

R&D: PSI and partners conduct research in the DISEGO—Distributed and Secure Grid Operation project

Development of an Innovative eIoT Platform

Together with two distribution system operators and four universities, PSI GridConnect and PSI FLS Fuzzy Logik & Neuro Systeme are collaborating in the practical DISEGO research project. The aim is to develop an innovative eIoT (Energy Internet of Things) platform that enables secure, traceable and automated control of distribution grids based on smart meter data.

With the energy transition and the associated smart meter rollout in Germany, the DISEGO project consortium has set itself an ambitious mission: to develop an

own measurements at transformer stations and cable distribution cabinets. This data is merged in the PSI GridConnect systems to estimate the grid status and control

Economic Affairs and Climate Action (German BMWK) is to ensure a climate-friendly, reliable and affordable energy supply.

An important component of this is the development of a distributed and IT-secure grid monitoring and control system that can be implemented in energy industry practice.



The energy sector needs smart, creative minds and, in particular, software solutions that can support us on the path to the energy transition. With the DISEGO project, these ideas are becoming reality. This is how we can meet the upcoming challenges posed by Section 14 EnWG.

Thorsten Meyer, Innovation and Product Management, Stadtwerke Norderstedt

Comprehensible AI-based decision support

In future, the eIoT platform will provide system managers in the grid control room with comprehensible AI-based decision support. Based on qualitatively labeled network data, the Qualicision AI software from PSI FLS prioritizes the control recommendations in the event of critical network conditions, among other things, and learns from the network operation modes that have been imple-

eIoT platform that makes distribution grids more efficient and reliable and creates “real” interoperability in the energy system.

Based on the combination of smart meter measurement data from grid customers and the grid operator’s

actuators in the grid, as well as for the use of various other microservices. Despite, or perhaps because of, the distributed cloud-based architecture, the application is capable of handling mass data. A fundamental goal of all research projects funded by the Federal Ministry for



The project members at the kick-off meeting in November 2022.

mented. As a result, equipment overloads and voltage band violations can be minimized in a targeted manner and counteracted with traceable measures.

From testing in the laboratory to use by grid customers the DISEGO research project runs through successive stages of testing: simulative and practical laboratory tests at Hamburg University of Technology and two field tests on the Stromnetz Hamburg GmbH innovation campus and in the supply area of Stadtwerke Norderstedt with real grid customers.

Further partners in the project are the University of Duisburg-Essen



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and the Hamburg University of Applied Sciences. The results of the project, led by the Helmut Schmidt University of Hamburg, will subsequently be prepared for incorporation into regulation and standardization as well as enable the DISEGO platform to be used by distribution system operators for automated control of the distribution grid. 🌐

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