

# Energy transition applied: Four partners test hydrogen production in the Saarland

Industrial scale electrolysis planned at STEAG's plant in Völklingen-Fenne

**Essen.** With the phase-out of nuclear power production in 2022 and the planned end of coal-fired power generation in 2038, one thing is certain: Wind and solar energy will be the main pillars of electricity supply in Germany in the future. However, both renewable energy sources are subject to weather-related fluctuations. As an energy medium, hydrogen can balance out these fluctuations and thus become an important building block in a successful energy transition. For this reason, STEAG's power plant site in Völklingen-Fenne, Saarland, is to be expanded to include the "Fenne HydroHub", where hydrogen is to be produced on an industrial scale.

STEAG GmbH, Siemens AG, the Institute for Future Energy and Material Flow Systems (IZES gGmbH) and the German Research Center for Artificial Intelligence (DFKI GmbH) are entering the "Fenne HydroHub" project outline in the "Living Labs for the Energy Transition" ideas competition staged by the Federal Ministry for Economic Affairs and Energy (BMWi). By means of this competition, the German government is planning to accelerate the expansion of hydrogen technologies and the establishment of integrated energy solutions, and make them ready for the market.

## Accelerating energy integration

A key role will be played by electricity-based hydrogen production (electrolysis) based on renewable energy sources. Electricity from wind and solar power is used to split water into oxygen and so-called "green hydrogen" by electrolysis. The hydrogen can then be used as a substitute for fossil fuels, making energy production CO<sub>2</sub>-free. For energy-intensive industries such as steel and chemicals, the use of hydrogen can be a decisive step towards better environmental compatibility and climate neutrality.

Page 1 of 3

---

### Contact

Florian Adamek  
Press Spokesman  
Tel. +49 201 801-4262  
Fax +49 201 801-4250

Florian.Adamek@steag.com  
www.steag.com

### STEAG GmbH

Rüttenscheider Strasse 1-3  
D-45128 Essen  
www.steag.com

Registered office in Essen  
Registered at Essen Local  
Court under number B 19649

### Supervisory Board

Guntram Pehlke, Chairman

### Board of Management

Joachim Rumstadt, Chairman  
Michael Baumgärtner  
Dr.-Ing. Wolfgang Cieslik  
Alfred Geißler

In the form of the “Fenne HydroHub”, the four partners in the project want to create a prototype that can also be constructed at other locations across Germany. In addition to reducing CO<sub>2</sub> emissions, this will also create new jobs. A decision as to whether the partners can submit a firm application for funding in the second phase of the competition is expected at the end of June. The project partners estimate an investment volume in the mid two-digit million range.

### **Optimum conditions at the Fenne energy hub**

The Fenne energy hub provides optimum conditions for the gathering of experience with the operation and commercial use of the electrolysis process in an industrial laboratory. Not only does the site have the necessary electricity, gas, heat and storage infrastructure, it is also home to qualified employees who are already actively shaping the energy transition with their know-how. In addition, there is the geographical proximity to the Saarland steel industry as a possible customer for hydrogen. Furthermore, a link with the transport sector for hydrogen-powered vehicles is to be established.

The four partners are breaking new ground in Völklingen-Fenne, where the interaction of various components and systems is being tested on an industrial scale for the first time. A new electrolyzer, a large hydrogen storage tank and a new high-temperature heat pump come together with an existing large-scale battery system, a mine gas engine cogeneration plant and an electrode boiler at the energy hub. Accordingly, all the connections to electricity, heat and gas networks are available and usable. In addition, STEAG is considering the construction of a combined cycle power plant at the Fenne site, in which hydrogen can be converted back to electricity on a large scale in a gas turbine.

### **STEAG GmbH**

STEAG is one of Germany’s leading energy producers and is shaping the energy transition at six power plant sites in Germany. For over 80 years, STEAG has stood nationally and internationally for efficient and reliable power generation. STEAG designs, develops, implements, operates and markets highly efficient power plants and storage facilities. As an experienced partner, STEAG supports its customers comprehensively and provides tailor-made solutions in the field of electricity and heat supply as well as a wide range of energy services.

### **Siemens AG**

Siemens AG is an international technology group and one of the leading providers of efficient power generation and transmission solutions, a pioneer in infrastructure systems and automation, drives and software packages for industry. The company is also one of the largest manufacturers of energy-efficient and resource-conserving technology products. This also includes electrolysis and heat pumps. Siemens has been involved in the electrochemical energy conversion of hydrogen for four decades.

### **IZES gGmbH**

IZES (Institut für ZukunftsEnergie- und Stoffstromsysteme) gGmbH was founded in November 1999 at the Saarland University of Applied Sciences and deals with five interdisciplinary fields of work: energy markets, material flows, infrastructure & municipal development, environmental psychology and technical innovations. The aim is to promote science and environmental protection through applied research and development. The approach of IZES gGmbH combines practical topics with scientific questions.

### **DFKI**

The German Research Center for Artificial Intelligence (DFKI) GmbH is Germany's leading business-oriented research institute in the field of innovative software technologies. In the international scientific community, DFKI is one of the world's most important centers of excellence. Founded in 1988, the DFKI has acquired a reputation as a competent and reliable partner for innovations in business through proactive and demand-oriented project work both nationally and internationally.