

# SAFETY ON THE LINES

Induced voltages and additional earthing are special considerations on the Lake Line worksite





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“The potential risks are assessed as part of everyday work on the Lake Line worksite.”

**Mika Laulumaa**  
Worksite Manager  
Eltel Networks



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## Ten years of occupational safety in the main grid

I HAVE worked with occupational safety throughout my career: the past ten years as a safety specialist at Fingrid and, before that, in occupational safety roles in the forest industry, construction yards, and the Finnish Institute of Occupational Health.

I have noticed that the challenges and tools are fairly similar across all industries. The key to achieving a high standard of occupational safety is to have everyone committed to promoting and maintaining it.

When I started at Fingrid, we were still using paper forms to record safety observations. Today, accident reports, safety observations, work risk assessments, MVR measurements and responsibility audits are all digital. Occupational safety data is sent to Fingrid’s reporting system, which helps maintain constant situational awareness of occupational safety.

Preventive action is the prerequisite for a high standard of occupational safety. The amount of preventive action has increased enormously on Fingrid’s worksites over the past ten years. And this year is no exception: safety observations, safety toolbox talks, and work risk assessments

have been done very actively. We expect Fingrid’s Triple Jump Towards Zero campaign to propel the number even higher.

The standard of occupational safety and safety attitudes have improved over the long term. Nonetheless, there is still room for improvement in occupational safety, as we have not yet reached our goal of zero accidents.

Moreover, there have been some serious near-misses recently related to electrical and occupational safety. Unfortunately, this year, we have also identified some worrying risk-taking on Fingrid’s worksites, such as people working at heights without fall protection and removing additional earthing with their bare hands. Risk-taking like this is a serious matter for us, and we are strict in our approach to addressing it.

Every one of us must take care of our own safety and the safety of our colleagues. Avoid taking risks and intervene whenever you see dangerous behaviour. Remember the principles of the Triple Jump to Zero campaign in all situations: plan, evaluate and think before you act.

**Karri Koskinen**  
Expert, Safety  
Fingrid



*“Avoid taking risks and intervene whenever you see dangerous behaviour.”*

## FINGRID

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**CONTACT US!** Occupational safety is a shared issue that we aim to develop in collaboration with our suppliers. All feedback is important. Contact Karri Koskinen with tips for articles, development ideas, and feedback on the magazine. Do not hesitate to contact us if you have any questions about occupational safety. Karri Koskinen, *Expert, Safety*, tel. +358 40 631 2152, karri.koskinen@fingrid.fi



# FOCUS ON OCCUPATIONAL SAFETY ON THE LAKE LINE

The Lake Line from Vaala to Joroinen is being reinforced. As the new transmission line runs mainly alongside the existing 400 kV line, the people working on the site must pay special attention to induced voltage and additional earthing.

TEXT MATTI VÄLIMÄKI | PHOTOS AKSELI MURAJA

The Lake Line largely runs alongside an existing transmission line. Induced voltages are an important consideration to ensure safe work.

“Our worksite extends from Kajaani all the way to Iisalmi, and we submitted our earthing plans to Fingrid for approval,” says Jukka-Pekka Kivistö (right), HSE Supervisor at Eltel Networks. The plans are reviewed by the site manager, Mika Laulumaa from Eltel Networks (left), and Jarmo Lahtoniemi, Senior Transmission Line Specialist at Fingrid (centre).



Cranes and other work machinery operating near the live line are earthed with care.



Ricards Andzans (left) and Jukka-Pekka Kivistö (centre) carry out a lift on a worksite.

The sturdy concrete foundation has set, and the next transmission line tower will soon be erected by crane. Elsewhere, lines are already being installed on towers using a puller and tension machine. The line is strung on pulleys and earthed with earthing rollers at the puller and tension end and earthed pulleys along the span.

The structures carry a 400 + 110 kilovolt transmission line to reinforce the Lake Line. The connection from Vaala to Joroinen is 291 km long.

“The Lake Line will reinforce transmission connections from north to south. It will also enable more wind and solar power to be built in Eastern Finland,” says **Tommi Olsson**, Project Manager at Fingrid.

The large Lake Line project is divided into four sections. Eltel Networks is working on one section stretching approximately 70 km from Kajaani to Iisalmi.

**VERIFICATION RATHER THAN ASSUMPTION**

The new transmission line under construction mainly runs alongside the existing Lake Line. For

“Induced voltage is a familiar phenomenon, and additional earthing is routine.”

this reason, those on the worksite must pay special attention to the induced voltage in the new structures by the existing transmission lines.

Induced voltage can be life-threatening.

“We have prepared worksite earthing plans, which Fingrid has approved. The line under construction has additional earthing at least every two kilometres. Furthermore, the linesmen connect their personal earthing when going onto the line. This double safety check prevents an electrical accident, even if one of the additional earthing connections detaches or breaks,” says **Jukka-Pekka Kivistö**, HSE Supervisor at Eltel Networks.

Cranes and other work machinery operating near the live line are also earthed.

“Induced voltage is a familiar phenomenon, and additional earthing is routine. However, this is an important matter, so we do not simply



There will be at least a couple more summers and winters before the new Lake Line connection is complete. Work began in 2023 and is expected to end in 2026.

assume everyone knows about it. Instead, we provide an orientation on every worksite as if it were a new topic: repetition is the mother of all learning,” adds **Niko Ollikainen**, Project Manager at Eltel Networks.

**SAFE DOING EVERY TYPE OF WORK**

Naturally, all the general ground rules of occupational safety also apply to the Lake Line. For example, every employee completes a worksite orientation and Fingrid’s general online courses on occupational safety.

“Occupational safety plans have been prepared for various work phases on the site. In addition, any risks are assessed as part of the day-to-day work,” says **Mika Laulumaa**, Site Manager at Eltel Networks.

“When we work at heights, we use safety harnesses and follow the Always Attached rule.”

He mentions one practical example:

“When we work at heights, we use safety harnesses and follow the Always Attached rule: when a linesman moves along a tower, they do not remove the hook attached to the structure until they have attached a second safety hook.”

**THE PROS AND CONS OF WINTER**

The section of the Lake Line in Eltel Networks’ worksite has rather varied terrain. For example,

it includes dry sand cloth, rocks, and boulder deposits, as well as marshland that can only be accessed when the ground freezes in the winter.

“Winter opens up new access routes and allows us to do work that we cannot do in the summer. However, very low temperatures also restrict us: they prevent us from working with machinery, for example. We also need to be prepared for slippery conditions in the winter—for example, by gritting surfaces or wearing studded boots,” says Laulumaa.

There are two substations on Eltel Networks’ worksite.

“Where our worksite meets the substation site, it is important to coordinate work with the substation contractor. Everyone needs to know who is doing what and when,” says Ollikainen.

There is also a railway on the worksite:

“We cross the railway using Fingrid’s scaffolding, which prevents the wire or line from making contact with the railway’s overhead line,” notes Ollikainen. ♦



## Training package on additional worksite earthing

**FINGRID** arranges training on additional earthing and occupational safety ground rules for its service providers.

“We started providing training after we noticed an uptick in the number of high-risk situations related to induced voltage in recent years. We want to reverse this nasty trend,” says **Jani Pelvo**, Person in Charge of Operation of Electrical Installations at Fingrid.

In the training courses, Fingrid’s specialists visit transmission line worksites to discuss induced voltage and the necessary precautions. At the same time, they also go through other key safety issues.

The training is intended for everyone working on transmission line sites, including foreign employees.

“It could even be a new topic for some foreign employees. The electricity network may be built differently in their home countries, with no nearby lines to cause a risk of induced voltage.”

Training has also been arranged for the Lake Line and will continue to be in the future.

“The transmission line is earthed using additional earthing, and the installation technicians attach personal earthing when they go onto the line,” says **Jukka-Pekka Kivistö** (centre), HSE Supervisor at Eltel Networks. **Antti Tolpanniemi** (left) and **Lasse Perttu** (right) watch the work.



# STOPPING SLIPS

Slippery conditions come every year, causing slips that lead to absences from work. The Best Practices material instructs worksites to plan for slip prevention.

TEXT MINNA SAANO | PHOTO SHUTTERSTOCK

**S**lips and trips are common workplace accidents leading to absences.

“On Fingrid’s worksites, they have accounted for just below half of all occupational accidents, which is a relatively large number,” says **Markku Pöysti**, Expert in Occupational Safety at Fingrid.

Although slips are more prevalent than trips, Pöysti says that he rarely sees actual slip prevention plans when he visits worksites.

“Slip prevention is an everyday task on the worksite: sanding and salting when the weather demands it. However, slippery conditions come every year, and we struggle with the same things every time. Slips mainly happen in the winter

*“Slip prevention is an everyday task on the worksite: sanding and salting when the weather demands it.”*



months, but we should not forget that mud and clay can be slippery at any time of the year.”

The HSE supervisors working on Fingrid’s sites have a lot of safety expertise, knowledge and skill.

“We worked with them to think about practical steps we could take to prevent and manage slipperiness,” says Pöysti.



“The Best Practices material instructs worksites to plan for slip prevention,” says Markku Pöysti, Occupational Safety Expert at Fingrid.

This led to the latest Best Practice material, which is not compulsory for worksites but serves as a good guideline for planning slip prevention.

The material describes the topics that a slip prevention plan should cover and what needs to be considered when implementing the plan.

“The site manager or project manager usually oversees the preparation of the slip prevention plan, and it is good to have the plan in writing. It is also important to include the worksite personnel in the process, especially those involved in slip prevention work,” Pöysti notes.

A new module on slip prevention planning was added to the Best Practices material at the start of October.

“We hope it will help worksites to make their own plans, ultimately leading to fewer occupational accidents due to slipping.”

## THE IMPORTANCE OF FORESIGHT

“When bad weather rolls in, slipping can be a big problem. It may only take 15 minutes for the conditions to change throughout the worksite, which can cover a large area. For example, the Lake Line 3 project is 83 kilometres long,” says **Antti Nykänen**, Site Manager and HSEQ Supervisor at Destia, on the worksite of Lake Line 3, a new transmission line under construction between Iisalmi and Kuopio.

Nykänen was one of the HSE Supervisors who helped compile the Best Practices material. He has a background in road maintenance, gritting, salting and ploughing.

Nykänen highlights the importance of foresight and a clear division of responsibility:

“Who is responsible for planning action: the site manager or the work group? Who manages certain column spans? Who monitors the weather forecast? Who does the gritting, and what material do they use for it? Is gritting done by machine or manually? Where is the material sourced from? When things like these are decided in advance, a slip prevention plan benefits the worksite.” ♦

## What are HSE and HSEQ?

The HSE Supervisors are employees of service providers who promote occupational safety on their worksites by identifying hazards and developing safety communications and practices that

reduce the risk of occupational accidents. HSE stands for health, safety, and the environment. The Q in HSEQ stands for quality.

# THE TRIPLE JUMP TOWARDS ZERO

## campaign invites worksites to compete on safety

Electrical and occupational safety on Fingrid’s worksites is ensured by carefully planning tasks in advance, considering the risks and taking a moment to think before starting work. Fingrid invites everyone working on its sites to take part in an occupational safety competition where the most active worksites will be rewarded.

TEXT SUSANNA CYGNEL | PHOTOS FINGRID

**W**orksite safety is about teamwork – everyone working on the site must be involved.

“Safety is a multifaceted entity. It also involves process development to ensure that safety observations are documented and work instructions can be updated as necessary,” says **Erik Sappinen**, Site Manager at Enersense PN Oy, a contractor on Fingrid’s Framnäs substation worksite.

He emphasises that safety always starts with careful planning.

“The very first step is to plan the work we are about to do. Much of the work is already familiar, but even these familiar work instructions can be updated when new risks are identified,” says Sappinen.

Although the work may be familiar, each worksite is a different environment. There may not yet be a ready-to-use template, so the work plan must be written from scratch.

“Once the task is clarified, we can consider the potential risks and the prerequisites for working safely.”

Fingrid launched its Triple Jump Towards Zero occupational safety campaign at the start of September. The campaign aims to raise awareness of occupational safety among employees.

“The campaigns encourage employees to do more risk assessments, make safety observations, and maintain a state of readiness to improve safety in everyday work.”

*“The very first step is to plan the work we are about to do.”*

### PLAN, ASSESS, AND THINK

During the Triple Jump Towards Zero campaign, sites can use safety toolbox talk materials and digital campaign posters about important safety topics.

In addition, a monthly task will be announced, and the people who complete it will be entered into a separate prize draw.



The campaign material features some of the most significant hazards on Fingrid’s worksites.

For more information about the campaign, visit [fingrid.fi/en/safety-at-work-campaign-2024](https://fingrid.fi/en/safety-at-work-campaign-2024)

The campaign began in September by emphasising that planning everything carefully beforehand, assessing the risks, and thinking before acting can lead to a safe worksite.

Sappinen says that the work group always take time to review the plans. Then, before starting work, the situation on-site is assessed, and a safe work assessment is conducted as the work progresses.

“Risk assessment is an ongoing process. When you think before you act, you can notice potential risks before an accident happens,” Sappinen emphasises.

He has noticed that people are more routinely talking about safety on worksites, which is a good sign of higher safety awareness.

“While working, I hear people chatting about whether there are any risks involved in the work

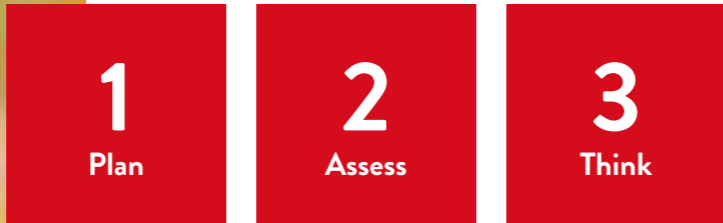
phase and that type of thing,” Sappinen says contentedly.

### THINK ABOUT HAZARDS SUCH AS WORKING AT HEIGHT

From the start of October, Fingrid’s safety campaign reminded people to identify hazards, assess risks and manage them.

Sappinen says that although the environment on a substation worksite may remain fairly similar on the ground, there are risks involved in working at height and doing the associated lifting work: the work environment higher up can change due to factors such as wind.

Therefore, challenging lifts are always assessed separately to verify whether any live components are nearby and determine the distance between them and the workplace. Plans also cover the



this task at its Main Grid Control Centre based on worksite notices.

“Before we start the work, we call the Main Grid Control Centre to let them know the work is beginning and that we need automatic reclosure to be eliminated,” Sappinen explains.

When the work is done, we call the Main Grid Control Centre again and tell them we have finished and that automatic reclosure can be reactivated.

**AWARDS FOR THE SAFEST WORKSITES**

During the Triple Jump Towards Zero campaign, the three worksites that record the highest numbers of work risk assessments, safety toolbox talks, and safety observations in relation to the number of working hours will receive awards. These will be tracked with a specially-created metric.

At the same time, the worksite personnel are encouraged to use the Quentic app, which makes it easy for them to safety observations or work risk assessments at the work location using their own phones. They can also attach photos.

“All we need to do to win the campaign award—and improve worksite safety—is to keep thinking about safety and making an effort to report our observations,” Sappinen says.

“To begin with, documenting everything can feel like a chore. However, as you get used to it, observations can be recorded continuously.”

Safety observations help refine work instructions for accuracy and identify hazards more easily. Documenting risk management is particularly important: if a risk is identified, it must be documented to prevent future accidents.

“The worst way to identify a hazard is after an incident has occurred.” ♦

necessary earthing, and the earthing of lifting machinery must also be planned.

“The soil is an important consideration when lifting: we need to ensure that it is strong enough to bear the loads and that the hoisting cage or crane will not begin moving uncontrollably. The safety assessment also covers the weights of the loads and the correct lifting equipment.”

**WORKING NEAR LIVE COMPONENTS**

Electrical safety will be top of the agenda in Fingrid’s safety campaign from November onwards. It is one of the key aspects of work on transmission line and substation sites.

Contractors on the Framnäs substation site are working next to a 110 kV line. Automatic reclosure on the line must be sufficiently deactivated during many types of lifting work. Fingrid carries out

## Persons in charge of electrical work meet to set policies on operating procedures

Fingrid invites the persons in charge of electrical work of its major service providers to meetings a few times a year. The aim is to harmonise operations and provide feedback on how the legislation works in practice.

TEXT PÄIVI BRINK | PHOTOS FINGRID

The law requires a service provider engaged in electrical work to have a person in charge of electrical work who is personally responsible for the company’s electrical work safety. Fingrid has noticed that service providers respond differently to government policies or standards.



The meetings of persons in charge of electrical work which began this autumn seek to set policies on effective practices.

“The long-term goal is to harmonise operating procedures. Too many accidents still happen, so we need a forum like this. Everyone has the right to get home from the worksite in good health,” says **Kimmo Muttonen**, Fingrid’s Unit Manager and Person in charge of electrical work.

If electrical work is done on a worksite, every member of the work group must know who the person in charge of electrical work is. The person in charge of electrical work does not always have to be on the worksite, but they are responsible for organising the electrical work.

“However, our service providers have very different ways of selecting an electrical safety supervisor while work is done and documenting electrical work actions. These are the things we want to set policies on.”

The meetings that began this autumn also cover interpretations of government policies and laws.

“We discuss how laws and guidelines work in practice and how problems on different sites have been resolved. We can learn from each other. If a policy is clearly unworkable in practice, we have the opportunity to influence authorities and legislators,” says Muttonen. ♦



*“Everyone has the right to get home healthy from the worksite.”*



# Make the leap towards zero and submit a safety observation!

WE use the Quentic reporting system to collect safety observations on our worksites. Safety observations provide information on safety measures and hidden risks, so we can intervene before an incident arises.

SAFETY observations can be about big things or small things. Observations can be submitted by registered and unregistered users at [www.fingrid.fi/havainto](http://www.fingrid.fi/havainto)

Every  
observation  
counts!



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