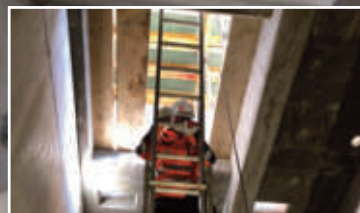


# ABIONIK News

**Nr. 04**



**Wedelwitz  
waterwork**



**Rockenberg  
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prevention project  
Rettenbach**



**Research Project -  
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**Our vision:** Improving life  
with clean air and water

**Dear business partners,  
Dear readers,**

Welcome to what is already the fourth issue of Abionik News.

Discover the true value of an investment that reveals itself over time, and is influenced by a multitude of crucial factors. Irrespective of initial expenditure, the essential key elements are operational reliability, sustainable longevity, minimum maintenance requirements and constant efficiency.

We at the Abionik Group have had these aspects in our sights all along, and assume unlimited responsibility for these success factors in developing and marketing our products.

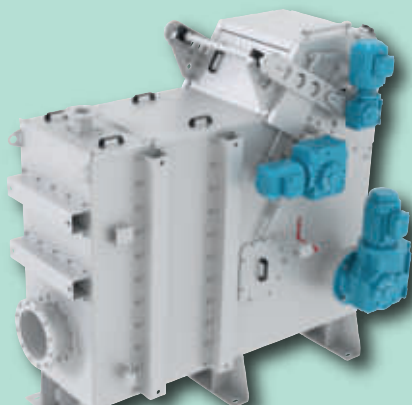
Our mission? To support you in the best possible way – not just for a moment in time, but for the whole life of a machine.



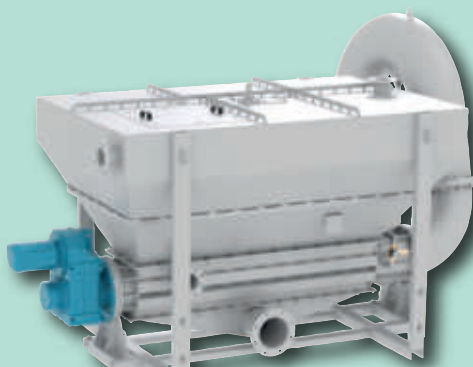
This commitment is demonstrated by our innovative service which focuses on your needs at every stage. From first commissioning to regular maintenance, we focus on a partnership based on trust, efficiency and unsurpassed support.

Our passion for excellence always drives us to find new ways of doing things, not simply to offer new products but rather integrated solutions which exceed your expectations. In a constantly changing world, we remain adaptable and flexible, always focussing our attention on your individual needs and requirements.

With the integration of Frankenberger GmbH, we embarked on a new path a few months ago, expanding our portfolio to include extraordinary products in the area of waste water treatment. In doing so, we have gained a team of highly qualified and motivated people who are always prepared to think outside the box to explore new applications and develop pioneering products.



Compact screen



Septage receiving station



αβ- Multi Rake Bar Screen

## Our vision:

Improving life with clean air and water

Join us on this journey! As well as municipal water treatment, industrial waste water purification is becoming increasingly important. Where previously it was common practice to do only what was absolutely necessary, industrial customers today recognise the enormous potential of comprehensive water treatment. Thanks to innovative technologies and advanced processes, water, energy, heat and valuable residues can be recovered and seamlessly integrated into the production process.

Our smart technology links these solutions together in a revolutionary way, not only in order to fulfil regulatory requirements, but also to reduce your costs. At the same time we are contributing to protecting our valuable resources and the environment. Prepare yourselves to redefine the handling of industrial water. Welcome to a world in which efficiency, sustainability and the conservation of resources go hand in hand. Experience the future of industrial water treatment – with us today!

Ingenuity and the determination to deliver high performance are the core competencies of our company. We set standards when it comes to developing ground-breaking products and optimising product life cycles. Our aim is to build long-term customer relations and to ensure that your investment in our machinery is still a good decision even years later.

Welcome to a world full of opportunities! I do hope you have enjoyed reading this issue.

**Yours sincerely,**

**Daniel Crawford,  
CEO ABIONIK**



Screenings cutter



Grid classifier



Filterscreen

**WWW.ABIONIK.COM**



## Research Project - InReUse

### Modular industrial wastewater treatment with membrane bioreactors, reverse osmosis and concentrate treatment

**Worldwide, water resources are limited and unevenly distributed. Together with the strong growth of the world population and the resulting increased demand for food, this is one of the main causes of increasing water scarcity.**

Water plays a very important role in many product manufacturing processes in industry. As it is used for different applications, the quality changes due to the introduction of impurities. Often in industrial processes, water is only used once. The reuse of industrial wastewater can be reflected positively in many areas. On the one hand, there is the possibility of increasing production capacity and, on the other hand, improving the sustainability of the products. At the same time, the legal requirements are met, which leads to a reduction in the pollution of local waters.

The InReUse project "Modular Industrial Wastewater Treatment with Membrane Bioreactors, Reverse Osmosis and Concentrate Treatment" will demonstrate the feasibility of an integrated membrane bioreactor and reverse osmosis (MBR-RO) system including concentrate management for an industrial park in Vietnam.

This is expected to increase water availability while reducing discharge to the water body through a reuse concept. The two-year project is funded by the German Federal Ministry for the Environment, Nature Conservation Nuclear Safety and Consumer Protection (BMUV) and carried out together with the Technical University of Berlin (TU) and the Ho Chi Minh City University of Technology (HCMUT).

The concept of combining membrane processes with biological wastewater treatment in a membrane bioreactor is already used in many applications that require high efficiency. Examples of applications can be found

where space limited, such as on ships or in remote facilities like mountain huts. The high packing density also offers a decisive advantage in the project, as space in existing industrial parks is expensive. On the one hand, the use of this technology makes more water available and, on the other hand, reduces the discharge of polluted industrial water into water bodies through innovative reuse concepts. Given Vietnam's rapidly growing industry, the importance of implementing sustainable solutions increases with each new production facility.

A compact container plant will be built, with a capacity of 5-10 m<sup>3</sup>/d (Fig. 1). In the first step, the wastewater flows through a mechanical pre-treatment to remove coarse material. This is followed by a biological treatment with upstream denitrification. In this step, carbon and nitrogen will be degraded. This is followed by the MBR stage, with 2 x FM 06-2-2 filters (Fig. 2), with a total of 25 m<sup>2</sup> active membrane surface. By using ultrafiltration membranes, colloidal particles, macromolecules, and microorganisms are retained. To control the whole system, important parameters such as total suspended solids and oxygen content as well as pH value, temperature and redox potential are measured. For the MBR filtration, the transmembrane pressure as well as the flow rate are controlled.

This technology is to be adapted and optimized to the specific requirements in the Vietnamese industrial parks and the various local applications. For this purpose, an extension of this modular technology is planned with a reverse osmosis and connected concentrate management to provide a water quality that meets the highest demands in addition to the direct effluent quality of the MBR. The focus here is on matching the water quality as closely as possible to the use to ensure energy-efficient treatment.

For the project, the treatment plant of the Le Minh Xuan Industrial Park, near Ho Chi Minh, was selected, which has a capacity of 11,000 m<sup>3</sup>/d. In this industrial area textile production, dye works and tanneries can be found, which is reflected in the inflow of the wastewater treatment plant (Fig. 3).



Abb 2: Martin Systems FM06-2-2 filter (25 m<sup>2</sup>)

# Membrane Filters for Membrane Bioreactor (MBR) Application

For municipal, industrial and maritime sector

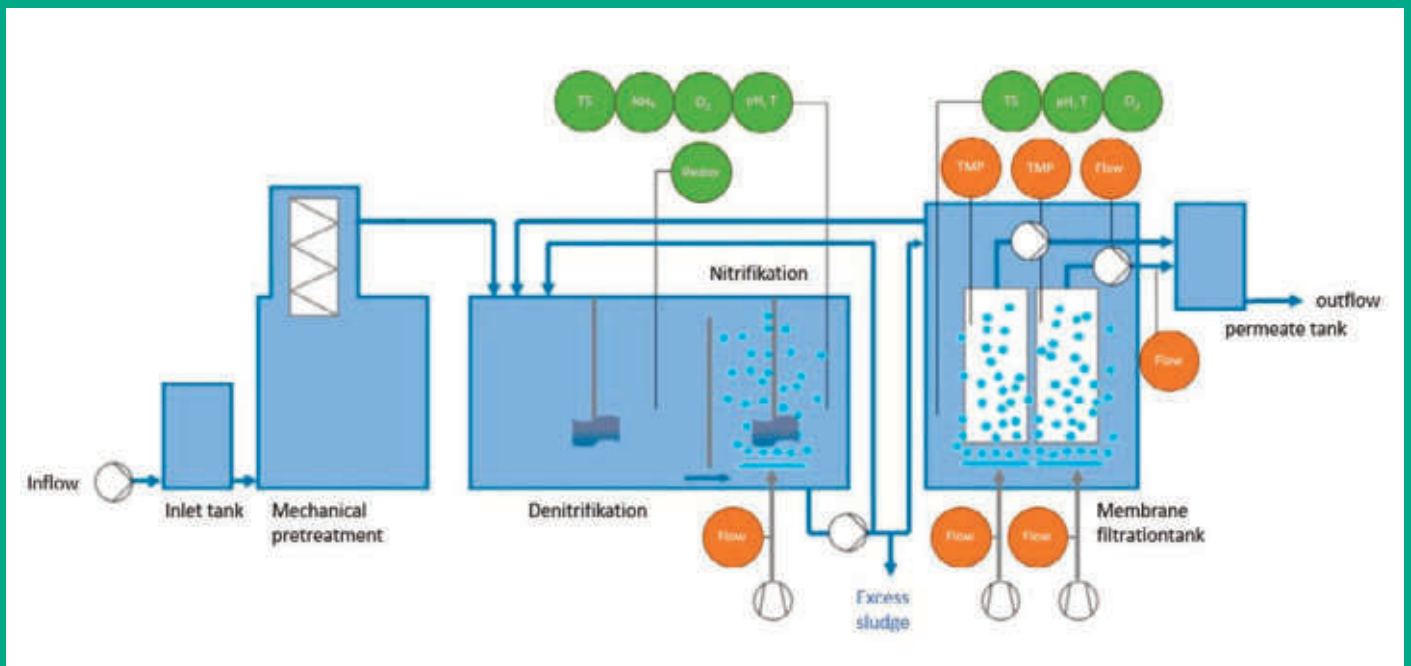


Abb 1: Sketch - structure of the container plant



Abb 3: Inlet KA Le Minh Xuan

To achieve the greatest possible impact of the project and to act as a multiplier for the achievement of the Sustainable Development Goals, the project work is accompanied by a concept for public relations.

You can find out more about the InReUse project here:

[https://blogs.tu-berlin.de/uvt\\_inreuse/en/](https://blogs.tu-berlin.de/uvt_inreuse/en/)



## Flood prevention project Rettenbach

**A flood control reservoir has been built in the AT-6450 Sölden district in Tirol (Austria) to provide long-term protection from flooding and landslides for the population and infrastructure at the Rettenbach alluvial cone.**

The project's customer is Wildbach- u. Lawinenverbauung GBL, Oberes Inntal, a subordinate department of the Federal Ministry. The department is responsible for both the overall planning and implementation of the project.

The Rettenbach flood control reservoir is located in the catchment area of the relevant hinterland at a height of 2,129 m above sea level, and its capacity is approx. 45,000 m<sup>3</sup>. Implementing this measure will diminish the flood wave occurring during precipitation events, thus effectively reducing the movement of debris in the middle reaches downstream.

The outlet structure of the floodwater retention system is designed as a trough barrier in reinforced concrete. Approx. 1,750 m<sup>3</sup> of concrete and 113 tonnes of reinforcing steel were used to build the structure. Approx. 41,000 m<sup>3</sup> of earth were required for the embankments to the left and right of the outlet structure.

The outflow from the flood control reservoir was limited to a value of 14 m<sup>3</sup>/s by means of a right-swivelling Steinhardt HydroSlide® flow control mechanism (size DR 2300). This results in a retention rate close to 25% for the reservoir. The outflow control system makes constant reduction to a maximum water level of 10.40 m possible. Its operation requires no external energy input, which is made possible by a float specially designed for the system. The diameter of the outflow opening is 2300 mm. The HydroSlide® outflow control weighs approx. 8.35 tonnes in total, and is made entirely of stainless steel material.



The Steinhardt HydroSlide® outflow control system was installed by our Austrian partners PP engineering GmbH. The cost of the technical equipment came to around 200K Euros.

The flood control reservoir is not in operation at the moment, as the earth deposits making the embankments are currently being sealed using jetting methods.



# Sustainable innovations made of stainless steel

Water Technology Specialist for Urban Water Management



Test (maximum reduction) (l.) and operation (not dammed) (r.) of the Steinhardt HydroSlide® outflow control system DR 2300 – Flood Control Reservoir Rettenbach, Sölden, Tirol



Rotating bearing for the HydroSlide® outflow control system, Flood Control Reservoir Rettenbach, Sölden, Tirol



Site of the Rettenbach Flood Control Reservoir, Sölden, Tirol

[WWW.STEINHARDT.DE](http://WWW.STEINHARDT.DE)

## Gentle integration of modern plant technology into the listed for preservation structure of Wedelwitz's waterwork

With 5 waterworks and 10 pumping stations, the Versorgungsverband Eilenburg - Wurzen (thereinafter referred to as Eilenburg - Wurzen infrastructure association) ensures that fresh water flows from the pipes at over 88,000 inhabitants and businesses of the Eilenburg's surrounding towns and communities. The old waterwork of Wedelwitz received a comprehensive modernization.

For this purpose, in addition to flood and terrain regulations, the old waterwork's building – a one-storey clinker building, listed for preservation, with its partly original steel frame windows - was renovated and extended by an adjacent new building.



The replacement building comprises the entire EI&C technology including energy supply, control, and automation technology. Photovoltaic systems on large roof areas, help to meet the energy requirements of the systems in an efficient and environmentally friendly way.

In Wedelwitz there are 12 wells, which feed water into the supply network. Natural spring water often has an excess of carbonic acid (carbon dioxide). This makes water too acidic. Removal of free excess carbon dioxide increases the pH value up to the value required by the German Drinking Water Ordinance. Thus, the water does not have a corrosive effect and possible damage to water pipes in the supply network is excluded.

For the physical deacidification of raw water, Likusta has been awarded the contract to supply two flatbed aerators including piping and control cabinet. The water flows horizontally through a flat container and is enriched with air in a vertical direction. The air intake takes place via ceramic ventilation tubes, so-called aeration pipes.





# Clear Choice

for waste water and waste gas treatment

The fine-bubble aeration enlarges the reaction surface. Foaming occurs. The excess carbon dioxide is blown out and piped outside of the building. Challenging was the cramped conditions in the historic part of the waterwork building, where piping and flatbed aerators of the deacidification plant had to be installed precisely within a small space only and at the same time ensuring an efficient flow.

The pressure of the required process air in the flatbed aerators is generated by highly efficient controllable side channel blowers and streams into the systems via manifolds inside a closed air duct system. These suction pipes had to be laid from the furthest point in the new building to the historic old building, where the actual flatbed aerators for deacidification are located at.

**Our flatbed aerators are made of PP-H material (homopolymer).** This fact helped us to score at the Eilenburg – Wurzen infrastructure association. The plastic used has several advantages over stainless steel which is commonly used in such plants. PP-H is food-compliant like stainless steel, but additionally it is characterized by better corrosion resistance. The flatbed aerators had to be brought into the waterwork's building in sections. Afterwards they are assembled and welded together on site, due to the cramped space conditions. Here, too, PP material offers significant advantages for on-site processing. A big plus is also the lower acquisition costs of a PP-H-manufactured plant, which in turn benefits Eilenburg-Wurzen supply association's budget.



## Rockenberg pumping station relies on FSM-Frankenberger GmbH

Rockenberg lies in the north-west of the Wetterau district in Central Hessen and belongs to the northern periphery of the Rhine-Main region. The Wetter river flows through the region, with its source in the Vogelsberg. Rockenberg is situated 25 km from Gießen, 35 km from Marburg and 40 km from Frankfurt. For more than a decade the local authorities have collaborated on sewage disposal with the neighbouring town of Butzbach. As the Rockenberg water treatment plant was increasingly proving to be too small due to increasing water regulatory controls and population numbers, since autumn 2010 the sewage produced has been pumped into the Butzbach municipal water treatment plant via a pumping station.

As this continuously growing town had in the meantime become stretched to its limits in terms of sewage disposal, the local authority decided to build a new pumping station and to increase the volume of rainfall collection by 630 cubic metres with an upstream bypass sewer DN 3000. To protect the pumps against blockages and damage, an FSM multi-rake screen and an FSM screening washing press for preliminary purification were included in the design concept.

In the subsequent call for tender by Energie und Versorgung Butzbach GmbH, FSM Frankenberger's proposal won the bid in competition with many reputable manufacturers.

Well thought-out integration into the infrastructure, the technological benefits of the FSM products and the comprehensive know-how of our experts swiftly led to award of the contract.

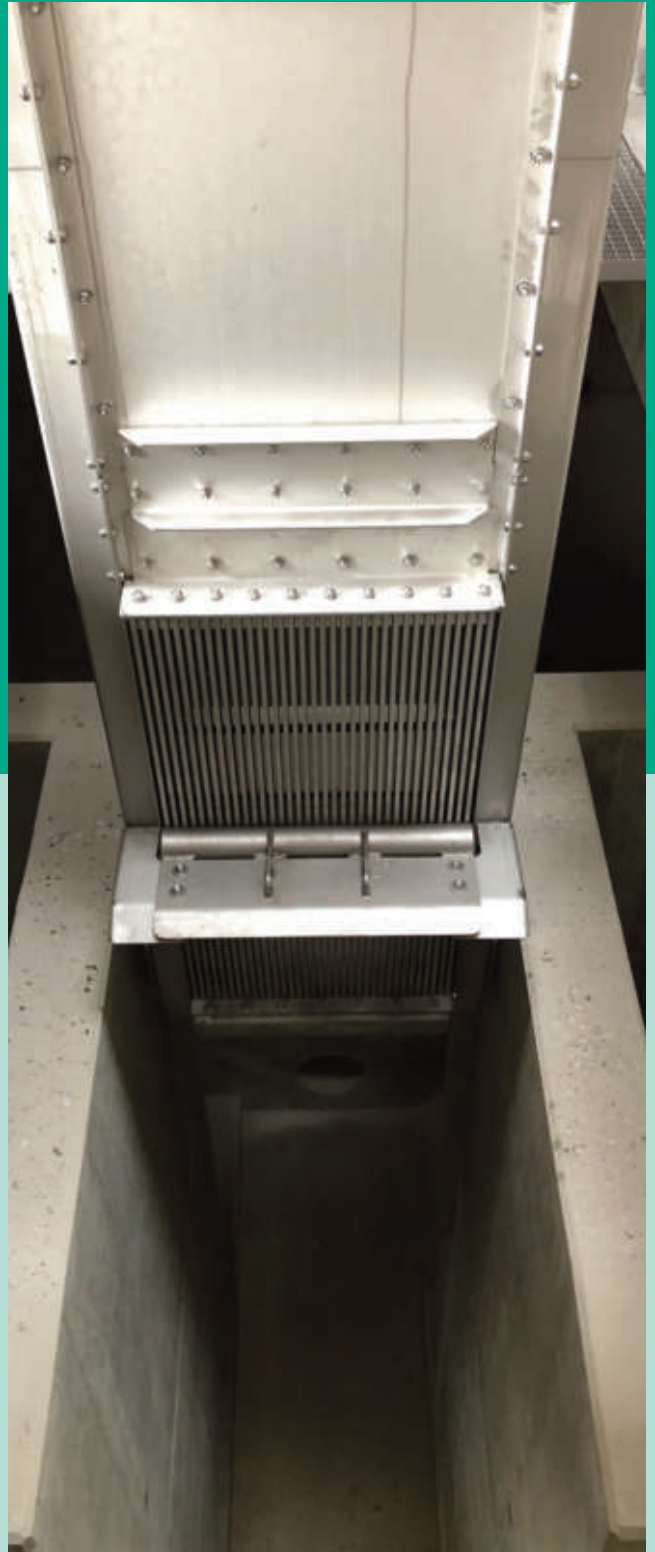


# The specialists for environmental technology

Machines for water and wastewater treatment

FSM's robust and high-performance multi-rake bar screen, which sets new standards with its compact design and separation performance, was seamlessly integrated into the existing machinery, as was the screenings wash press SPW200-700 which excels for its dewatering performance.

**Once installation and commissioning had been completed, the customer proved more than satisfied with the performance data from his investment. For our part, we wish to thank everyone involved for your excellent cooperation and teamwork.**



Assembly of the FSM Multi Rake Bar Screen and the FSM Screening washing press





**Our vision:** Improving life  
with clean air and water

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