

Safety on the lines

Aiming for
zero accidents
through training
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Safety on the lines

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Contact us!

Occupational safety affects us all, and we want to improve safety in cooperation with suppliers. All feedback is important. Please send any ideas for articles, tips for development and feedback on the magazine to Karri Koskinen. Please don't hesitate to get in touch if you have any questions about occupational safety.



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FINGRID



Significant investments also pose challenges for occupational safety

In the coming years, we will implement several large-scale projects, such as the Forest Line, a third 400kV overhead line connection to Sweden and the network solutions required to connect wind power to the grid. These significant investments will lead to major challenges in terms of occupational safety, both for Fingrid and for our service providers and contractors.

Our work sites will welcome scores of new professionals who may not be familiar with our operating methods. We have sought to address these challenges by improving our operations so that the orientation process begins well before anyone starts working on-site. It is our view that personnel competence and training are significant contributors to occupational safety. The entity as a whole can only be managed through cooperation, which ensures that everyone works safely and follows the common ground rules on our joint work sites. We are working together towards our shared common goal of zero accidents.

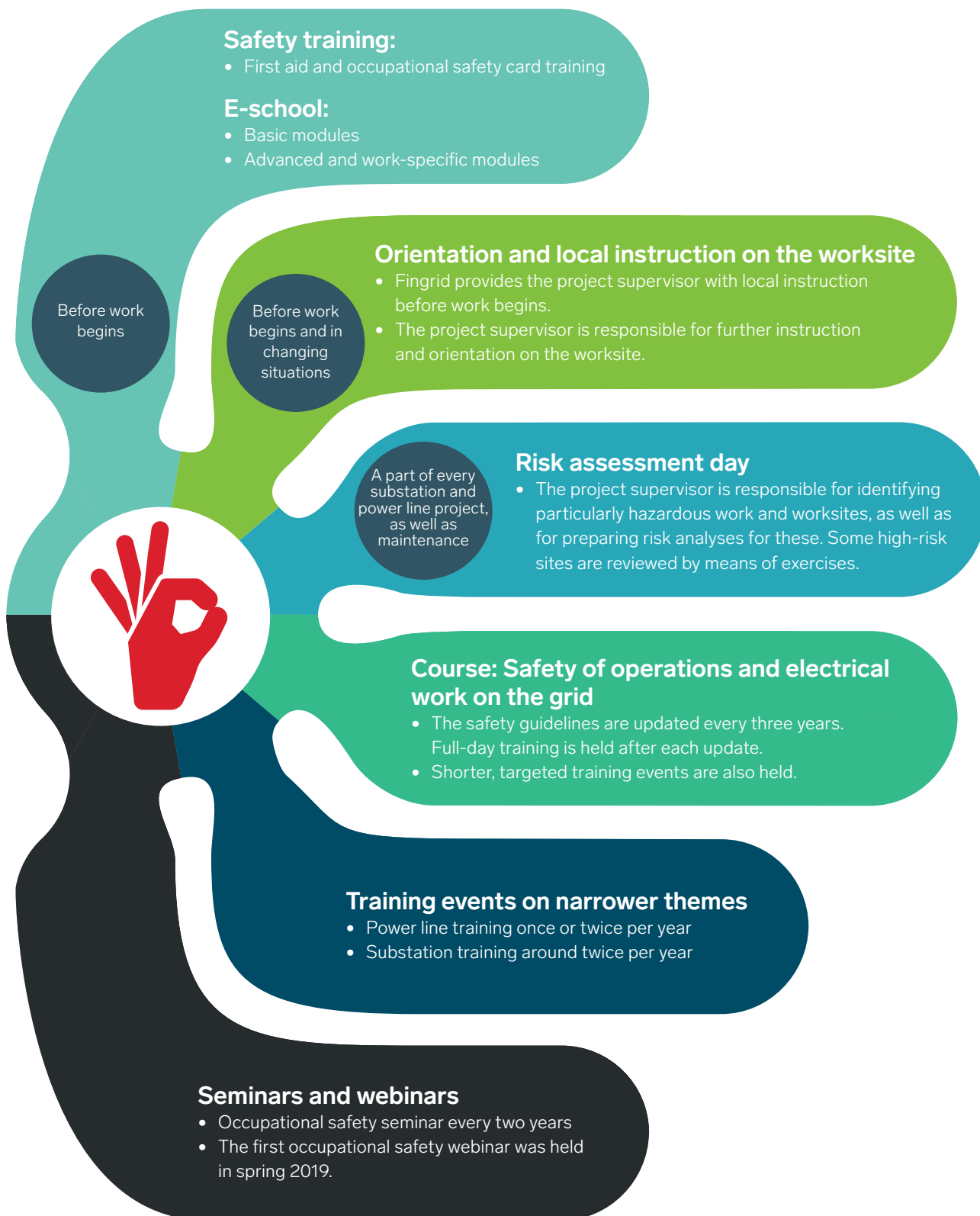
Fingrid has made substantial effort in its work-site supervision in recent years, and a strict approach has been taken to tackling occupational safety issues. It has also been necessary to issue admonitions and sanctions for some more grievous occupational safety shortcomings. In the main, these have

been due to a lack of normal personal protective equipment and acting in contravention of guidelines. The sanctions have also given rise to negative reactions on work sites and the perception that we are intervening in the wrong issues. We do not enjoy issuing admonitions and sanctions for such basic shortcomings, but if these matters are not in good order, how can we be sure that everything else is OK? At Fingrid, we would prefer to focus on assessing the risks of the most challenging work phases and improving occupational safety during these phases.

In 2019, our occupational safety theme is “Creating a safety culture together”. This sums up the reality of the matter: occupational safety can only be improved through good cooperation among everyone involved. So let’s look after each other, ensure there is a good team spirit on work sites, take the right approach and attitude to getting things done, make sure the basics are in order and focus together on planning challenging work phases, assessing risks and ensuring safety. Wishing you a safe and fruitful autumn,

Sami Mäki

The author is the Manager of Fingrid’s Grid Management Unit. His responsibilities include promoting occupational safe.



Aiming for zero accidents through training and orientation

Fingrid is investing in occupational safety by arranging several different types of orientation, training and occupational safety promotion events for service providers. Some of these are included in the contractual terms and conditions concerning safety.

When service providers enter into contracts with Fingrid, the terms and conditions include mandatory safety training and orientation. According to **Karri Koskinen**, Fingrid's Occupational Safety Expert, the purpose of the requirements is summarised by the Zero Accident target.

"We endeavour to equip everyone with the capabilities to ensure safety. We require our service providers to do the same."

FIRST AID AND OCCUPATIONAL SAFETY CARD COURSE AND E-SCHOOL: COMPULSORY FOR ALL

First aid and occupational safety card courses are mandatory for everyone working on Fingrid's sites. The personnel must also complete at least the basic modules on Fingrid's E-school before they can begin working.

"More advanced modules may be completed gradually, in line with the project supervisor's plans as the project progresses," Koskinen says.

The E-school also includes modules for specific types of work, which employees must complete before they begin such work.

SPECIFIC TRAINING FOR OPERATIONAL AND ELECTRICAL WORK

Employees operating on Fingrid's high-voltage equipment must complete a course entitled "Operating and electrical work safety on the main grid".

"The course reviews how to work safely at Fingrid's substations and on power lines. Other parties have also chosen to complete this training," says **Pasi Lehtonen**, Fingrid's Safety Manager,

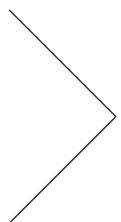
The safety guidelines, which dictate the content of the training, are updated every three years. Wide-ranging, work-day-long training events are held after every update.

"We also arrange shorter targeted training events. The topics included in the guidelines are also reviewed during risk assessment days."

RISK ASSESSMENT DAY RAISES RISK AWARENESS ON CONSTRUCTION SITES

Fingrid strives to arrange risk assessment days as a part of every substation and power line project. In 2018, risk assessment days were arranged for every area of maintenance work, both on powerlines and in substations.

First aid and occupational safety card courses are mandatory for everyone working on Fingrid's sites.



“The project supervisor is responsible for assessing the risks of work and sites that are identified as hazardous. The risk assessment day supports this work.”

Some high-risk sites are reviewed as an exercise. The day also involves discussing general occupational safety matters, such as rules, accidents that have occurred, and near-misses.

“The events are attended by the employees of the project supervisor and subcontractor, who are reminded of the presence of risk and of the occupational safety rules,” Koskinen says.

CONSTRUCTION SITE ORIENTATION AND LOCAL GUIDANCE ARE PREREQUISITES FOR SAFETY

On Fingrid’s investment projects, the project supervisor is responsible for providing employee orientation on the rules and hazards on the construction site, as well as for advising on how these hazards can be avoided. Fingrid is tasked with providing the project supervisor with local guidance before work begins and when changes occur on the work site, such as changes in the operational situation. The project supervisor shares local guidance with people working on the site.

On Fingrid’s investment projects, the project supervisor is responsible for providing employee orientation on the rules and hazards on the construction site

“In the areas managed by Fingrid, such as substations where no construction work is done, Fingrid is responsible for orientation,” Koskinen says.

Less intensive occupational safety events may also be arranged on construction sites in the form of occupational safety briefings. These may include presentations by Fingrid’s experts on occupational safety matters as a part of the project’s kick-off meeting.

POWER LINE AND SUBSTATION TRAINING SUPPORT SAFE CONSTRUCTION

In addition to the forms of training required by the contractual terms and conditions, Fingrid arranges occupational safety training with a more limited focus for service providers.

Power line training comprises a series of training events intended for people working on Fingrid’s power lines.

“The events are held once or twice a year, and they review the basics of power line construction and updated information,” says **Hannes Maasalo**, Fingrid’s Power Line Expert.

“We also arrange individual training events. Last autumn, we held a safety training event for Fingrid employees working at heights. Next autumn, we will provide this training to our service providers,” Maasalo says.

Substation training is also held regularly. Training days are arranged twice a year with varying themes, including high-voltage equipment and high-quality substation construction.

“The training events cover technical requirements, as well as safe, high-quality installation and operating models. We also review the contractual terms and conditions if they have been amended,” says **Janne Eskelinen**, Project Manager.

EXCHANGING INFORMATION AT SEMINARS AND WEBINARS

Occupational safety matters are also discussed at Fingrid’s occupational safety seminar, which is held every two years. The seminar is attended by project and construction site managers, as well as occupational safety experts and managers.

At the beginning of the year, Fingrid trialled a webinar as a new communication channel for occupational safety.

“The 90-minute webinar reviewed the state of occupational safety last year and the targets for 2019. We received encouraging feedback, so we plan to hold more webinars – perhaps also for training purposes.” ■



During the practical training section of the power line technician's training course, students carried out power line construction and maintenance work.

TEXT | PÄIVI LEINONEN

PHOTOS | JUUSO MÄNNIKKÖ

Training to become a power line technician

The recruitment training for power line technicians, organised by Sitema Oy and its partners, is the first of its kind. New employees have traditionally been provided with orientation within the company. Now, people attending foundation training are finding employment in various different companies, where the orientation continues.

Sitema's CEO, **Juuso Männikkö**, was involved in designing the training courses provided in cooperation with the TE Services and the Centre for Economic Development, Transport and the Environment. Corporate partners include Eltel Networks, Empower PN and Destia. Once students have completed the training, they are employed by one of these companies.

Sixteen people were accepted onto the training course, and many of them had prior experience in construction or electrical engineering. For a small professional circle, this provides substantial additional workforce.

"There are relatively few power line technicians in Finland. Skilled new workers are required to replace the people who retire."

The first four weeks of the three-month training were spent on theory lessons that introduced the students to a diverse range of construction phases on power line projects and maintenance tasks. The theory section also included completing the safety training required in the sector. After the theory lessons, the students spent two months acquiring practical experience of technical tasks on partners' work sites.



Taneli Juutinen took the power line technician's training course on Eltel's worksite on the power line between Hikiä and Kapuli. Juutinen has prior experience working on construction sites, and he takes occupational safety regulations seriously.

EXCELLENT EXPERIENCES OF COOPERATION ON TRAINING

Keijo Välimaa, Fingrid's Construction Manager, confirms that there will be a need for expertise in the power line sector in the future.

"The transmission network will undergo a lot of construction and maintenance in the 2020s. For example, the construction of 300 kilometres of the Forest Line will begin next autumn."

Fingrid welcomed Sitema's initiative to arrange training, as there has been a shortage of Finnish expertise in the power line sector for a few years now.

"There is a pressing need for professionals with the capability to work in high places. No educational institution has offered training that takes students all the way to practical work – orientation has usually taken place alongside working duties," adds Välimaa.

Fingrid arranged an occupational safety day for the training to review construction site safety from Fingrid's perspective. During the course, the students also went through Fingrid's E-school.

Männikkö and Välimaa consider the first training course for power line technicians a success.

"The training exceeded our expectations. Only one student dropped out – for personal reasons – and all of the students who finished the course found employment with companies as soon as the training was over. We received good feedback from the students and the partners, as well as some excellent proposals for development. We have already planned the next training event for the autumn," says Männikkö.

NO COMPROMISING ON OCCUPATIONAL SAFETY

Rauno Järvenpää familiarised himself with work on Destia's construction sites, having previously worked as an electrician and a security service salesman.

"You cannot just start working in this sector without thorough training."

Rauno Järvenpää, who attended the power line technician's training course

“This is not the type of sector you can just walk into without thorough training. The theory section provided such a good foundation that there were no major surprises after that. Occupational safety is highlighted because the sector can involve major risks.”

During his practical training period, Järvenpää completed tasks such as installing overhead earth wires. Senior technicians provided guidance on the work site, and safety was reviewed several times.

“For example, when ascending pylons, it is important to ensure that the attachments and other equipment are in good condition, right down to the finest details. We also check our colleagues’ gear,” says Järvenpää.

Taneli Juutinen began practical training in maintenance work on Eltel’s site in Inari. Juutinen had previously worked on construction sites, but the electrical sector was new to him.

“The power carried by these pylons is in a different class from the wiring in a house. The course reviewed the implications of this in comprehensive detail and taught us the right ways of working.”

Recruitment training addresses a genuine need

The recruitment training for power line technicians is the first training course in the industry to simultaneously prepare employees to work at several companies. The industry has suffered from a shortage of Finnish experts in recent years.

The training is arranged by Sitema and Fingrid in collaboration with the TE Services and the Centre for Economic Development, Transport and the Environment. The corporate partners are Eltel Networks, Empower PN and Destia.



Like the other students on the course, Mika Helmivirta, who works at Empower, is satisfied with his choice of industry and training.

Juutinen finds the physical aspect of the work appealing, and he is not afraid of working in high places.

“The course also involved reviewing some serious accidents. We found that they were generally down to a failure to follow safety instructions. The course also reminded us that the use of safety equipment is audited, and there can be substantial fines if safety is found to be inadequate.”

PEOPLE FROM ALL WALKS OF LIFE JOIN THE POWER LINE SECTOR

When students are selected, there are no requirements concerning expertise or prior training. Students share an enthusiasm for physical work. The criteria for acceptance onto the course include good physical fitness, willingness to travel and willingness to work at heights. Students have praised the common theory course, which also helps them get to know their future colleagues.

Mika Helmivirta was given a taste of work on Empower’s sites in Seinäjoki and Lahti. The physicality of the work was the first thing that struck him.

“On the first day, I climbed a pylon 40 metres high. If you plan to climb a dozen of them with all your gear, you need to be in good shape.”

Like the other people on the course, Helmivirta is happy that he decided to retrain.

“Almost everything is new to me. I become even more interested the more I learn.” ■



At Eltel Networks' training centre in Olsztyn, Poland, students practice lowering a person down with the help of a life-sized doll.

TEXT | PÄIVI BRINK

PHOTOS | KARRI KOSKINEN

A realistic training environment

Practice makes perfect

Fingrid's partner, Eltel Networks, has built a training centre for power line workers in Poland. The skills tests required by Fingrid are also conducted there. The target is excellent occupational safety.

Eltel Networks is an international company with approximately 7,200 employees in several European countries. The company does planning, construction and maintenance work for Fingrid in Finland.

Eltel has a specialised training centre for power line workers. Based next to the company's Polish office in the city of Olsztyn, the centre has a few free-standing pylons with electricity lines installed.

"At the training centre, employees can learn about power line work and conduct competence demonstrations. The pylons enable power line workers to practice tasks such as binding conductors, going out onto power lines from pylons, methods for attachment onto the pylon – known as the always

attached method – and moving on the pylon using the always attached method. At the same time, employees receive an orientation on the safety ladder structure, which is a typical feature of new pylons,” says **Marko Elorinne**, Construction Manager at Eltel Networks.

The aim of building the training centre was to create a shared set of safe operating practices for all employees and to ensure occupational safety.

”It is great to meet power line workers during training and to receive feedback on our operating methods.”

Maciej Ostrowski, Operational Excellence Director, Eltel Networks

“The area is used by our employees from every country, but it is also leased out to other contractors in the sector for exercises and competence demonstrations. When our employees climb up pylons to do real work, the electricity must be disconnected and there is no time for practising,” says Elorinne.

FROM TRAINING TO SKILLS TESTS

The training centre was built in 2012 when Eltel Networks expanded onto the UK market, which has specific safety requirements. In all of Europe, there is only one corresponding centre located in England. The training centre is certified by several different authorities. The trainers are experienced power line workers with solid professional competence and a passion for teaching.

“We have developed practical training techniques and expanded the applications of the centre over the years. Practical training begins with how to work at heights of up to 70 metres. New arrivals to the sector are able to practice working methods in accordance with our standards, while we finetune and consolidate the techniques used by more experienced workers. We also provide training on how to fetch tools from the ground up to the top of a pylon using drones,” says

Maciej Ostrowski, Operational Excellence Director at Eltel Networks in Poland.

Skills tests are a test of pylon safety, the ability to climb different types of pylon, the use of the always attached method and lowering an injured person from a pylon. In terms of working methods, the tests include installing additional earthing.

“Under the always attached method, one of the safety hooks is always attached to the pylon, while the other is used

to move forward. Power line workers are far away from inhabited areas when they work, so they must have the ability to lower an injured colleague from a pylon and administer first aid. It must be possible to trust the team,” Ostrowski says.

The annual skills tests required by Fingrid are also conducted at the training centre in Poland.

“Technicians who have completed this training are working on Fingrid’s sites as we speak. Practical training is very useful, particularly for new technicians,” Elorinne says.

DISCUSSION OF THE BEST OPERATING PRACTICES

In addition to harmonising working methods, the training centre also helps to improve methods. Ostrowski states that skills tests also enable employees to give feedback to Eltel Networks in the form of a free discussion among employees in other countries, skills tests assessors and representatives of technology companies in the sector. This also improves the operating methods of the sector as a whole.

“In my opinion, it is great to meet power line workers during training because it enables us to receive feedback on our operating methods and the functionality of these methods. For example, we have just started using new climbing harnesses, and the people using the practical training area are giving us feedback on them. Experienced workers can also learn from each other’s experiences when they chat during practical training and skills tests,” Ostrowski says. ■



The towers enable power line workers to practice various situations in realistic conditions.

Qualification is one of the keys to collaboration

Working in substations and on power lines requires service providers to have special expertise and uncompromising occupational safety management. Fingrid verifies the competences of the personnel of service providers involved in maintenance work through qualification. It is hoped that a national qualification practice will be agreed for the sector.

Maintenance in substations and on power lines is demanding work that puts the skills of service providers' personnel to the test, in terms of both competence and occupational safety. In a demanding work environment, competence and occupational safety go hand in hand. When professionals know what they are doing, the work is done with an assured approach and the right tools, resulting in safe work and a high-quality outcome. If an employee does not have adequate competences, there is a risk of maintenance measures being done wrongly and hidden faults remaining on the site.

The company's ability to discharge maintenance work can be demonstrated by carefully prepared, high-quality work instructions and plans.

Fingrid holds ISO 55001 asset management certification, which requires it to verify the qualifications of service providers and their personnel for the intended duties.

"We began using a qualification procedure for substation maintenance in 2015. This has proven to be a good practice, and we hope it will become more widespread in our sector. We all have an interest in ensuring competence and occupational safety," says **Timo Heiskanen**, Fingrid's Substation Maintenance Manager.

Heiskanen believes that, in the future, qualification could be a procedure similar to the occupational safety, hot work or first aid card, and it could be used to verify the qualifications of service providers' employees.

"We have begun using a qualification procedure and tests for power line maintenance this spring. The qualification for power line inspectors – the inspector licence – has been in use for several years, and it will now be joined by other qualifications entitling people to perform maintenance work," says **Mikko Jalonen**, Manager responsible for the maintenance of Fingrid's power lines.

TWO LEVELS OF COMPETENCE UNDER ASSESSMENT

The competences of service providers are verified at company level and on a personal level. The company's ability to discharge maintenance work can be demonstrated by carefully prepared, high-quality work instructions and plans. Various module tests incorporated in the qualification procedure ensure that every person involved in work has sufficient professional qualifications and an understanding of occupational safety matters when they work in demanding environments.

So far, approximately 200 people have completed the module tests included in Fingrid's qualification procedure. There are 30 different modules for completion, and a total of approximately 500 questions. The modules are valid for three years at a time, generally for the term of one basic maintenance contract. It may be necessary to update the module test if Fingrid sets new requirements for the task or the employee's competence is found to be inadequate.



OCCUPATIONAL SAFETY PLAYS A MAJOR PART IN QUALIFICATION

“The starting point for beginning work is the online occupational safety E-school, which verifies the employee’s basic competences in occupational safety matters. Occupational safety also plays a major part in the module tests included in the qualification procedure, either directly or indirectly,” Heiskanen says.

“Alongside the qualification procedure, employees working on power lines must conduct skills test of safe pylon work, the use of safety equipment, additional earthing for work, helping an injured person down and climbing up wooden poles,” Jalonen adds.

TAMPERE PRACTICAL TRAINING AREA ENABLES MANY TYPES OF ACTIVITY

Fingrid has qualification procedures in use for the maintenance of substations and power lines, as well as for the maintenance of the HVDC power connections going to Sweden and Estonia.

Fingrid has gradually outsourced the arrangement of module tests for qualification to the Tampere Adult Education Centre (TAKK), and it will work increasingly closely with TAKK in the future. A new TAKK learning environment, currently under construction on the Nirva campus in Tampere and due for completion next year, will enable practical exercises to be conducted on substation and power line maintenance in a safe de-energized training environment without live electricity.

“The aim of TAKK’s learning environment project is to create an open training platform for network owners and contractors in the network sector which will also benefit students of vocational institutions. The learning environment will increase the attractiveness of the sector among students when it becomes possible to learn about the maintenance practices for substations and power lines in a training environment that feels genuine,” Heiskanen says.

“The Tampere training area will also offer the opportunity to conduct the competence demonstrations required for working on power lines, as well as to practise the work itself,” Jalonen says. ■

TAKK’s learning environment adds value to training

Tampere Adult Education Centre’s new learning environment, located four kilometres from the centre of Tampere, will offer a wide range of training opportunities for substation and power line maintenance tasks. The area will be taken into use in 2020.

TAKK’s learning environment will enable the following tasks to be practised:

- Local switching
- Earthing for work
- Maintenance of switching devices
- Maintenance of instrument transformers
- Maintenance of power transformers
- Substation inspections
- Maintenance of power lines
- Maintenance of protective relays
- Working at height on towers
- Saving an injured person and practising helping them down in a substation and on powerlines
- Power line skills tests

The training area may also be used by other parties, such as the emergency services, when they practise extinguishing fires near substations or power lines.

TEXT | PÄIVI BRINK
PHOTO | JOHANNES WIEHN

A big company provides systematic training



At Omexom, thorough orientation guides employees to constantly take occupational safety into consideration in everyday work. In addition to safety briefings and reviews, safety is seamlessly incorporated into every working duty.

“Our employees come from different educational backgrounds and take on a wide variety of roles, but nobody is fully ready when they are fresh out of school. Organisations in the sector have a major role to play in developing competence and occupational safety. Orientation includes learning about the company and the job, and also about occupational safety. Everyone has a responsibility to look after occupational safety, and this cannot be outsourced or separated out from other work,” says **Veera Höglund**, Omexom’s Country Manager for Finland.

VINCI Energies, a major international company, acquired Infratek about a year ago and, since January, Infratek has been operating under the Omexom brand. The company’s legal name remains Infratek Finland Oy. Omexom supplies construction and maintenance work for Fingrid.

“As part of a large group of companies, we are able to compare our business and occupational safety expertise internationally. We can develop our skills by listening to others, and we can also share our competences,” Höglund states.

The largest employee group in the company is electricians, who carry out fault repairing and maintenance works all over Finland.

“When we take on a new employee, we go through the occupational safety matters and talk about what they mean to us. Statutory responsibility for occupational safety lies with the employer, but everyone has a responsibility on the work site. We instruct our employees to be vigilant



” Everyone needs to be able to trust their team members.

Jani Gratschev, Business Unit Manager, for Omexom's substation services

and follow the rules,” says **Jani Gratschev**, Business Unit Manager for Omexom's substation services.

SLIPS AND TRIPS ARE TYPICAL WORK SITE ACCIDENTS

It is easy to presume that working with electricity would cause the most hazards in an electrician's work, but high-voltage accidents are thankfully extremely rare.

“There is no need to fear electricity, but it must be respected. The operating instructions and rules are good and strict, and they must be followed closely. Our employees are very careful in this regard. I have worked in this sector for a long time and, fortunately, high-voltage accidents occur very rarely in Finland. On our work sites over the years, absences due to illness have been caused by small and irritating problems such as slips and trips,” says Gratschev.

Hazardous incidents have arisen in a wide range of circumstances. There have been cases where old control cables that are no longer in use have, for some reason, remained live. Sometimes, hazards arise due to inadequate communication between contractors. In addition, the traffic and changing weather conditions associated with off-site work have been challenging for our employees.

“Everyone needs to be able to trust their team members. Work is often done in the middle of a forest and, in the event of an accident, help is primarily provided by team members. Every employee must follow the occupational safety instructions and have the necessary first aid skills. If someone cannot adhere to the rules, the cooperation cannot continue. Occupational safety is an aspect of professionalism,” Gratschev notes.

A vigilant safety culture and good management go hand in hand throughout the organisation. Compulsory training courses for unit managers include the group-level Safety Excellence training, which analyses occupational safety from the perspective of management and the company culture.

“It is very important for supervisors to set a good example. Their approach to safety matters has a significant impact on the way that safety attitudes are integrated into the work culture at every level of the organisation,” Höglund says.

SAFETY REFLECTS THE QUALITY OF THE SERVICE

“Our target is to have no accidents. If our work were technically tip-top but our employees were injuring themselves to do it, our product would not be OK. We need occupational health and safety experts to share good practices, but the main thing is to incorporate safety into the work itself,” Höglund emphasises.

Accidents are rare, and they are discussed openly.

“In our group of companies, information is collected at regular intervals on the safety status of every unit. The information is studied, lessons are learnt and it is communicated to employees. For example, in my unit, we have now gone 516 days without an accident requiring someone to take sick leave. In three years, there has been one accident. Luckily, our employees are motivated to give their observations on any hazards and challenge supervisors by asking questions. Our company has a low threshold for giving feedback, and we do not seek to punish anyone who is involved in an accident,” Gratschev says.

Höglund says that safety is a shared concern among organisations in the sector, and open discussion is required.

“Safety matters should not be corporate secrets or competitive factors – we should be able to develop the sector together,” Höglund states. ■



”Safety matters should not be corporate secrets or competitive factors.

Veera Höglund, Omexom's Country Manager for Finland

Get to know Fingrid's e-school!

The aims of the e-school are to improve the occupational safety awareness of people working on Fingrid's sites and to prevent accidents. The e-school is based on the main hazards on Fingrid's worksites, contractual terms and conditions concerning safety, and legislation.



The e-school is on Fingrid's occupational safety site:

www.fingrid.fi/verkkokoulu

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