PRESS-INFORMATION

SACHSEN-ANHALT
Investment and Marketing Corporation

Heading for the future with a tailwind: Aschersleben aims for energy independence

Aschersleben claims to be the oldest town in Saxony-Anhalt, but at the moment it is focusing much more on its future than on its eventful history. Aschersleben is on the way to becoming a green energy pioneer. The municipality is working toward energy independence, which will benefit not only residents, but also the economy. Predictable energy prices are just one of the benefits of the town's investor-friendly economic policy.

Aschersleben is full of surprises. Anyone who thinks that a municipality of 27,000 people in the heart of Saxony-Anhalt is a sleepy little place will soon find out that they are wrong. The town, which is around 40 minutes by car from the regional capital Magdeburg, can beat many larger cities hands down when it comes to courage, ambition and innovation. And the word has got around. Aschersleben recently made the headlines in Germany's national media with its plan to become a showcase location for the energy transition. The town will not simply be paying lip service to this goal and nor will it be abandoned in a dispute over wind and solar farms. The community is united. The town council has decided that in the medium term all its energy will be generated from renewable sources.

The fact that Aschersleben is taking such an ambitious approach and is welcoming the expansion of its existing two wind parks as well as the plans for a third is a lesson learned from the energy crisis. The conviction behind this is that we can only reduce our dependency on external sources by decentralizing our energy generation, which means using energy where it is produced. "The residents of the town will benefit from this and, of course, so will the businesses," says Matthias May, the business development manager for the town of Aschersleben. "We are well on track to supply our industrial parks with renewable energy produced here in the medium term. For the companies in the area, this means that their energy prices will be more predictable, because they won't be subject to the huge fluctuations on the world markets that they have recently experienced."

Scope for investors

These plans are likely to arouse the interest of investors. Apart from green electricity, Aschersleben has a number of other benefits to offer. Companies in fields such as specialist mechanical engineering, steel structures and machinery, construction materials, non-woven textiles, composites, medical technology and logistics have all found that Aschersleben offers the ideal conditions for the production and sale of their products and services. Sites are currently available for new businesses in the Zornitzer Weg industrial park, which covers a total area of 70 hectares. Some of these sites come with construction plans and others do not. "If the site does not have a plan, it gives an investor the freedom to construct buildings over a relatively large area that meet their own needs. Of course, that's the icing on the cake," says Matthias May.

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He explains that Aschersleben has a very business-friendly climate, in part because several company owners are members of the town council. “Our town provides the space for putting ideas and projects into practice and businesses get to hear about it,” he adds. In its communications with potential investors, the town puts the emphasis on openness, transparency and speed. This is why all the technical data and prices needed by investors can be found on the town’s website under the heading “Invest in Aschersleben.” “For us, transparency also involves honesty. We explain what we can and can't do. That’s the only approach that gets us anywhere,” says May. When the town council receives an inquiry, it immediately goes on red alert. “That means we attempt to do everything possible. Any special requests for a site inspection are met immediately. We really can rely on our team of employees.”

Industry Park by the freeway

The main argument in favor of moving to Aschersleben is the location of the town. It lies in the center of Saxony-Anhalt, in the center of Germany and at the heart of Europe. The Zornitzer Weg industrial park is right next to the A 36 freeway, which is only a few minutes from the A14 and Leipzig/Halle airport. “The proximity to the freeway is the key advantage of the location for us,” says Christoph Hermann, CEO of the TAS Group. This logistics company is based in Aschersleben and has 170 employees, 70 vehicles and a warehouse with a floor area of 80,000 square meters. It provides an important service to local manufacturers. “Around 80 percent of our customers come from the area. I really appreciate the short distances and the close-knit network. People know one another and that makes a lot of things easier.”

Christoph Hermann says that Aschersleben is a pleasant place to live which benefits from a green belt and is close to the Harz region. This is what Judith Franz, who works for the town’s public relations department, likes to hear. “Aschersleben is an attractive, relaxed town with well-managed parks and gardens, sports facilities, culture and leisure venues, including a movie theater and a zoo, and a charming town center with cafés, stores and restaurants,” she explains. For potential investors and their future employees, Aschersleben also offers advantages such as affordable housing and a very wide range of schools and colleges for a town of its size.

Holger Sasse is pleased that he found the perfect location for his business here in his hometown. The company has become one of the beacons of innovation in Saxony-Anhalt. In 2005, Sasse founded Novo-Tech GmbH & Co. KG with the vision of manufacturing a versatile, environmentally friendly, recyclable wood-based material. Today the company, which has been based in Aschersleben since 2007 and has 160 employees, is Europe’s largest producer of innovative wood-based materials for outdoor use. Its products are made into decking and facade components, for example. In a unique, patented manufacturing process, up to 75 percent wood fibers are mixed with polymers (recycled plastic) and additives (binders and coloring). The wood fibers are sourced entirely from waste from the sawmill industry and no trees are felled to produce the products.

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Cradle-to-cradle: The future-proof town

The entrepreneur Holger Sasse is convinced that the climate crisis and the shortage of resources can only be resolved by taking a completely new approach and leaving the throwaway society behind. Novo-Tech's recyclable products, which are completely harmless to health, follow the cradle-to-cradle principle of sustainability. Sasse's second company, Novo-Tech Circular, which is based in the Zornitzer Weg industry park, is the first business to use high-tech processes to recycle rotor blades from wind turbines and produce new materials from them.

Aschersleben has joined the network of cradle-to-cradle regions and aims to attract more companies with forward-looking solutions that benefit people and the environment. "That's a powerful commitment," says Holger Sasse. The latest renovation project being run by Aschersleben Gebäude- und Wohnungsgesellschaft mbH (AWG), a company owned by the town, is the only one of its kind in Europe and follows this concept. A 1970s building made from precast concrete slabs has been made energy independent. The result is a kind of solar power system that people can live in. The tenants of the 22 apartments pay an all-inclusive rent of EUR 11.50 per square meter, which is only a little more than they paid before, if you add together the rent, the heating costs and all the other fixed costs of the apartments. In May 2023, the first tenants moved in and, in June, the project was awarded the DW-Zukunftspreis der Immobilienwirtschaft, a prize for intelligent solutions to the problems of the heating transition in existing buildings. As we said earlier: Aschersleben is full of surprises.

Author: Dana Toschner

More information about the Zornitzer Weg industrial park in Aschersleben

At a glance
- Total area: 70 hectares
- Largest available individual site: 10 hectares
- Level, uncontaminated, flood-proof
- Purchase price: EUR 13.35 per square meter, fully developed

Infrastructure
- Direct link to the A 36, only a few minutes from the A 14
- 80 km to Leipzig/Halle airport
- 50 km to Magdeburg port
- 2 km to Aschersleben rail station (on the Hanover-Halle/Leipzig route)
- Speed Pipe network for fiber optic cables

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PRESS-INFORMATION

SACHSEN-ANHALT
Investment and Marketing Corporation

“We make intelligent use of our waste:” Bitterfeld-Wolfen Chemical Park paves the way for climate neutrality

Bitterfeld, a town in the central German chemical triangle, was once the most polluted area in the former German Democratic Republic (GDR). Today the chemical park is home to beds of roses in full bloom and wild flower meadows buzzing with insects. “Our signs explain that these are insect meadows. We don't want people to think that we’re just not bothering to cut the grass,” says Max Fuhr from Chemiepark Bitterfeld-Wolfen GmbH. The company provides support for investment projects at the site, from the planning and approval processes through to the implementation. Bitterfeld-Wolfen Chemical Park covers an area of 1200 hectares, which makes it one of the largest sites for chemical and pharmaceutical companies. Max Fuhr explains how the chemical park is reinventing itself against the background of the challenges of climate change and the decarbonization of our lifestyle.

“Chemistry provides bread, prosperity and beauty:” this was the slogan for the large-scale expansion of the chemical industry in the GDR in 1958, which had drastic consequences for the environment. Is there still a place for chemical parks in the era of climate change and in the light of the EU goal of climate neutrality?

Max Fuhr: We have identified the future markets and areas of growth that fit with our goals. The companies that move here must use environmentally friendly technology. And we focus primarily on materials networks. The businesses that join us will benefit from the materials cycle that covers the entire site.

How does this materials cycle work?

The plants are connected to one another by pipelines. The by-products and residues of one company’s chemical production process can be used by another company as raw materials. We look at these material flows and identify the places where suitable companies can move in.

For example, a unique materials cycle has been established at our site on the basis of the chloralkali process of the chlorine manufacturer Nobian that includes Nobian itself, Evonik, Heraeus and Linde. At the end of the cycle, Heraeus can produce synthetic glass for fiber optic cables. In addition, ICL-IP Bitterfeld GmbH uses the chlorine gas supplied by Nobian to manufacture flame retardants which increase the flashpoint of plastic to 250 degrees Celsius.

Bitterfeld-Wolfen Chemical Park makes intelligent use of its waste. This reduces the amount of residues and emissions and strengthens the circular economy.

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Which future markets have you identified for the Bitterfeld-Wolfen site?

One of them is electric mobility. To manufacture the battery cells for electric cars, raw materials such as lithium have be converted into specialty chemicals. We have the capacity and the expertise for the chemical conversion and refining processes. The high-quality inorganic basic chemicals, such as acids and alkalis, needed for these processes can be provided by local suppliers. In addition, there are highly qualified staff available in the region with experience in electrochemistry, chemical process engineering and thermal treatment of materials.

More than 80 percent of battery materials are currently produced in Asia. Now AMG Lithium has opened a lithium refinery in the chemical park.

AMG aims to establish its own lithium value chain in Europe. Because we offer the ideal conditions for this, the AMG subsidiary AMG Lithium GmbH has moved here and invested 150 million euros in the park in the first stage of its development. From 2024, it will be producing 20,000 metric tons of lithium hydroxide every year. By 2030, the annual production could increase to 100,000 metric tons.

In 2019, Black Magic, a company from Saxony-Anhalt, was awarded the Hugo Junkers innovation prize for the development of an electrically conductive “black” powder made from carbon. Black Magic is also based in the chemical park. How does it fit into your portfolio?

The company manufactures special curved graphene which is used in the cells of ultracapacitors. These are storage units for electrical energy which can produce a much higher output than conventional batteries very quickly. The young business has combined with the energy start-up Skeleton to form Skeleton Materials. The companies deliberately chose Bitterfeld-Wolfen Chemical Park as their base because of its local administrative facilities, good transport links and the possibility of hiring experienced staff.

We are seeing a recovery in the photovoltaics industry. Will it play an important role in the Bitterfeld region, which was once known as the “solar valley” of central Germany?

Nexwafe plans to build a wafer factory here. The main investor is Reliance New Energy Limited, and production is due to start in the first half of 2025. Nexwafe has specialized in wafers that are primarily used in high-performance modules. With the help of a innovative manufacturing procedure, the company can produce wafers to meet individual customers’ requirements. The new plant will initially make wafers with an output of 250 megawatts. In the next stages of development, outputs of up to 3000 megawatts will be possible.

Green hydrogen is a field with future potential where Bitterfeld-Wolfen Chemical Park is in a strong position...

Our strategy is to make use of high-purity green hydrogen and its secondary products. For example, the chlorine manufacturer Nobian uses green

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electricity and therefore the hydrogen produced as a by-product is also green. It is processed by Linde in the materials network mentioned earlier. Hydrogen with such a high level of purity is also of interest to the semiconductor industry, among others.

Bitterfeld-Wolfen Chemical Park is also a partner in the E4MeWi research project. What is this all about?

E4MeWi stands for an energy-efficient, renewable-energy-based methanol economy. In addition to our chemical park, the project includes the start-ups CreativeQuantum and INERATEC, the Leibniz Institute for Catalysis and the Ruhr University Bochum. The research project is focusing on green methanol which can be used to produce resins for the furniture, construction, automotive and plastics industries. In the light of the imminent climate crisis, it is no longer possible to manufacture methanol from fossil raw materials in large-scale plants. One very interesting project involves the development of a pilot catalyst plant for synthesizing methanol in a completely new way. This will come into operation at the chemical park here in 2023. One aim of the project is to produce green methanol at competitive prices in places where cheap electricity and local CO2 emissions are available. This brings us back to the urgent need for a carbon-neutral lifestyle to protect our planet.

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PRESS-INFORMATION

SACHSEN-ANHALT
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House of Transfer in Leuna: Pooling knowledge for the industries of the future

The House of Transfer is being established in Leuna. This structural change project will function as an interface between science, industry and politics and it will help companies to be innovative, sustainable and climate neutral. A former coal-mining region in the center of Germany is being transformed into a modern industrial location with an efficient circular economy.

Sometimes only a few meters are missing. This was the case for a company that wanted to connect to the hydrogen network. “With our expertise we can help,” says Manja Tschöpe. She is the leader of a special project that has been based in the Chemical Park Leuna in the south of Saxony-Anhalt since early 2023.

The project, known as House of Transfer or HoT, was launched by the Fraunhofer Institute for Wind Energy Systems IWES in cooperation with BioEconomy e. V., the Fraunhofer Center for International Management and Knowledge Economy IMW, the Chemie+ cooperation network of Martin Luther University Halle-Wittenberg and POLYKUM e. V.

Four key areas for the future

“There is already an incredible number of innovative ideas and technologies around that will help to ensure the success of structural change, not only in the former central German coal-mining region. But many of the organizations involved don’t know about the others, which means that there is a lot of time-consuming and costly duplication of structures,” says Manja Tschöpe. The project aims to address this problem. The working group is putting the emphasis on four areas: the bioeconomy, chemistry, plastics and hydrogen. The main aim of these key areas is to support the transition of the former central German coal-mining region into the future and to develop a modern and sustainable industry that can create synergies to promote productivity and protect the environment with the help of a circular economy. Close cooperation is needed across all four sectors to establish climate-neutral value chains as soon as possible.

This transformation process is exactly where the support of the House of Transfer comes in. It will act as a service provider and networker. The Federal Ministry for Economic Affairs and Climate Action has provided funding of a total of 4.6 million euros for the first four years. After this, the House of Transfer aims to be independent. The project team is currently made up of nine full-time members of staff. A total of 25 experts are involved in the HoT. The office is located in the Chemical Park Leuna not far from the coal-mining region. It has very close links with the companies in the park.

A network packed with knowledge and contacts

Following the start-up phase, which lasted for six months, the team is now working on identifying the specific requirements of the region. “We are in close contact with a large number of businesses in our four key sectors.

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Many companies are facing individual challenges, but many of their requirements are similar too. The inquiries we are receiving range from the development of targeted training modules and committee work through to increasing the visibility of specific technologies," says Manja Tschöpe. "We see ourselves primarily as the people who will help to remove obstacles that prevent individual businesses from transforming themselves, for example by matchmaking, supporting projects during the start-up phase or providing specific market knowledge."

In the future, companies will be able to approach the project team in particular when they need assistance with finding contacts or investors. The HoT team can also help with identifying training needs, searching for partners and funding for R&D projects or developing individual business models. In addition, it can make use of its contacts in the world of politics and the public sector when a few meters of pipe are all that is needed to connect to the hydrogen network.

Wiki on the web about future technologies

In the future, the project team also aims to bring together initiatives that have been running in parallel, in order to enable findings and research results to be transferred into a practical industrial setting more quickly. The HoT will provide an overview of the changing value chains in the key areas of the bioeconomy, chemistry, plastics and hydrogen, together with scenarios for future developments and their effects, for example on the employment market. This knowledge will be processed by the project team and made available to all the stakeholders.

There are also plans for a comprehensive website where the team intends to create a wiki covering the technologies, processes, innovations and niches in the sectors. The website is at https://house-of-transfer.de/. The project is one building block in the technology-driven structural change of Saxony-Anhalt. The idea first emerged in 2020 and the main focus is on a circular approach to ensure that companies can do business in a climate-neutral way, because only by establishing a complete functioning system will it be possible to achieve a successful transformation.

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The House of Transfer project has been provided with funding of 4.6 million euros by the Federal Ministry for Economic Affairs and Climate Action on the basis of a resolution passed by the German parliament.

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PRESS-INFORMATION

SACHSEN-ANHALT
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The State Energy Agency: “Trend for resource-efficient, sustainable production”

Companies want to do business in a more sustainable and resource-efficient way. In Saxony-Anhalt, they are supported by the State Energy Agency (LENA) as they move toward climate neutrality. In this interview, Thomas Micka, head of the business department at LENA, describes the opportunities, requirements and successes involved.

You are head of the business department at the State Energy Agency, known as LENA. What exactly is LENA?

Thomas Micka: The State Energy Agency is a company that is fully owned by the state of Saxony-Anhalt. Working on behalf of the state government, it provides support for consumers, the public sector and businesses during the energy transition, focusing in particular on energy efficiency and renewable energies. LENA initiates projects, provides training and helps with networking.

What is the role of your business department?

More than 130,000 companies are registered with the chambers of commerce in Saxony-Anhalt. Industry is responsible for around 45 percent of the total final energy requirement in the state. One of our tasks is to help companies to become more energy-efficient, sustainable and climate-neutral. We have developed an extensive selection of information and support services for this purpose. These range from design and dimensioning aids for cross-cutting technologies, systems for renewable energies and methods of increasing energy efficiency using process optimization through to a variety of documented examples of best practices. All the information is brought together in virtual rooms and is permanently available.

How does LENA provide support for projects?

As a state-owned company we are non-competitive and provider-independent. Our offerings close the gaps that cannot yet be adequately filled by the market. One of our main focus areas at the moment is encouraging companies to develop transformation concepts for climate-neutral business. The foundation for projects of this kind is standards-based greenhouse gas accounting. The complex process of drawing up these accounts and identifying and implementing strategic measures presents challenges for small and medium-sized enterprises in particular. Using LENA’s Saxony-Anhalt GHG checking tool, which is based on MS Office, we train energy advisers to provide consultancy services in this area. It is important to be able to provide offerings that meet the growing demand. LENA also offers consultancy on funding and networking opportunities for businesses and scientific or research institutions. In addition, we provide measurement and testing systems free of charge as required for first time and one-off use. For example, companies can use an ultrasound testing system to locate and evaluate leaks in compressed air systems. These are very prone to losses and therefore often waste energy. Our network analyzer enables electricity consumption and load curves to be measured. SMEs in

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particular are often unaware of how their power is distributed. Network analyses allow them to make improvements. By lending the equipment, we aim to demonstrate to companies the effects of regular testing and analysis and encourage them to take a more systematic approach. Businesses interested in what we have to offer can contact us at any time.

Efficiency measures, testing equipment and analyses all cost money. You mentioned funding instruments. What is available in Saxony-Anhalt?

The Saxony-Anhalt ENERGY funding program has invested more than 140 million euros over recent years in hundreds of projects involving energy efficiency and sustainable energy supplies. For every one euro of funding, we were able to attract almost two additional euros of investment. This year, businesses will once again have the opportunity to apply for funding from the Saxony-Anhalt ENERGY program. Other funding programs are currently being put in place by the Ministry of Energy.

In addition, LENA organizes events and provides guidance for companies. This enables us to raise awareness of the funding options available and explain the technical methods for increasing efficiency. We also publish information about funding offered by the federal and state governments on an ongoing basis in our online newsletter.

Is there still a strong trend for resource-efficient, sustainable production in Saxony-Anhalt?

The trend is continuing to grow, not least because of geopolitical developments. There has been a significant increase in the efforts to make our energy supply more independent of fossil fuels, to optimize processes and to improve energy efficiency. The incentives offered by the German federal government for planning transformation processes can help in this respect. The inquiries about climate-neutral business have multiplied and this is one reason why we are offering the Saxony-Anhalt GHG check.

At the moment, everyone is talking about green energy. What role does it play for companies in Saxony-Anhalt?

Around 62 percent of the electricity in Saxony-Anhalt comes from renewable sources, while the figure for heating is not even one third of that. This is partly due to the cost of producing heat and the dependency on fossil fuels such as oil and gas. Many companies have recognized this and are looking for alternatives. One option is to bring heat users and waste heat together more effectively and, in the future, to create better links with municipalities for the purposes of municipal heat planning.

Which companies are making good progress in this respect?

Many companies, in fact almost all, are looking at their energy use. It would not be fair to any of them to single only a few out here. On our Saxony-Anhalt energy atlas platform, we currently have more than 300 examples of best practices from companies of all sizes and across all industries that have

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already successfully taken measures to reduce their energy requirements and their greenhouse gas emissions.

Which new technologies are currently in demand?

The majority of companies in Saxony-Anhalt are still using natural gas. This is why there is a considerable interest in hydrogen, in particular for use in high-temperature processes. Therefore, as part of its hydrogen strategy, the state government of Saxony-Anhalt set up the hydrogen coordination agency, which has been based with LENA since the fall of 2022. My colleague Dr. Stefan Scharf is responsible for this area. Hydrogen has a long tradition in Saxony-Anhalt. It has been playing a key role in the chemical industry in the region for 150 years. Now we need to produce this basic material in a climate-neutral way so that it is available for other applications. It is worth mentioning here the large-scale projects with an international impact, such as world's biggest electrolyzer in Leuna and the living lab in Bad Lauchstädt, where construction of the salt cavern storage facility recently began. A number of large infrastructure projects are also underway. Saxony-Anhalt has the significant advantage of existing hydrogen pipelines that could be connected to the planned Europe-wide network.

What is the current level of demand for hydrogen in Saxony-Anhalt?

There is a considerable amount of demand, in particular from large-scale industry. The companies want to know where they will obtain the amount of hydrogen they need and what the price will be. We have already received inquiries about this.

It will be interesting to see how quickly the basic material industry will develop and how soon hydrogen will be used as a fuel in other industries and also in mobility applications. There are projects underway in Saxony-Anhalt in all these areas.

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PRESS-INFORMATION

SACHSEN-ANHALT
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Efficient use of energy and resources – companies in Saxony-Anhalt play a pioneering role

When companies invest in energy efficiency, they are not only making an important contribution to combating climate change, but also cutting their energy and raw material costs. The aim of these measures is to reduce energy use to a minimum and, in the long term, to meet the remaining requirements exclusively from renewable sources. Investing in energy-efficient technology is therefore an important part of the energy transition.

There are many companies in Saxony-Anhalt that have invested in energy efficiency. They include Miltitz Aromatics GmbH, a medium-sized company based in Bitterfeld-Wolfen Chemical Park, that specializes in the chemical synthesis of fragrances and in fine chemistry. The company has its roots in Schimmel & Co., a former market leader in the production of fragrances and aromas based in central Germany. Miltitz Aromatics was founded in 1992 in the town of Miltitz near Leipzig. In 1993, the company moved to Bitterfeld-Wolfen Chemical Park because of the excellent infrastructure there.

Technology for improving energy efficiency and safety

Scents for detergents, fruit aromas and, in particular, many of the basic substances for perfumes are developed in the chemical laboratory here. “Scents influence our well-being and bring back memories and emotions throughout our lives. Our noses do not wear out, providing that they are kept healthy,” says Dr. Stefan Müller, CEO of Miltitz Aromatics GmbH. With 47 employees and three apprentices, the company achieved a turnover of 16.4 million euros in 2022 and experienced above-average growth over the past few years.

To ensure that it continues making good progress, Miltitz Aromatics has invested in a new energy-efficient flow reactor, with the support of the Saxony-Anhalt ENERGY funding program, which will reduce its energy consumption and increase safety levels. The aim of the investment was to save energy and, as a direct result, reduce CO2 emissions. The previous process used to produce intermediate products has been converted from batch processing to continuous operation using the flow reactor. In the chemical industry, batch processing is the equivalent of boiling ingredients in a pan. All the substances are put into a vat and left to simmer for several hours while being stirred occasionally. After this, everything is removed from the vat at once.

When a continuous process is used, the ingredients are added uninterruptedly to a much smaller machine and emerge a few moments later as finished products. The difference between several metric tons and only few hundred milliliters of chemicals reacting with one another leads to a significant improvement in safety levels. But flow reactors also bring advantages in terms of energy consumption. They allow the reaction temperature to be increased and, in addition, they can be cooled with water

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instead of with an electrically cooled brine solution. Also, an agitator that has to keep several metric tons of ingredients moving uses much more energy than the rotor discs in a flow reactor.

Manufacturing bio-based scents

The company also plans to change the type of resources it uses. Until now the fragrances have been manufactured on the basis of crude oil, but in the future they will be bio-based. With this vision in mind, Müller approached the "BioZ. Bio-based innovations from Zeitz and central Germany" alliance for advice. The alliance is funded by the "WIR! Innovation and Structural Change" program which was set up by the German Federal Ministry of Education and Research. The twelve-person research department at the company, which is already heavily focused on innovation, took up the challenge. The advice and the research showed that maggots from the eggs of the soldier fly could be an alternative to crude oil. Lauric acid can be produced from the maggot grease in the same way as from oil. This can then be synthesized to produce scents. "The cosmetics industry in particular will welcome the fact that our fragrances are no longer based on crude oil, because sustainability has become a very important purchasing criterion," says Müller.

The food and drinks industry in the region is also investing in energy efficiency. One example is the traditional Wippra brewery in the town of Sangerhausen in the south of the Harz region. The Gehring family has been brewing beer here for more than 20 years. The beer is produced in the old brewhouse using methods that date back to 1905. Energy, sustainability and climate considerations were three of the reasons why the decision was made to invest in new brewing modules for beer production. Following the purchase of the new systems, which were partially financed by the Saxony-Anhalt ENERGY funding program, the brewery was able to reduce its energy consumption and increase its beer production.

Another example is reha team Halle GmbH, a medium-sized company that supplies personal mobility products, rehabilitation equipment and medical aids. To reduce its resource use and improve its energy efficiency, the company replaced its old gas heating system with a modern, highly efficient condensing boiler. The new boiler was partly funded by the Saxony-Anhalt ENERGY program. The lighting in the building has also been replaced with LED lights to meet new energy standards.

SMEs and municipalities in the region can benefit from a range of advice services and funding options for improving energy efficiency which are provided by the German federal government and the state of Saxony-Anhalt. These include finance for investments in renovating buildings, energy management systems, waste heat reduction and use and energy-efficient, climate-friendly production processes, plus subsidies for consultancy. The Saxony-Anhalt ENERGY funding program is currently being restructured and will start up again in 2023.

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PRESS-INFORMATION

SACHSEN-ANHALT
Investment and Marketing Corporation

Green ammonia is the fuel of the future for the global shipping industry

Ammonia and methanol produced from renewable hydrogen are the fuels that will be used in marine engines in the future. In the test laboratories of WTZ in Dessau-Roßlau, researchers from Saxony-Anhalt are developing ship propulsion systems for a decarbonized world.

The marine engine running at high speed in one of the test labs belonging to WTZ, an institute specializing in research into engines and machinery, has only one cylinder. With all its peripheral systems, hoses and cables, the unique research engine fills an entire room. This single-cylinder research engine designed by WTZ has a power output of 180 kW and it runs not only on diesel but also on ammonia. The ammonia is pumped into the engine at a pressure of 500 bar and ignited by a pilot diesel injection system. In trial operation, the engine has already operated on up to 90 percent ammonia. The goal of the AmmoniaMot project at WTZ in Saxony-Anhalt is to develop a combustion process for CO_2-neutral ship engines that burn ammonia rather than diesel or heavy oil, which is harmful to the environment.

Important fuel for decarbonizing maritime shipping

Maritime transport is responsible for around three percent of global energy use and seven percent of crude oil consumption. The objective of the International Maritime Organization (IMO) to reduce CO_2 emissions by 2050 to 50 percent of the 2008 levels can only be achieved by a massive shift to carbon-free fuels. This will be made possible by the hydrogen derivative ammonia, for example, which is a green, carbon-free alternative if it is synthesized using renewable energy. “Ammonia is an important fuel for decarbonizing maritime shipping,” says Carsten Tietze, mechanical engineer and innovation manager at WTZ. But using ammonia as a fuel is nothing new. As long ago as 1872, the trams in New Orleans ran on the substance. At the time, the use of ammonia proved to be too complex and too expensive, but, with the advent of climate change, the technology is once again attracting attention.

Saxony-Anhalt provides funding of two million euros for the infrastructure

WTZ in Saxony-Anhalt is one of the first research institutions in Germany to investigate the potential of ammonia manufactured using renewable hydrogen, which makes it ideal as a CO_2-neutral fuel for shipping. In the AmmoniaMot project, which is funded by the Federal Ministry for Economic Affairs and Climate Action, the researchers are venturing into completely new territory, because ammonia has not been used anywhere in the world as a fuel in ships’ engines. The advantage is obvious. “The energy density of liquefied ammonia is higher than that of gaseous hydrogen, which means that more energy can be stored in smaller tanks on ships,” explains Carsten Tietze.

However, using alternative carbon-free fuels such as ammonia in ships’ engines also presents major challenges. “It burns quite differently from diesel

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or gasoline. This means that the engines need to be modified. All the components, including the hoses, injection nozzles and pumps, have to be suitable for the fuel, which does not provide as much lubrication as diesel. Also ammonia is toxic and so safety concepts, gas alarms and measurement systems have to be developed and installed for these engines," says Carsten Tietze. In addition, it was time-consuming to set up the infrastructure in the test lab that was needed for the research. Tietze explains that it took around two years before the team could start testing the new combustion process in its own research engines. The region of Saxony-Anhalt provided two million euros of funding for the testing infrastructure. Compared with institutions in other countries, WTZ now has unique facilities for researching and developing new green engine technologies. With its single-cylinder research engines and accompanying infrastructure, plus the research and development labs with their expert staff, WTZ gGmbH in Dessau-Roßlau is one of the leading research facilities for large engine development.

WTZ is a research partner of global engine manufacturers

Innovations in large engines are the business of WTZ gGmbH from Saxony-Anhalt. The independent, nonprofit research institute, which was founded in 1950, is a partner of international engine manufacturers. The use of renewable energy has played an increasingly important role in its research activities for many years. These include joint projects, which are currently receiving funding, concerning the combustion of pure gaseous hydrogen in combined heat and power plants and the use of green hydrogen in train engines.

WTZ works closely with the government of Saxony-Anhalt, including during the development of the region's hydrogen strategy. In the framework for a green hydrogen economy adopted by the state government in 2021, combustion engines still have a role to play if they run on renewable fuels produced from green hydrogen. In the large engine segment, for example in ships, combustion engines have a highly important function to perform as part of decarbonization. This is clear from another project at WTZ Roßlau known as MeOHmare, which started at the beginning of the year. This innovative project, which is funded by the Federal Ministry for Economic Affairs and Climate Action, involves developing a methanol engine for maritime shipping.

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PRESS-INFORMATION

SACHSEN-ANHALT
Investment and Marketing Corporation

Mathilde's Garden is home to the goddess of the rainbow

"Irises don't like wet feet, so Quedlinburg is the perfect place for them," explains Maya Behrens. Her Mathilde's Garden lies in the wind and rain shadow of the Harz mountains. The scent of the flowers in the garden is enchanting. More than 1600 different irises, rare roses and local varieties of fruit trees find that the soil and weather conditions in the Harz are ideal.

A "carpet of scent" is mentioned in the history of the town. Maya Behrens has photographs and documents dating back to the time when her garden on Harzweg in Quedlinburg was still known as the Stumpfsburg Garden and was one of the most famous plant breeding and show gardens in central Germany. It belonged to the seed breeding company founded by Heinrich Mette in 1784 and it is said that the scent of the snapdragons, asters, wallflowers, stocks and pinks spread throughout the town during the flowering season. In 1945, the Mette family was dispossessed.

In the period that followed, Quedlinburg became equally famous as the center of garden seed production in the former German Democratic Republic (GDR). The scientific breeding station and greenhouses of VEB Saat- und Pflanzgut Quedlinburg, a state-owned seed and plant company, were based in the Stumpfsburg Garden until 1992. Only the chimney of the boiler house is left to bear witness to this era. But the genius loci, the spirit of the place, can still be felt here. Why else would Maya Behrens, an expert in managing garden shows and dream garden projects who travels throughout Germany, have fallen in love with the overgrown garden? "Here on this ground, which is steeped in tradition, I had the vision of starting my own iris breeding business," says Maya, who is now in her mid-forties. This was the motivation behind her move from Lower Saxony to Quedlinburg with her two daughters ten years ago.

Original and also exclusive

Since then, her idea of sustainable plant production has flourished, and she has an iris as her company logo. While she enthuses about her love of the iris, the goddess of the rainbow, she chooses particularly beautiful flowers for cutting. It is obvious why the plant has been given this name. Its flowers come in all the colors of the rainbow and present a stunning picture. Landscape designers, fruit growers and gardeners from the region love to visit Mathilde's Garden because of the impressive collection of irises, the rare roses and the old local varieties of fruit. Here the tradition of the breeding garden has been revived. "Our plants are original and, at the same time, exclusive. Every customer finds something that is just what they are looking for," says Maya. In almost the same way as in the past, her address attracts customers who want plants that have been selected and bred in real-life conditions. Maya points to the meadows around the garden, which like many in the area have turned brown. Low rainfall, which for centuries was an advantage of the location for seed breeders, could become a problem as a result of dramatic changes in the climate. But Maya does not use hoses to water her perennials and roses growing outdoors. She is aware that drought-resistant plants will be in demand in the future. However, she has her own

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recipe for healthy, flourishing plants. She talks about her Terra Preta, a black soil that she makes herself. The term Terra Preta was originally used to refer to the fertile black soil of the Amazon region. Maya Behrens' recipe comes from Mexico, where she was born and brought up. Her parents were teachers from Germany. When it was time for her to go to school, she traveled to Germany and spent the second part of her childhood in her grandparents' plant nursery in Hanover.

A gardener with a doctorate

After taking a gardening apprenticeship, she studied economics and business informatics and then completed a doctorate on "evolutionary and collective learning processes in open and closed systems." At first sight this seems a very abstract subject for a woman who likes getting her hands dirty. However, as lecturer in marketing at the University of Bremen, she linked her theoretical teaching with plenty of practical examples from her grandparents' nursery. This is how her talent for acting as an intermediary between gardeners and marketing people was discovered. As she looks back over the most recent part of her career, Maya Behrens explains that there was great demand for her services at federal and regional garden shows,

In the tradition of the Quedlinburg endowment for ladies

She regards Mathilde's Garden as being a continuation of an old Quedlinburg tradition. "All the gardening knowledge in this UNESCO World Heritage town would not have been built up without the noble ladies from the endowment and their gardeners," she explains. That is why she named her garden after Mathilde. The wife of King Henry I and mother of Emperor Otto founded the Quedlinburg Damenstift, an endowment for noble ladies, in 936 in the town where Heinrich was buried. "There were strong women about even in the Middle Ages," says Maya. But she only really became aware of this when she moved to Quedlinburg. She laughs because she has strengthened her presence here with a new idea. For the last two years, her café in Mathilde's Garden has been an additional attraction. While she was talking to customers about her plants, she had the idea of serving them coffee or rose petal tea and, of course, cake. She uses the iris and rose blooms that she has just picked in her amazing cake creations and even surprises herself. "Becoming a baking queen really wasn't my plan," she admits.

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