How can Fingrid solve system-level stability challenges?

System-level stability challenges call for joint Nordic solutions. Accordingly,Fingrid has brought the Nordic transmission system operators together to focus on the demands of a converter-dominated power system and develop analytical methods to ensure the stability of converters. Action is also required on a national scale.

What is Fingrid doing to improve the grid?

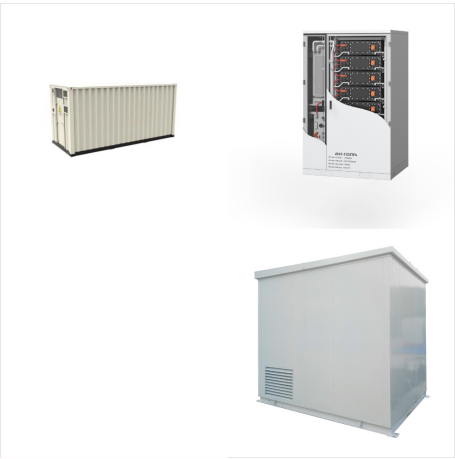
Action is also required on a national scale. Fingrid has revised the technical requirements for power plants connecting to the main grid. The company also invests in technologies to stabilise the grid,including synchronous compensator and static synchronous compensators (STATCOM).

How do I use Fingrid open data?

Example: using Fingrid open data on a web page or mobile application. Add the following text to your web page or to your application: Fingrid may request removal of the attribution information from your work to the extent reasonably practicable. Fingrid wants to develop the content and quality of the open data platform.

Are wind and solar power plant manufacturers developing grid-forming capabilities?

Wind and solar power plant manufacturers are still developing grid-forming capabilities. In a society pushing for carbon neutrality,it is essential that the manufacturers of wind and power plants develop grid-forming capabilities for their plants.



The main theme of this issue is power system reserves. The energy transition is significantly increasing the need for reserves. In the editorial of Fingrid magazine 1/2024, Tuomas Rauhala, Senior Vice President, Power System Operation, writes about the new normal: larger power fluctuations in the electricity system in Finland and the other

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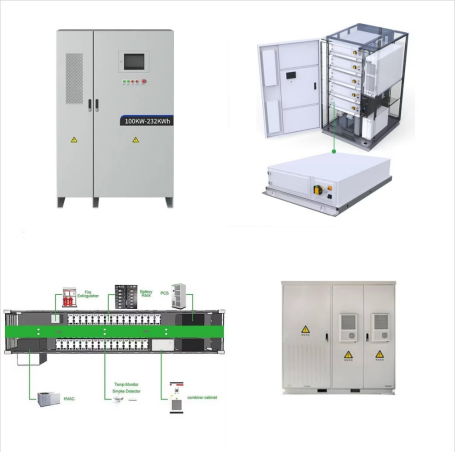
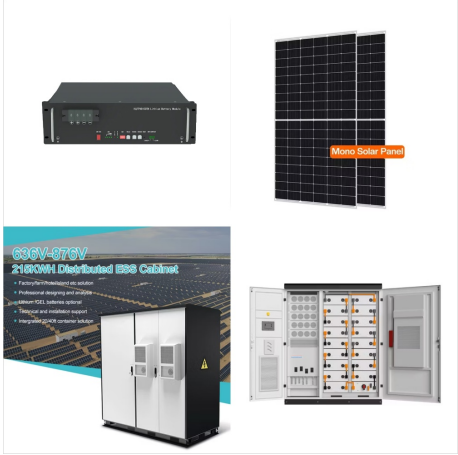
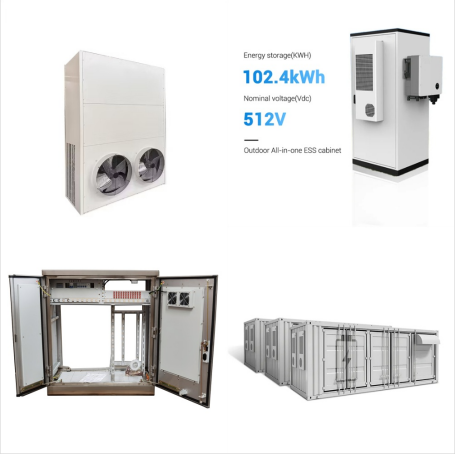


State of the Baltic Sea area power system. The TSO of Norway, Statnett, maintains a map which shows the state of the power system in the Baltic Sea area. Data on the transmissions of electricity from country to country and on the price of electricity are updated approximately once a ???



Mets? Group's Pirita Mikkanen, a Fingrid customer interviewed for the article, says that her company is interested in the possibility of supporting the power system in certain pre-agreed situations by flexibly adjusting its electricity consumption in return for a fixed rebate. Some of the other articles in issue 3/2024 of the Fingrid Magazine:



As the transmission system operator with system responsibility, Fingrid is responsible for the technical functionality and system security of the power system of Finland. Fingrid handles national balance responsibility tasks and national imbalance settlement in an appropriate, fair and non-discriminatory way towards all electricity market

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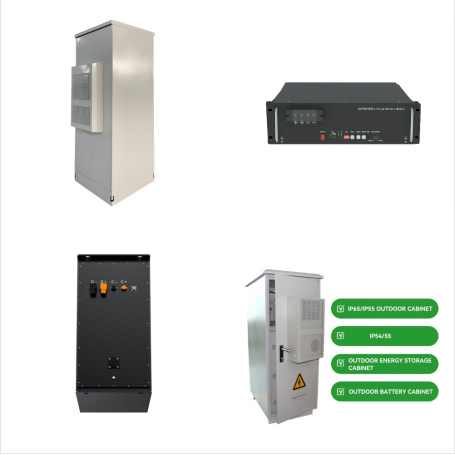
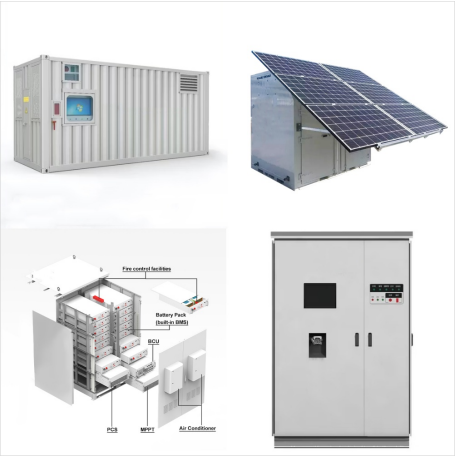
The power system needs reserves to keep electricity production and consumption balanced every hour of the day and maintain a stable grid frequency. Fingrid hopes new players will join the electricity reserve markets ??? now, getting involved is easier than ever. 25.3.2024



Fingrid began collaborating with the Belgian transmission system operator Elia in autumn 2019, following a European transmission system innovation event. "We presented our digital monitoring system, which we had already been developing for a few years by then. Elia expressed an interest in trialling the system," Laitinen said.



The shift in the electricity system increases the need for power system reserves and solutions that ensure the smooth management of changes and disturbances in the grid. In real terms, main grid tariffs have fallen. Previously, the fees were raised two per cent in 2022, while in 2019 Fingrid reduced its grid service fees by eight per cent.

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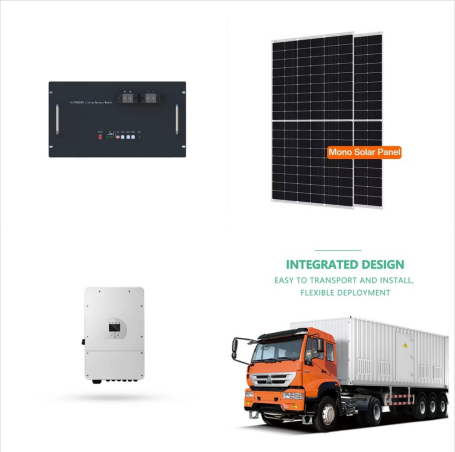
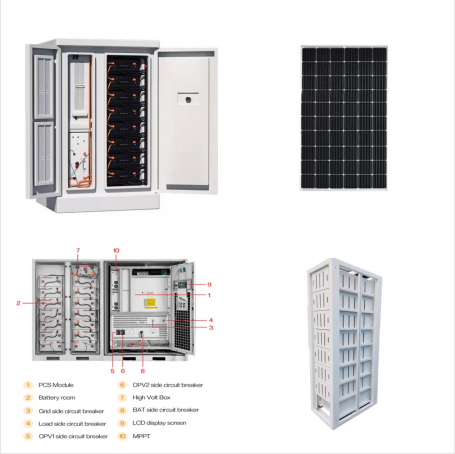


If other types of grid energy storage systems are to be connected to the power system, Fingrid will determine their requirements separately. The European grid connection network codes do not currently set any requirements on grid energy storage systems. These Specifications were established taking into account the shared goals of European grid

"We are pleased to be able to support Fingrid's goals and, at the same time, the construction of a clean energy system in Finland with our solutions," said Sales Director Toni Heino of Hitachi Energy Finland. Fingrid's goal is for all new 110 kV GIS instruments to represent new, environmentally friendly insulation technology from 2025.



Fingrid Oyj is the enterprise which takes care of the functioning of the nation-wide high-voltage grid, the backbone of electricity transmission in Finland. Fingrid produces large amount of data ???

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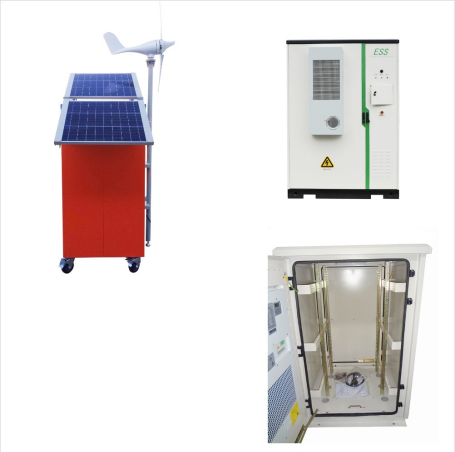
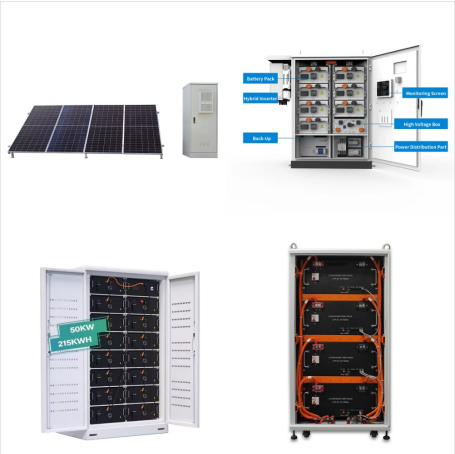
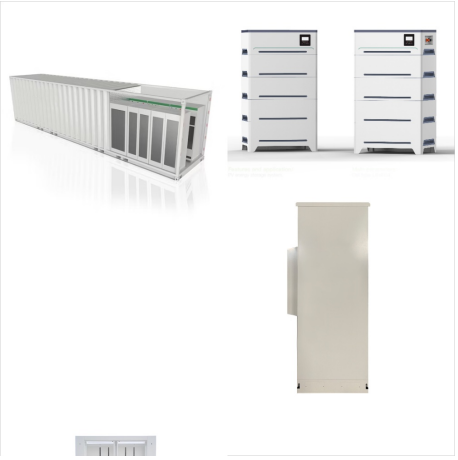


Power generating facilities ("power plants") with a rated power output exceeding 0.8 kW connected to the Finnish power system must fulfill the Grid Code Specifications for Power Generating Facilities ("Specifications"). The requirements are based on the European Network Code (European Commission Regulation 2016/631), to which Fingrid



Finland will transition to a 15-minute imbalance settlement period on 22 May 2023, when the imbalance settlement system will begin using a 15-minute resolution instead of one hour. The centralised information exchange unit, datahub, and most energy metering will also switch to a 15-minute resolution.



The Nordic Transmission System Operators (TSOs) Svenska kraftn?t, Statnett, Fingrid and Energinet.dk are launching a report summarizing the shared views of the TSOs on challenges and opportunities affecting the Nordic power system in the period leading up to 2025.

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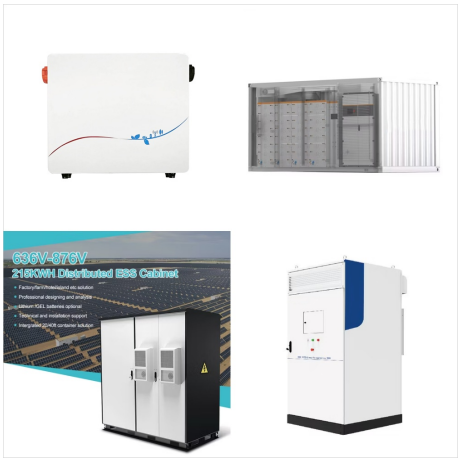
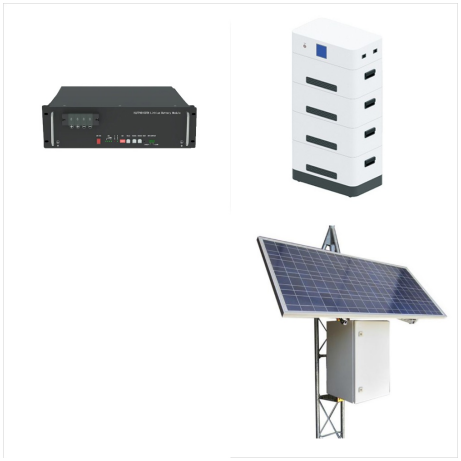
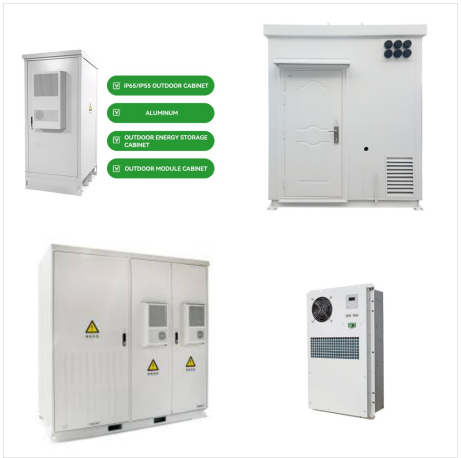


Signing the contract with Helen is an important step towards a concrete pilot project. Fingrid will continue investigations related to utilizing new technologies to power system balancing, and believes it is important to test in practice how to use the energy storage in the most efficient way for the power system need.



The Finnish transmission system operator Fingrid will modernise the Rauhalahti substation in Jyv?skyl?. The modernisation of the substation will improve the system security of the power grid and make it possible to connect the electric boilers of the energy company Alva to the main grid, thereby achieving cleaner district heating production.



According to Fingrid's analysis, the power system can cope with a single major fault at a large production plant or at a cross-border connection, but if several faults occur simultaneously, the power situation will become much tighter. The electricity system has become increasingly dependent on the weather. In terms of electricity adequacy

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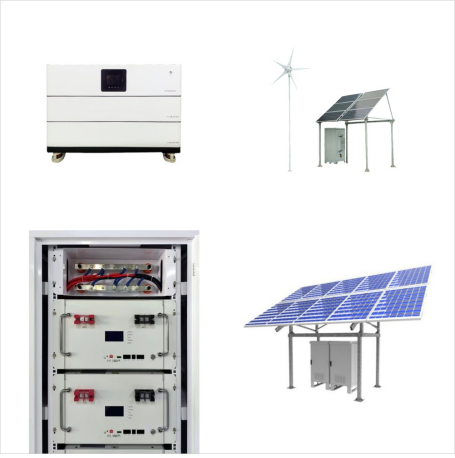
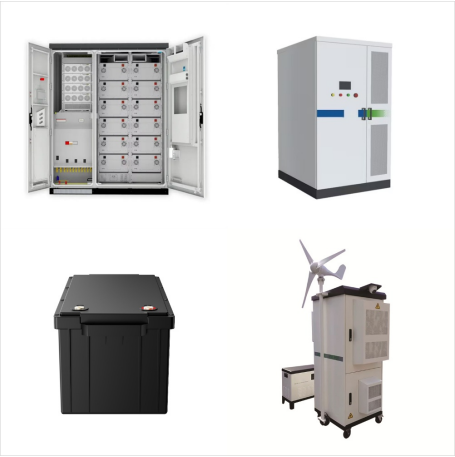
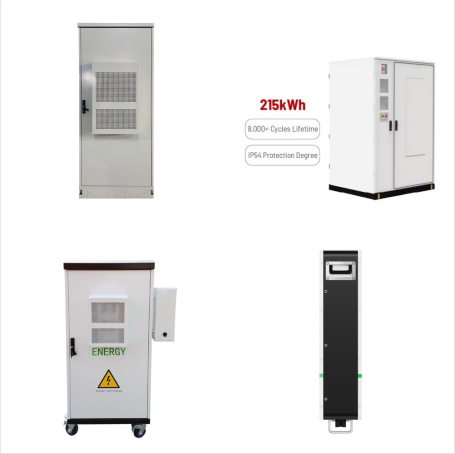


Link to the State of the Nordic Power System Map. More information: Fingrid/ Juha Kekkonen, Executive Vice president, tel. +358 40 560 5274 or Fingrid/ Juha Hiekkala, Manager, Electricity Market Development, tel. +358 40 553 9898. Phone all locations: +358 30 395 5000 . All contacts .



The newly created dataset can be retrieved via Fingrid's Open data -platform and browsed on Fingrid's website. Inertia is the ability of a power system to oppose changes in frequency due to resistance provided by the kinetic energy ???



"Power plants with side-by-side solar and wind power production are currently under development. These plants can share one grid connection. In the future, hybrid power plants could also include grid energy ???

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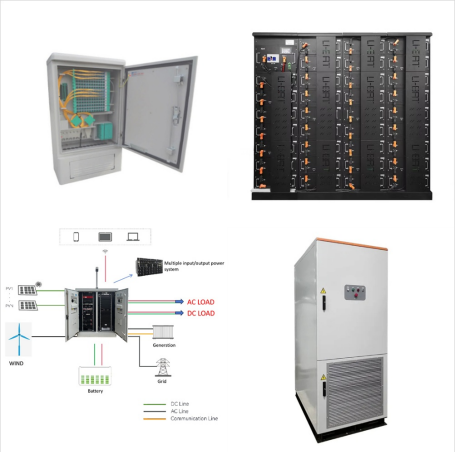
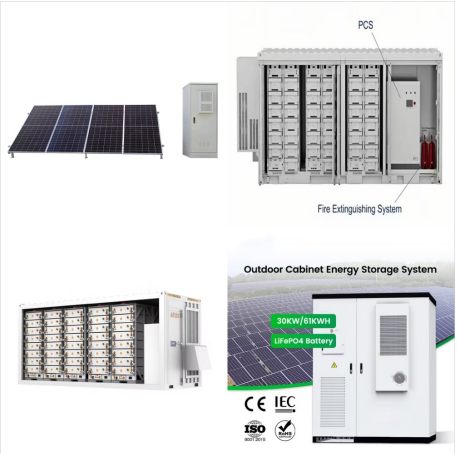


To ensure the reliability of the power system, the bundling of large production hubs is also limited to a maximum size of 1.3 GW. In addition to offshore wind power, onshore wind power and industrial-scale solar power accelerate the green transition by meeting the growing electricity consumption driven by new consumption investments.



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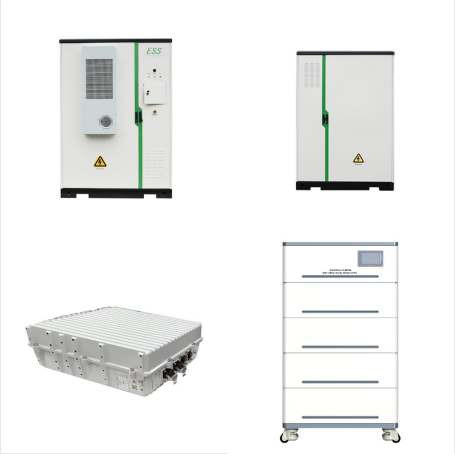
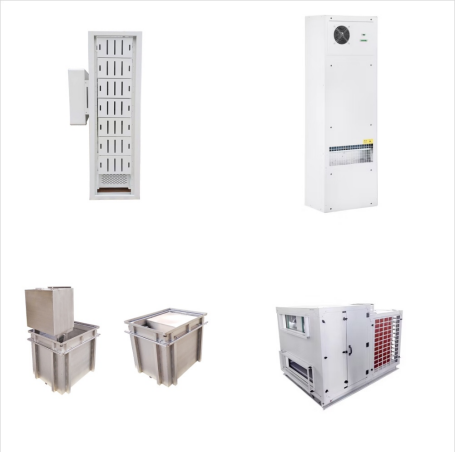
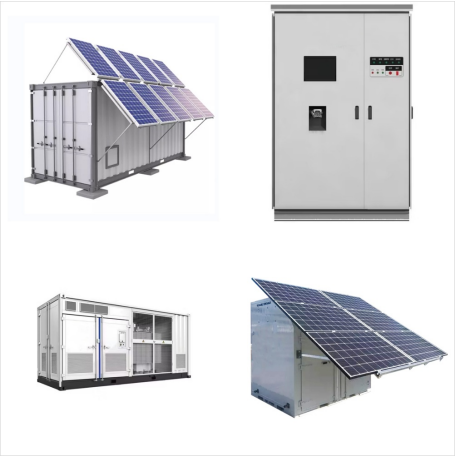


/110 kV Arkkukallio substation will be built in the middle of the area where several wind power projects are underway. Approximately 500 MW of new wind power will be connected to the Arkkukallio substation by the end of 2024, and approximately 800 MW by the end of 2028, Fingrid said in a press release.

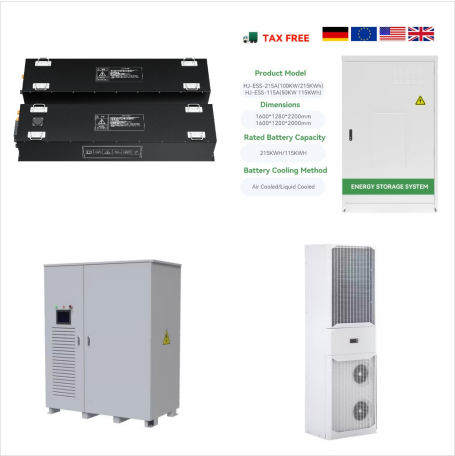
FINGRID POWER SYSTEM HONG KONG



Different states of the power system - traffic lights: 1=green, 2=yellow, 3=red, 4=black, 5=blue*. Green: Power system is in normal secure state.* Yellow: Power system is in endangered state. The adequacy of the electricity is endangered or the power system doesn"t fulfill the security standards. * Red: Power system is in disturbed state.



Fingrid's electricity system vision scenarios present the possibilities of an electrified Finland in the coming decades. The goal is to present Finland's opportunities to compete for electricity production and consumption projects and to create a long-term view of the development needs of the main power transmission network.



The Nordic electricity power system and two Swedish nuclear power plants were disrupted on Wednesday, 26 April 2023. "Due to the disruption, replacement production from the Nordic balancing power market was activated and the situation was stabilized," Finnish grid operator Fingrid said, adding that Sweden, Finland, Norway and eastern Denmark were affected.

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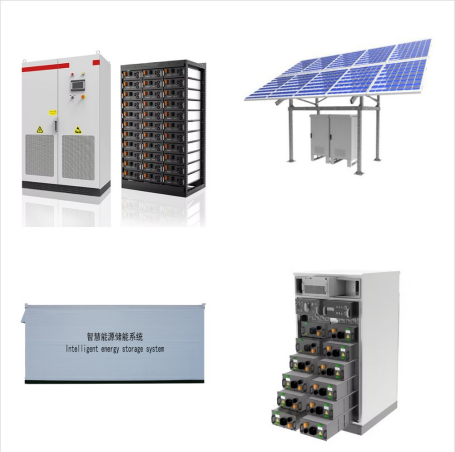

"Power plants with side-by-side solar and wind power production are currently under development. These plants can share one grid connection. In the future, hybrid power plants could also include grid energy storage in the form of a battery, further raising the utilisation rate of the connection," says Risto Kuusi, Senior Expert at Fingrid.