PRESS BRIEFING

Smart Grid LAB Hessen tests future scenarios in the real-world power grid

Kassel, 10 December 2020. The House of Energy, together with its members, has initiated another real world test laboratory. Led by Darmstadt University of Applied Sciences, the project partners Ingenieurbüro Pfeffer, JEAN MÜLLER, QGroup and Tractebel will be researching and testing various scenarios for energy systems of the future in the Smart Grid LAB Hessen over the next three years. With funding from the EFRE, the project which goes by the same name and has a volume of over three million Euro, is beginning the development of smart grid test lab at the offices of of Ingenieurbüro Pfeffer in Rödermark. Managing director Matthias Pfeffer is proud of the project at his company: "That the Smart Grid LAB Hessen is to be developed and operated here is testimony to the progressiveness of our company, as we will be contributing much of our own infrastructure."

The purpose of the Smart Grid LAB is to test active control processes in smart grid and all the required functionality under real-world conditions. Various different scenarios are to be developed in the project, with which the Smart Grid LAB will be operated.

These include:

- the increase of distributed renewable energy generation
- higher demand for electricity, e.g. due to more E-mobility and heat pumps
- the increase of prosumers with and without storage systems

The scenarios are to provide the basis for deriving answers to a wide range of questions: How can the power grid be stably controlled on days with low electricity generation when large numbers of customers want to charge an electric vehicle? How can the grid be stabilised when there are outages of dynamic elements (e.g. storage system)? To what extent can dynamic grid elements compensate for peaks and continuous loads? What happens when key measurement and control systems are disrupted? How can hackers be prevented?

Darmstadt University of Applied Sciences, the consortium leader, will develop these future and typical consumption and generation scenarios, is delighted with the project approval: "the optimisation of the economic, dynamic and security aspects of the smart grid and the application of the results for real-

world grids is a task which will take the smart grids of the future a big step forward," Prof. Dr. Ing. Ingo Jeromin, Head of the Institute for Electrical Power Supply, Renewable Energies and Energy Efficiency. The results will be used to develop the requirements for use in a real-world distribution grid in Hessen.

Within the framework of the project the smart grid is to be examined on a holistic basis from various of perspectives. The network is built using operating equipment of public networks. All energy sources and consumers are simulations of real-world examples. This will enable even challenging grid situations to be simulated safely.

The joint work is being carried out by experts on an interdisciplinary basis from the fields of research, engineering, IT security and the manufacture of electrical switching and measurement components in the state of Hessen. Project partner and component manufacturer JEAN MÜLLER is integrating low voltage switching devices in the smart grid infrastructure. Multilevel security company QGroup GmbH will be evaluating the resilience and segregation requirements with respect to the IT/OT test configurations, the operating equipment used, their networking and control across security boundaries. This means that the risks in the event of an cyber-attack can not only be reduced but effectively eliminated as well. In addition, project partner Tractebel will be contributing its experience with scenarios from international energy infrastructure projects and ensuring the transferability of the learnings from Smart Grid LABs Hessen to the national and international context.

Furthermore, a scientific and technical advisory board comprised of representatives from the power supply and grid operation, technical controlling and certification, personal safety and energy regulatory sectors will also be formed to contribute to the project in an advisory capacity. The project advisory board is to be established and moderated by the House of Energy.

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The **House of Energy** e. V., based in Kassel, which regards itself as a "think tank", is funded by the private sector, science, universities, higher education institutions and research institutes, as well as the State of Hessen. It works on a transdisciplinary basis and provides conceptual and scientific support for the energy transition in Hessen. As a centre of excellence, communication, coordination and knowledge sharing platform, the House of Energy initiates and supports projects with a technological focus. It is the first innovation cluster in Hessen to receive EU funding support. www.house-of-energy.org

Darmstadt University of Applied Sciences (Hochschule Darmstadt, h_da) is one of the largest Universities of Applied Aciences in Germany. With a student body of over 16,000, it offers around 70 Bachelor, Diploma and Master study programs with a wide range of course options and, on the basis of its doctoral degree-awarding power, the possibility of carrying out doctoral studies at the h_da or in cooperation with partner universities. The key areas of study and research are engineering, mathematics and natural sciences, sustainability sciences, information science and information technology, economics, social science and social work, and architecture, media and design. Over 300 professors can call on their experience and contacts from their own professional lives. www.h-da.de

Ingenieurbüro Pfeffer specialises in the planning, project development and distribution of transformer stations and substations for distribution network operators and industry. Integrated solutions for conventional and smart grid expansion are the challenge and the goal for the company. 45 years of project experience, close partnerships with top-name component manufacturers and scientific collaboration provide the basis for every solution. Ingenieurbüro Pfeffer is an expert consultant and partner for all those faced with the challenges of smart grids. www.ipi-online.de

JEAN MÜLLER is a leading supplier of fused switchgear, fuses and enclosures for low-voltage distribution systems. At its headquarters in Eltville im Rheingau, over 500 employees develop, manufacture and distribute devices for energy utilities, switchgear manufacturers and major suppliers of electrical products in Europe, Asia, New Zealand and worldwide. The devices comply with all technology standards in terms of operative reliability with regard to safety of persons and operating

safety and reliability. The company is also fully dedicated to issues relating to environmental, energy and information security policy, the quality of products and services and occupational health and safety. In order to not just fulfil the state-of-the-art in technology but help to define it, JEAN MÜLLER is actively involved in national and international standardisation bodies and working groups. www.jeanmueller.de

The **QGroup GmbH**, based in Frankfurt am Main, was established in 1993. Since 2000, it has been supplying (advanced) security products to businesses and government and military customers. The IT solutions of the QGroup, such as trusted servers or biometric 3-factor authentication solutions are state-of-the-art products for critical security requirements and close the remaining security gap between kernel and platform of classical IT. QGroup is an established competence centre for high availability and a Centre of Excellence for Multilevel IT Security and thus resilience, hard segregation and security foundations. Its portfolio is rounded off with a wide range of qualified security operation services for its clients. The QGroup GmbH is actively involved in Hessen-based associations, as well as German and international ones, such as House of Energy, House of IT, Cyber Alliance, Teletrust and Afcea. www.qgroup.de

Tractebel, as an active driver of the energy transition, delivers comprehensive engineering and consulting services covering projects entire life cycle, including development and project management. As one of the world's largest engineering companies, with more than 150 years of experience, our mission is to take an active role in shaping the world of tomorrow. With around 5,000 experts and offices in 33 countries, we develop multi-disciplinary solutions in the fields of energy, water and infrastructure. In December 2014 Tractebel, with headquarters in Brussels, acquired the Lahmeyer Group, following which Lahmeyer International changed its name to Tractebel Engineering GmbH in 2019.
www.tractebel-engie.de