisfactory separation results if there is not enough room for sedimentation.

It is generally known that a lot of heavy organic particles settle with the fine sand which can only be “blown out” of the plant if the velocity is increased. But this phenomenon would lead to the loss of the fine sand spectrum from 200 to 350 µm. With the use of our patented organic discharge systems heavy organic particles are simply removed at the end of the washing process to guarantee an always optimal room for sedimentation for all particles.

Washing efficiency:
Although our patent gives us comprehensive copy protection and prevents completely uncontaminated copying, each of our competitors tries to somehow get around one distinct patent claim. But, in the end, all grit washers have a conical tank with an inclined grit removal screw, a pressure probe and an organics discharge installed on the tank, without knowing what it is actually good for.

Some have tried to replace the stirrer with pressure air without taking into account that the pressure probe will not deliver continuously stable measurements any more. Former colleagues have tried to install only distribution channels in the wash zone where we use our patented perforated plate bottom solution. Their system cannot create a steady fluidized bed with the result that the tank sometimes washes but sometimes by far fails to achieve the guaranteed loss on ignition of < 3%. Others have tried their luck with a fast running stirrer (400 rpm) to achieve fluidization and wash the grit. At such a speed, however, the pressure probe in the tank is not able to deliver reliable measurements and is also nonexistent.

Most competitive product do not at all care about a homogenous fluidized bed but stir the settled solids without interruption. This may work as long as there is hardly any grit to wash but if there is more grit the removal screw will discharge the grit along with the organics like a classifier and the grit will leave the plant via the outlet, and it all ends up again with “There is no grit!” There is a litany of how competitors try to wash grit and it would go beyond the scope of this article to mention them all. We should list some of our “smart” international competitors copies our COANDA Grit Washer and the service life of about 20,000 operation hours.

Conclusion:
If you are interested in buying a grit washer, check offers for the features a good grit washer should provide:
- low surface overflow rate
- circumferential overflow weir
- separate organics discharge
- grit washing and removal even during feeding
- washing function/fluidization
- grit removal screw supported on both ends
- high solids throughout

Rely on our expertise in grit washing. You can be sure to be in best hands (pic. 2). We do not want to sell some hundred kilos of stainless steel to our customers but provide them with a technical solution that really helps them to save a lot of disposal costs. We are true to our word.

Maximum benefit from HUBER Wash Press WAP with more than 4,000 mm feed trough length installed in Finland

Continued success of HUBER Wash Press WAP

The increasing demand for economical machines produces a variety of innovative technical solutions, such as on WWTP Jyväskylä for example. Jyväskylä is Finland’s seventh largest city and located in central Finland.

In summer 2011, the two 3 mm step screens previously installed on site were replaced by two HUBER EscaMax® screens with 6 mm perforation. A HUBER Wash Press WAP with extra long feed trough could successfully be used for the screen’s discharge length of 2 x 1.552 m. The size 4 Wash Press has a feed trough length of 4,200 mm and is able to handle the maximum screenings throughput of 4 m³/h. If the HUBER EscaMax® screens are operated continuously, a wash water amount of about 3 l/s is generated by the spray nozzle bars of the two screens. This amount is easily handled by the Wash Press.

Facts and figures installed machines:
- 2 x EscaMax® 5,000 x 1,552 x 6
- 1 x WAP size 4 with extra long feed trough 4,200 mm
- 1 x Ro 8t
- 1 x WAP/SL size 2
- 1 x RoS 2 size 4

The 6 mm HUBER Belt Screen EscaMax® with perforated plate increases separation efficiency and generates therefore twice the amount of screenings of a 3 mm step screen. It must be considered that a 3 mm step screen is able to achieve comparable separation degrees provided impoundage level and filter carpet formation are optimal.

It should also be mentioned that 4,200 mm feed trough length has proven well as maximum feed trough length for WAPs size 4.

WAP with extra long feed trough up to 4,200 mm maximum has proven well for size 4 with standard guarantee values

Picture 1: Do you want to separate grit or waste space with empty containers?

1:1 at least in appearance but unfortunately have neither the required know-how or any clue about proper control of grit washing processes.

Wear protection:
Grit is a very critical material and causes wear especially when it is moving. After all, complex grit traps are used on many sewage treatment plants with good reason to improve the service life of pumps and pipeline. That is why we attached great importance to wear protection right from the beginning. We avoid high relative velocities of the rotating agglomerates (stirrer, screw) of our COANDA Grit Washer and the grit removal screw has high-quality journal bearings on both ends (cylindrical carburised / chilled cast iron bearings) so that the auger does not scratch the trough walls. Welded conveyance bars, plastic shells or cheap bearings should have no place in grit handling systems. The stirrer in the COANDA Grit Washer always operates in a homogenous grit fluidised bed so that the fluidized grit offers only little resistance to the stirrer arms. But as some wear cannot completely be avoided all stirrer arms of our COANDA Grit Washer units are made of 30 mm diameter full material. Due to the low relative velocity and the massive materials used we can guarantee a service life of about 20,000 operation hours.

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Successful installation of a WAP 4 with 4,200 mm feed trough length for 2 EscaMax® screens, size 5000x1552x6
Sewer grit treatment system on the Iberian Peninsula

Once they knew that the HUBER plant is able to produce recyclable material from sewer grit, the municipality of San Sebastián issued a public invitation to tender at the beginning of 2009. It was the company Aquilla that won this tender and was commissioned to execute the project on the basis of the Irun example. Of course, bigger units had to be used due to high throughput requirements (3 m³/hr raw material) but this was no problem with the modular HUBER system. Aquilla ordered the machines and electrical equipment in June 2009. HUBER supplied the equipment already in October 2009. Also the installation time was very short so that the complete plant could be put into operation in December. Since that day up to 80 sewer cleaning vehicles a month discharge their load into the HUBER plant. The material comes mainly from the sewer system of San Sebastián and from several of the municipality’s pumping stations. Via a separate line the tanker vehicles press the liquid phase directly into the RoSF9 wash drum. This reduces odours and significantly improves the hygiene situation for the operating staff. The solids in the tanker vehicles are then emptied into the RoSF7 acceptance tank with a storage volume of 16 m³ from where they are discontinuously fed to the treatment plant. The RoSF9 wash drum (1,650 mm dia.) removes and washes out all disturbing material bigger than 10 mm. After screening this material is transported to a landfill for further treatment. A centrillev pump delivers the grit fraction in the underflow of the RoSF9 wash drum into the RoSF4 grit washer (3 t/h throughput) where the grit is separated, washed and dried.

It goes without saying that the washed grit has a loss of ignition below 3%. The treated grit is stored on the WWTP to be used as secondary building material.

With this sewer grit treatment plant San Sebastián found a quick response to the rising disposal costs in Spain. Even the local TV station reported about this great, innovative solution. Half a year later HUBER Spain received the order for another complete sewage treatment plant for WWTP Arauzuri at Pamplona. The machines supplied to Arauzuri have meanwhile been put into operation.

Advantages of HUBER sewer grit treatment plants:
➤ All contents of tanker vehicles can be treated in one place
➤ No water or sludge hinders solids transport
➤ No annoying puddles of water at the deepest point of the tank
➤ Big aggregates ensure reliable material flow and easy operation
➤ No installation of different metallic materials (no carbon steel)
➤ Best clarification results for safe utilisation
It is a pity that the financial crisis inhibits important investments into environmental protection also in Spain. But time never stands still, sooner or later customers will invest in our treatment technology.

Cost-effective screenings treatment for any application

Use a WAP/SL to increase digester gas yield by up to 38,000 Nm³/a
The HUBER Screensings Wash Press WAP/SL is able to achieve a virtually complete washout of organic compounds from screenings. This returned carbon load is available as an additional source for digester gas production.

We have proven in both laboratory and practical tests on a wastewater treatment plant in Bavaria that this effect occurs with significant intensity also in practice. This 18,000 PE wastewater treatment plant has a rather short sewer system and the load of faeces contained within the screenings is very high. The faeces washed out from the screenings consist primarily in organic carbon. The microorganisms inside the digester transform this organic carbon into methane. After every wash cycle of the WAP/SL the sludgy wash water with its high organic load is introduced into the channel downstream of the screen. All settlable material settles there and the sediments are passed on to the digester as primary sludge.

Results
Results have shown that digester gas yield can be increased by up to 20% with the use of a HUBER Wash Press WAP/SL, which means an additional gas yield of up to 104 Nm³ per day. As the produced digester gas is used to operate a block heat and power plant, more gas means also more energy and heat. The additionally produced power can be used on site or fed to the power network. Up to 15,000 euros per year can be saved in this way.

The benefits of screenings treatment with a WAP/SL Wash Press
The wash water with its high carbon load is returned to improve denitrification and gas yield
When evaluating the economic efficiency of screenings treatment the focus has previously been on weight/volume reduction, which is up to 70% with a WAP/SL, depending on DS content. Volume and weight reduction reduces both the volume of screenings that require expensive disposal and the number of disposal transports required. But a holistic evaluation of economic efficiency should also include the advantage of an increased yield of energy in the form of gas, power and heat. The HUBER Wash Press WAP/SL is an option for sewage treatment plant operators to take another step towards an energy self-sufficient wastewater treatment plant. If we take into account the costs that can be saved through sewage grit treatment and the additional money that can be earned with the additional energy produced, the payback period of the investment can significantly be revised downward.
Our stand at the IFAT 2012

HUBER exhibits at IFAT 2012 from 7 to 11 May in hall A2, stand no. 333

Innovative solutions to increase water and energy efficiency

Climate change, demographic deve- lopment and ever scarcer resources
including water have more and more impact on water management. New challenges have to be met in the field of wastewater disposal, wastewater treatment and treatment of the mod- ular materials generated in these processes. Particularly efficiency of, resources and energy as well as ener- gy recovery are aspects that have to be taken into account when designing intelligent and innovative future solutions.

HUBER SE has responded to these new challenges and developed several innovative products. These carefully designed solutions are easy to install and operate and provide high efficiency at acceptable costs. At this technology the HUBER smartMBR systems for the treatment of wastewater containing a high load of organic material are known. HUBER will present these solutions and their complete range on 1,062 m² booth area to the visitors of IFAT Entsorga 2012 which takes place in Munich from 7 to 11 May (Hall A2, stand no. 333).

HUBER smartMBR – a new range in the service of water recycling

In the world’s ever growing cities and in many industrial regions water short- age is becoming a crucial problem for the people living there.Reuse of treated high quality wastewater is therefore a key to the future.

The smartMBR systems have been carefully designed so they are attractive looking and simple to install and operate, whilst maintain- ing the high quality and technical standards for which HUBER have been known for many years. The smartMBR systems come in 6 stand- ard sizes, ranging from a treatment capacity of 15 m³ to 70 m³. They are intended for wastewater use in sanitised buildings, office buildings, hospitals, etc.

The standardised systems offer short payback value, quick transport and installa- tion, and easy startup. The units are completely made of stainless steel and are designed to achieve high product quality and a long product life.

HUBER Powerflash – a screen’s innovative details. Its high- tech design with a side-to-side press and aיות optimized, however, are on the screen’s innovative details. Its high- quality design minimizes the energy demand of the screen and also keeps out all other coarse material contained in the wastewater and allows for the removal of large or bulky materials which are able to cause problems.

For every application, however, the screen’s innovative details, its high-quality design minimizes the energy demand of the screen and also keeps out all other coarse material contained in the wastewater and allows for the removal of large or bulky materials which are able to cause problems.
Leukerbad in Switzerland uses wastewater from thermal spa

The small idyllic town Leukerbad is situated at 1,400 m in the Swiss Alps of the canton Valais. It is a skiing and holiday location with a natural thermal spring. The spring water is used in several therapeutic and recreation spas before it is discharged to the public sewer system where it arrives with a temperature higher than 30 °C. This temperature is ideal to use a HUBER RoWin Heat Exchanger.

Leukerbad is one of the largest spa & holiday resorts in the Alp with the most beautiful thermal baths in Switzerland. Whether for a recreational weekend or a longer stay, everyone will enjoy the rejuvenating thermal water, rich in minerals, from mountain springs. Leukerbad offers its visitors on 365 days a year a wide range of facilities to match every taste. Leukerbad even uses wastewater with its typical pollutants, the spring water not only cools down but contains also grease and oil as well as skin particles from bathing activities. Due to these pollutants and the wash water of the filter plants conventional plate heat exchangers cannot be used. The risk of blocking and clogging of the narrow channels would be too high, not to talk of the sediments on the heat exchanger surfaces and consequential decrease in heat transfer.

HUBER has developed the RoWin Heat Exchanger particularly for such problems. Its efficiency and reliability has already been proven impressive in several projects. Nevertheless, we still had to convince the Burgerbad spa operators in Leukerbad. The spa uses about 28 % of the thermal spring water to offer its guests superb relaxation in its wide choice of pools. Although the thermal water looses some of its energy in the pools, it leaves the spa with a temperature of more than 30 °C. The fact that this temperature level is sufficient to ensure the supply for a modern heating system shows the high energy potential of these thermal springs.

What distinguishes the Burgerbad project from previous projects is the fact that it is the first project for which the tank version of the HUBER RoWin Heat Exchanger has been used. The heat exchanger modules are not mounted in a stainless steel tank as usual but directly in the concrete case they are installed in a tank below the parking area on the rear side of the spa. In order not to lose some of the parking area, the tank has load-bearing covers. So, it is out of sight but thanks to its excellent performance certainly never out of mind. As the water flows from the building by gravity there is no need for a pump to feed the heat exchangers, this saves energy and significantly improves efficiency.

The optimised interconnection of both heat exchangers ensures an output of 450 kW from a wastewater flow of 8 – 9 l/s. As about 300 kW are added from an external energy source the heat pump receives 750 kW with a temperature of about 20 °C and generates a heat output in excess of 1 MW which is available for use for heating purposes within the Burgerbad spa. It is therefore not only the spa guests who profit from the heat from the thermal springs but also the Burgerbad operators. A natural energy source, all-year-round availability, heat exchangers installed in the outflow from the spa, a high coefficient of performance of the heat pump – this list of benefits could certainly be continued. The Burgerbad operators realised how profitable it is to use heat recovered from wastewater. Once this news has spread beyond the Valais, Burgerbad will certainly not remain the only spa that optimises its energy balance with a HUBER RoWin Heat Exchanger.
Guaranteed heat transfer performance through automatic surface cleaning – a unique design to recover green energy

HUBER RoWin Heat Exchangers are the solution in three projects for wastewater heat recovery in Switzerland

Heat input into the building: 1300 kW
Max. process water flow: 42 l/s
➤ Load case heating:
- extraction of heat from the building: 940 kW
- Max. heat input into receiving water: 840 kW
- Max. amount of process water: 17 l/s

Utilisation of heat from wastewater in the thermal spa Burgerbad at Leukerbad
Burgerbad is the biggest alpine thermal spa in Europe and uses a HUBER RoWin Heat Exchanger to optimise its energy balance. Read the detailed article on page 10 to get the full story.

Other projects for wastewater heat utilisation in process
➤ Chemical production
➤ Potato processing industry
➤ Thermal spa
➤ Municipal wastewater upstream and downstream of a WWTP
➤ Sea water
➤ Paper production
➤ Slaughterhouse wastewater

The HUBER Thermin® system with the RoWin Heat Exchanger in a tank or as a submersed version for sewers offers new solutions for the recovery of heat from wastewater and for cooling media that have been impossible previously.

Effective and sustainable flushing of sewers: HUBER PowerFlush®

Flushing gate optimally adjustable to any sewer shape
- Regular flushing using the dry weather flow
- Frameless flushing gate without an invert step
- Flexibility of submerging the gates
- Easy retrofitting without any interruption of sewer operation
- Suitable for any sewer cross section
- No additional or special manholes required
- Minimum energy demand

The main component of the system is the flushing gate which is designed and intended even for larger nominal diameters and can normally be installed without the need for structural alterations, without additional installation openings or special manholes, and without any interruption of sewer operation. This new system without an invert step is suitable to be used for very different sewer shapes and even complex operation conditions and hydraulic requirements. Various designs for different sewer profiles and nominal diameters have well proven their value in practice.

The fully automatic electrical control unit is tailored to specific local requirements to guarantee maximum system efficiency. Specific operating parameters are defined together with planners and operators and can be changed any time to optimise the process without the need to interrupt system operation.

The HUBER PowerFlush® is a economical and ecological solution which maintains the hydraulic capacity of sewers, reduces the frequency of overflow events and thus protects waters. It also prevents other negative effects, such as high peak loads arriving at the wastewater treatment plant and odour annoyance, and minimises energy consumption and costs.

Optimal flexibility with Complete Plants

Solutions
- Berching

Flushing gate installed in a rectangular storage sewer

Over the course of the time there are a number of reasons for sedimentation on the sewer base: Regular retention combined with a slow flow velocity especially in combined sewer systems leads to sedimentation of material which may contain also a huge amount of organic material. The subsequent reduced sewer cross section impairs system efficiency. Negative effects are the increase of stormwater overflow quantity discharged into the receiving water courses, high peak loads arriving at the wastewater treatment plant and sewer damage caused by wrong handling of high-pressure cleaners. But the sediments need to be removed to re-establish the efficiency of sewers. A number of measures are known to solve the problem. These solutions differ technically and in terms of economic efficiency. Although even the ancient Romans had used surge flushing to clean their Cloaca Maxima (literally ‘greatest sewer’) in Rome, it was only at the end of the seventies when this method was recovered as the German standards 128 of the German Association for Water, Wastewater and Waste (DWA) were introduced for cleaning storage and retention sewers of combined sewer systems. Today, sewer flushing is again a well-proven method to clean sewers and storage structures but available solutions and strategies differ considerably in terms of technical and economic efficiency.

In Germany, sewers are usually high-pressure cleaned. This method is also called an emergency strategy and consumes a lot of energy and fresh water. Furthermore, it is carried out under unhygienic working conditions, lacks the preventive aspect of avoiding sedimentation and involves a high risk of damaging sewer walls or connections if applied improperly. To ensure reliable system operation without interruption of sewer operation, the innovative HUBER PowerFlush® has been developed for operators of sewer systems and sewers with storage capacity and overflow. The patented sewer flushing system allows for complete removal of sediments in sewers and even prevention of potential future sedimentation. The installation of flushing gates based on the principle of sewer flushing is an efficient way to solve the sedimentation problem. HUBER flushing gates are designed to generate the required flush water volume by impounding the water before opening quickly to free the total sewer cross section and allow the powerful flush water jet to remove the sediments due to its high flow velocity. Sediments in the gate area are also removed due to the formation of a downstream vortex. The special features of the HUBER PowerFlush® system:
- Sewer flushing independent of storm events

Every plant our customers buy contributes substantially to achieving CO2 reduction goals. Here are some examples of such projects:

Utilisation of heat from wastewater for the Wintower high-rise building at Winterthur

22 000 m³ about the size of three football fields but is also the floor spa of the 28 stores of the Wintower in Winterthur, Switzerland. It is a real heating technology challenge to cool such a building in summer (+ additional benefit) and heat it in cold winter months. About 600 kW heating energy is needed in Winterthur. The HUBER ThermWin® system was installed and successfully put into operation at the beginning of this year.

An amount of approximately 50 l/s wastewater is taken from the sewer and pre-treated in a ROTAMAT® Pumping Stations Screen RoK 4, size 4,700 l. Two submersible pumps deliver the water to the two RoWin Heat Exchangers size 8 installed in the cellar of the Wintower. Heat transfer to the cooling medium takes place inside the heat exchangers. The medium is heated and supplies the heat pump with the necessary energy. About 600 kW are in this way provided for the heating system. The plant is also used for cooling in summer, extracting up to 600 kW from the building.

It is an ideal energy sink not only due to its far higher heat capacity but also due to its temperature of about 30 °C. All-year-round utilisation and high coefficients of performance of the heating/cooling machine guarantee high saving potentials so that investment costs pay off soon. Planned has been commissioned in April 2011.

Technical data:
- 2 RoWin Heat Exchanger units
- 1 HUBER Pumping Stations Screen RoK 4

Operating parameters:
- Load case heating:
  Max. 480 kW extraction of heat from the wastewater
  585 kW heat input into the building
- Load case cooling:
  600 kW extraction of heat from the building
  Max. 840 kW heat input into the wastewater
- Wastewater volume: Max. 50 l/s

Planned Utilisation of heat from wastewater in a wood processing industry

Can you imagine how much heat energy is hidden in a flow of 150 m³/h process-internal circulation water with a temperature between 50 °C and 58 °C, or how it is cooled by about 8 °C by the HUBER RoWin Heat Exchanger? About 1200 kW (cooling capacity) is available to heat the production halls and offices in a wood processing industry. The production plant operates 24 hours, its circulation water contains a lot of wood fibres and critical aggregates. Every type of heat exchanger tested before had the problem that its surface got almost completely blinded within a very short time. It turned out that only the HUBER RoWin Heat Exchanger with automatic surface cleaning and solids removal is able to ensure the reliable utilisation of waste heat. Basic tests over several weeks proved that the heat exchanger surfaces are perfectly cleaned every day and encrustation is reliably prevented in summer, however, the circulation water sometimes reaches a temperature of up to 58 °C, which is a critical range that can have a negative impact on product quality.

Siemens in sewers are one of the major problems with the operation of dewatering systems. Organic and inorganic sediments settle on the sewer bottom during dry weather or flushing of wastewater retention sewers, with very negative consequences. Efficient sewer flushing ensures lasting prevention of such sediments.

Cleaning of sewers and stormwater retention sewers has been gaining in importance recently. Sediments on the sewer bottom and washouts and the material grow more and more over the course of time. There are a number of reasons for sedimentation on the sewer base: Regular retention combined with a slow flow velocity especially in combined sewer systems leads to sedimentation of material which may contain also a huge amount of organic material. The subsequent reduced sewer cross section impairs system efficiency. Negative effects are the increase of stormwater overflow quantity discharged into the receiving water courses, high peak loads arriving at the wastewater treatment plant and sewer damage caused by wrong handling of high-pressure cleaners. But the sediments need to be removed to re-establish the efficiency of sewers. A number of measures are known to solve the problem. These solutions differ technically and in terms of economic efficiency. Although even the ancient Romans had used surge flushing to clean their Cloaca Maxima (literally ‘greatest sewer’) in Rome, it was only at the end of the seventies when this method was recovered as the German standards 128 of the German Association for Water, Wastewater and Waste (DWA) were introduced for cleaning storage and retention sewers of combined sewer systems. Today, sewer flushing is again a well-proven method to clean sewers and storage structures but available solutions and strategies differ considerably in terms of technical and economic efficiency.

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HUBER wastewater treatment solution for about 120,000 people

STP Sovetsk – Largest MBR plant in Russia relies on VRM® technology

The plant with its innovative MBR technology will treat the wastewater of about 120,000 residents (26,000 m³/d) in and around Kaliningrad. Presently Kaliningrad is still uncharted territory as far as wastewater treatment is concerned, there is only one pumping station from old Soviet times. The major part of the wastewater is discharged to the river Neman without any prior treatment. To meet the high Russian effluent standards one of the most innovative sewage treatment plants in Russia will be built at Kaliningrad in the next two years. As a system supplier for the complete mechanical pre-treatment and filtration equipment, including additional aggregates and electrical control systems, HUBER has moved up into the league of suppliers for large-scale MBR projects. HUBER has also been commissioned to provide the hydraulic layout of the filtration chambers. Through active participation in the overall process we take on additional responsibility and provide the customer with additional value in respect of process safety. We will report in detail about this project after completion and start-up.

The first HUBER BioMem® plant in Greece was installed and put into operation at Marathopolis in September 2010. The plant with 125 m² membrane surface is designed for the wastewater of 150 employees of a nearby hotel. The daily flow to the plant is season-dependent and ranges from 15 to 30 m³. Different operation concepts are applied to meet the requirements of varying flow rates from the building development: In times of low loads the plant is operated as a combination of a SBR plant and downstream filtration unit. With peak flows the plant is operated as a conventional MBR plant with upstream denitrification followed by nitrification and downstream filtration. The operating staff of the neighbour hotel takes care of the MBR plant with VRM® membrane unit including operational checks twice a week.

Washing and cleaning agent industry in Brazil

Another industrial membrane plant with HUBER BioMem® modules for wastewater treatment has been installed in a company in Brazil which produces washing and cleaning agents. Start-up of this 125 m² plant is scheduled for May 2012. The planned hourly throughput, which is taken as a partial flow from production, is 0.65 m³/h. The average organics BODS load is approximately 3,000 mg/l. The wastewater to be treated is pre-screened with a 0.5 mm ROTAMAT® filter. The pre-screened wastewater collected in a buffer tank (due to varying inflows). Pre-screening also protects the membranes against coarse material that may be contained within the wastewater flow. In addition, the pH value is corrected in the buffer tank. The wastewater is then pumped into the MBR plant with a DS concentration of 8 g/l and finally treated by the HUBER BioMem® filtration unit with ultrafiltration membranes. The plant opera- tors are happy that they can directly reuse the treated wastewater for cleaning in the production buildings.

Municipal application in Croatia

The HUBER BioMem® plant is designed for 500 PE and will clarify the wastewater of a small village in Istria, in the north-western part of Croatia - a typical decentralized application. Due to tighter legislation the plant must both achieve high reduction rates related to nitrogen elimination and meet increased hygiene standards. Required and guaranteed energy values must strictly be met and are continuously monitored by local authorities.

The HUBER BioMem® system has well proven its perfect suitability for MBR plant sizes from 100 to 2,500 PE and is used in more and more applications worldwide.
Inlet concentration: 35 mg/l
Outlet concentration: > 99.0 %, > 99.6 %, > 99.9 %, 1 mg/l, 28 mg/l, 0 mg, 1389 mg/l, 5 mg/l

InBev, Planta Sur – Maximum efficiency on a small footprint

Leading global brewer buys its first HUBER MBR plant

parameter |
inlet concentration |
COD |
3750 mg/l |
| 104 mg/l |
| 35 mg/l |
| > 99.6 % |

BOD |
1389 mg/l |
| 28 mg/l |
| 5 mg/l |
| > 99.6 % |

TSS |
200 mg/l |
| 1 mg/l |
| 0 mg |
| > 99.9 % |

With a sales volume of about 400 million hectolitres, Anheuser-Busch InBev based in Limw, Belgium, is the worldwide leading brewery group. The company is one of the five largest producers of consumer goods with about 114,000 employees working for them in more than 23 countries, 2,800 of them in Germany: Their portfolios include 200 brands in more than 100 countries, among them are the global premium brands Beck`s, Stella Artois and Budweiser. With its products Anheuser-Busch InBev is number one or two in 19 key markets worldwide. In more than any other brewery InBev Planta Sur in Barrio Porteño de Pompeya in Buenos Aires is their largest production for lageronates, such as Pepsi, 7Up, Mirinda, Pils de los Toros and waters of different flavours. A total production of 25,000 hectolitres is achieved with 10 bottling lines, these are 1.1 million units per day. Increasing wastewater volumes and higher environmental standards forced InBev Planta Sur in 2011 to think about a new wastewater treatment solution. Besides, a part of their premises where their old wastewater treatment plant is installed has been declared a protected nature reserve so it lies very close to a river. They could therefore not build larger additional wastewater treatment systems to handle the high volume of simultaneously 1,440 m3/d but had to use mainly existing tanks. It was clear that membrane technology would be the best available solution to meet environmental standards even on a small footprint. When the biological HUBER system was designed with a higher MLSS of 12 g/l and planning of the associated equipment units was completed it turned out that even the previous aeration tank volume of 1,590 m3 is sufficient and no substantial extension on work was required. The MBR solution has not only technological but also marketing advantages as InBev Planta Sur as a member in a support program of the Environmental Agency of Buenos Aires show that improved technologies and processes are not only a means to achieve more efficient and economical production but can also protect the environment. We prepared our offer in cooperation with our sales partner Servier and submitted it to the end customer at the end of April 2011. We offered two VRM® 30 / 480 units, redundant permeate and recirculation pumps, blowers for aeration, cleaning work needs to be done. It was a special request of the customer that the VRM® 30 / 480 should be able to filter the total volume flow of 60 m3/h even during plant maintenance. Also the permeate pumps have therefore been designed to ensure 30 to 60 m3/h can be covered. Another special feature of this project is that it is not possible to feed the VRM® chamber by gravity due to the low geodetic altitude and wide distance between the VRM® chamber and biological treatment system. The VRM® chamber is therefore fed from the three bio-tanks by means of the customer’s pumps and a distribution system. Also the flow from the VRM® chamber to the biological system is returned by pumps. These pumps have been supplied by HUBER. The plant was installation and commissioned in January and February 2012 and soon achieved the required effluent quality. This project shows that customers rely on our extensive experience in the field of brewery wastewater treatment and adds another outstanding reference installation to our large number of reference projects.

Wacker Chemie AG, Burghausen

Cooling water screening – Pump station Überackern, Austria

Founded in 2014, the Wacker Chemie AG works at Burghausen is the most important production site of Wacker Chemie and biggest chemical industry location in Bavaria. On more than two square kilometres plant grounds about 10,000 employees manufacture some thousand different products in about 110 production plants. The Burghausen site is located 110 km east of Munich near the Austrian border, in the Bavarian Chemical Triangle. Several pump stations extract almost the total cooling water required from the nearby river Salzach and the Alz Canal. The low pressure pump station Überackern on the Austrian side was built around in the fifties. It is operated by Wacker Germany and delivers cooling water from the river Mühlbach to the Burghausen site. Previously, three treatment lines were installed there, each consisting of a coarsens (40 mm wire rope type screen) and fine bar screen (2 mm travelling chain screen) for water treatment. As too much silt passed through the two screen stages especially in autumn, the coarse screens were replaced by 15 mm telescope type unit at the beginning of 2010. Recently, also the fine screens were replaced by HUBER perforated plate screens with 3 mm aperture to further improve the situation and achieve an increased retention of pollutants with the result of reduced cleaning requirements for the downstream heat exchangers. Due to the positive experience with HUBER machines over many years, the customer relied on us and ordered three HUBER Escamax® screens, size 7000 / 1752 / 3 mm. Since June 2010, these screens have reliably extracted water from the river Mühlbach. Previously, the screenings separated from the river water were discharged to a trough behind the fine screen and removed manually. This step has been automated with the installation of two HUBER ROTAMAT®-Screw Conveyors Ro 8t units for the removal of max. 3 m³/h screenings and their transport over about 17 metres. The treatment of river / surface water for process cooling / drinking water production requires sturdy and reliable screens. HUBER screens of the MAX-STEP SCREEN® family have therefore been designed to ensure 30 to 60 m³/h can be covered. Another special feature of this project is that it is not possible to feed the VRM® chamber by gravity due to the low geodetic altitude and wide distance between the VRM® chamber and biological treatment system. The VRM® chamber is therefore fed from the three bio-tanks by means of the customer’s pumps and a distribution system. Also the flow from the VRM® chamber to the biological system is returned by pumps. These pumps have been supplied by HUBER.

Wacker Chemie AG, Burghausen

Automated screenings removal

3 HUBER Escamax® screens, size 7000 / 1752 / 3 mm

Parameter |
inlet concentration (NOMINAL) |
COD |
3750 mg/l |
| 104 mg/l |
| 35 mg/l |
| > 99.6 % |

BOD |
1389 mg/l |
| 28 mg/l |
| 5 mg/l |
| > 99.6 % |

TSS |
200 mg/l |
| 1 mg/l |
| 0 mg |
| > 99.9 % |

The two VRM® 30 / 480 units during installation into the membrane chambers

Currently the membrane technology is being further developed. This technology is being further developed. This technology is being further developed.
HUBER MBR solution for 5-star luxury hotel

In December 2010 HUBER SE received the order to supply a MBR plant including a preliminary screen for the Xanadu Island Resort. The Xanadu Island resort is a prestigious and exclusive five-star all suite hotel at the west coast of Turkey. It is situated on a private peninsula, amidst beautiful gardens and flowered courtyards and surrounded by the deep blue water of the Aegean Sea. This enchanting and elegant resort belongs to the famous Xanadu chain offering an All Inclusive concept with High Class service.

This project has posed new challenges for us. The plant had to fit into an existing building and a narrow time frame had to be observed. The customer wanted to have the work completed before the start of the summer holiday season in May this year. To make sure our proposal would optimally meet the customer’s requirements we had to find out about his specific needs, so we traveled to Turkey still in December and discussed the project with the customer together with our Turkish sales representatives and representatives of the planning office BRT Architects.

This early meeting has greatly facilitated the further execution of the project because we learned a lot of useful facts and could take these into account in our project planning right from the beginning. HUBER supplied the first two VRM® 20/300 units in April 2011, these were immediately built into the new filtration chambers which have been integrated in the basement of the operational building. Two weeks after the first delivery the next two VRM® 20/300 plants and two ROTAMAT® Micro Strainer Ro9 E 300/3 units for wastewater pre-screening arrived at the hotel. Also these ultra-filtration plants and screens were installed immediately after delivery. The biological treatment system including the complete pipework was completed before the start of the summer holiday season in May this year.

When starting this project we realized that the core component of the HUBER VRM® 20/300 dangling over the Aegean Sea was finally ready to go within about 1 hour.

In December 2010 HUBER SE received the order to supply a MBR plant including a preliminary screen for the Xanadu Island Resort. The Xanadu Island resort is a prestigious and exclusive five-star all suite hotel at the west coast of Turkey. It is situated on a private peninsula, amidst beautiful gardens and flowered courtyards and surrounded by the deep blue water of the Aegean Sea. This enchanting and elegant resort belongs to the famous Xanadu chain offering an All Inclusive concept with High Class service.

The core component of the HUBER VRM® 20/300 dangling over the Aegean Sea. Hotel entrance

Wastewater treatment solution for five-star hotel Xanadu Island

Continued from page 1: HUBER are proud to announce the launch of a new range of innovative MBR systems

smartMBR® - The new generation of water recycling systems for buildings

“…we are very excited about the launch of this product range…” says HUBER CEO Georg Huber. “Many cities are already running out of water, and this situation will get much worse in the coming years. The smartMBR range provides a user-friendly and visually attractive solution. These features are important to city dwellers. It also allows the implementation of water recycling on a step by step basis, which is the reality of financial and practical constraints requires.”

Technical Details:

The units are of full stainless steel construction to ensure they are strong enough to cope with the bumps of transportation, and a long operating life. All components and electrical cabling are pre-installed at our factory. The side mounted ancillaries unit is located inside the tank for safety during transport. Once the smartMBR range is on site, the ancillaries unit is simply removed from inside the tank, and fixed onto the side of the tank with 4 bolts. Services connections are quickly and easily made via twist lock connectors or multi-pin electrical connectors and unit is ready to go within about 1 hour.

When routine cleaning of the membrane units is required, the closing has been made as clean and easy as possible for the service personnel. The membrane unit has been designed so the lifting points and the mounting brackets are all raised up above the activated sludge level. An optional portable gantry crane will be offered with the units to allow lifting out of the membrane units for routine cleaning.

The smartMBR range will be formally launched at IFAT Entsorga 2012 which takes place in Munich during May.

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**Innovative HUBER MBR system for wastewater treatment**

The comprehensive renovation of the GIZ headquarters in Eschborn carried out from 2004 to 2006 included a concept for the separate collection of the different wastewater flows in house no. 1 (GIZ headquarters, pic. 1). Under the SANIRESC project (SANI-Recycling@ESchborn) HUBER supplied, among others, the wastewater treatment plants for the production of service water from greywater. Due to its innovative character, the project is supported by the Federal Ministry for Education and Research (BMBF; funding no. 02WD0952). The wastewater flows from kitchens, wash hand basins and washing water sinks in the GIZ building (wash water without faeces) are collected separately and treated in a mechanical pre-treatment unit and the innovative MBR system. 38 washing and wash hand basins and 8 dish washing machines are connected to the greywater line, with a volume of 350 l greywater to be treated per day. The following modular components are installed (MBR greywater treatment plant, pic. 2):  
- Aerated intermediate storage tank with preceding screen (3 mm mesh)  
- Membrane bioreactor with submerged HUBER ultrafiltration module in a plastic tank  
- Permeate / service water storage tank  
- Electric measuring and automatic control devices including remote data transmission (incl. fault indication via SMS) and telecontrol  

The mechanical pre-treatment unit, a 3 mm screen element, removes coarse material (hair for example) prior to the MBR treatment process. The pre-screened wastewater is intermediately stored in a tank from where it is pumped batchwise into the membrane bioreactor. An ultrafiltration module with 38 nm separation size is used for filtration in the MBR tank. Via a pump the permeate is sucked off through the membranes with some underpressure (approx. 60 mbar) and stored in a tank to be used as service water. Continuous intro-duction of scouring air below the membrane modules prevents clogging of the membrane surface.  

The plastic tanks are customized units perfectly tailored to meet specific customer requirements, and they are odour-tight. To ensure as problem-free as possible plant operation, for the first time a telecontrol sys-

**Table 1. Greywater treatment test results from the hotel Fuchsbräu**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>BOD</td>
<td>&lt; 5 mg/l</td>
<td>(-)</td>
</tr>
<tr>
<td>Oxygen saturation</td>
<td>≥ 50% (80-120%)</td>
<td>(-)</td>
</tr>
<tr>
<td>Total coliforms</td>
<td>&lt; 100/ml (100)</td>
<td>(-)</td>
</tr>
<tr>
<td>E-Coli</td>
<td>n.m. below limits of detection</td>
<td>(-)</td>
</tr>
<tr>
<td>Pseudomonas aeruginosa</td>
<td>&lt; 1/ml (-)</td>
<td>(-)</td>
</tr>
</tbody>
</table>

Quality standards for toilet flushing water and permeate quality (random samples taken during the test period October and November 2011, hotel Fuchsbräu, Beilngries, Germany)  
= Berliner Markblatt, 1995 | Limit values for bathing waters according to RL 76/160/EWG  

Since the beginning of 2011 the treated greywater is fed into the service water network and used as toilet flushing water in the hotel rooms. Consequent use of the high-quality service water for toilet operations sustainably reduces drinking water consumption.

**Technical Data:**  
- Bio-system volume: maximum 0.5 m³  
- Membrane surface: 3.5 m²  
- Separation size: 38 nm  
- Membrane material: PES  
- Operating parameters:  
  - Flow rate: 350 l/d  
  - DS content: 3 - 6 g/l  
  - BDS ≤ 0.1 kg COD/(kg DS * d)

Since the beginning of 2011 the treated greywater is fed into the service water network and used as toilet flushing water in the hotel rooms. Consequent use of the high-quality service water for toilet operations sustainably reduces drinking water consumption.

Hotel Fuchsbräu at Beilngries, Germany uses recycled greywater for toilet flushing

The idea of sustainability

The town Beilngries with a population of about 8,750 is a tourist centre in the middle of the nature park Altmühl in Bavaria. The historic town has region-wide water supply and wastewater disposal systems according to German standards. Drinking water of excellent quality is always available. Due to this specific water consumption of private house-holds in the municipality ranges around the German average consumption, which is a rather low value. Especially tourism industry attaches great importance to the idea of sus-tainability with the use of water because they have an economic benefit from saving water. The innova-tions applied in the tourism branch not only on the energy sector but also for water use can serve as example solutions for densely populated are-as.  

**Greywater recycling with HUBER MCB**

The four-star hotel Fuchsbräu in Beilngries with indoor swimming pool, sauna and seminar house (pic. 6) has already won several awards. When they reopened their hotel from 2008 to 2010, especially the lis-

- Aerated intermediate storage tank with preceding HUBER ultrafiltration unit (type MCB 3 with 21 m² membrane surface)  
- Storage tank with automatic drinking water feeding  
- Electric measuring and automatic control devices including fault indication via SMS  
- Membrane bioreactor with submerged HUBER ultrafiltration unit (type MCB 3 with 21 m² membrane surface)  

The quality of the treated greywater meets the microbiological requirements of the EC standards for bathing waters RL 76/160/EWG (1975). As the permeate is free of particles and odourless it meets the high aesthetic quality expected by hotel guests and owners. The quality standards for toilet flushing water and the permeate quality achieved during the test period in October and November 2011 are presented in table 1.  

- Aeration tank volume: maximum 1,500 l  
- Filtration unit: 1 x MCB 3  
- Membranefläche: 10.5 m²  
- Operating parameters:  
  - Flow rate: 750-1,960 l/d  
  - Dry substance: 5 g/l  
  - BDS ≤ 0.1 kg COD/(kg DS * d)

The treatment plant at the headquarters of the Ger-
man Society for International C oope-
ration (GIZ) in Eschborn collects indi-
vidual wastewater flows separately. Due to the very high clarification effi-
ciency of the innovative HUBER MBR system used to treat the greywater, the high-quality effluent can be used for irrigation or toilet flushing. The HUBER MBR system uses membrane ultrafiltration membranes with 38 nm separation size.

**Table 1. Technical Data**

**Project Data**

- Bio-system volume: maximum 0.5 m³  
- Membrane surface: 3.5 m²  
- Separation size: 38 nm  
- Membrane material: PES  
- Operating parameters:  
  - Flow rate: 350 l/d  
  - DS content: 3 - 6 g/l  
  - BDS ≤ 0.1 kg COD/(kg DS * d)
HUBER Global Service

Competent service for optimal plant operation and operating costs

HUBER Plant 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 economy evaluation and offer customised solutions. The ideal implementation of the selected solution on site will be guaranteed by our qualified service technicians.

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 HUBER service centre in Berching.

Service makes the difference

We offer an extensive product-accompanying service for all your HUBER machines and plants during their entire lifespan.

Don’t hesitate to contact us!

Service packages are available to meet any budget and we provide a tailored solution for every individual customer to guarantee maximum operating reliability and minimised operating costs in the long run!

HUBER Spares Parts Service

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

HUBER Repair Service

Prompt and expert repairs minimise expensive downtime. 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 factory.

HUBER Maintenance Service

Preventive maintenance is without doubt more economical than reactive maintenance. We offer customised service packages to ensure maximum performance is achieved in terms of operating reliability and costs.

HUBER Product 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 could be achieved through equipment optimisation. We provide and guarantee this service with our HUBER product optimisation service.

HUBER TeleService

“You cannot see us but we are with you and your machines.” The installation of a HUBER tele service system enables our service specialists to daily check all important operating parameters and immediately notify the customer in case of any deviation. This guarantees maximum safety and operation efficiency.

HUBER Service for products from other manufacturers

We offer an extensive and professional service for products from other manufacturers, comprising spare, repair and equipment optimisation. One contact person for all service requests - a clear logistic and economical benefit for our customers!

Global HUBER Consultancy Service

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.

Hygienic high-quality drinking water for consumers

Protection of drinking water, our most important resource

Drinking water in Germany must meet the high quality requirements of the German Drinking Water Ordinance which specifies the permissible limits for the substances contained within water. The four water works in the supply area of the municipal utility Vereinigte Stadtwerke GmbH supply hygienic high-quality drinking water to their customers. The water quality is regularly controlled by an independent laboratory in coordination with the local health authorities.

The water comes exclusively from natural groundwater resources and is treated to drinking water quality in the four water works. Oxygenation is applied to oxidise the iron and manganese naturally contained in the soil. The generated flocs are filtered out by gravel filters. Further treatment is not necessary. The water is delivered to the supply network via reservoirs as and when required. Customers are at any time supplied with the required water quality. About 12 million litres of drinking water a day flow through the 756 kilometres long network to the connected households.

In cooperation with Buhlert Metallbau GmbH in Ahrensburg and HUBER SE, Vereinigte Stadtwerke GmbH have planned, dimensioned and installed a HUBER Air Filter Plant L361. A respiration process results from the varying water levels in the clear water reservoir for which reservoir aeration and deaeration is required.

The ambient air contains a number of particles and contaminants from natural processes, such as erosion or decomposition of organisms, and from human activities, such as agriculture or industry. Dust and various organisms (e.g. pollen, fungi, etc.) may enter the drinking water reservoir via the respiration process. During reservoir operation all these particles would settle on the wall, ceiling and water surface. Due to condensation of water on the tank walls they would be a danger for water quality. German DVGW standards therefore demand that the openings for tank ventilation must be protected with screens and equipped with filters (DVGW worksheet W 300, Bonn, June 2003). To make sure the required drinking water quality can still be guaranteed, Vereinigte Stadtwerke GmbH decided to replace their old technical equipment.

Together with HUBER and Biebelried Metallbau GmbH a solution has been developed which ensures the reliable removal of small, unhygienic particles: a filter for suspended matter with preceding fine dust filter to increase the life of the filter cell.

To eliminate damage to the structure caused by high overpressure or underpressure, the plant has been designed for 400 Pa maximum pressure difference and a safety valve has been integrated in the air line. Due to scarce space and to meet the customer’s request for an attack-proof, lockable, side-hinged louver, we have developed a special solution together with the operators.

The air filter plant and air line, including the connection plates and louvres, have been designed so that aeration and deaeration is achieved with one plant for both reservoir chambers. The customer still has the option to install a second air filter plant later without the need for much structural alteration.

The future-proof investment guarantees the supply of hygienic drinking water for all consumers also in the future.