

ABIONIK News

No. 07



Conclusion
ifat München



First order
in England



Research
Projekt - MAAT



Renovation of the
Briest sewage
treatment plant

Our vision: Improving life
with clean air and water

**Dear employees,
business partners and friends,**

Welcome to the newest edition of our
ABIONIK News.

IFAT in Munich has closed its doors and
the time until the next trade fair will
pass soon.

On behalf of the ABIONIK Group, I would like to
thank you for your visits to our stand.
You, dear business partners and customers, gave
us positive feedback and showed us potential for
improvement.

We will process all your requests, wishes and
suggestions and come back to you.

I would also like to sincerely thank everyone who
was involved in our trade fair performance and
represented our ABIONIK community at our stand.
The success of the trade fair rewarded us for our
intensive preparations.

According to information from Messe München,
the number of visitors and exhibitors at the last
trade fair in 2022 was far exceeded.

After the Covid pandemic, this is a pleasing trend
that makes us feel positive and we hope to be
able to present you with an appealing trade fair
appearance again at the next trade fair in 2026.



Although conflicts are taking place
around the world, we hope for many
more positive conversations and
orders in order to make our
connection to clean water around
the world.

If you are interested in our products,
you can contact us at all times.

Now I hope you enjoy reading our new issue.

Yours sincerely,

Daniel Crawford
CEO ABIONIK



Our vision:

Improving life with clean air and water



Research Projekt - MAAT

Maritime waste and wastewater disposal technology:
Energy efficient and decentralised concept for a safe and smart maritime waste management

Cruises are becoming increasingly attractive for tourists due to the opportunity to travel to many destinations in a short space of time and see and experience as much as possible. Ocean liners such as the AIDA are over 300 meters long and offer space for several thousand passengers. Popular cruise ships usually have a capacity of between 3,000 and 6,000 passengers, although there are also some models with even higher capacities. With over 1 million guests in 2019, AIDA Cruises, for example, is one of the global market leaders in this sector.

These huge ships, which look like floating cities, offer a wide range of amenities and entertainment options. However, their immense size and capacity pose significant challenges in terms of environmental impact and sustainability. Experience suggests that the specific amount of waste is around 3 kg per passenger per day.

A significant proportion of the waste on cruise ships is contaminated and must therefore follow special treatment regulations. Sewage sludge, food waste and contaminated plastic and paper packaging that has meet food are particularly affected. For reasons of hygiene, this waste must be cooled and therefore stored temporarily in a costly and energy-intensive manner.

Cruise ships require correspondingly large storage capacities to transfer the waste generated during the voyage to suitable disposal companies in the ports. In regions with poor infrastructure or on longer

Forschungseinrichtung
Gas- und Wärmetechnische Anlagen



Anlagenbau für Holzkraftwerke und
KWK-Systeme



Projektkoordinator



Anlagenbau für maritime
Abwasseraufbereitung



Forschungseinrichtung
Technologie der Energierohstoffe



Membrane Filters for Membrane Bioreactor (MBR) Application

For municipal, industrial and maritime sector

voyages without a stopover, this is often only possible to a limited extent, which significantly increases the need for storage space and energy. The temporary storage of contaminated waste is therefore particularly complex and cost intensive.

The overall objective of the project is to develop a modular, energy-efficient concept in UNIT design for safe and intelligent waste disposal on maritime units. As a result of this research project, an integrated demonstrator is to be developed, built and tested. This demonstrator comprises a low-temperature dryer, gasification plant with combustion chamber with heat exchanger system for waste heat transfer to the dryer, flue gas filter and exhaust gas aftertreatment. In particular, the binding and, if applicable, optional requirements for obtaining the "Blue Angel" eco-label with regard to waste disposal and incineration are to be fulfilled with this concept (RAL gGmbH, 2013).

The three-year project is funded by the Federal Ministry for Economic Affairs and Climate Protection and coordinated by Martin Systems in cooperation with the Technical University Bergakademie Freiberg, LiPRO Energy GmbH & Co. KG, Rheinisch-Westfälische Technische Hochschule Aachen.

For the preliminary tests, briquetting tests were carried out using different mixtures:

A mixture of organic sludge, food waste, cardboard, plastic, wood and textiles was easy to briquette (Fig. 2).

Pure dried and sanitized sewage sludge from the sewage treatment plant was also easy to briquette (Fig. 3).



Fig. 2

Fig. 3



... continue on the next page ►

it can be seen in Figure 4 that this did not work well, as the briquettes were pressed under high pressures and therefore also under heat. In addition, pure shredded plastic/foil is difficult or impossible to briquette or pelletize, even if the process is cooled.



Fig.. 4

The resulting heat causes the shredded plastic parts to melt and the briquette discs to stick together.

Figure 5 shows a laboratory-scale gasification plant for pellets, which was built together with the Institute for Gas and Thermal Engineering (GWA) at the TU Bergakademie Freiberg. The pellets were introduced at 1. A motor-driven screw (2) was used to convey the pellets through the pyrolysis screw (3) for gasification.



Fig.. 5

Membrane Filters for Membrane Bioreactor (MBR) Application

For municipal, industrial and maritime sector

This process takes place without oxygen. This is followed by a downstream oxidation stage [4], in which a small amount of acid is added, and further combustion takes place, turning the coal into ash. During the project, pelletizing proved to be more difficult than briquetting, which is why the focus was placed on the latter.

A pilot gasification plant for briquettes was built on a laboratory scale [Abbildung 6]. In this gasification plant, the briquettes are fed into the feed chute on the right (1). The briquettes are conveyed into the pyrolysis screw [3] via the drive motor [2], whereby a thermochemical conversion takes place. This produces a combustion gas [4] and coal, which is produced as a solid residue [5].

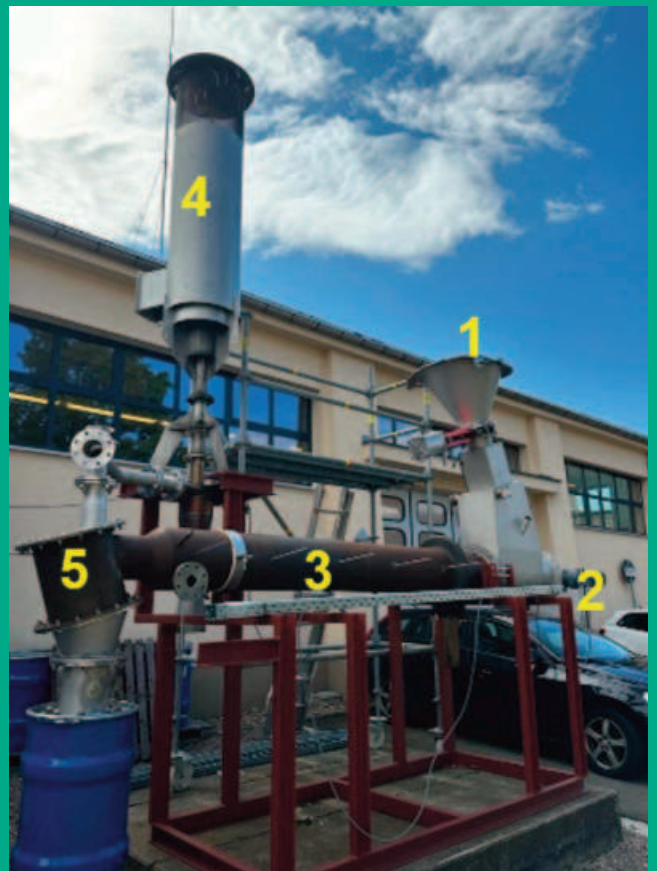
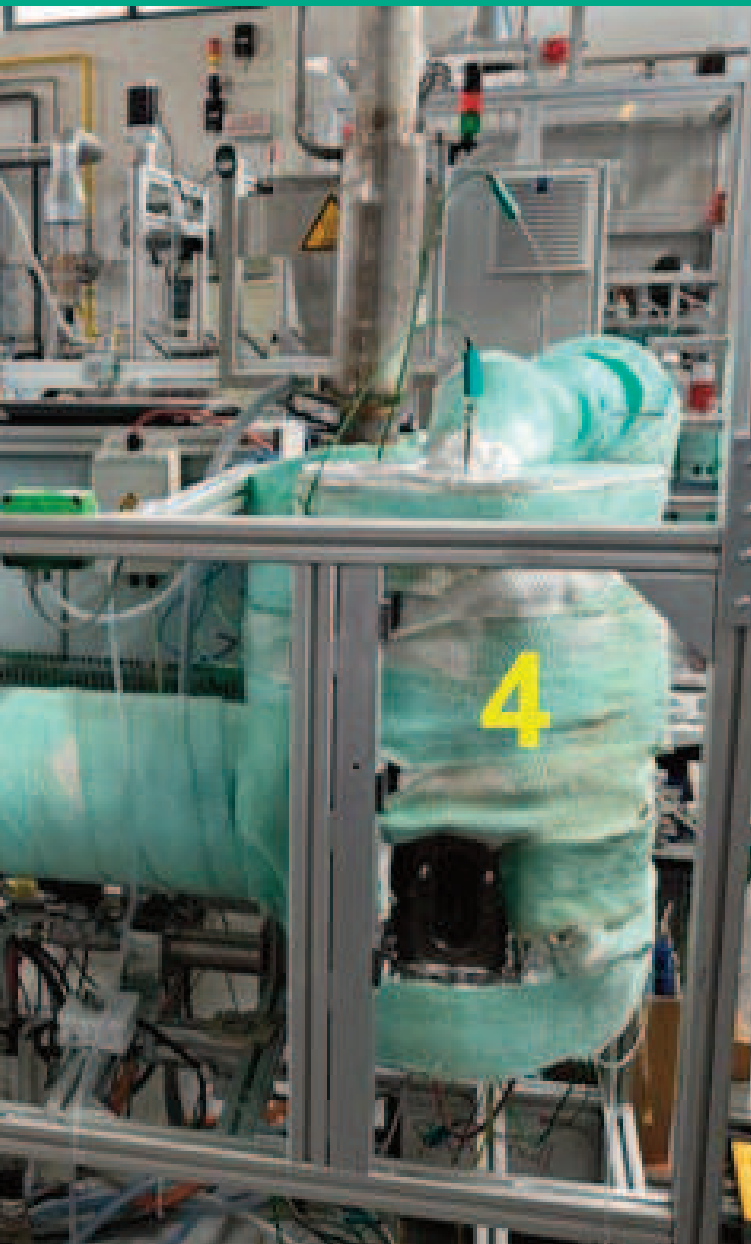


Fig. 5



Bundesministerium
für Wirtschaft
und Klimaschutz

Likusta optimizes exhaust air purification at WWTP Briest`s refurbishment

BRAWAG GmbH is a water and wastewater company, based in Brandenburg an der Havel (a city in State Brandenburg, Germany). The company operates the wastewater treatment plant in Briest to treat the municipal wastewater in the city of Brandenburg and its surrounding municipalities. The old wastewater treatment plant has been extensively modernized in various fields such as energy, process and environmental technologies.

Due to the completely new construction of the screen building and grit chamber including cover, the exhaust air system and exhaust air purification had to be re-dimensioned.



exhaust air treatment system with control cabinet

BRAWAG commissioned Likusta to supply and install a combined exhaust air system and the equipment for the condensate pumping station. The exhaust air is treated by using a biofilter with an upstream biotrickling filter and humidifier. A control cabinet custom-built by Likusta optimally controls the combined processes.

The new system cleans the exhaust air from the new screening plant, the new container hall as well as the emissions from the inlet, distribution shaft and grit chamber. The exhaust air treatment plant itself is installed outside Briest sewage treatment plant and connected to the exhaust air sources to be extracted via underground pipelines. The cleaning capacity is 4,400 m³/h.

Functional description

The first exhaust air treatment stage is the biotrickling filter, which is constructed in a space-saving vertical design and is made of corrosion-resistant PE-100. The odor-intensive H₂S contaminated exhaust air flows upwards in the biotrickling filter. The biotrickling filter is filled with a special material to create the largest possible surface area for biofilm colonization and at the same time to achieve a long contact time between the exhaust air and the biofilm. The material is sprayed with a liquid at a defined time interval to ensure optimum conditions for the biofilm.

PLC ensures optimal environmental conditions

The PLC controls water supply and sprinkling in the biotrickling filter. There is an intensive mass transfer between biofilm and exhaust air. The water-soluble and biodegradable exhaust air constituents are separated in the filter and converted biologically.

The separation of H₂S creates an acidic environment, which increases the establishment of certain bacterial strains.

Clear Choice

for waste water and waste gas treatment

The second stage of the exhaust air treatment system takes place in the biofilter with an upstream humidifier. The pre-treated exhaust air from the biotrickling filter is additionally pre-humidified in the humidifier, as the filter material moisture is decisive for the cleaning performance of the biofilter and to prevent drying of the filter bed in the inflow area.

The humidified air supply flows through the filter bed consisting of a mixture of wood chips and bark mulch. The filter bed itself is colonized by microorganisms and must be kept moist to ensure an optimized habitat for the microorganisms. Pollutants and odorous substances from exhaust gas streams are broken down into non-toxic, odorless and low molecular weight substances by the metabolic activity of microorganisms. At the outlet from the filter bed, only the earthy, resinous odor of the biofilter material can be detected.



biofilter filled



pipng inside building

Interesting technical project

Due to the extensive modernization work at the Briest sewage treatment plant, simultaneous coordination with other trades was necessary. The installation of the exhaust air system was carried out at the same time as the construction work for the actual building.

Ex-zone requirements for the construction of the exhaust air system are necessary due to the high levels of polluted exhaust air from the various areas of the wastewater treatment plant. Conductive material, corrosion-proof exhaust air fans and measurement technology for use in Ex zones were used to meet these framework conditions. The submersible pump used to pump the condensate water in the condensate pumping station is also Ex-approved. It's great; once again we were able to rely on the know-how and product portfolio of our parent company Wilo SE in this application.

Installation of several brush screens in Luxembourg (SIDEN wastewater association)

The inter-municipal wastewater association SIDEN is responsible for the wastewater disposal and treatment of its 34 member municipalities in the north of Luxembourg. The catchment area of the SIDEN wastewater association covers 40% of the Grand Duchy's territory and, with the exception of the conurbations around Ettelbrück and Diekirch, is predominantly rural.

Since SIDEN was founded in 1994, the association has grown from just a few employees to more than 150. An annual budget of almost 100 million euros is now spent on creating new wastewater infrastructure to accommodate the country's growth. The overriding objectives here are the best possible treatment of wastewater at the wastewater treatment plants and the reduction of solid and pollutant loads at the interfaces between the sewer network and the waterways.

SIDEN currently operates 75 biological wastewater treatment plants with a treatment capacity of between 150 and 130,000 PE and a total treatment capacity of 270,000 PE. In addition, there are around 400 special structures in the sewer network (RÜÜ, RÜB, RÜB+PW, PW) with a total length of 370 km (gravitational and pressurised drainage).

In Luxembourg, a large number of stormwater overflows are currently being equipped with screening systems and water level measuring probes in order to reduce the coarse material input into the receiving waters and to document the overflow frequency and discharge behaviour. These measures pursue the overarching objectives of the EU WFD to improve the ecological and chemical status of water bodies.

As some of the watercourses are located far from the power supply, it was decided to operate these structures independently or without external energy. In this context, SIDEN has installed five Hydroclean® brush screens from Steinhardt Brand in recent years to its complete satisfaction. The Hydroclean® brush screen is characterised by its efficient and reliable operation. Thanks to its flexible brush rollers, the risk of clogging due to coarse material is minimised. The SIDEN wastewater association is considering equipping further structures with Hydroclean® brush screens in the future.



Syndicat Intercommunal de Dépollution des
Eaux Résiduaires du Nord (SIDEN)



Sustainable innovations made of stainless steel

Specialist in Urban Water Management



Wilco UK/FSM Frankenger wins first order in England

Since 01.01.2024, we have started sales in England with Wilco UK and have now received our first order in England.

In a tender, we prevailed against our competitors in England.

Cantwell Electrical Engineering Ltd, one of Ireland's leading Water and Wastewater Pumping and Treatment solution providers, has ordered an FSM Dual Flow screen with fish-friendly filterpanel, which will later be operated by Irish Water.

The screen will be installed in a raw water intake on the River Slaney.

The material will collect on a chain driven filter belt mounted parallel to the flow and lift the solids to the discharge point.

The filterpanel of the screen are equipped with a special bag in which the animals in the river are

collected. Once they reach the top of the screen, they are returned to the water via a system.

The wastewater treatment plant is located in the town of Enniscorthy (Inis Córthaidh in Irish), a town in County Wexford in the south-east of the Republic of Ireland.

With a population of 12,310, Enniscorthy is the second largest town in the county. The town in Ireland has an eventful past and has several places of interest.

We are pleased to have made such a good start with Wilco UK and look forward to further orders in England.

You are welcome to contact us about other products from our company and we will be happy to help you.

You can reach our colleagues in England at the following e-mail addresses:

Mr Simon Light
simon.light@fsm-umwelt.de

Mr Ian Hayward
ian.hayward@fsm-umwelt.de



Enniscorthy

The specialists for environmental technology

Machines for water and wastewater treatment

FSM Frankenberger FRS 3 at the Fernwald/Steinbach wastewater treatment plant

As we already wrote to you in our previous FSM News, the plant has been operating our FSM Frankenberger FR filter screen and an FSM screening washing press.

The customer is extremely satisfied with our machines and the service provided by FSM Frankenberger.

As the municipality of Fernwald is constantly expanding, the ageing wastewater treatment plant now needs to be modernised and equipped for the future.

We took part in the tendering process of an engineering office responsible for the planning with our new FSM FRS 3 filter screen.

The customer and the engineering office are convinced of our price/performance ratio and the advantages of our screen compared to other manufacturers.

The advantages of our filter screen are the side seals and the plastic chain supports.

The cleaning brush is self-adjusting thanks to a flexible system and the brush no longer needs to be readjusted by employees of the sewage treatment plant.

Our new debris collector removes sand and gravel deposits in front of the screen.

The screen will also have our new spring-operated scraper plate, which increases the cleaning performance of the scraper shaft.

We at FSM Frankenberger are proud to be able to equip the Steinbach sewage treatment plant with another FRS 3 filter screen from our company.

FSM Frankenberger exhibited at the IFAT 2024 trade fair in Munich

This year, IFAT in Munich takes place in mid-May. IFAT is the world's largest trade fair for environmental and waste disposal technology and FSM is the most important trade fair we attend. Together with our sister companies Likusta Umwelttechnik GmbH and Martin Membran Systems GmbH, we were represented at the ABIONIK Group GmbH stand.

We were able to welcome our customers and sales partners from all over the world to our spacious stand. We were happy to discuss your wishes, suggestions and criticisms and will come back to you with our answers.

FSM exhibited products from the FSM and Steinhardt brands. This year, 4 screens were exhibited, with which we were able to demonstrate our expertise in the field of mechanical pre-treatment of water and wastewater. We were able to include one of the screen types on display in our product range by taking over the machine technology division of the Bischof company. With exhibits on flow control, flushing systems, solids retention and flood protection, we demonstrated our expertise in the areas of storm-water treatment, sewer network management, flood protection, the 4th purification stage and flushing of retention basins.

IFAT 2024 was a resounding success, which made up for all the work involved in the preparations. We would be delighted to be a key partner in your project to be a component in your project and make a positive contribution to contribute to the important project "clean water"

We would like to thank all those who visited us and planned and realised our trade fair appearance. We hope to welcome you to our stand at IFAT 2026 in Munich.

WWW.FSM-UMWELT.DE



Our vision: Improving life
with clean air and water

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