

1 2026

FINGRID

TRANSMISSION SYSTEM OPERATOR'S MAGAZINE / RENEWING THE ENERGY SYSTEM / fingridlehti.fi

**ASTA SIHVONEN-PUNKKA,
FINGRID:**

**“We are aiming for a clean,
reliable power system,
the most competitive of
its kind in Europe.”**



Energised encounters

This year, Fingrid will participate in several energy events and fairs, and hold customer events almost weekly in the form of live events and webinars.

The most important of these, Fingrid Current, will be held on 3 September this year for invited guests and streamed live to viewers online. Fingrid's stand at the Vaasa Energy Week in March served customers and project developers for two days.

We also offer numerous other customer interactions, both in person and via Teams – visit fingrid.fi for the latest information.

We are actively pursuing opportunities for new encounters, and in 2026, we will be a key partner in the world's largest orienteering relay race, the Jukola Relay in Kotka on 13 and 14 June. This partnership will give us the opportunity to meet landowners and other stakeholders in the beautiful landscapes of the Kymenlaakso region

and be involved in one of the highlights of the Finnish summer.

We meet future talent especially during the winter season at university recruitment fairs. ♦

FINGRID employees are also happy to share their expertise by giving presentations at our stakeholders' events. So please contact comms@fingrid.fi if you would like a presentation about the heart of Finland's electricity system at your event!

THIS YEAR, YOU WILL FIND FINGRID PERSONNEL AT THE FOLLOWING EVENTS, AMONG MANY OTHERS:

SuomiAreena in Pori,
23 to 26 June

Farmari in Kalajoki
25 to 27 June

Municipal Fair in Helsinki
16 to 17 September

Energy Fair in Tampere
20 to 22 October

Fingrid participated in the Summer Job Day at Aalto University in January.

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Finland lives on electricity

ELECTRICITY IS a success story for Finland. Over the past ten years, more than 10,000 megawatts of clean electricity production has been added to Finland's electricity system through Olkiluoto 3 and wind power. At the same time, carbon dioxide emissions from electricity production have been slashed to a quarter, and last year, Finland had the cheapest electricity in Europe.

Fingrid, the Finnish transmission system operator, is laying the foundations for a clean future by developing the transmission grid and electricity market, and by ensuring the functionality and reliability of the electricity system.

Our new strategy is leading the way. Its three main objectives are to meet changing customer needs, to develop our own operations, and to build security.

The energy transition is changing our customers' businesses, technology solutions, and needs. Our job is to find new solutions to meet changing customer needs. We aim to connect more customers to the grid more quickly with flexible connection solutions and direct customers to connect to parts of the grid where capacity is available.

Clean new electricity production and growing electricity consumption are increasingly geographically dispersed. Fingrid is building the electricity grid to meet the needs of a changing electricity system faster and more efficiently, but also responsibly.

The ambitious 10-year, €5.2-billion investment plan for the transmission grid will require good investment capacity based on a balanced budget. It demands

efficient operations, the use of technology, and good management.

Electricity infrastructure is the basis for the security of supply and the functioning of society. In an evolving security environment, critical infrastructure must be protected and preparedness for emergencies must be improved. The new strategy is a means of preparing for darker days while the sun is still shining.

The energy transition marches on and cannot be made to wait.

Fingrid's strategy points the way forward. Together with our customers – present and future – and other stakeholders, we will continue to work for a clean, secure and competitive electricity system.

We are preparing for darker days while the sun still shines.



Asta Sihvonen-Punkka
CEO
Fingrid Oyj

Susanna Kekkonen

FINGRID

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FINGRID

Electricity consumption and production reach record levels

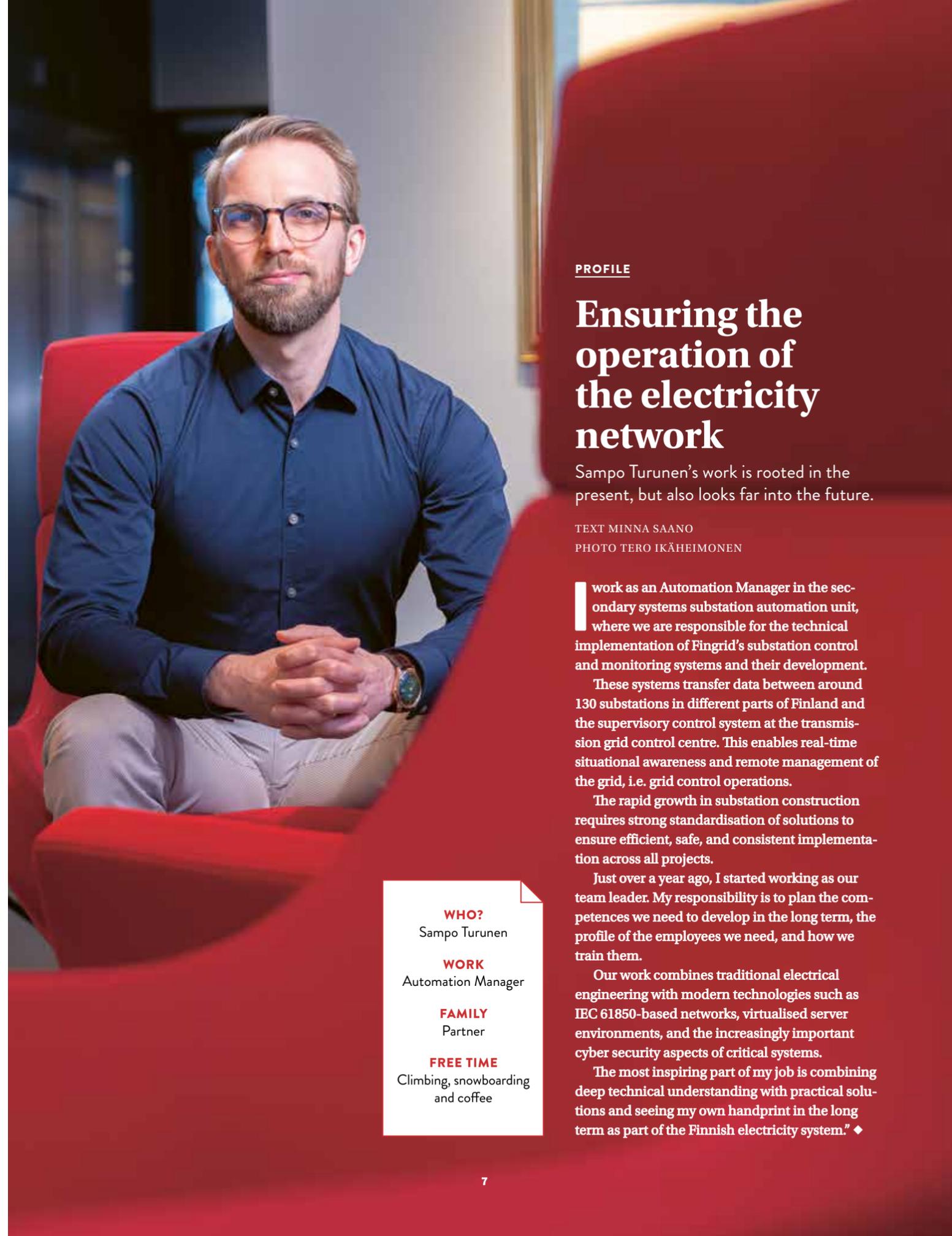
The electricity system of Finland broke records at the beginning of the year when electricity consumption rose to an all-time high of 15,553 megawatts between 5:00 pm and 5:15 pm on 8 January 2026. On the same day, a record was also set for total daily electricity consumption.

Domestic electricity production then rose to its highest ever recorded level of 15,475 megawatts between 7:45 pm and 8:00 pm on 10 January 2026.

The electricity system, power plants, and power transmission connections operated without problems, and electricity prices remained reasonable

considering the low temperature, as wind power was readily available.

Electric boilers have become more common in Finland in recent years due to the good availability of cheap electricity, and they increase electricity consumption as they produce heat. If wind power production is limited on a very cold winter day, or if, for example, an important power plant or transmission connection is out of service, electricity consumers are encouraged to contribute to the adequacy of electricity by shifting their electricity consumption from more expensive hours to cheaper ones. ♦



PROFILE

Ensuring the operation of the electricity network

Sampo Turunen's work is rooted in the present, but also looks far into the future.

TEXT MINNA SAANO
PHOTO TERO IKÄHEIMONEN

work as an Automation Manager in the secondary systems substation automation unit, where we are responsible for the technical implementation of Fingrid's substation control and monitoring systems and their development.

These systems transfer data between around 130 substations in different parts of Finland and the supervisory control system at the transmission grid control centre. This enables real-time situational awareness and remote management of the grid, i.e. grid control operations.

The rapid growth in substation construction requires strong standardisation of solutions to ensure efficient, safe, and consistent implementation across all projects.

Just over a year ago, I started working as our team leader. My responsibility is to plan the competences we need to develop in the long term, the profile of the employees we need, and how we train them.

Our work combines traditional electrical engineering with modern technologies such as IEC 61850-based networks, virtualised server environments, and the increasingly important cyber security aspects of critical systems.

The most inspiring part of my job is combining deep technical understanding with practical solutions and seeing my own handprint in the long term as part of the Finnish electricity system." ♦

WHO?
Sampo Turunen

WORK
Automation Manager

FAMILY
Partner

FREE TIME
Climbing, snowboarding and coffee

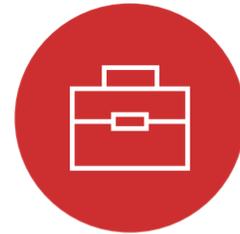


The main grid is being strengthened in Eastern Finland

The main grid substations in Lieksa and Nurmes are being modernised. The upgrade will ensure high reliability in the main grid and help connect the planned investments in the region to the main grid. The estimated investment costs for the projects total approximately €10 million, and completion is expected in 2028.

In addition, the reinforcement of the Lake Line connection to the main grid, which will be completed next autumn, will improve the possibilities to connect renewable energy and industrial projects planned in Eastern Finland to the main grid. The Lake Line is a 400 + 110 kilovolt connection from Vaala to Joroinen.

Several other significant investments in the main grid have been made in Eastern Finland in recent years; substations in the region have been upgraded and technical solutions have been implemented to support voltage control in the grid. In addition, the new Kontiolahti-Uimaharju-Pamilo 110-kilovolt transmission line was completed in the region in 2022. ♦



Changes in Fingrid's ownership structure

ILMARINEN Mutual Pension Insurance Company is selling its stake in Fingrid, approximately 20% of the shares of the company, to the Finnish State and OP Pohjola Kantaverkko Holding Ky. The State's acquisition requires the Finnish Parliament to allocate the necessary funds for the acquisition, among other things.

When the entire transaction arrangements are finalised, the State's holding of Fingrid will increase from 53.1% to 59.5% and OP Pohjola Kantaverkko Holding Ky will own 14.2% of the company. The remaining shares are owned by Finnish pension and insurance companies.

PODCAST

Kantaverkon pulssilla



IN Fingrid's Kantaverkon pulssilla podcast, CEO **Asta Sihvonen-Punkka** discusses current energy issues with various partners. Listen on Spotify.

PRACTICAL QUESTION

Can a drone be flown near transmission lines or substations?



There is no ban on flying near transmission lines, but there may be restrictions around substations and power plants, says Inspector Kimmo Huoviala from Traficom.

TEXT MARJO TIIRIKKA / PHOTO ANNA DAMMERT

1 What are the regulations in Finland for flying drones near power lines?

Flying near power lines is not directly prohibited by the EU Drone Regulation. However, flying or falling must not pose a risk to critical infrastructure.

Fingrid and some local electricity companies have applied for restrictive airspace zones around substations and power plants, as well as around harbour areas, for example, to restrict unmanned aviation.

Fingrid and some local electricity companies have applied for restrictive airspace zones around substations and power plants, as well as around harbour areas, for example, to restrict unmanned aviation.

2 Can flying drones cause disruption to electricity distribution?

Drones come in many sizes, and so the potential damage they can cause to electricity distribution ranges from zero to severe.

A typical consumer imaging drone is made of plastic, weighs less than a kilogram, and is about 60 centimetres wide from motor to motor. If dropped in a suitable place, it can be used to cause a short circuit, but these devices can be interpreted as relatively low risk.

A heavier drone designed for professional use can be 1.5 metres in size, with carbon fibre motor arms. Such a drone poses a more significant risk because of its weight, and the carbon fibre structure can cause a short circuit.

3 How can the flight of drones be controlled?

Control can be a challenge. Consumer drones weighing more than 250 grams are required to have a remote identification system that transmits the registration number of the drone operator, the drone's position, altitude, speed and direction of flight, and the pilot's location. This identification information is freely receivable via a mobile phone application.

However, it is still perfectly legal to fly older drones that do not have this remote identification requirement.

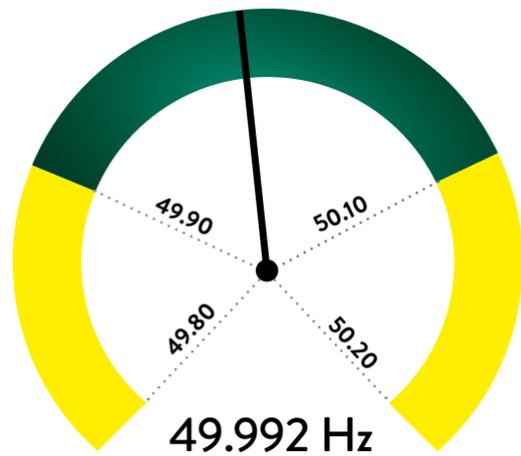
There are also more effective solutions for monitoring drone activity, such as the Sensofusion detection system. ♦

There are also more effective solutions for monitoring drone activity, such as the Sensofusion detection system.

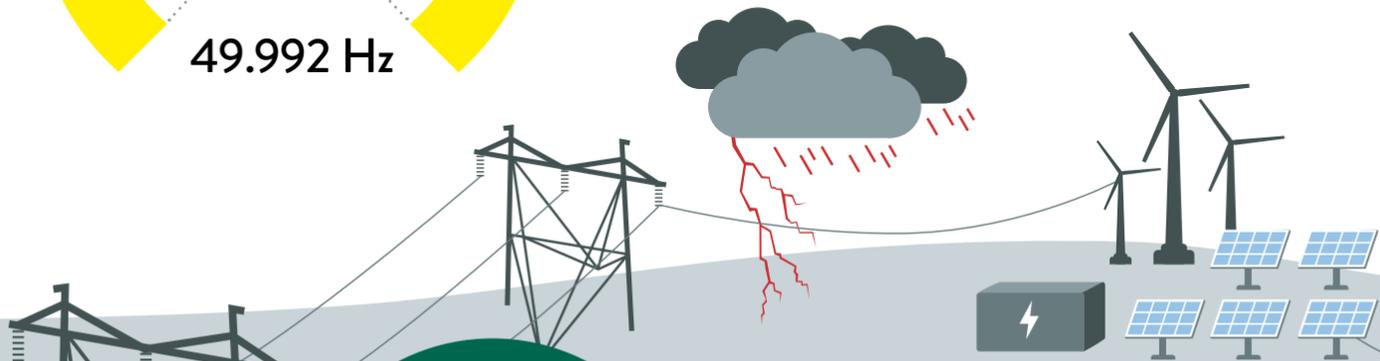
POWER QUALITY IS CONTINUOUSLY MONITORED

Fingrid is responsible for the quality and reliability of electricity in the Finnish transmission grid. We maintain frequency stability, seek to minimise interference and voltage dips, and monitor surges and harmonics to ensure a stable power supply for critical industrial processes.

COMPILED BY EERO PEHKONEN / INFOGRAPHIC BY LAURA YLIKAHRI



50 Hz is the **nominal frequency** of the grid, and Fingrid constantly balances it between production and consumption: the frequency decreases when consumption exceeds production and increases when production exceeds consumption.



Why power quality matters?

Maintaining stable voltage minimises stress on equipment, increases durability, and keeps systems running as intended.

Key aspects of electricity quality:

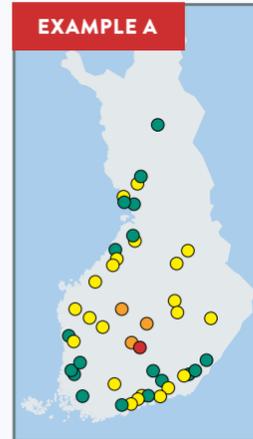
RELIABILITY:

Fingrid is developing the electric power network to reduce outages and improve the resilience of the network.

STATE OF THE POWER SYSTEM AND FREQUENCY:

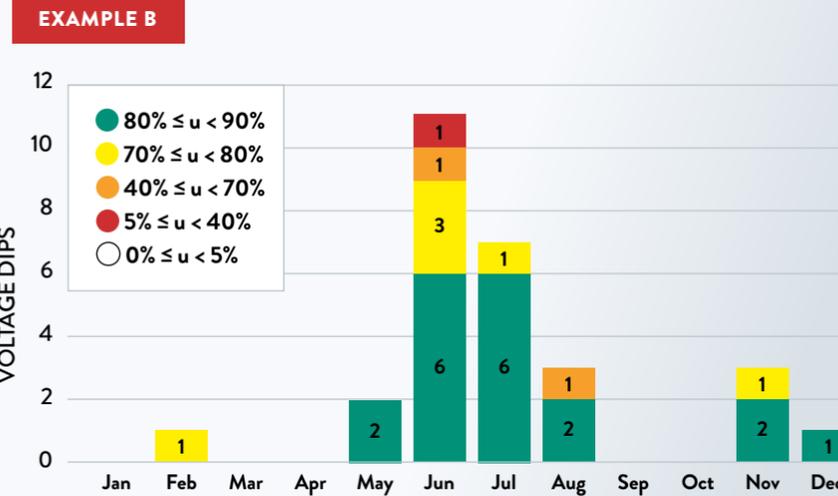
Fingrid monitors the state of the electrical system and maintains it with reserve power, such as wind, solar and energy storage.

Examples of incidents caused by thunderstorms



Example A. A thunderstorm caused a three-phase short-circuit fault on the 400 kV Petäjavesi-Vihtavuori transmission line in July 2024, resulting in a short-lived but widespread voltage dip that was widely visible in Finland.

Example B. The number and depth of voltage dips at Heinola substation in relation to the nominal value in 2024. Most of the voltage dips were caused by thunderstorms in summer. Other causes were strong winds or switching situations.



How does Fingrid monitor and report power quality?

REPORTING: Goes through reports with customers as needed. Learn more: fingrid.fi/en/maintenance_of_power_balance

DEVELOPMENT WORK: Maintains and develops monitoring systems to detect various power quality events.

MY FINGRID: Provides general and power quality data of the system for the benefit of customers. oma.fingrid.fi/en/

Why is frequency stability important?

The installations connected to the power system are designed for a specific frequency. Excessive deviations can damage equipment and, in the worst case, bring down the entire power system.



Monitor the frequency of the power system on the State of the Power System page: fingrid.fi/en/power_system_state

BILLIONS OF EUROS INVESTED

in strengthening the electricity network in the Helsinki metropolitan area

TEXT SUSANNA CYGNEL / PHOTOS FINGRID, VANTAA ENERGY ELECTRICITY NETWORKS LTD, HELEN ELECTRICITY NETWORK LTD AND TUOMAS KIVINEN

Electricity consumption in the Helsinki metropolitan area is growing rapidly, but local production has declined. Electricity now has to be brought in from further afield and transmitted to more and more end-users in a densely built-up area. This is why substantial investments are now being made in the electricity network.

Electricity consumption is growing in all the municipalities of the metropolitan area, placing greater demands on the adequacy of electricity, the transmission capacity, and the voltage support of the electricity network.

Electricity is increasingly needed to electrify ports and transport, to expand metro services, for data centres, and to electrify district heating, such as heat pumps and boilers.

At the same time, the Helsinki metropolitan area is expanding and the population is increasing: new residential areas are increasing the basic load, which means that the need for services and the number of jobs is also increasing. Heating is becoming electrified, and more and more people in the capital have electric cars.

The increase in consumption is reflected not only in the amount of electricity used, but also in the timing of consumption. For example, the charging of electric cars is often concentrated at times of low electricity prices, which increases the instantaneous power demand on the grid.

At the same time, the Helsinki metropolitan area's own electricity production has fallen sharply. The region used to have significant local electricity and heat generation, but the closure of the coal-fired power plants has removed around 700 MW of electricity and over 1,000 MW of thermal power.



HELEN ELECTRICITY NETWORK LTD

The Helsinki metropolitan area is consuming increasing amounts of electricity due to urban growth, electrification of shipping and heavy transport, expansion of the metro network, data centres, and electrification of district heating, among other things.

The closure of the coal-fired power plants at Hanasaari and Salmisaari in Helsinki and Suomenoja in Espoo has fundamentally changed energy production.

“In the past, the Helsinki metropolitan area was close to self-sufficiency, but now it is clearly a consumption-weighted region in terms of electricity. The change has been exceptionally rapid,” says **Timo Kiiveri**, Executive Vice President of Fingrid.

District heating is now increasingly produced by electric boilers, large heat pumps, heat storage systems, and other emission-free solutions. This has increased electricity consumption and the need for transmission, as heat is no longer produced as a by-product of electricity generation as it used to be.

ELECTRICITY CONSUMPTION DOUBLES IN HELSINKI AND VANTAA

Esa Äärinen, Customer Relations Director at Helen Electricity Network Ltd, confirms that



“Electricity consumption in Helsinki has begun to grow rapidly.”

Esa Äärinen
Customer Relations Director
Helen Electricity Network Ltd

electricity consumption in Helsinki has started to grow strongly.

By the end of the decade, electricity consumption is projected to increase to between 1,500 MW and 1,600 MW, double today’s levels. Of this, 1,400 MW will occur through decisions already



“The intensity and speed of the clean transition has surprised everyone in the industry in the Helsinki metropolitan area.”

Risto Lappi
CEO
Vantaa Energy Electricity Networks Ltd

taken by customers, and part of the new electricity consumption has been connected to the grid through flexible connection contracts.

“This development is being driven by urban growth, electrification of shipping and heavy transport, expansion of the metro network, data centres, and electrification of district heating, among other things,” Äärinen says.

Helen has responded to this development by increasing its investments to around €500 million over the next 10 years.

Electricity consumption is also growing exceptionally fast in Vantaa. The electrification of heat production and transport and the phasing out of fossil fuels have created a need for substantial investment.

“The intensity and speed of the clean transition has surprised us all in the metropolitan area,” says **Risto Lappi**, CEO of Vantaa Energy Electricity Networks Ltd.

In Vantaa, electricity consumption is projected to double in ten years. This growth will require investments of around €250 million, with a particular focus on the 110-kilovolt regional network, which will connect the city’s distribution network to the transmission grid.

As consumption and power peaks increase, the existing 110-kilovolt grid will become a bottleneck for electricity transmission, and new loads, such as data centres or electric vehicle charging infrastructure, cannot be connected to the grid without significant reinforcements.

THE NETWORK IS BEING BUILT ACCORDING TO FORECASTS

A key project that will improve the security of supply in Vantaa and the entire Helsinki metropolitan area is the new substation added to Fingrid’s development plan on the border between Vantaa and Tuusula.

HELSINKI ELECTRICITY NETWORK PROJECTS, HELEN ELECTRICITY NETWORK LTD

- Substation expansions and 400 kV connections to the grid will improve the transmission capacity and security of supply.
- A 400 kV cable connection is planned to Sörnäinen to meet the city’s growing power needs.
- The reinforcement of the 110 kV network in the city centre will meet the rapidly growing demand for electricity.
- The western boulevard project will enable urban development by converting the electricity network on Vihdintie from overhead lines to underground cables to make way for the urban boulevard.

ELECTRICITY NETWORK PROJECTS IN VANTAA, VANTAA ENERGY ELECTRICITY NETWORKS

- The Tammisto–Aviapolis power line will reinforce electricity transmission to the airport and workplace cluster.
- The Ruotsinkylä–Tikkurila line will improve the security of electricity supply in central Vantaa.
- The Aviapolis–Keimola line will allow for regional growth and large new electricity consumption facilities.
- The Tikkurila–Aviapolis line will increase the transmission capacity between key consumption areas.
- The Keimola–Varisto line will secure the electricity supply in growing parts of West Vantaa.
- The Tikkurila and Aviapolis substations will increase the capacity and reliability of the network.



“Building new parts of the transmission grid typically takes seven to eight years. That is why projects need to be agreed upon and known well in advance.”

Timo Kiiveri
Executive Vice President
Fingrid

“It will strongly guide the construction of the 110-kilovolt network in Vantaa, and it will have a major impact on the region’s electricity supply and security of supply,” Lappi says.

In total, Fingrid has almost €1 billion worth of system reinforcement projects underway in Southern Finland.

Key among them are the already-completed Huittinen–Forssa transmission line, the new transformer stations at Hepokorpi in Espoo and transformer expansion in Tammisto in Vantaa, the 400-kilovolt cable connection in Helsinki, and the Lowlands Line, which will bring additional transmission capacity from the west to the capital. In addition, several projects are investing in grid voltage support.

Kiiveri says that the network will be strengthened as consumption and connections grow in line with forecasts, but not as a front-loaded contingency. Needs arise in stages and are implemented gradually as forecasts can change and needs grow.

“We cannot build transmission capacity just in case, because that would be economically unsustainable. That is why projects are implemented in phases, according to forecasts and orders by distribution system operators and other customers,” he explains.

THE TRANSMISSION GRID MUST FAVOUR OVERHEAD LINES

In a densely built-up urban environment, building an electricity network is a different challenge from that in sparsely populated areas. In Helsinki, for example, a 400-kilovolt underground cable crosses gas and water pipelines, transport routes, recreational areas and even wartime structures.

“The emphasis is on permits, land use and dialogue with residents. People will naturally react if construction comes close to their living environment, and this has to be taken into account. The amount of dialogue is huge,” says Kiiveri.

Although people often talk about underground cabling in urban areas, the basic solution for the transmission grid is still the 400-kilovolt overhead line.

“Underground cables are a special solution. They are up to ten times more expensive than overhead lines, with lower transmission capacities and slower fault repairs. From a security of supply perspective, overhead lines are a superior solution,” says Kiiveri.

Overhead lines are also necessary in cities, for example where high transmission capacity is needed.

However, for electricity transmission connections in Helsinki, underground cabling is often the only alternative due to the dense urban structure.

300 TONNES OF STEEL ON THE MOVE

The challenges of building a transmission grid are not limited to line routes: transporting of large electrical transformers requires careful planning. The transport weight of a single transformer is almost 300 tonnes, equivalent to the weight of about seven trams.

Transport is made more difficult by the fact that many of the railways, and especially the railway bridges, are up to 100 years old. The condition and load-bearing capacity of road bridges also limit the routes, which means that long detours have to be found.

TRANSMISSION GRID PROJECTS IN THE HELSINKI METROPOLITAN AREA, FINGRID

- The Huittinen–Forssa 400 kV line will increase the transmission capacity from the west to Southern Finland.
- The substations at Hepokorpi and Tammisto will strengthen the supply to the Helsinki metropolitan area.
- The Helsinki 400 kV underground cable will secure the city’s electricity supply in a dense urban environment.
- The Lowlands Line will bring additional capacity to the whole of Southern Finland.



Fingrid is executing transmission grid reinforcement projects worth nearly EUR 1 billion in Southern Finland. The photo shows the Hepokorpi substation, part of the transmission grid in Espoo.

“The technical debt in infrastructure is now highly visible in the daily life of the electricity transmission operator. In addition, the changed security situation has created additional challenges in sharing information on critical infrastructure, meaning that we are not getting enough information to plan routes,” says Kiiveri.

TIMELY INFORMATION ON PROJECTS IS NEEDED

The Helsinki metropolitan area has established itself as the focus of electricity consumption in Finland, and this trend is only getting stronger.

At present, electricity is mainly imported to the region from the west coast of Finland and Sweden via the Aurora Line, but small-scale nuclear power, for example, could change this and increase

the capital’s self-sufficiency of electricity at some point in time.

Transmission grid projects require long-term planning together with distribution network operators.

“It typically takes between seven and eight years to build new parts of the transmission grid, much longer than building a boiler, for example. Therefore, projects need to be agreed upon and known well in advance,” Kiiveri emphasises.

Lappi also highlights the importance of long-term forecasting.

“It is essential for the distribution system operator to know which substation can offer grid capacity in the future. That is why Fingrid’s 10–20 year planning is particularly important for us,” says Lappi. ♦



FINGRID'S STRATEGY AIMS FOR GROWTH IN FINLAND

The new strategy is summed up in these words: "Electricity for growth. Reliably."

TEXT KATARIINA KRABBE / PHOTOS SUSANNA KEKKONEN AND PIRJO TUOMINEN/PARLIAMENT OF FINLAND

The keys to Finland's growth lie in the green transition, clean electricity and the opportunities it brings. "Fingrid is the facilitator, the platform provider. New clean power production will be added to the grid, as well as large consumption sites. It is our job to make sure that it works. This is how we clean up the energy system while stimulating growth in Finland," says **Asta Sihvonen-Punkka**, CEO of Fingrid, explaining the slogan.

The word "reliably" in the slogan refers to transmission reliability, which is already best-in-class: 99.9995% of the electricity produced on the grid can be delivered.

CHANGES IN THE OPERATING ENVIRONMENT

The strategy work, which started a year ago, involved Fingrid's Board of Directors, all managers, and all three customer committees, ensuring the voice of customers was also heard.

"We sought to tackle the challenges of the operating environment: the need for connection and transmission services is high, there is huge demand and we are building the network to meet these needs.

At the same time, economic uncertainty is affecting our customers' investments," says Sihvonen-Punkka.

She adds that there is a major shift towards a weather-dependent electricity system, with wind power production growing strongly, which is reflected in the price of electricity and in the fact that sometimes electricity is available well in excess of domestic needs and sometimes imports are required.

Moreover, the geopolitical security situation has deteriorated considerably in a short period of time.

"As a transmission system operator, Fingrid is a highly regulated company, so the unpredictability of regulation is a challenge, and we need to think carefully about how we act and how we can positively influence regulation," Sihvonen-Punkka says.

ELECTRICITY FOR GROWTH.
RELIABLY.

In February, Fingrid published its action plan titled *Electricity for growth. Reliably*. You can read it in full at fingrid.fi/sahkolla_kasvua_toimenpidesuunnitelma

“The energy transition will not wait, and we must not become a bottleneck or a brake under any circumstances. A lot is required of us, and this is the basis of our three strategic priorities.”

CLEAN, RELIABLE AND THE MOST COMPETITIVE OF ITS KIND IN EUROPE

The first objective is to create new solutions to meet customer needs, the second is to develop Fingrid’s own operating models to respond to the change, and the third is to be prepared and proactive in anticipating different situations and security challenges.

These strategic objectives will lead towards a vision of a clean, reliable electricity system, the most competitive of its kind in Europe.

“We have been asked whether the target is ambitious enough. It is true that Fingrid has no competitors in the Finnish transmission system

96%

of Finland’s electricity production is emission-free.

business. However, the field of competition is pan-European in terms of where developers want to invest and build more power production or where large consumption sites such as data centres and new industrial investments will be located.”

In addition to reliability of supply, we are also well advanced in terms of cleanliness, as 96% of Finland’s electricity production is emission-free.

“You can also connect to our network in 2–3 years. According to our data, we are among the leaders in Europe in terms of execution times.”

TANGIBLE BREAKTHROUGHS

In internal work, strategic top-level objectives are broken down into smaller sets of issues.

“For example, we should be able to connect more sites more quickly, but we also need to make sure that different types of customers have the opportunity to connect,” says Sihvonon-Punkka.

The timeframe for large industrial projects can be 7–8 years.

“When the construction of the network takes the same amount of time, from master planning to environmental impact assessment, the project may have to wait a long time, even if our capacity is already reserved for those who are first in line.”

This will also be addressed through geographic location guidance. For example, grid energy storage is directed to where there is spare connection capacity, while electric boilers need to get to where the heating demand is.

“Southern Finland will be able to connect production, but not industrial-scale consumption, until the ongoing network investments are completed.”

A further aim is to build quickly, cost-effectively and responsibly. Already at the end of last year, Fingrid decided to increase its investment programme by more than €1 billion to €5.2 billion. In addition, the electricity market needs balancing capacity, including the development of a reserve market.

“The aim is to deliver investments on time, on budget, and with minimal environmental impact.”

Fingrid’s own finances must be sustainable in order to meet customer needs.

“Productivity is also being sought through new technology – for example, better use can be made of transmission capacity through software solutions.”

The electricity system must also be able to cope with any eventuality.

“We have always been prepared for disturbances, but the security situation has added a new dimension to this, so we’re now also preparing for exceptional circumstances of longer duration.” ♦

“You can connect to our network in 2–3 years. According to our data, we are among the leaders in Europe in terms of execution times.”

Six members of parliament answered the following questions:

- 1** **WHAT** role do you think Fingrid plays in enabling economic growth in Finland?
 - 2** **WHAT** measures are especially important in Fingrid’s *Electricity for Growth. Reliably.* action plan?
 - 3** **WHAT** does Finland’s electrification trend look like? Is there anything to worry about?
- Questionnaire was sent to all parties.*



Pauli Aalto-Setälä, National Coalition Party

- 1.** Fingrid’s role in enabling economic growth in Finland is primarily related to the availability of clean energy, which is crucial for economic growth and industrial investment. Clean transmission investments, estimated by the Confederation of Finnish Industries at more than €300 billion, comprise an exceptionally large package, the realisation of which is directly dependent on the efficiency of electricity transmission. Fingrid has been very successful in this task.
- 2.** The most important thing is that the grid is reliable and new production facilities can be connected to it. According to the programme, Fingrid will invest an estimated €5.2 billion in the grid over the next ten years, which could contribute up to 10 GW of new industrial electricity consumption in Finland. This is also the government’s hope and target.
- 3.** Subzero periods with no wind and electricity adequacy. On the positive side, Fingrid is open to the introduction of an electricity capacity mechanism.



Eveliina Heinäluoma, SDP

- 1.** Fingrid has an important role to play. A stable and functioning electricity system is the basis for green growth and clean industry, for example.
- 2.** Of particular importance are the faster and more efficient use of the grid to support growth, flexible grid connections and better use of flexibility, significantly speeding up permit processes and cooperation with authorities, and ensuring sufficient electricity, even in difficult situations. In particular, security of supply issues and dealing with exceptional situations will be a key focus.
- 3.** Finland’s electricity production is already almost emission-free, and its heat production is getting cleaner quickly. The gloomy economic outlook in Finland is creating shadows; we also need new industrial-scale electricity consumption in Finland to realise its potential.



Eeva Kalli, Centre Party

1. Fingrid plays a key role in enabling economic growth, as a functioning and reliable grid is a prerequisite for investment, industrial electrification, and the clean transition.

2. Grid investments and timely implementation are particularly important where new production and consumption are growing. In addition, streamlining permit processes, proactive network planning, and close cooperation with customers and authorities are crucial.

3. The main concern is whether investment in the electricity network, the skilled workforce and permit processes will keep pace with developments, given the rapid pace of electrification. At the same time, we need to develop an open dialogue with local stakeholders and ensure fair compensation for landowners.



Mauri Peltokangas, Finns Party

1. We need to develop the transmission grid to ensure that we have enough electricity transmission capacity to meet our ever-growing electricity demand. Secure, clean and affordable electricity is a competitive advantage.

2. The idea that “Public authorities and the energy sector will increase cooperation and joint exercises in threat mapping and preparedness” is particularly relevant. As a neighbour of Russia, we are vulnerable to hybrid operations.

3. Finland is already quite far along in the electrification process. What worries me personally is that there is still a tendency to rely heavily on wind power for energy production. The price of electricity varies greatly depending on the wind. Nuclear power is a better alternative for clean electricity generation.



Jenni Pitko, Greens

1. Fingrid has a key role to play. Finland must strive to become energy self-sufficient and move away from fossil fuels, and maintaining a modern grid is important in this respect.

2. When a single line is used efficiently in terms of land use, nature and money are saved. Effective cooperation between authorities and increased demand-side management are also important in the face of growing electricity consumption and production.

3. Concerns relate to regulation and support policies. This government has handed out tax cuts for fossil fuels, and the planned nuclear support mechanism could slow down wind power. But the key issue is to reinvigorate demand. However, the grid cannot be built on the basis of data centres, but must prioritise higher-value-added industries.



Henrik Wickström, Swedish People's Party

1. Fingrid's role is absolutely crucial. In order to promote green transition projects and create jobs in Finland, a functioning electricity grid is important.

2. I think the most important thing is to build a functioning grid, the infrastructure, because that is what everything is based on. It is important for both the security of supply and business activity.

3. The timetable and changes in world politics. What worries me is that, in terms of global politics, interest in the green transition is waning.



The more
in-depth answers:
fingridlehti.fi/en

TEXT SUSANNA CYGNEL / ILLUSTRATION SHUTTERSTOCK

Extended Producer Responsibility in renewable energy projects



The producers of certain products such as solar panels and batteries are legally required to manage the waste from the products they have placed on the market when the products are discarded.

Renewable energy projects need to take into account Extended Producer Responsibility (EPR) obligations. In solar power and grid energy storage projects, electrical equipment and batteries are key products covered by EPR.

In a nutshell, EPR lies with the company that is the first to place the product on the market in Finland.

For batteries as well as electrical and electronic equipment, EPR applies to manufacturers, companies importing products from within or outside the EU, distance sellers and companies selling products under their own name or trademark.

EPR also applies to companies that place batteries incorporated into other products on the market, and to economic operators that prepare for re-use or for repurposing or remanufacture batteries.

Fingrid is not a producer within the meaning of the Waste Act, but it requires its contractual partners to comply with up-to-date legislation on EPR.

“We can communicate the requirements of EPR in a number of different contexts to make operators aware of them,” says Environmental Specialist **Nina Nordblad** from Fingrid.

PRODUCER ORGANISATIONS CARRY OUT THE LEGAL OBLIGATIONS ON BEHALF OF THEIR MEMBERS

In Finland, the easiest way to manage EPR is to join an approved producer organisation.

“Producer organisations are non-profit organisations established and managed by the producers themselves. They carry out the legal obligations on behalf of their members,” says **Jaana Mäenpää**, Senior Officer at the Finnish Supervisory Agency.



“Omissions are often the result of ignorance, but that does not eliminate responsibility.”

Jaana Mäenpää
Senior Officer
Finnish Supervisory Agency

The producer organisation is responsible for organising the waste management for discarded products, including collection, transport and recycling. It also collects and reports annual statistics to the authorities and ensures that the collection, recycling and recovery targets for the products are met.

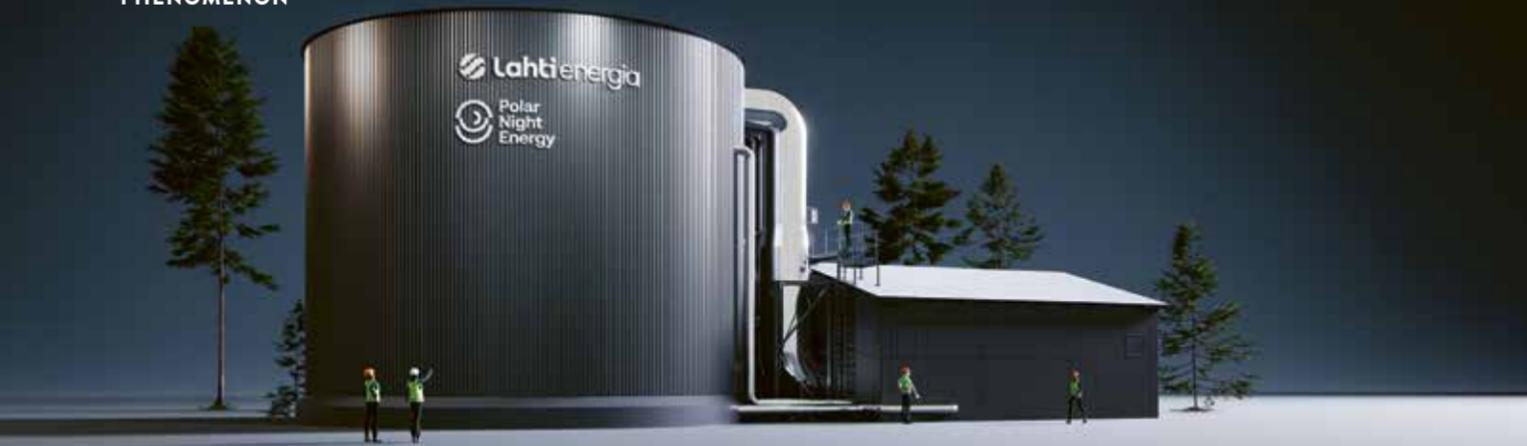
Alternatively, EPR can be fulfilled by establishing a producer organisation with other producers. In exceptional cases, it can also be managed by applying directly to the producer register, but this is rare.

NATIONWIDE SUPERVISION

EPR is guided and supervised nationally by the Finnish Supervisory Agency. Supervision focuses on both producers and producer organisations.

“Often, non-compliance can be due to lack of information, but that does not remove the responsibility. That is why we highlight the importance of proactive guidance and information sharing,” says Mäenpää.

The Finnish Supervisory Agency may impose a negligence penalty for failing to comply with EPR or to report annual monitoring data. ♦



TEXT ARI RYTSY / PHOTOS POLAR NIGHT ENERGY, LAHTI ENERGY AND ENICO LTD

Sand battery and smart batteries to support the electricity grid

The addition of the world's largest sand battery to the Vääksy district heating network and Enico's domestic battery solutions show that the reserve market now includes more than just large industrial loads. It is about smart trading and technological leadership.

The energy transition is progressing rapidly, making balancing the electricity grid more critical than ever. As weather-dependent production increases, the ability to store energy and respond quickly to fluctuations in supply and demand will be needed.

The reserve market operated by Fingrid offers an opportunity for this, which is now being exploited by players from completely different backgrounds.

SAND BATTERY BRINGS STABILITY TO VÄÄKSY

Jouni Haikarainen, CEO of Lahti Energia, sees energy storage as part of a broader shift away from fossil fuels. The 3,000-tonne sand battery being built in the Vääksy district heating network is a concrete example of this.



“We wanted to stop using fossil natural gas.”

Jouni Haikarainen
CEO
Lahti Energy

“We wanted to get rid of fossil natural gas. We looked at several options, and the sand battery was the most interesting. Investment subsidies were instrumental when we set out to execute a project with new technology,” says Haikarainen.

Technically, the system has a capacity of 2 MW and a storage capacity of 250 MWh, with electric elements heating air in the pipework. The air then heats the sand up to 600°C. The system is multi-purpose, as it not only secures the price of district heating, but also opens new doors in the electricity market.

“The sand battery will also allow us to participate in reserve markets that our current solutions for Lahti's main network are unable to address. There are crucial differences in speed and controllability between the sand battery and a conventional electric boiler.”

For Lahti Energia, reserve trading is handled by an external balance responsible party, which is a typical division of labour in the energy world. Although the day-to-day operations are in the hands of a partner, the experience with Fingrid has been positive in all respects.



“Storage is part of the energy transition megatrend.”

Marko Lähteenmäki
CEO
Enico Ltd

“Every time Lahti Energia has dealt with Fingrid, the service has been professional and good,” says Haikarainen.

As a future development, he envisages a more dynamic reserve market, where bids would not need to be locked in too early, but resources could be offered flexibly, closer to the time of use.

DOMESTIC SECURITY OF SUPPLY AND SMART DATA

Where the sand battery shines at the interface between heat and electricity, Enico Oy from Tampere focuses on electrochemical electrical energy storage. For CEO **Marko Lähteenmäki**, this is not just about the hardware; it is a seamless combination of technology, automation and data.

“Storage is part of the energy megatrend. In the past, flexibility was provided by large industrial loads, but now new solutions are needed,” he says.

For Enico, using products made in Finland is a value choice linked to the national security of supply. The physical security of equipment connected to energy networks and the management of data are as important today as the protection of information networks.

The reserve market in a nutshell

FINGRID maintains the real-time balance of the electricity system by purchasing reserves on the market.

The grid frequency is an indicator of balance, and it is kept at 50.0 hertz (the normal range being 49.9–50.1 Hz). The amount of electricity produced at any given moment must be exactly the same as the amount consumed.

Operators can receive compensation depending on the marketplace:

- A capacity fee (€/MW), which is paid for the ability to adjust capacity. It ensures that the resource is available to Fingrid at the agreed time.
- An energy fee (€/MWh) paid for the actual adjustment, i.e. activation, when the reserve is actually used for balancing.

“We do not run batteries down blindly. Instead, our software optimises the output and the service life of the battery. By having all components and automation under one roof, we avoid building different interfaces, which is often a challenge in international projects,” says Lähteenmäki.

Finland is an excellent pilot platform for the storage systems offered by Enico. Lähteenmäki acknowledges Fingrid's role in this ecosystem in particular.

“We are fortunate in the sense that Fingrid is a customer-oriented limited company, not a rigid government agency. They have a genuine interest in helping different parties to succeed. Even though the organisation is large and reserves are stretched, they are proactive.” ♦



AFFORDABLE AND ECOLOGICAL SOLAR ENERGY

At the end of 2025, Finland had 352 megawatts of industrial-scale solar power capacity, and growth is rapid. The photo shows a solar park owned by Oulun Seudun Sähkö in Ruotsinoja, Liminka.

Solar power is a cheap, renewable and emission-free energy source, and the construction of a solar power plant is fast. Producers appreciate Fingrid's willingness to work with them.

TEXT PÄIVI BRINK

PHOTOS OULUN SEUDUN SÄHKÖ, SKARTA ENERGY AND ALIGHT

Today, 1,500 megawatts of solar power is produced in Finland. Less than a third of this is produced in industrial-scale solar parks directly connected to the grid. Smaller solar power plants of less than 1 MW are usually connected to the distribution network.

The smallest solar power plants produce energy for individual households or farms, while the largest ones sell electricity to large industrial or municipal energy consumers and to the electricity exchange. Modularity and scalability are therefore advantages of solar power.

"At the moment, Renewables Finland estimates that up to 26,000 megawatts of solar power plants are being planned for Finland, but most of these will not be built. If even 10 per cent of that is realised, that is still a lot," says **Edvard Lukka**, Specialist at Fingrid.

"Reliable production forecasts from solar energy producers are important to us, because we must ensure the power balance of the electricity system. Wind and solar power plants support each other well," he continues.

However, electricity price forecasts have fallen in Finland, which reduces the profitability of production. The biggest solar boom was about three years ago.

"There are plans to build solar power plants with a total capacity of up to

26 000

megawatts in Finland, but most of these will be scrapped."

Edvard Lukka
Specialist
Fingrid



“Finland needs suitable power purchase and financing agreements and new investments that increase consumption, such as data centres.”

Santeri Ahokas
Executive Vice President
Skarta Energy

“It was a real gold rush. Now we are in a more realistic phase, where only the best projects and companies will survive. Growth is more controlled and projects are of higher quality. Finland needs suitable power purchase and financing agreements and new investments that increase consumption, such as data centres,” says **Santeri Ahokas**, Executive Vice President of Skarta Energy.

Founded in 2021, Skarta is currently the largest solar energy producer in Finland and the owner of Finland’s largest 107 MWp solar power plant in Utajärvi. The company develops solar power projects both for its own power production and for sale to others. Its customers are industrial energy consumers and investors, and the company specialises in projects over 50 MWp.

GETTING RID OF COAL CHEAPLY

In ten years, the efficiency of solar panels has more than doubled.

“The pricing of the panels is also affected by geopolitical factors, as the panels and components are manufactured in China. However, solar power is the cheapest form of electricity generation of all,” says Ahokas.

Alight, which is an international solar energy developer and independent power producer originally from Sweden, enters into long-term contracts with industrial energy consumers. Its largest solar park in Finland, 100 MWp, is under construction in Eurajoki.

“We are currently planning 1 gigawatt worth of solar parks in Finland. Our customers range from the clothing company H&M to banks and

automotive companies. For our customers, price is the primary reason to switch to solar power, but reducing carbon emissions is also a strong motivator,” says **Alexander Rudberg**, Alight’s Development Director.

PERMIT PROCESSES VARY ACROSS THE COUNTRY

Founded a year ago, Finnish Solar Power was set up by energy companies to produce electricity for its owners. It has solar power plants under development in various parts of the country.

“Getting a permit can be very different depending on the municipality. As solar energy production is new, the criteria for obtaining a permit are being refined all the time. This is, of course, necessary, but sometimes, it causes extra work for us as applicants,” says **Jukka Kaarre**, CEO of Finnish Solar Power.

A solar power plant typically takes 1–3 years from design to implementation. Solar companies are concerned about a new zoning law, which would require zoning for power plants larger than 50 hectares. This would significantly slow down the construction of solar power. The industry is trying to influence the drafting of the law.

“Despite all this, solar power plants are quick to build compared to other forms of energy,” says Kaarre.

A nearby nature reserve or settlement will affect the permitting process, but will not necessarily prevent construction. There is no need to leave a buffer zone around a solar power plant. An appropriate distance to the grid connection point is also important when deciding on construction.



Although the amount of light varies with the seasons, southern Finland has as much light per year as central Europe. The photo shows Skarta’s solar power plant in Isosuo, Utajärvi.



OULUN SEUDUN SÄHKÖ

“Building a solar power plant is quick compared to other forms of energy,” says **Jukka Kaarre** (centre), the CEO of Finnish Solar Power. The photo shows the opening ceremony of the Ruotsinoja solar park in Liminka.

Many landowners are very interested in leasing their land for solar power plants.

“Every week, we hear from many landowners who are interested in decades-long leases. A project of about 10 megawatts can fit on about 15 hectares, but a project over 80 megawatts requires about 100 hectares of land,” says Kaarre.

SMOOTH COOPERATION

Representatives of solar companies thank Fingrid for its interest in energy producers, fast decision-making, digital tools and transparency.

Alight works with many of the Nordic transmission system operators, and in Rudberg’s experience, cooperation with Fingrid is very good.

“The transparency of Fingrid’s operations gives us significant benefits. Its public capacity maps clearly show where projects should be planned.

At Fingrid, the key account manager has the autonomy to make decisions with the customer, and the attitude towards customers is positive,” says Rudberg. ♦



“Fingrid’s public capacity maps clearly show where projects should be planned.”

Alexander Rudberg
Development Director
Alight

AI

TEXT SUSANNA CYGNEL
PHOTOS SHUTTERSTOCK, HELEN ELECTRICITY NETWORK LTD AND FINGRID

is already an important everyday assistant in the energy sector

With artificial intelligence (AI) taking over routine tasks, people can focus on work that requires expertise. At Fingrid, AI makes work smoother and supports the operation of the power system. At Helen Group, an energy group, it is already an integral part of everyday business.

Fingrid currently uses AI especially in expert work, but it is also being developed to enhance business processes and customer interactions.

“AI can be used to streamline routine tasks so that people can focus on where their expertise is truly needed,” says ICT Development Manager **Hanna Kuusi**, who coordinates Fingrid’s AI development.

Generative AI is available to all Fingrid employees. The tool is helpful in areas such as text drafting and processing, documentation, software development, and information structuring. Uptake has risen to over 80 %.

The first AI agents are already working in areas such as translation and IT support.

AI ALSO SUPPORTING THE POWER SYSTEM

Many of Fingrid’s AI solutions are still in the development or pilot phase. For example, a generative AI tool is being integrated with the case management system so that information from different sources can be found with a single search in the future.

Fingrid uses AI in customer interactions, one example being the Datahub chatbot, which allows customers to request information about missing metering data or how to log into the customer portal, for example.



“The goal is to target maintenance more flexibly and identify risks in good time.”

Hanna Kuusi
ICT Development
Manager
Fingrid

AI is also being piloted for processing crossing statements. Its role is to produce a preliminary opinion, which an expert then reviews, edits if necessary, and approves before sending it. The aim is to reduce the time it takes to process statements and to reduce the burden of routine tasks for statement handlers.

In addition to expert work, Fingrid has piloted AI in support of the power system operations. One key development is the use of machine learning to predict failures of substation equipment.

“Monitoring systems continuously collect information on the status of equipment, and models analyse anomalies that may indicate disturbances. The goal is to target maintenance more flexibly and identify risks in good time,” Kuusi explains.

HELEN DEVELOPS AI AS PART OF THE TEAM

Other players in the energy sector are also using and developing AI for their own needs. The sector relies on vast amounts of data, which AI is excellent at processing.

“The energy sector has been using AI for a long time, especially to forecast production, consumption and networks,” says **Mikko Muurinen**, Head of Data & AI at Helen Group.

FINGRID'S AI development has been named AITO (the Finnish word for “authentic”). This encapsulates the promise that AI is more than just a technology; it should help to realise Fingrid’s vision of a clean, secure power system that is the most competitive of its kind in Europe.



At Helen, AI has become a crucial part of the development of energy systems and customer experience. Initially, the focus was on analytics and forecasting, but AI is now being used to generate new insights, for example about energy saving opportunities, based on historical consumption patterns.

“It is used to make systems more efficient and reduce emissions, as well as to make predictions, whether they focus on the minutes ahead or a horizon of several decades,” says Muurinen.

In customer service, AI deepens customer understanding and enables a more personalised service. This can be seen, for example, in AI agents embedded in websites and AI-assisted customer service. By 2027, Helen aims to resolve more than half its customer service interactions with the help of AI.

According to Muurinen, AI will be built directly into Helen’s processes so that it will start to function more and more naturally as part of expert teams.

A COMMON DIRECTION FOR THE ENERGY SECTOR

As the energy sector develops AI for various needs, collaboration between actors becomes more important; questions about AI reliability, governance, and the role of humans are shared across the entire energy sector.



“It is used to make systems more efficient and reduce emissions.”

Mikko Muurinen
Head of Data & AI
Helen Group

“Together with Fingrid, we have promoted matters such as AI development models and exchanged ideas on more technical issues. We have also considered how different agents and assistants can be used safely and appropriately,” says Muurinen.

High-quality and sufficiently comprehensive data is the basis for the development of AI, and Helen and Fingrid have also had many discussions about this.

“Reliable data is essential for building AI solutions that better serve the entire energy sector,” says Kuusi. ♦



“Fingrid helped us a lot when we were studying the practical impact of the updated grid code specifications,” says Markus Ovaskainen from Merus Power (right). “Other new grid energy storage facilities are also required to have the same capability,” say Joonas Mörsky (left) and Olli-Pekka Janhunen from Fingrid.



Merus Power supplied Finland’s first grid energy storage system with the capability to balance the grid voltage and frequency. The facility was built in Valkeakoski. The grid code specifications for grid energy storage systems require new facilities based on battery technology to have grid-forming control.

Fingrid’s Planning Manager **Olli-Pekka Janhunen** says that the grid code specifications for grid energy storage systems (SJV2024), which were updated in 2024, require new grid energy storage systems using battery technology to coordinate closely with the grid.

“The key new requirement is that grid energy storage systems must have grid-forming capabilities. They must be able to respond to voltage and frequency fluctuations near instantaneously and independently.”

The change comes in response to the increase in converter-connected production, such as solar and wind power plants, and the decline in fossil-fuel plants, such as coal and gas power plants.

The electricity grid now has fewer traditional power plants based on rotating machines, which creates the grid’s voltage and frequency.

“The idea is that grid energy storage facilities will help to keep the electricity system balanced in all circumstances.”

FINGRID HELPED INTERPRET THE CRITERIA

Finland’s first grid energy storage facility capable of balancing the grid’s voltage and frequency was opened in Valkeakoski last autumn. The grid energy storage facility was supplied by Merus Power and has a capacity of 30 megawatts.

The Finnish listed company supplies filters and compensators for ensuring the quality of

“The Power Conversion System was programmed to behave as if it were a traditional power plant.”

Markus Ovaskainen
Sales & Marketing Director
Merus Power

electricity, as well as turnkey grid energy storage facilities.

Sales & Marketing Director **Markus Ovaskainen** says that the company did not have a ready-made product that would meet the new grid code specifications at the time when they were published.

“We set out to create a new type of software and control technology for the Power Conversion System in the grid energy storage system. Fingrid provided us with a great deal of assistance in clarifying what the levels and criteria actually mean in practice. The Power Conversion System was programmed to behave as if it were a traditional power plant with a rotating generator,” Ovaskainen explains.

Power Conversion System consists of converters, power electronics devices that essentially charge and discharge a battery.

The project, which required the efforts of several people, took a couple of years, after which the system’s compliance with the criteria was

GRID ENERGY STORAGE FACILITIES MUST SUPPORT THE GRID

Finland’s first grid energy storage facility with grid-forming capabilities was opened in Valkeakoski last autumn. Other new grid energy storage systems are expected to have the same capabilities.

TEXT MATTI VÄLIMÄKI / PHOTOS LAURA VESA

Elsewhere in Europe, transmission system operators do not yet require grid energy storage facilities to have grid-forming capabilities.

verified through modelling. A new verification was performed during commissioning.

“Fingrid also requires other new grid energy storage facilities connecting to the main grid to undergo similar modelling and verification,” says **Joona Mörsky**, Power Plant Specialist at Fingrid.

CAPABILITY DOES NOT CONSUME BATTERY CAPACITY

Ovaskainen says that the new capabilities will not increase the operating costs of the grid energy storage system.

“The grid energy storage facility contributes to frequency maintenance at all times, but because Finland’s electricity network is strong and stable, only minor adjustments with negligible use of the batteries are required. They do not stress the batteries excessively or shorten their lifespan.”

When many people bear a load, the burden on the individual is smaller:

“When procuring a grid energy storage facility, it is advisable to ensure that the supplier is capable of equipping it with the required control system and can demonstrate that they have been able to do so in the past.”

GRID ENERGY STORAGE FACILITIES ARE OF INTEREST

Fingrid has received numerous enquiries about grid energy storage facilities.

“When a customer wants to build a grid energy storage facility, we help them interpret the SJV2024 criteria. We also advise on the type of modelling we require,” says Mörsky.

He adds that the new requirements do not apply to old grid energy storage facilities that are already connected to the grid.

Ovaskainen says that once Merus Power had laid the groundwork with the Valkeakoski project, it was easier for the company to get involved in subsequent projects. The company has also delivered a grid energy storage facility with the new capabilities in Mertaniemi in Lappeenranta, and two other projects are in the works.

According to Ovaskainen, it is also easier to export technology when the bar has already been set high in Finland.

“In addition to Finland, there are already several grid energy storage systems with grid-forming capabilities in Australia and the UK, for example,” says Janhunen.

Elsewhere in Europe, transmission system operators do not yet require grid energy storage facilities to have grid-forming capabilities.

“Finland adopted the new requirements because there is a lot of wind power here,” says Mörsky. ♦

Many business models

IN Finland, the entities typically interested in building grid energy storage facilities are large institutional investors and renewable energy funds.

There are many business models: For example, the grid energy storage facility can discharge electricity when the price is high and charge when it is low. A grid energy storage facility can also be connected to a wind farm. In this case, electricity can be taken from the storage facility when production forecasts fail and the promised electricity must be delivered to the market. In addition, a grid energy storage facility can participate in Fingrid’s reserve market.

The voltage and frequency of the electricity grid could also be balanced using synchronous generators, for example, which would not produce energy but would rotate in tandem with the grid.

“These installations are expensive and have no significant benefits other than their grid-forming capabilities. Implementing grid-forming regulation in grid energy storage facilities is a more technically and economically viable solution to the problem,” says Planning Manager **Olli-Pekka Janhunen** from Fingrid.

The Finnish forest reindeer is one species that must be taken into consideration. Its habitats are in Kainuu and Suomenselkä and may be a conservation criterion for a Natura area.



TEXT MINNA SAANO / PHOTOS SHUTTERSTOCK

Ecological values guide the choice of transmission line routes

Designing a new transmission line route involves considering nature conservation areas and valuable natural sites. If they cannot be avoided, mitigation measures are taken to reduce the impact of the transmission line on nature.

The first step in planning the route of a new transmission line is to map Natura conservation sites, national parks, and other nature conservation areas. Building transmission lines in these areas is avoided as far as possible.

“The environment and natural values in other areas also have a strong influence on the route of a transmission line. The Nature Conservation Act and the Water Act identify species and habitats that must be protected, and we must take these into account. Where possible, we avoid them or take mitigating measures where they occur,” says **Marja Nuottajärvi**, Senior Expert at Fingrid.

The Finnish Species Information Centre and field surveys provide information on protected species along a planned transmission line route. Protected species can include plants, fungi, insects, birds, and mammals. Some habitats are also protected.

Nuottajärvi cites the Finnish forest reindeer as one example of a species that must be considered. The habitats of this species are in Kainuu and Suomenselkä and may be a conservation criterion for a Natura area.

“In these areas, the route must be well designed, and mitigation measures must be taken near sensitive breeding grounds.”

Fingrid’s operations have always taken into account small water bodies, i.e. streams, creeks and springs.

“Where natural small bodies of water cannot be avoided, construction and operation guidelines and vegetation management guidelines will be provided to reduce the harm. Watersheds will also be taken into account to avoid discharges into small bodies of water during construction.”

Protected plant habitats are avoided or mitigation measures are taken, for example by selective clearing. In some cases, plants such as lesser butterfly orchids have been relocated to new sites with permission.

“On the other hand, some protected species thrive and even breed in transmission line rights-of-way,” says Nuottajärvi.

She points out that laws and regulations change, and it is important to keep up to date with them.

“This year, the Nature Conservation Act and the Forestry Act will be amended to include new regulations on bird nesting, for example.” ♦



Lesser butterfly orchid

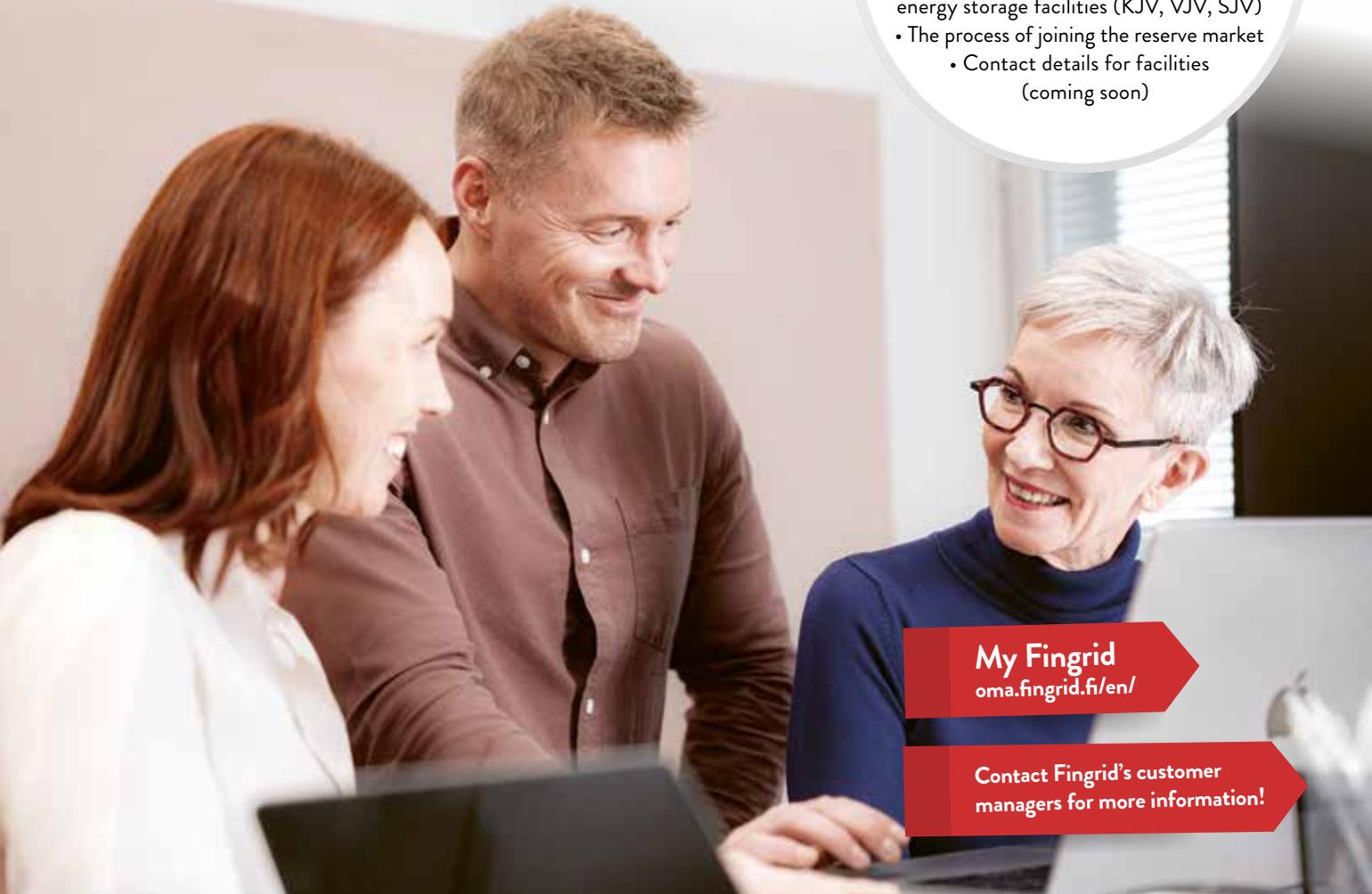
Get started with My Fingrid!

MY FINGRID is a channel for Fingrid and its customers to exchange information. It can be used to securely send information about an organisation's development projects to help with the planning of the transmission system.

My Fingrid also provides information on matters such as the organisation's electricity transmission metering and transmission system outages. We are constantly developing the service.

WHAT DOES MY FINGRID OFFER?

- Electricity transmission metering and billing information
- Information about disturbances and outages in the transmission grid
- Exchange of information on network changes and new production, consumption, and energy storage facilities (KJV, VJV, SJV)
- The process of joining the reserve market
 - Contact details for facilities (coming soon)



My Fingrid
oma.fingrid.fi/en/

Contact Fingrid's customer managers for more information!

 [@fingrid_ojy](https://twitter.com/fingrid_ojy)  [Fingrid Oyj](https://www.linkedin.com/company/fingrid-oyj)  [Fingrid Oyj](https://www.youtube.com/channel/UCFingridOyj)  [@fingridfi](https://www.facebook.com/fingridfi)  [@fingridoyj](https://www.instagram.com/fingridoyj)

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