IMG SAXONY-ANHALT PRESS AREA

SACHSEN-ANHALT
Investment and Marketing Corporation

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.

Author: Manuela Bock

Further details:

www.sivonic.com

Photos:

Copyright Alexander Liebing:

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

Copyright Michael Bader:

Location in Barleben

Additional assets available online: Photos (2)

https://press.invest-in-saxony-anhalt.com/2025-05-28-High-tech-made-in-Barleben-SIVONIC-makes-the-invisible-measurable