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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, which went into operation at the beginning of April. "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 CO_2 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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