

ABIONIK News

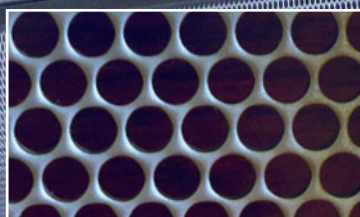
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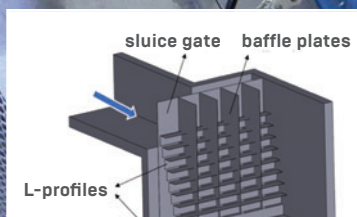
Hands4health



**Likusta supplies
scrubber for chlorine
gas separation**



**Retrofitting
measures**



Project RING

Our vision: Improving life
with clean air and water

**Dear business partners
and readers,**

A warm welcome to the summer edition of ABIONIK News.

Over the past few months, climate policy has gained significant momentum, and at the same time given us a lot of food for thought.

There is no doubt that burning fossil fuels releases large quantities of greenhouse gases and is the main cause of global warming. The predicted consequences are at the very least alarming: droughts, flooding and storms are increasing, biodiversity is decreasing and sea levels are rising.

The war in Ukraine has also demonstrated how dependent we are on imported energy. Broader diversification of energy sources is therefore an urgent necessity, as is the contribution of every individual to conserving resources.

By reducing our energy consumption and switching to renewable energy, we become part of the solution. A sustainable lifestyle includes many different aspects such as, for example, better insulation for our homes, increased awareness in consumption of food and products, the avoidance of unnecessary emissions as well as such simple things as multi-use, refillable packaging and regional products. Every little step counts!

We in the ABIONIK GROUP are also making our contribution. Protecting the environment is one of the guiding principles of our business activities. With innovative, holistic solutions we have a long-term commitment to environmental and corporate responsibility. This philosophy connects us to our customers who have made a commitment to the protection and quality of water.



Water is an infinitely precious asset, the basis of all plant, animal and human life. Clean watercourses, seas and rivers are important habitats for many species. And last but not least, we need clean water for drinking.

As part of our long-term strategic planning we are developing innovative technologies and energy-saving concepts for this purpose, and in our products we are vigilant in using materials which conserve resources, are durable and easy to maintain as well as being recyclable.

Our vision:

Improving life with clean air and water

We do not simply limit ourselves to developing new models, but equally optimise existing plants by exchanging components as part of an upgrade. This enables your machinery to remain at the latest state of the art without extensive modernisation measures.

Find out about our sustainability concept, our service plans and how you can benefit from them in your field of activity. We are also delighted if you can help us become better, for instance by identifying potential environmental opportunities so that we can include these in our products and offers. The sooner we as a company regard ourselves as a

team in the battle against climate change, the better we will be able to meet the challenges facing us.

We look forward to a shared path towards a future worth living – and of course we also hope you enjoy reading this issue.

Yours sincerely,

**Daniel Crawford,
CEO ABIONIK**





Hands4health

Hand hygiene, water quality and sanitation in primary health care facilities and schools not connected to functional water supply systems.

Water, sanitation, and hygiene (WASH) are essential for maintaining a hygienic environment and preventing the transmission of diseases. Especially in health facilities and schools. Proper hand hygiene management is one of the most important measures to prevent transmission of diarrheal, respiratory diseases and infections.

In 2019, the Joint Monitoring Program (JMP) Global Baseline Report estimated that more than 45% of primary health facilities and 50% of schools in LMICs lack access to washing facilities, basic hygiene, and water supply systems. Further, staff as well as administrators of health facilities and schools often lack the knowledge and capacity to manage WASH services appropriately.

The four-year hands4health project (2021-2024) is funded by the Swiss Agency for Development and Cooperation and is being carried out firstly in Switzerland, with laboratory research in Burkina Faso, Mali, Nigeria, and Palestine (with field development).

Together with the University of Applied Sciences Northwestern Switzerland and Gravit'eau, Martin Systems is working on the evaluation of on-site water treatment plants and hand washing systems with ultrafiltration technology. With the support of the aid organizations Cesvi, Terre des hommes as well as the Skat Foundation, the plants were commissioned in the respective countries and on-site development work was carried out.

One of the measures tested in the project is hand washing facilities with water recycling. The project focuses on improving handwashing, water and sanitation services in primary care facilities and schools that are not connected to the normal water supply. The goal is to

integrate new and existing cost-effective and resource-efficient WASH interventions from the fields of technology, behavioral and health psychology, gender and inclusion, design, health, information and communication technology, and knowledge management into a practical, user-friendly solution.

(The handwashing units work with Martin Systems filters, which are gravity operated. This enables safe hand washing where it is not possible: in areas with limited water and/or electricity supply. Gravity-powered handwashing stations clean and recycle handwashing water for the next user without the need for a regular water supply or access to electricity. The handwashing station is a micro-sized wastewater treatment system that incorporates multiple stages of purification, including ultrafiltration, and removes pathogens from the water.

Together with Gravit'eau, on-site drinking water treatment systems are also installed that purify at least 99.999% of disease-causing bacteria, viruses and protozoa in surface water, groundwater, or rainwater. The system is modular and can be used in different sizes, e.g. as water filters for domestic or small municipal water supply systems. The filters used by



[Source: <https://www.graviteau.ch/handwashingstation>]

Membrane Filters for Membrane Bioreactor (MBR) Application

For municipal, industrial and maritime sector

Martin Systems can remove particles and pathogenic parasites, bacteria and viruses from contaminated and turbid surface and groundwater. The filters can be used as a stand-alone single-stage process or in combination with other technologies such as solar disinfection, UV disinfection or chlorination.

The technology involves ultrafiltration membranes and the gravity pressure of water to operate the filter. Unlike conventional membrane filtration systems, biofilm formation occurs on the membranes. Flow through the membrane is reduced, but the filter does not clog because pores and voids form in the biofilm, which also contribute to water treatment. As a result, the filter requires no backwashing or cleaning and operates with minimal maintenance. Filters remove protozoa, bacteria and viruses and can handle very turbid water.

The focus of the hands4health project is on the most vulnerable in conflict-affected areas, including rural, remote communities in four countries. In total, the project benefits about 97,000 people. In the countries of Burkina Faso and Mali, the project focuses on staff at primary health centers, with a focus on students in elementary school in Nigeria and Palestine.

If you would like to learn more about the project: <https://hands4health.dev/>



[Source: <https://www.graviteau.ch/handwashingstation>]

Project RING

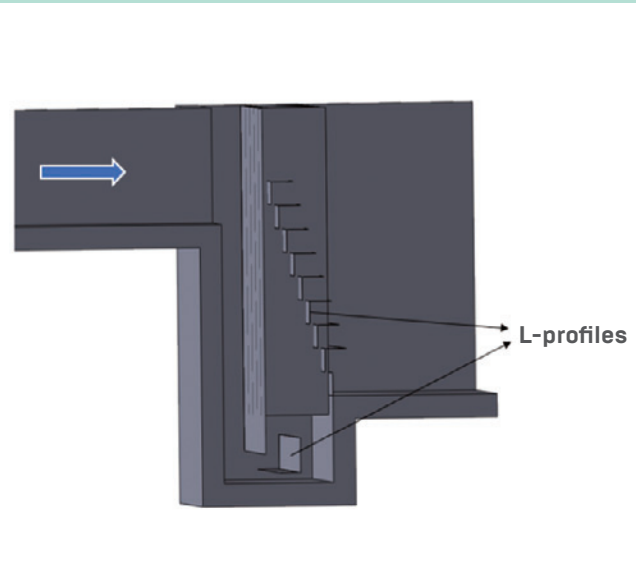
“Trial of an innovative rectifier for sedimentation basins”

Rainwater basins are used in separation and mixed sewerage systems to store waste water (retention/capture basins) and for the sedimentation of solids contained in the waste water (rainwater basins). The aim is to separate out as high a proportion as possible of filterable substances (FS) – in particular contaminated fine-particle fractions with particle diameters smaller than 63 µm (AFS63) – through sedimentation processes in the basin. High-performance rainwater basins in this way effectively reduce the introduction of solid matter and harmful substances into surface bodies of water.

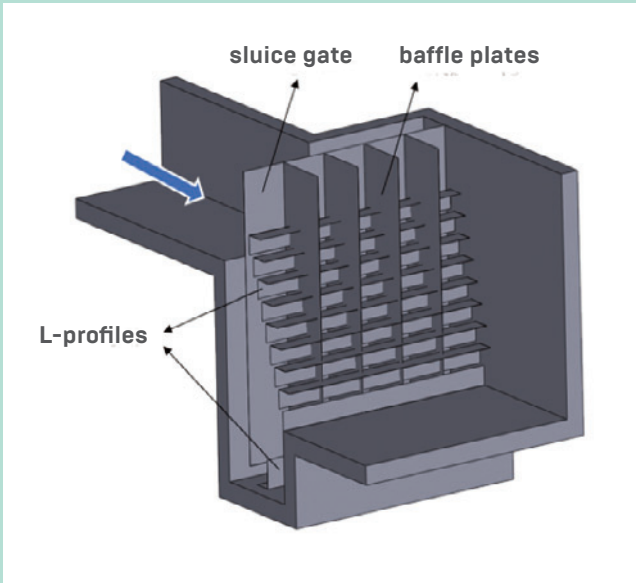
Current research projects demonstrate that rainwater basins often achieve an unsatisfactory degree of effectiveness with regard to retention of solid matter. The emissions of solid matter and pollutants

introduced by run-offs and combined sewer overflows into surface waters have to be minimised against the background of the Water Framework Directive (EC-WRRL 2004) which has to be implemented. To that extent the focus in our sewer infrastructures is shifting to process optimisation of the interfaces with the receiving watercourses (amongst other issues). In Germany, a total of more than 47,000 rainwater basins are in operation, with a related level of investment amounting to 659 €/German citizen (Brombach 2013), and their overflows contribute to the pollution of our surface waters.

As part of the RING project in cooperation with the Institute for Infrastructure•Water•Resources•Environment (IWARU) at the Technical University of Münster, what is known as a “rectifier” is being further developed into a fully functional prototype for use in rainwater basins for stormwater treatment. The rectifier can be retrofitted in the inflow structures of existing rainwater basins in separation and combined sewer systems to increase the sedimentation capacity of these basins. IWARU has lead responsibility for this project which is sponsored by the Ministry of the Environment, Agriculture, Nature



Provisional design of the rectifier in the inflow components of a rainwater basin



Sustainable innovations made of stainless steel

Water Technology Specialist for Urban Water Management

and Consumer Protection (MULNV) of North Rhine-Westphalia.

The functioning principle of the rectifier is based on separation and equalisation of the flow in the inlet cross-section of rainwater basins (see figs. 1, 2 and 3). This creates optimised settling conditions for sedimentable particles.

The structural part of the system was originally designed as a basic variant within the project “Retrofitting measures for rainwater basins and recommendations for their new construction” (MEREBEN, sponsored by the MUKLNV NRW 2014–2017). Numeric model tests on the IWARU confirm that the necessary basin volumes at the front required to equalise the flow are significantly reduced by use of the rectifier and therefore the length of the sedimentation chamber with steady flow can be significantly increased.

On the basis of these initial investigations, the form and/or dimensions of the rectifier in the current RING project are to be optimised by further numeric calculations and the achievable improvement in

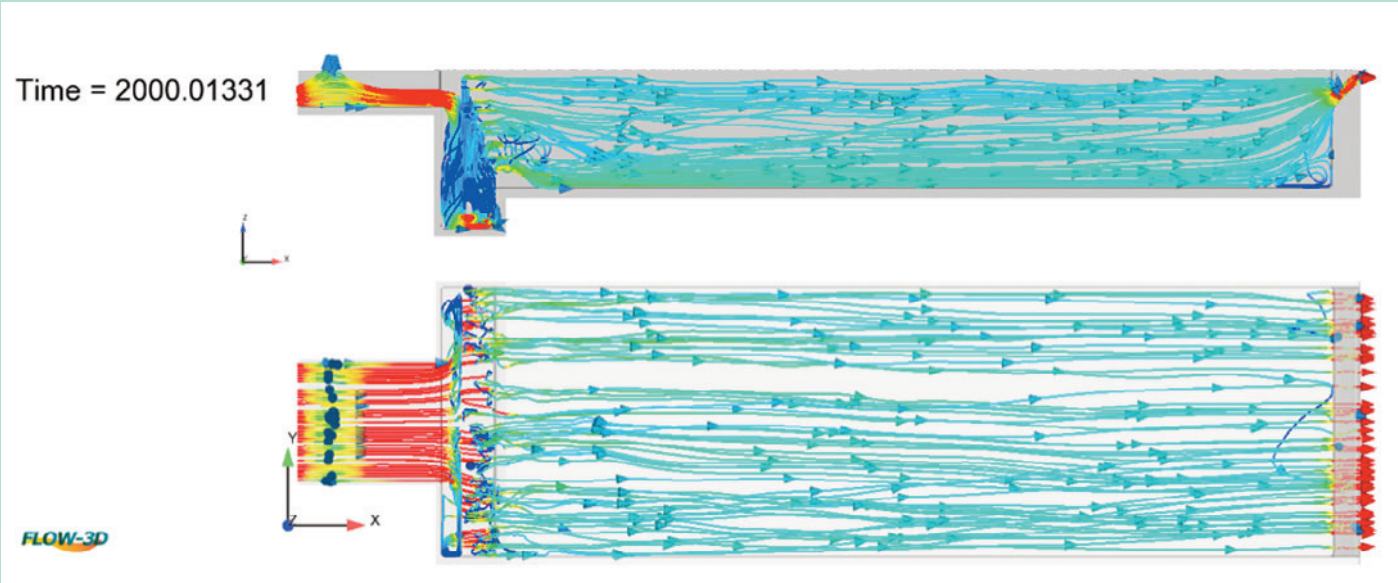
settling performance of existing rainwater basins assessed.

As part of a comprehensive monitoring campaign on a selected rainwater basin in the city of Münster, the in-situ behaviour of the rectifier and the achievable improved effectiveness are being documented. Information on suitability in practice is also being collected, and recommendations for practical operation of the system (cleaning and maintenance intervals) extrapolated from this.

Steinhardt GmbH is responsible for the structural design of the rectifier based on the results of numeric modelling (IWARU) and local conditions.

This ensures that the bottom of the flushing sump, which runs across the width of the basin, is also cleaned with the last flush.

The costs for the equipment with the Steinhardt HydroSelf® flushing system amounted to around 300,000 euros.



Flow through a rainwater basis with rectifier in the inflow components (numerical simulation)

Likusta supplies scrubber for chlorine gas separation

In October 2021 Evoqua Water Technologies placed an order with Likusta for the manufacture and supply of a total of 7 scrubbers for chlorine gas separation for a project in Kuwait. 6 of the scrubbers have a separation capacity of max. 65 kg chlorine, the seventh scrubber has a separation capacity of max. 1000 kg chlorine.

The plants were manufactured in two batches for delivery in May 2022 and February 2023. The systems are designed as counter-flow columns with caustic soda storage tank made completely from plastic. The special features of the systems are the circulation pumps and fans with built-in redundancy.

Functioning of the exhaust air scrubbers:
These systems are used for emergencies. In the event of a leak in the chlorine storage and dosing system, the escape of chlorine gas is detected by a



sensor and the exhaust air scrubbers start up automatically. The fans extract the polluted air from the contaminated area and feed it from bottom to top through the scrubber column equipped with packing. At the same time, the caustic soda stored in the storage tank is sprayed over the packing and trickles down, in counter flow to the air, back into the storage tank. The packing columns provide the necessary exchange surface for the chemical reaction [adsorption and neutralisation] between the chlorine gas and caustic soda.

Structure of the exhaust air scrubber:
In addition to the storage tank and scrubber column with packing and nozzle holder, the exhaust air scrubbers have two redundant circulation pumps



Clear Choice for waste water and waste gas treatment



made of PP with corresponding pipes to the nozzle holder, level monitoring for the storage tank, two redundant fans and piping between the scrubber outlet and fan intake including non-return valves, and a control cabinet for the control and automation functions.

As the exhaust air scrubbers are intended for export, they have been designed to fit into a shipping container as a compact unit with few components to be dismantled.

To ensure that assembly on site could be carried out as simply as possible by the customer or end user, as well as for "Plug & Play" commissioning, the



exhaust air scrubbers were fully built, cabled and commissioned at the works by Likusta, and a test run was also completed there. The systems were furthermore inspected and accepted by the customer in the course of a FAT before collection.

At their installation site the exhaust air scrubbers will enhance the safety and protection of operating staff, as well as serving other purposes, in the event of an accident. We are delighted to be able to contribute to this with our systems.

In addition to selling new machinery, FSM Frankenberg GmbH is also focused on modernising your existing machinery by retrofitting measures.

What does the term “retrofit” mean?

It is made up of the Latin word “retro” for “in reverse” and the English word “fit”, which also means “to adapt”. When we speak of a “retrofit”, we mean modernising a plant. Older and technically obsolete machinery is not removed and replaced, but brought up-to-date so that it can continue to be used.

To achieve this, individual components are exchanged, extended or modified whilst the machine itself stays the same.

Retrofitting an existing plant achieves the following aims:

- Extension of the plant’s life
- Increase in screenings retention
- Higher energy efficiency
- Higher productivity and better quality
- Ensuring the availability of spare parts
- Lower investment costs compared with new procurement
- No new, long drawn-out approval procedure or tendering process
- No alteration work in the screening chamber
- Lower training costs, as staff are already familiar with the machine

With our retrofit programme we can bring the FSM machines you already have in use up to the latest state of the art.

This means you will save time and expense, and also enables us to save the resources that would be required to manufacture a new machine.

The specialists for environmental technology
Machines for water and wastewater treatment

If in future your FSM filterscreens are ready for a major overhaul, our modernisation modules will enable us to bring your existing filterscreens up to the latest state of the art. By fitting improved side seals, the flexible brush and a flexible stripper plate, your existing filterscreens get all the features of the current design we offer. As well as providing greater retention of screenings, these modernisation measures also lead to lower maintenance costs on the machines.

We can also offer you FSM baskets in HF perforation. This HF perforation means that the flow rate is unchanged but offers greater retention of screenings due to smaller perforation.

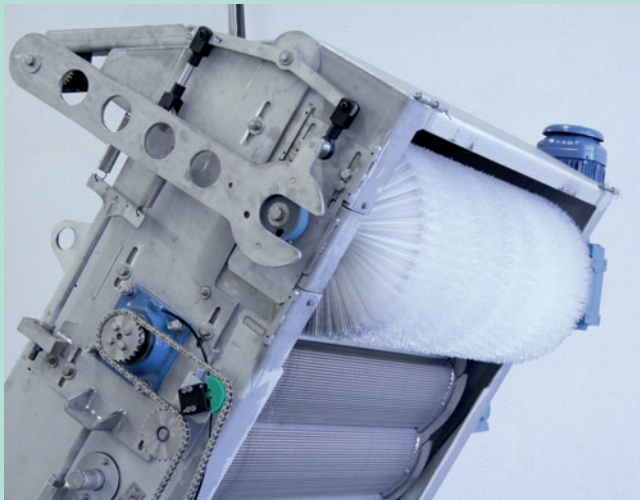
Do you have problems with a lot of sand and grit in your flumes?

Then our range includes the brand new Sand and Grit basket (patent pending). This new development has already proved its worth in many water treatment plants around the world. It will help you minimise impurities such as sand and grit directly upstream of your filterscreen.

If you are interested in this product, please do contact us about it.

To generally prolong the life of your plant and machinery, we also offer our specifically tailored maintenance agreements. By exchanging discounted consumable parts promptly and maintaining critical components, their service life can be extended and the value of your investment maximised. Preferential service and short response times also ensure that in the event of a breakdown, your plants will be operational again more quickly, and your productivity will not be unnecessarily reduced.

Regular maintenance and servicing under a maintenance agreement will contribute to extending the life of your plant and machinery significantly. We would be pleased to advise you so that we can find the appropriate maintenance option to suit your needs.



Self-adjusting brush (FSM TYPE FRS 3)



FSM-fitter during maintenance



Our vision: Improving life
with clean air and water



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