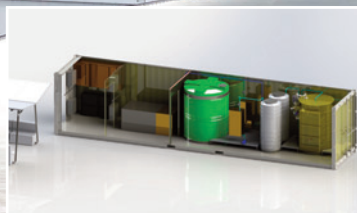


ABIONIK News

No. 01



SophiA
(Sustainable Off-grid
solutions for Pharmacies
and Hospitals in Africa)



Likusta optimises
exhaust air purification
in the sewage sludge
drying plant



WILoop
Fountain sculpture



Wastewater Association
Morgental

Our vision: Improving life
with clean air and water

Dear readers and business partners,

I am delighted to welcome you to our first joint edition of the ABIONIK News. Exciting times with major challenges lie ahead of us – the topic of water has never been as ubiquitous as it is at present. To develop solutions for the tasks facing us today and in the future, solid expertise and smart synergies are more sought after than ever.

The companies MARTIN Systems, Steinhardt, Likusta Umwelttechnik and, since 01.10.2022, FSM Frankenberger form the ABIONIK Group, which is a 100% subsidiary of WILO SE. This association of strong brand names involved in water management and wastewater treatment can provide the answers to the challenges we face. Going forward, we intend to inform you about these on a regular basis in this Newsletter.



Become part of this growing community around the ABIONIK Group, and help us expand the boundaries of what is achievable. We are ready!

You were able to gain a first impression of ABIONIK's far-reaching vision at this year's IFAT in Munich, and I would like to thank everyone who visited our booth most sincerely – we really appreciate your interest.

I would also like to wish all our employees, business partners and customers a happy end to the year, a peaceful Christmas and a successful 2023 - and of course I hope you enjoy reading this issue.

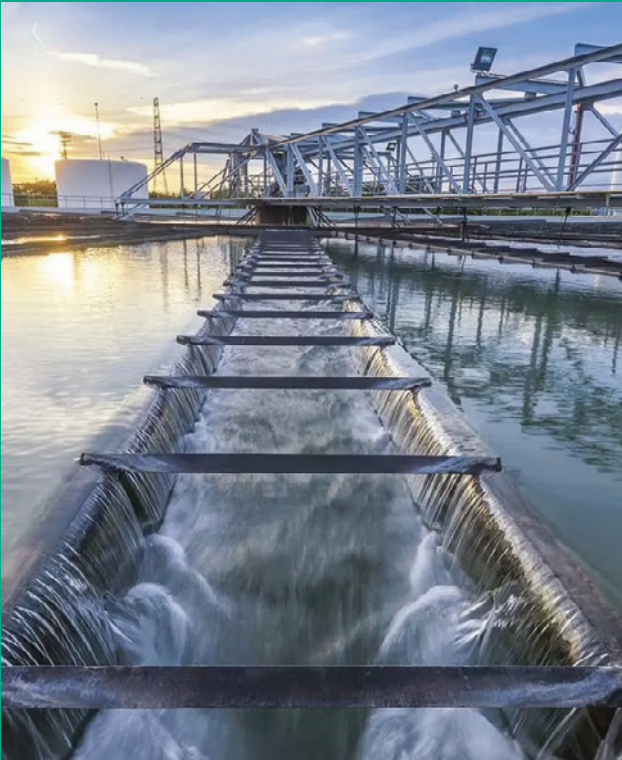
Yours sincerely,
Daniel Crawford
CEO ABIONIK Group

Our vision:

Improving life with clean air and water

Abionik
and GAMMA S.A reaffirm
their Cooperation in Cuba

“German Day” at the International Trade Fair FIHAV 2022. The German supplier of water and air purification Abionik, part of the Wilo Group which has pursued business activities in Cuba for many years, and the Cuban service company in the environmental sector, GAMMA S.A., also signed a memorandum of understanding. According to this, Wilo will offer technology and expertise in the area of wastewater treatment, whilst Gamma will provide professional services in respect of integrated, environmentally sustainable technical solutions.



SophiA

The project SophiA (Sustainable Off-grid solutions for Pharmacies and Hospitals in Africa) will make it possible for people in Africa to gain access to carbon-neutral energy for power, heating and cooling of foods and medicines, and clean, safe drinking water. This will improve their quality of life in a sustainable way. This is a Horizon 2020 project financed by the EU.

Background

Most people in Africa still live in remote areas with inadequate infrastructure and low growth opportunities. These rural areas have no access to medical care, schools, clean water, and infrastructure, which leads to higher levels of sickness and poverty compared to urban areas. Overall, the SophiA-systems, designed as compact container solutions, will be demonstrated in four healthcare facilities – in the places where help is most urgently needed. Four different geographic regions with different climatic conditions have been selected for this purpose.

The aim of the SophiA project is to provide a sustainable, off-grid energy supply for four remote and rural healthcare facilities in Africa, accelerating development growth and economic transformation, and ensuring access to energy and healthcare services for all. The modular, flexible, efficient, and affordable solar systems are designed and manufactured for on-site use:

- Electrical supply in the event of a power failure
 - Clean, safe drinking water
 - Hot water; steam if required
 - Cooling system for operating theatres or intensive care stations
 - Refrigerating drugs to +5°C (possibly chilling food), blood plasma to -30°C and sensitive drugs (eg. some Covid-19 or Ebola vaccines) to -70°C
- Martin Systems GmbH is supporting three work packages in the project in close cooperation with Karlsruhe University of Applied Sciences (HKA):**
- Contribution to the water system technology by providing expertise on the Cube®-filtration system for decentralized drinking water systems and membrane bioreactor (MBR) applications.

Membrane Filters for Membrane Bioreactor (MBR) Application

For municipal, industrial and maritime sector

- As industrial partner we contribute to the definition of business plans, commercialization activities and the identification of value-added chains.
- Participation in training to build capacity, and preparation of small demo systems for training sessions and presentations; participation in activities aimed at communicating and spreading the project.

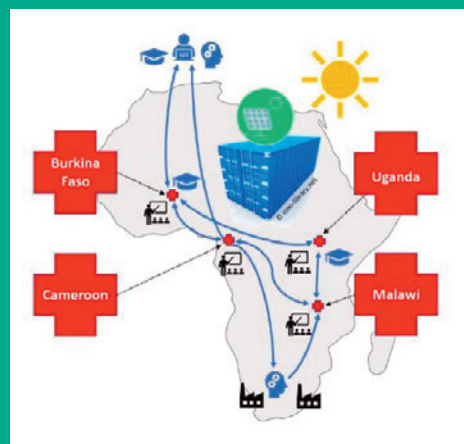
Previously the membranes had been tested on a small scale with a membrane surface of 0.45 m² at the HKA with synthetic untreated water, and with untreated water samples from Burkina Faso. Subsequently there has been an upscaling with two pilot plants using a filter surface of 6.25 m² each, built by Martin Systems and made available to the HKA for further investigations. Now that all the tests have run successfully, and the expected results in terms of retention of bacteria and water volume have been achieved, the system is now being built for the first site in Burkina Faso and is expected to be dispatched to Johannesburg in January 2023 for integration into the container there. The planned date for commissioning is mid-2023.

Based on the results of the demo system, optimization and adjustment can be provided, if necessary, at the other three locations.

Martin Systems GmbH has more than 20 years' extensive experience in process engineering, design, construction and the operation and servicing of wastewater treatment plants, in particular membrane bioreactors (MBR), and in the manufacture of submerged low-pressure membranes based on ultra-filtration technology, as well as producing systems, apparatuses, and filters for ultra-filtration technology for the treatment of drinking water, grey water and black water.

These systems are used in the industry, in the maritime sector, in the public wastewater sector and in water treatment in rural areas. The use of submerged low pressure ultra-filtration membranes has become increasingly important recently, particularly in drinking water preparation, due to their stable operation and low cost. The PAUL Filter, AQUA CUBE and CUBE mini are based on submerged low pressure ultra-filtration membranes. To date, around 2,500 PAULs have been distributed worldwide. Most PAULs are found in rural areas in developing countries and emerging economies, including India, Bangladesh, Haiti, Nepal, Ghana, Myanmar etc. Some PAULs function as permanent, decentralized plants with capacity between 1.5 and 3.0 m³/d.

Numerous academic papers have been written and joint projects undertaken in parallel with the Technical University of Berlin and other universities and research centers, the Harbin University of Technology, China, KWB (Water Centre of Expertise, Berlin), the University of Hanover and the KIT (Karlsruhe Institute of Technology) to test the filter in a multitude of applications under all possible operating conditions.



◀ **Fig.:** Demonstration in four healthcare facilities in Burkina Faso, Cameroon, Uganda, Malawi



◀ **Fig.: Container for solar water purification**
From left: PV installation, storage tank for drinking water, storage vessel for deionised water, solar heat exchanger, buffer tank for ultra-filtration, container for ultra-filtration, capacitive deionisation

WILOOP –
Fountain sculpture

New fountain built for the Wilopark central square in Dortmund.

Just in time for the 150th anniversary of WILO SE, the "WILOOP" was completed on the Wilo Campus in Dortmund.

The fountain sculpture stands in the central square of the Wilopark as an interesting design feature in front of the Pioneer Cube, enhancing its contemporary architectural concept. The planning, design and execution of the building project was led by WILO SE. Construction was for the main part a cooperation by the company Martin Systems and Steinhardt Water Technology Systems, part of the ABIONIK Group.

The basis for the fountain construction is a disc-shaped steel structure approx. 23 m long which projects around 7 m high at a sharp angle. The flat oval steel support system is completely

encased in stainless steel galvanically isolated from the main body. A visual highlight is the underside of the fountain, which is clad in highly reflective, electrolytically polished stainless-steel plates, creating a space-defining effect below the towering disc of the fountain. Finally, on the top side, step-like stainless steel plates are arranged to allow the fountain's water to flow down.

The surface draining water enters the semi-circular, so-called pool table, which is enclosed by a stainless-steel overflow channel. Via this channel, the circulating water is feed to a treatment plant (Provided by Martin Systems) and cleaned to prevent excessive accumulation of solids and the algae in the water flow.

Wilo's high-performance pumps circulate the water upwards and feed the 102 outflow nozzles arranged around the edge of the fountain. The building project ran for the period from February to August 2022.

Martin Systems was responsible for the water supply and treatment, whilst the structural design and execution of the stainless-steel cladding was undertaken by Steinhardt Water Technology Systems.



Sustainable innovations made of stainless steel

Water Technology Specialist for Urban Water Management



Likusta optimises exhaust air purification in the sewage sludge drying plant

In November 2021 Veolia Klärschlammverwertung Deutschland awarded the contract to Likusta Umwelttechnik GmbH for manufacture and supply of a made-to-measure exhaust air treatment plant for the sewage sludge drying system in Zorbau. Previously the exhaust air had been routed via the adjacent waste incineration plant, but this had created its own problems. A separate exhaust air purification plant was therefore designed, which is now housed in a hall specially built for the purpose.



The new plant purifies 60,000 m³/h of odorous exhaust gas.

Special features of the plant are the high exhaust air temperatures at the inlet to the exhaust air purification plant and the avoidance of wastewater



Clear Choice

for waste water and waste gas treatment

accrual due to condensation and desludging. The exhaust air temperatures are consistent with what is possible when using components made from plastic and activated carbon.

How the exhaust air purification plant works:

1. In the first stage, the exhaust air is purified by acid scrubbing with sulphuric acid to remove the ammonia. In the scrubber the exhaust air cools adiabatically (meaning a system is transferred from one condition to another without exchanging heat with its environment.) and leaves the scrubber saturated with moisture.
2. The remaining odorous substances are absorbed by the activated carbon. For this purpose it is necessary to heat the exhaust air before it enters the activated carbon filters in order to reduce relative humidity to a level tolerated by the activated carbon. After the activated carbon filters, the exhaust air is discharged into the atmosphere.



Layout plan of the exhaust air purification plant in Zorbau:

The core components of the exhaust air purification plant are an acid scrubber made of PP and three activated carbon filters made of PE connected in parallel. Likusta designed and manufactured this plant to the customer's requirements in accordance with the specific conditions on site. As well as the flow of exhaust air itself, the structural circumstances also had to be taken into account.

The scope of supply thus also included the ventilation pipes consisting of pre-fabricated, insulated stainless steel pipe segments with a diameter of 1,200 mm steam and condensate pipes made of stainless steel, double-walled chemical pipework made of PE, pipe conduits, heat exchangers to raise the exhaust air temperature upstream of the activated carbon filters, fans and the chimney.

The double-walled storage tanks for sulphuric acid and ammonium sulphate solution as the reaction product from the exhaust air scrubber, as well as the dosing technology for them, were also manufactured and installed by Likusta.

The plant is controlled by a switch cabinet manufactured by Likusta.

The plant became operational in September 2022, less than a year after the contract was awarded. For such a large and complex plant, this is a short, tight project time frame, achieved despite currently mounting challenges in terms of material availability.

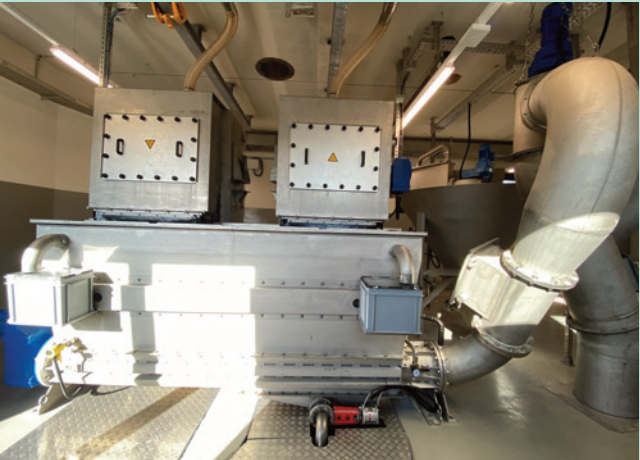
We would like to thank all those involved for the very good and constructive cooperation that made the successful implementation of the project possible.

Wastewater
Association
Morgental

The Morgental Wastewater Association treats wastewater from the Arbon region in the Thurgau Canton of Switzerland. This innovative association, population equivalent 75,000, is best known for its pioneering role in the area of energy production. We would like to thank all those involved for the very good and constructive cooperation that made the successful implementation of the project possible. The aim of creating the energy park is to produce as much renewable energy as possible. You can also learn more about the association here:

Kläranlage Morgental, [\[morgental.ch\]](https://morgental.ch)

Since summer 2022 the Association has relied on two screening systems and one screenings wash press provided by FSM Frankenger. Both robust 6 mm bar screens efficiently treat the wastewater intake.



The robust screenings wash press separates organic particles from the screenings and compacts them to high values of dewatered solids.

The Association is also using a device for amphibians recently designed by FSM which rescues many animals every day. Special exit routes have been installed in the screenings wash press to offer frogs, toads and salamanders an escape room. The escape system is low-maintenance, incurring minimal cost for the operator.



The specialists for environmental technology

Machines for water and wastewater treatment



The project was implemented by our Swiss representatives FILTECH AG [\[filtech.ch\]](https://filtech.ch). We wish to thank everyone involved for their excellent teamwork: the design team at Hunziker Betatech Winterthur Hunziker Betatech AG – Ingenieurbüro (Engineering Consultants), Gesamtplaner - Wasser, Bau, Umwelt (Overall Design - Water, Construction, Environment) - Winterthur [\[hunziker-betatech.ch\]](https://hunziker-betatech.ch), consultants for the amphibian escape route [\[wildtierarchitektur.ch\]](https://wildtierarchitektur.ch)...

... and especially all the staff at the plant!

2022 the
year of great
changes

Since August 2022, FSM Frankenger GmbH & Co. KG and WSM Walower Stahl- und Maschinenbau GmbH have been part of Abionik and thus integrated into the Wilo Group, an international technology group. The extraordinary and versatile competences of the combined companies form an excellent starting position for mastering current and future tasks in the fields of water management and wastewater treatment.

Even though this marks the end of 50 years of independent company history, the locations, employees and managing directors as well as the extensive product range for our customers will remain unchanged.

We would like to thank our customers for the good and cooperative partnership over the past decades and would like to invite you to join us in an exciting and even more successful future.

As usual, you can reach all contact persons under the known contact details, who will be available for you with advice and support for your projects.



WWW.ABIONIK.COM

Our vision: Improving life
with clean air and water



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