SIEMENS

Self-sufficient energy community through renewables and automation

Lempäälän Energia builds a microgrid with Microgrid Control – a SICAM application

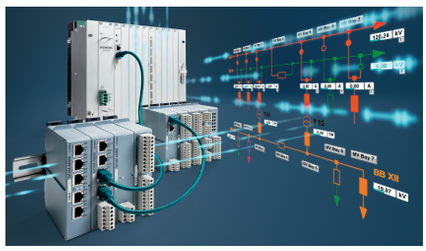
siemens.com/microgrid

Lempäälän Energia and Siemens collaborate on the LEMENE project to build a microgrid for a business district located in the Marjamäki industrial area, in the municipality of Lempäälä, near Tampere, Finland. Against the backdrop of increasing energy costs, high demand for thermal power, and fluctuating load profile, the LEMENE project is aimed at providing a cost-effective and environmentally friendly energy system, while guaranteeing a secure electricity supply.

An energy system with Microgrid Control – a SICAM application at heart
To tackle this challenge, Microgrid Control with its interface to the energy and ancillary market is installed to integrate, control, and optimize two solar panel fields featuring more than 15,000 panels with an annual electricity output of 3,600 MWh, six gas motors, fuel cells and two battery storage systems. This amounts to a total production capacity of 16 MW. Furthermore, the energy community production facilities use combined heat and power generation to maximize efficiency. The surplus in energy generation is offered back to Fingrid, the national electricity transmission grid operator.

"Our goal is to create an energy community with distributed generation of renewable energy," says Toni Laakso, CEO of Lempäälän Energia Ltd. "This involves ensuring the security of the energy supply for the community as well as its functionality at all times... Our partnership with Siemens has strengthened even more along LEMENE project. The solution offers an innovative, intelligent business ecosystem for companies."

Being chosen as one of eleven key projects for renewable energy and new technology in 2017, LEMENE was granted investment aid from The Ministry of Economic Affairs and Employment (MEAE), thus bringing Finland one step further to achieving its national targets for the future energy solution.



Lemene energy site

Three key benefits for Lempäälän Energia and project configuration

Resiliency through islanding capability and resynchronization
With Microgrid Control, functionalities such as island operation, alarming, blackout detection and black start strengthen both grid resiliency and energy independence. In case of a blackout or other disrupting conditions, a quick restoration of the grid is always performed, therefore guaranteeing the energy supply.

Optimization of energy production leads to energy self-sufficiency and cost reduction
Microgrid Control enables the utilization of the most efficient energy mix, which in turn maximizes the profit for Lempäälän Energia. Features such as tie-line control including energy import/export control, peak shaving and demand charges and thermal control help leverage all the renewable assets on site. This ensures achievement of the energy self-sufficiency goal established at the beginning of the project, reduces energy costs and minimizes the run-time of the gas boilers, thus eliminating CO2 emissions.

Market participation for energy and ancillary services
Through several interfaces, Lempäälän Energia receives a constant flow of information not only from all on-site assets, but also weather forecast data and live electricity prices. This enables the participation in energy and ancillary market and unlocks a new stream of revenue, as the surplus energy is sold back to the national transmission grid.

Siemens AG
Smart Infrastructure
Digital Grid
Humboldstrasse 59
91459 Nuremberg
Germany

For the U.S., pubslished by
Siemens Industry Inc.
100 Technology Drive
Alpharetta, GA 30005
United States

Artikel-Nr. SIDG-B10079-00-7600