



PRESSE-INFORMATION

Hydrogen power from Saxony-Anhalt: how HORIBA FuelCon is shaping the energy transition

HORIBA FuelCon GmbH manufactures test stands for hydrogen industry components, builds manufacturing plants and sets standards with its test solutions for electrolyzers. In Barleben, work is being done at what is probably the world's largest and most state-of-the-art production facility for testing and manufacturing plants for fuel cells and electrolyzers. With its leading position in the field of hydrogen testing technology, the company is making a key contribution to the energy transition.

In Ostfalen Technology Park in Barleben, HORIBA FuelCon is working on the future of energy. Hydrogen is considered a key technology to reduce dependence on fossil fuels – and global demand is enormous. Anyone wanting to supply hydrogen in large quantities needs optimum plants and processes. This is where the company in Saxony-Anhalt comes into play, and it is setting new standards. HORIBA FuelCon develops and produces test solutions for electrolyzers, devices that split water into its components hydrogen and oxygen using electricity during electrolysis. “We’re helping to lead the energy sector into a sustainable future,” says Carsten Krüger, Head of Marketing Communications.

Currently, large pilot plants are being built just outside Magdeburg for the development and validation of electrolyzers in high-performance ranges. “There’s nothing like this anywhere else in the world, says Krüger. “Technologically, we’re at the forefront.” And this isn’t the only innovation: HORIBA FuelCon uses so-called multiple joining stations for high-temperature plants. The crucial advantage here: while conventional, heavy plants can usually only process one fuel cell stack – a stack of fuel cells – the company has now brought plants for four stacks to the market. And the potential continues to grow: “The capacity will increase even more in the future, developments are in full swing,” explains Krüger. For customers, this means a significant increase in efficiency. Thanks to state-of-the-art production facilities, HORIBA FuelCon not only enables quality control but also automated sintering – a key step in the manufacture of high-temperature fuel cells. These optimized processes shorten production times and reduce costs. The company makes use of automated solutions in manufacturing, replacing production stages that are slow, hands-on and resource-heavy.

25 years of experience and expertise ensures a competitive advantage

Fueled by this drive for innovation, the company can also draw on a wealth of established expertise. Originally established in 2001 as a spin-off, it has evolved continuously ever since. HORIBA FuelCon is now the global center of excellence for hydrogen technologies within the international HORIBA Group. From its base in Barleben, the company supplies industries around the world – including the automotive sector, the energy industry and research institutions. “Our more than 25 years of experience in automated testing gives us a real competitive edge,” says Carsten Krüger. What started out as a niche business has grown into a global success story. “We’ve helped shape the



industry's transformation – and we've been right there with it every step of the way." Today the company has access to a global network of sites. Highly regarded around the world, its customer-specific testing systems are setting new standards for tomorrow's energy solutions. Its customer base is steadily growing, especially outside Europe. And many new market entrants are turning to the team in Saxony-Anhalt for their expertise, benefitting from the full range of support – from early-stage development to full-scale production.

Rapid growth at one of Saxony-Anhalt's Centers of Excellence

The company's momentum is most visible in its recent expansion: just a few years ago, the world's largest and most advanced production facility for fuel cell and electrolyzer testing and manufacturing systems opened in Barleben. This new factory has made the site the hydrogen hub within the HORIBA Group. "No matter whether you need a test stand in Japan or Germany – the systems are all made here in Barleben," says Krüger.

HORIBA FuelCon is growing fast, with its workforce doubling between 2022 and 2024. The company draws on both regional specialists and international talent. "We introduced bilingual processes and digital documentation early on, and we've worked hard to remove barriers to entry. That makes us an attractive employer for skilled workers from around the globe," Krüger explains. Today, people from almost 25 nations are employed at the Barleben site, which has been designated "Ostfalen Technology Park Center of Excellence" by the state of Saxony-Anhalt. This is a seal of quality that reflects close cooperation between business, research and academia. Here, innovation and investment contribute directly to regional growth. This is everyday reality: graduates from Otto von Guericke University Magdeburg (OVGU) are hired, and the company's in-house training ensures a pipeline of skilled professionals for years to come. With an average age of 36, the team is young and dynamic –

just like its processes. "We've always been guided by progress," says Krüger. Artificial intelligence is playing an increasingly important role in development and testing processes. "AI helps us anticipate demand and make complex processes more efficient. That means we can meet customer-specific requirements faster." AI is especially valuable in fully automated testing – in scripting and programming test procedures, for instance. And that's how the future will continue to take shape – with the course being set in Saxony-Anhalt. Why here? Carsten Krüger sums it up: "The conditions are ideal – we're close to leading research institutions like OVGU, Magdeburg-Stendal University of Applied Sciences, and the Fraunhofer Institute. We have a local supplier network and the space to keep expanding." A new plot of land has already been secured for future growth.

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[Home – HORIBA FuelCon](#)

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025 Evaluator End-of-Line Quality Assurance

A system installed at the end of the production line (End-of-Line / EOL) for fuel cell stacks which ensures fully automated quality assurance. The photo also shows a fuel cell stack on a cart being moved into the test stand through the distinctive roll-up door.

2025 Evaluator ES electrolysis with test unit

Close-up from the test chamber of a high-temperature test stand. A typical test unit – a high-temperature stack – is being connected by an employee for a test run.

2025 Evaluator S200-LT fuel cell test systems

The Evaluator S200-LT series is designed for high-performance fuel cell stacks. The floor-level test chamber at the head of the stand gives an impression of the test unit's dimensions – the systems can handle stacks with outputs of up to 400 kW. The photo shows three identical units in a row, already in use for pre-series production.

2025 Evaluator SX200-LT fuel cell test system with test unit

The Evaluator SX200-LT is a test solution for complex fuel cell systems: these are installed as finished modules later in various applications. The photo shows a fuel cell system from a passenger car inside the test chamber.

2025 HORIBA FuelCon eHUB building

Front view of the HORIBA eHUB company building, the HORIBA FuelCon site in Barleben. Completed at the end of 2021 after 18 months of construction, it now houses 260 employees.

2025 HORIBA FuelCon eHUB – aerial view

Aerial view of the HORIBA eHUB building, HORIBA FuelCon's site in Barleben. The office area is visible in the foreground, comprising around 3,000 square meters for all non-production departments. In the background are two production halls covering 7,000 square meters and dedicated entirely to the manufacture of testing, production and assembly systems for fuel cells and electrolyzers. Behind the office building is a hydrogen tank that is used to operate the systems.

2025 HORIBA FuelCon production hall

View inside the HORIBA FuelCon production hall in Barleben. Various systems can be seen across a total of nine production lines.



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The Kraftwerk technology group aims to establish itself as the “operating system of the energy transition”.

Six well-known IT service providers in the energy industry have joined forces under the new umbrella brand “Kraftwerk Energy Software Holding” to pool their expertise and develop software solutions to transform the energy sector. The newly formed technology group set up shop last year in Halle (Saale), Germany.

The name “Kraftwerk” – German for “power plant” – says it all: the aim is to power the energy transition. “Our Kraftwerk software products are specifically designed for small and mid-sized utilities, water and heating providers, and charging infrastructure operators,” says CEO Andreas Weber. “These companies in particular are finding it increasingly difficult to keep up with the pace of AI development and digital business processes while also ensuring cybersecurity at the same time. “While the industry’s largest players are building their own IT platforms, Kraftwerk aims to be a trusted digitalization partner to small and mid-sized utilities, helping them adapt to technological change and remain competitive.”

Strategic location with university partnerships

Established just a year ago, Kraftwerk Software Holding GmbH brings together the IT providers msu solutions GmbH, iS Software GmbH, eins+null GmbH, signion GmbH, S&P Solutions GmbH and the e-mobility brand m8mit mobility GmbH. The group moved its headquarters from Regensburg to Halle (Saale) at the end of 2024. “We chose this central German location because we see enormous development potential for our group here,” says Andreas Weber. “Digitalization is a core component of the energy transition – and that calls for innovation. Halle offers strategic advantages in this regard, especially given its proximity to institutions like Martin Luther University Halle-Wittenberg, the universities of applied sciences in Anhalt and Merseburg, and Leipzig University of Applied Sciences. These connections create countless synergies.” Andreas Weber is no stranger to the region. Since 2018 he’s served as managing director of msu solutions, a company founded over 20 years ago and based at the TGZ – the technology and startup center at Halle’s Weinberg Campus Technology Park. “Kraftwerk” has established its operation there too.

Kraftwerk draws on deep industry experience

Kraftwerk Energy Software benefits from the long-standing, hands-on experience of its member companies: msu solutions offers bundled services for municipal utilities and water management association; iS Software develops software for the energy and water sectors; m8mit is a leading billing solutions provider for e-mobility; eins+null creates software for electricity and gas providers; signion delivers a strategic asset management platform. S&P Solutions develops and operates the ASS/ISS technical information system, which supports network and plant operations and meter management.



Together under one brand, Kraftwerk is now one of Germany's largest providers of industry-specific software, with around 350 specialists serving more than 500 energy-sector clients and 200 charging providers across Europe. Its solutions cover the entire value chain, from procurement to sales – including billing, finance and accounting, asset management and project management. Andreas Weber puts the company's goal in figurative terms: the name "Kraftwerk" is to become established as "the operating system of the energy transition". As he puts it: "Different technology platforms and parallel solutions for the same use cases will no longer be competitive given the rapid pace of technological development."

Cutting-edge software for mid-sized utilities

In February, the Kraftwerk Group unveiled its new platform solution at E-world in Essen – Europe's largest energy trade fair. "Our platform is built on Microsoft Business Central and integrates commercial, strategic and technical processes across the utility sector," explains Weber. "It uses AI and receives regular automatic updates to keep it cutting edge. With all key modules seamlessly integrated, the platform delivers maximum efficiency and helps utilities stay competitive." Designed for the cloud, he says, the software allows for flexible operations and quick responses to constantly changing regulatory requirements. Here he mentions the implementation of dynamic pricing: since the beginning of this year, all energy providers have been required to offer such tariffs. In other words, customers have to be given the opportunity to benefit from low electricity prices on the exchange. "The Kraftwerk Software Group has developed a solution to manage dynamic tariffs and help customers optimize their power consumption," says Andreas Weber, adding: "We're now gearing up to become the technology leader for mid-sized municipal utilities. Our aim is to offer this target group the most advanced and powerful industry software on the market."

Copy: Kathrain Graubaum

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Photos (all © K+S Studios GmbH):

Andreas Weber is the CEO of Kraftwerk Software Holding GmbH and msu solutions GmbH.

Sascha Reif is the CEO of msu solutions GmbH and m8mit mobility GmbH.

The Kraftwerk Group presented its new platform solution for the first time at E-world in Essen.



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mt 9 production lines.

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PRESSE-INFORMATION

High-tech made in Barleben: SIVONIC makes the invisible measurable

Green hydrogen produced with zero emissions is set to play a key role in the future of industry. In order to ensure it is produced efficiently and without disruption, innovative systems and processes are essential – and that’s exactly where SIVONIC comes in. Based in Saxony-Anhalt, this family-owned company has adapted a highly advanced technology for use in industrial environments, enabling precise monitoring of processes. SIVONIC is pioneering the use of modern impedance spectroscopy – a complex-sounding method that actually simplifies things. As such, it is blazing a trail in a field that is rapidly gaining significance.

It’s like looking into a black box: SIVONIC’s mission is to make hidden processes visible. A family business, the company’s location in Ostfalen Technology Park in Barleben couldn’t be more fitting: the close ties between science and business here have earned this site the official designation as a “Center of Excellence” of the state of Saxony-Anhalt. SIVONIC has become a leader in electrochemical impedance spectroscopy (EIS) – a technique that reveals what’s going on inside key hydrogen and renewable energy technologies.

What was once confined to labs for materials testing has now been made industry-ready by the Barleben-based experts. “No one else has ever done anything quite like this before,” says Hannes Benecke. Born in Magdeburg, Benecke and his brother are the company’s managing director duo. The pair recently also took over leadership of SensoTech GmbH – another successful mid-sized company co-founded by their father that specializes in analyzing and optimizing liquid processes for industry.

Shaping tomorrow’s technologies

Both companies are built on deep expertise and market knowledge. But staying at the forefront of a niche isn’t enough, says Hannes Benecke: what matters most is consistent quality and always staying one step ahead of the market. The challenge in developing their new technology was to manage higher voltages and currents, create a fully automated system that’s ready to run 24/7, and integrate all typical industrial interfaces seamlessly.

With the launch of electrochemical impedance spectroscopy (EIS) for industrial use, SIVONIC has enabled something that was previously unthinkable: in-depth analysis of the electrical and electrochemical behavior of components, individual cells and entire stacks. The technology offers major benefits – whether in complex production environments, during the development of new energy systems or in research. “This is how we help shape the technologies of the future,” says Benecke.

Even hard-to-reach areas can be measured

Thanks to this innovation from Barleben, components can now be fully analyzed while operating under real-world conditions. “You can think of it as



being rather like sonar or an echo,” Benecke explains. “A signal is sent into the component, and we measure the response from inside. That enables us to gain valuable insights.” The measurement device gives customers a comprehensive overview. How efficiently is their system running? How far along is the aging process? Are there any faults – and if so, what’s causing them? The technology has broad applications: electrolyzers, batteries and fuel cells can be examined, tested and analyzed in detail, for instance. This helps identify weak points, optimize designs and ensure maximum efficiency.

In production, too, EIS is becoming increasingly important, because it allows even difficult-to-access areas to be measured. “You can assess quality without even fully switching on the electrolyzer,” Benecke says. That’s key: after all, setting up, activating and integrating the system is a highly complex process. But by means of impedance measurement, valuable data can be gathered even before start-up. It also helps monitor systems during operation and detect problems early on, so that action can be taken before a failure occurs. “If one cell in the electrolyzer fails, the whole system might have to be shut down,” Benecke explains. “If you identify the problem early, however, you can plan ahead for service and maintenance.”

Valuable data from the “black box”

Word of these benefits is spreading. Electrolyzer manufacturers and hydrogen producers are already using EIS devices in R&D – and increasingly in production. But it was by no means easy to get to this point. “There are a lot of well-established systems and workflows in place,” says Benecke. “It took a lot of convincing to show what’s possible with EIS.” Now he’s certain: “Anyone looking to scale up impedance measurements will find it hard to ignore SIVONIC.”

One of the biggest drivers of success is the growing market, with more and more large-scale plants now going online. And outside the lab, unexpected real-world effects start to appear – such as gravitational shifts within stacked cells that can lead to minute misalignments and knock-on problems. SIVONIC’s technology can detect and analyze this type of issue. Measurement matters – and the importance of this is reflected in a major EU-funded project aiming to establish comprehensive monitoring for electrolyzers. SIVONIC is actively involved here, alongside universities, research institutes and other companies – delivering vital data from inside the “black box” with its EIS systems.

“We’re always at the forefront,” says Benecke. That includes supporting customers around the world with application engineers. SIVONIC’s employees are highly specialized, often recruited from local universities such as Otto von Guericke University Magdeburg and Magdeburg-Stendal University of Applied Sciences – or from across Germany. “Our people bring deep expertise, and the company draws on many years of hands-on experience,” says Benecke.

Many clients come to see the technology in action for themselves – no surprise, considering that pioneering technologies are being developed just outside Magdeburg. And that’s how things are going to stay. “We have deep links with this region,” says Benecke. And it’s from here that SIVONIC plans to keep growing – with innovations that are in demand around the world.



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SIVONIC at Hannover Messe: Hall 13, Stand D28/1

Photos:

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- GE0034_01_01

Modulator in the 9 HU* version for installation in a control cabinet.

- GE0072_01

EIS meter

- GE0074

Analyzer with 60 measuring channels in the 9-HE* version for installation in a control cabinet.

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- SensoTech-2021-08046

Located in Barleben

- SensoTech-2021-08664-grüner Rasen1920x1440

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PRESSE-INFORMATION

Green electricity for the world

From cozy alpine hotels to gold mines in the Australian outback – Tesvolt’s high-tech battery storage systems from Wittenberg are in use across the globe. Two young entrepreneurs are rethinking the future of energy from their base in the town of Luther. And now they’re building the largest factory of its kind in Europe.

Simon Schandert prefers understatement. As he walks toward the production hall, the 35-year-old casually points to a display case filled with trophies – more than a dozen business awards tell the story of Tesvolt’s success: Innovator of the Year, Top Company, Top Innovator, Rising Star, German Start-up Award, Smarter E-Award, Best Employer. Schandert and his former schoolmate Daniel Hannemann have come a long way since launching Tesvolt in Wittenberg ten years ago. With a workforce of 300, they are now building intelligent energy storage systems for commercial and industrial customers worldwide – generating tens of millions in annual revenue.

The Tesvolt formula – powering every corner of the planet

With their own proprietary hardware and software, they’ve significantly increased the performance and lifespan of batteries used for wind and solar power. Their so-called Tesvolt formula ensures that all battery modules within a system remain perfectly balanced. Customers worldwide rely on this top-tier technology: Tesvolt has already completed over 5,000 clean energy projects – for gold mining operations in Australia, irrigation pumps in Rwanda, vineyards in Brazil, salmon farms in Norway, hotels in the Alps and apartment buildings in Aschersleben. “Our goal is to bring clean, affordable energy to every corner of the world,” says CEO Hannemann. “We believe energy should belong to everyone – anytime, anywhere.”

Inside the pristine production hall on the edge of Wittenberg, rows of battery modules are lined up next to monitors and test cabinets powered by solar panels on the roof. “We operate the most advanced battery cell testing line in the world,” says Schandert. “Every module is rigorously tested before it’s assembled – to make sure there are no failures.” They use lithium-ion cells made by Samsung, combined with Tesvolt’s own Dynamix Battery Optimizer. Each system is custom-built and designed to last up to 30 years, with a guaranteed minimum lifetime of ten years. Right now, delivery of a large container system can still take over a year. But that’s about to change.

Under construction: Europe’s biggest gigafactory for stationary storage

Tesvolt is currently building the largest gigafactory for stationary battery storage in Europe – right on its own doorstep. The 30-million-euro facility will be largely automated and digital, with capacity for up to 80,000 systems per year. “That’s ten times what we can produce today,” says Schandert. “It’ll allow us to expand into multiple European markets at once.” The new plant is set to launch in fall 2025 and will create up to 400 new jobs – even with numerous robots deployed in production. Plans are already underway for a second phase: a new R&D and tech center with lecture halls, backed by an additional 30 million euros. “We’re taking it one step at a time,” says Schandert. “We prefer sustainable growth.” That’s always been the company’s approach.



Rooted in two family histories

Tesvolt's story started with a bit of good fortune. Simon Schandert's father ran a long-established electrical business in Zahna-Elster. Born in 1989, the younger Schandert trained at his father's firm as an electronics technician and began installing solar panels with him back in 2004, before going on to study industrial engineering with a focus on electrical engineering at TU Berlin and then specializing in battery systems. It was the boom time for solar power in Saxony-Anhalt. Around the same time, Daniel Hannemann launched his own solar installation company. The idea came from a family connection: a local utility had asked Hannemann's grandfather to lease land for a solar farm. "Even back then, we could see that farmers and industrial customers would need efficient battery storage," says Schandert. The two of them founded Tesvolt in 2014.

Maximum intelligence and safety

Traditional battery packs are only as strong as their weakest cell – which causes self-limiting behavior. Schandert and Hannemann overcame this by developing an intelligent system that balances the load across all modules. The result: higher performance and longer life. "We've put a brain in the battery," says Schandert. "With Tesvolt, the strong cells support the weak ones." This continues to be their patented formula for success.

Safety is another key pillar. Tesvolt meets rigorous European safety standards – and it is one of the few companies whose systems are certified by TÜV Rheinland. This means the storage units offer maximum protection against defects and fire hazards. They can be connected to the grid and the internet – or run autonomously. Tesvolt also offers full service, from planning and installation to maintenance and support. The company's biggest project to date is currently under construction in Worms: a multi-million-euro battery park for a solar farm operated by a regional utility. It's one of the largest battery storage installations in Germany.

Early support from Saxony-Anhalt

The state of Saxony-Anhalt backed Tesvolt from the word go. Just three years after its founding, IBG Beteiligungsgesellschaft committed several million euros to the young business, with the Princely House of Liechtenstein becoming another major shareholder in 2021. Nonetheless, more than half of the company remains in the hands of the two founders – and they intend to keep things that way. "We're young, innovative and agile," says Schandert. "We don't want to be tied down by corporate structures." They also want to stay rooted in their region, not least because they very much appreciate the short distances between Magdeburg, Leipzig and Berlin. And they're thrilled to have received such strong support from the state government: Saxony-Anhalt's state premier Reiner Haseloff even joined them for the groundbreaking ceremony of the gigafactory. "As a politician and a physicist," says Schandert, "he understands what we're doing – and why. And that means an awful lot to us."

Author: Sven Heitkamp



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PRESSE-INFORMATION

“Boiler systems from Köthen in global demand”

VKK STANDARDKESSEL Köthen GmbH is one of Germany’s oldest companies. For 160 years it’s been delivering high-quality, technically advanced boiler systems for steam and heat generation.

Its services range from planning, manufacturing, installation, commissioning, and maintenance of boiler systems through to engineering services and development support. The company’s system concepts are tailored to the specific operating conditions and needs of each customer.

Since last year, VKK STANDARDKESSEL Köthen GmbH has been part of the French Babcock Wanson Group – a global provider of industrial process heating systems and solutions. With operating companies in 13 European countries, including six production sites, and a global network of commercial and technical partners, the group offers custom-built solutions to help customers reduce energy consumption and minimize environmental impact.

This year at Hannover Messe, VKK STANDARDKESSEL Köthen GmbH is exhibiting alongside its subsidiaries based in Mülheim an der Ruhr and Poland, as well as its national and international partners. The co-exhibitor is Norwegian company Parat Halvorsen AS, a manufacturer of electrode boilers and also part of the Babcock Wanson Group. Company representative Christopher Schmitz explains why Hannover Messe is so important to VKK STANDARDKESSEL Köthen.

Mr. Schmitz, your company is part of the Saxony-Anhalt state presentation at Hannover Messe this year. What are your expectations?

Hannover Messe is a great opportunity to showcase VKK STANDARDKESSEL Köthen GmbH together with Parat Halvorsen AS and as part of the Babcock Wanson Group. We want to deepen our new partnership with Parat Halvorsen and increase awareness of the name Babcock Wanson in Germany.

You’ve been manufacturing boiler systems for 160 years. How has your company managed to survive over such a long period of time and remain successful to this day?

We have the “made in Germany” quality seal, which is valued both in Germany and worldwide. That’s helped VKK STANDARDKESSEL Köthen grow into a successful global player. Another reason is that we manufacture our products in Köthen – and previously in Duisburg – with a high level of in-house production. From flat sheet metal to fully rounded boilers – everything is built here without us having to rely on external parts. Our flexibility is another key factor. We design, manufacture, install and service custom boiler systems to meet each customer’s exact needs.

Which industries use your products and services most? Could you give a few examples?



Boiler systems from Köthen are in demand around the world. They're mainly used in the paper industry, breweries, and food production, as well as in the automotive, chemical, and heavy industries – and by companies in the heating sector.

Your boilers are huge and extremely heavy. How do you transport them to your customers?

Most are shipped by truck as heavy loads. We can transport boilers up to 4.3 meters in diameter this way. Larger units go by ship – we use the nearby port in Aken on the Elbe for this, and from there to a seaport for global delivery.

What are your plans for the future?

We'll be focusing on the production of electric and hybrid boilers to help our customers make the transition to sustainable energy. Hydrogen and electricity will play a growing role in powering steam boilers. We also want to strengthen cooperation within the Babcock Wanson Group – build on synergies, expand our product range, and provide end-to-end solutions from delivery through to maintenance.

Author: Beate Hagen

Photos:

Photo 1: Typical boiler plate issued by VKK STANDARDKESSEL Köthen GmbH, photo: Phil Porter

Photo 2: Boiler production; photo: VKK STANDARDKESSEL Köthen GmbH

Photo 3: Portrait photo of Christopher Schmitz; photo: Jan-Christoph Elle



PRESSE-INFORMATION

Accelerators of the green hydrogen economy from Saxony-Anhalt

At Bad Lauchstädt Energy Park, the first green hydrogen will be produced and fed into Germany's core grid by the end of this year. And in the Luther town of Wittenberg, a new electrolyzer is planned that will eventually supply the nearby nitrogen works in Piesteritz with sustainable energy. These are two pioneering projects on the path to climate neutrality.

Bad Lauchstädt Energy Park points the way forward as the "Central German living lab for the energy transition": eight wind turbines with a total output of 50 megawatts generate renewable electricity here, which will be used to produce green hydrogen through electrolysis. The hydrogen will then be transported via a 25-kilometer pipeline converted for hydrogen use. "This is the first time the full value chain of green hydrogen is being tested at industrial scale," says Cornelia Müller-Pagel, who heads the living lab, funded by the Federal Ministry for Economic Affairs and Climate Action (BMWK), and also leads the Green Gases division at VNG. VNG is a Leipzig-based energy group active across Europe, with decades of experience in the gas sector, especially in eastern Germany.

In order to achieve decarbonization, fossil fuels have to be phased out, especially in chemical plants, steel and cement production, and refineries. These industries need a climate-friendly energy source that can either be used as a feedstock or generate high-temperature process heat. "Green hydrogen can do both. That's why it will have a key role to play in the energy transition," Müller-Pagel explains, noting that the Energy Park's project partners developed the technical concept – from production and storage through to transport, marketing, and use. The consortium includes VNG and its subsidiaries (VNG Handel & Vertrieb, VNG Gasspeicher), the transmission system operator ONTRAS Gastransport, the planning agency Terrawatt, the energy company Uniper, and the DBI in Freiberg – one of Germany's leading gas institutes which serves as the project's scientific research partner.

TOTAL refinery in Leuna is the Energy Park's first customer

The Energy Park posts regular online updates on construction progress. The 30-megawatt industrial-scale electrolyzer is the core of the project. Its building was topped out last spring, and the facility is now scheduled to go online by the end of 2025. Electrolysis systems and other components are currently being installed.

Looking ahead, an underground cavern is to be built on-site for safe hydrogen storage – ensuring reliable supply to customers even when wind conditions fluctuate. The cavern will be carved out of a local salt deposit deep underground. "The hydrogen pipeline conversion is complete," adds Müller-Pagel. An old natural gas pipeline has been repurposed, and a new connection line now reaches the TOTAL site in Leuna. TOTAL is the Energy Park's anchor customer – the first to use its green hydrogen for commercial fuel production. "The refinery isn't a research partner. It made a business decision for the future," says Müller-Pagel. "Everyone involved had to break new ground with



the contract – it's a real-world example of how green hydrogen can be integrated into Germany's energy system."

The nitrogen works in Piesteritz could be the next customer

To ensure energy security in a climate-neutral system, VNG is also planning an industrial-scale electrolyzer in Wittenberg. The large-scale industrial facility is to have a capacity of up to 500 megawatts and produce 50,000 tons of green hydrogen per year. This project is called "GreenRoot" – a nod to its green origins. "Our goal is to produce green hydrogen using renewable electricity and supply it to customers in central Germany," says project manager Dr. Fabian Nadolny. The first customer could be SKW Stickstoffwerke Piesteritz, a chemical company that produces industrial and agrochemical base products. Facing national climate goals set by the federal government, SKW needs to cut CO₂ emissions and operate more sustainably. In the long run, green hydrogen could replace natural gas as the company's main energy source.

"We're currently developing a market-ready, customer-focused concept for GreenRoot," says Nadolny. By "we," he means not just VNG and its trading subsidiary VNG Handel & Vertrieb, but also the Dutch hydrogen company HyCC, which contributes technical expertise in electrolysis.

What do industrial customers in central Germany need? What political and regulatory frameworks are required to make these business models viable? Which technologies are reliable, innovative, and economically feasible at scale? The project consortium plans to answer these and other questions over the course of the year. A site close to SKW has already been secured for construction. Operations could start as early as 2029, says Nadolny.

Several companies have already invested in green hydrogen projects – which is why infrastructure tailored to each region is so crucial, stress Müller-Pagel and Nadolny. They're hoping for flexible, pragmatic conditions to speed up the rollout of the hydrogen economy.

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PRESSE-INFORMATION

Driving the energy transition with zero emissions

For 75 years, WTZ Roßlau has been building expertise in engine and mechanical engineering research. Today the institute plays a leading role in the development of engines that convert energy from alternative fuels. A reference plant is currently being built to demonstrate zero-emission energy supply in action.

Sustainable, decentralized energy supply is one of WTZ Roßlau gGmbH's major research and development areas. The three letters "WTZ" have been recognized around the world for 75 years – standing as they do for the internationally respected expertise of the Scientific-Technical Centre Roßlau. In 1950, former Junkers engineers founded the "Diesel Engine Design and Development Office Roßlau," which in 1964 became the "Scientific and Technical Centre for Diesel Engines". Customers from across Eastern Europe in particular came here to have engines developed for ships, locomotives, and combined heat and power plants.

Today the mid-sized research company is focused on the zero-emission propulsion systems of the future. Green hydrogen – produced using renewable energy – is considered the lifeblood of the energy transition, and WTZ is currently building a demonstration facility that will provide CO₂-neutral energy using green hydrogen. The facility is expected to be completed by mid-year. "Then we'll be able to show anyone interested what future-oriented solutions could look like," says Martin Steiner, head of the Energy Systems department.

He cites industrial parks, hospitals, swimming pools – and increasingly, data centers – as potential target groups. After all, Germany is looking to reduce its reliance on foreign data centers, so numerous new buildings are planned in this sector in the future.

Solutions for low-sun, low-wind periods

"Operators of energy-intensive systems need to be ready for Germany's Climate Protection Act, which requires the country to be climate-neutral by 2045. Large-scale energy providers are already investing in renewables," says Martin Steiner. He also points to a weather phenomenon that is specific to this region – low-sun, low-wind periods. In early November 2024, a persistent weather system led to a temporary drop in both solar and wind power generation. When that happens, the power supply has to come from fossil-fueled plants and electricity imports.

"We can't yet store enough summer-generated renewable power to last through winter," Steiner explains – and presents a possible solution: "In summer, surplus green electricity is used to split water into pure oxygen and hydrogen through electrolysis. These gases are stored in tanks and, when needed – for example, during a low-sun, low-wind period – can be converted back into electricity and heat by a motor developed at WTZ."

The hydrogen-oxygen cycle motor



Developed at WTZ as part of the HYPOS research consortium (Hydrogen Power Storage & Solutions East Germany), this innovation in engine technology generates electricity from green hydrogen and oxygen. The zero-emission APC (Argon Power Cycle) engine for converting hydrogen back into power was the highlight at the 2019 Dessau Gas Engine Conference, an event that WTZ hosts each year. "In this newly developed combustion process, both hydrogen and oxygen are used in a closed cycle," explains Carsten Tietze, design engineer and innovation manager. "No CO₂ or nitrogen oxides are produced in the hydrogen-oxygen cycle engine – the elements needed to create them simply aren't present in the combustion process. And when the hydrogen runs out, the engine can run on natural gas, too."

To demonstrate that the engine's only by-product is pure water, flowers were watered with it during the official presentation. In practice, this water stays in the closed cycle and can be reused for electrolysis.

Innovative hydrogen storage

WTZ first envisioned a reference plant for zero-emission energy supply five years ago and began installing solar panels on the roofs of its production halls. "Now we want to prove that our concept works," says Carsten Tietze, who secured the funding for the project. Going by the name of "CO₂-neutral energy supply in energy-intensive industries," or "energy4CHP" for short, the project is funded by Germany's Federal Ministry of Education and Research and will run through the end of 2025.

Test engineer Samuel Brinnig is leading the setup of the demonstration facility. The LOHC hydrogen storage system is currently being installed – LOHC stands for Liquid Organic Hydrogen Carrier. "It's an oil-like carrier fluid," Brinnig explains. "Hydrogen is bound to the carrier, which allows it to be stored at higher density and released when needed."

An alternative storage method involves compressing the hydrogen under high pressure – like the H₂ tanks which are already on site outdoors. WTZ is also developing a new cost-effective oxygen storage system as part of the joint energy4CHP project. At the same time, the team is working on ways to improve the efficiency of the electrolysis process.

"We need to keep costs in mind for potential customers," says Martin Steiner. He adds that the research project is also exploring how a CO₂-neutral energy system like this can be made economically viable.

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Photos (all K. Graubaum):

Engine: Samuel Brinnig, Martin Steiner, and Carsten Tietze of WTZ Roßlau (from left) present the zero-emission APC engine – the centerpiece of the demonstration plant for CO₂-neutral energy supply.

Storage: Carsten Tietze, Samuel Brinnig, and Martin Steiner (from left) standing next to the LOHC hydrogen storage unit currently being set up.

Engine presentation: The water produced by the zero-emission cycle engine is so pure it was used to water flowers during the presentation.

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