

Press Release

Digital twin for the German distribution grid

- **Rollout of envelio as part of the digital twin at all German E.ON distribution system operators completed**
- **Effective and faster integration of renewable energies**
- **Automated assessment of grid connections**

The digitization of the German energy landscape has made great progress: Germany's largest distribution grid operator E.ON has built a digital twin for its 700,000-kilometre power grid via a central data platform. This means that more than a third of the entire German distribution grid is virtually mapped. In order to be able to calculate the capacity and utilization of the grid in the digital twin, E.ON uses the technology of envelio, market leader of smart grid software in Europe.

The technology supports grid planning, grid connection and grid operation. Data from 55 million network components such as cables or transformers and more than 180,000 measuring devices are currently being evaluated – and the trend is rising. Further applications will be gradually implemented based on the regional requirements of the distribution grid companies within the E.ON Group.

Based on the data, it is possible, for example, to process requests for grid connections of wind turbines, PV systems, heat pumps, or wallboxes within seconds and respond quickly. Last year alone, the number of grid connection requests in the German E.ON grid was more than 410,000. In addition, the model recognizes where the need for grid expansion in low voltage is urgent, where sufficient capacity is available or where flexibility is needed. Since more than half of Germany's renewable energy capacity is connected to the E.ON distribution grid, the digital twin and envelio's technology contribute to demand-oriented grid expansion, strengthen security of supply and accelerate the energy transition.

Victoria Ossadnik, E.ON Board Member for Digital & Innovation, explains: "Our answer to the growing complexity of the energy system is digitization. The development and introduction of new IT technologies such as envelio's digital twin requires innovative strength and the will to transform. Both are available at E.ON to such an extent that we are setting standards in Europe with cutting-edge technology Made in Germany."

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E.ON's Board Member for Grids Thomas König: "Digitization is the key to a high level of security of supply and stability of our power grids. The large-scale power outage on the Iberian Peninsula at the end of April has impressively shown how elementary a strong energy infrastructure is. Innovative solutions such as digital twins help us to continue expanding the grid for our customers as efficiently as possible."

In addition to the German distribution grid, E.ON already has a digital twin and envelio's technology in use for its grids in Sweden, the Czech Republic and Poland. In total, more than 70 European grid operators are digitizing and automating their grids with envelios Intelligent Grid Platform – from municipal utilities to larger grid operators. The E.ON subsidiary is the technology supplier of the European Union's Digital Twin project in Germany. In addition, the expansion into the USA is currently underway.

envelio CEO Simon Koopmann: "We are at a turning point for the further development of our energy infrastructure. Intelligent, standardized digital solutions such as our digital twin not only enable more efficient operations, but also transform the power grid into a platform for the energy transition. The more grid operators cooperate and use common standards, the faster we will realize a resilient, sustainable and future-proof energy system."

With the grid connections of wind farms, PV systems, heat pumps and charging stations, the energy transition is a Herculean task for distribution system operators such as E.ON. This means that even if there are enough renewable energy sources available, the energy generated must be transported efficiently via the grids. The digital twin and envelio's technology form a central basis for this.

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