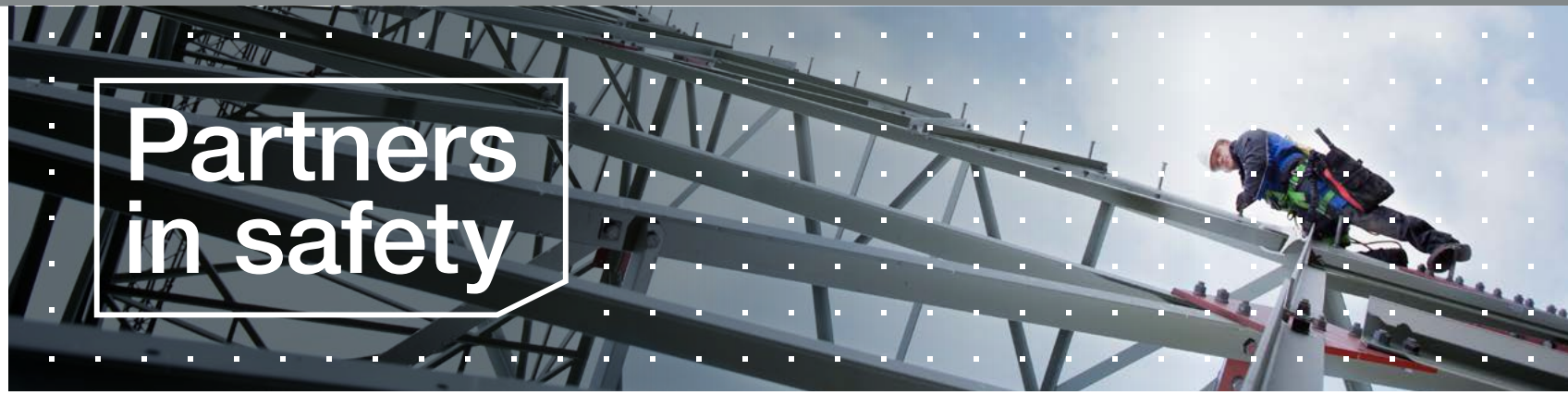


Partners in safety

Foreword

On July 1st - the new TenneT organisation went live. Following an intensive period of preparation, TenneT is now ready for the future, ready to play her role in the energy transition. The world is changing and TenneT is changing with it. That's why we also looked at our Purpose (what is our objective?), Promise (what promise do we make?) and Principles (which values and behaviours are appropriate?). I wish to mention them briefly here.
Our Purpose is "to connect everyone to a brighter energy future".
Our Promise is "Lighting the way ahead together" and our Principles are "connection, courage, ownership". For more information, visit the TenneT website.

In our new organisation, Safety remains our top priority. It is not a goal in itself, but a precondition for meeting our challenges. Once again, this edition of Newsletter contains several interesting safety themes. Happy reading and stay connected!

Connection Courage Ownership

Oscar van Aagten

Latest news

SCL follow-up audit TenneT

In September 2018, TenneT acquired the SCL Certificate Step 3. After a successful follow-up audit last year, the second follow-up audit this year took place at the end of September and beginning of October. We will let you know how this audit went in the next newsletter.

New TenneT OHS Policy

The new TenneT organisation also calls for a renewed Health and Safety (OHS) Policy. On Monday 31 August, the Executive Board of TenneT signed the new OHS Policy. The OHS Policy explains and gives direction to TenneT's employees and other stakeholders about the way in which TenneT carries out its activities and what we can expect from our employees in order to achieve the safety ambition of Zero Harm.
The OHS Policy covers the main themes within the current OHS field of work. There is a strong focus on the "human" aspects of OHS, such as psychological safety, the learning organisation and safety culture. But there is also attention for the "organisational" elements of OHS, such as Risk Management, safe operating practices throughout the chain and contractor management.
Working safely is the responsibility of every employee. It is important to discuss this with each other and to continue to do so in order to create a working environment in which care and respect for each other remain pivotal. Together, we can make TenneT's ambition become reality so that everyone can return home safe and sound at the end of each working day.
Click here for the OHS policy.


Act safe, stay safe!

augustus 2020

TenneT-beleid arbeidsgezondheid en -veiligheid

Onze visie is dat iedereen gezond en veilig thuiskomt, elke dag weer

Onze kantoren en onshore- en offshore-werkomgevingen stellen onze medewerkers bloot aan gevaren die een risico inhouden voor hun veiligheid en lichamelijke en psychische gezondheid. Wij willen dat iedereen die voor ons werkt gezond en veilig thuiskomt, elke dag weer. Ook streven we ernaar de risico's van onze activiteiten voor de externe omgeving tot een minimum te beperken.

Psychologische veiligheid
- We moedigen iedere medewerker aan de veiligheidsaspecten van hun werk aan de orde te stellen.
- We stimuleren een omgeving waarin iedereen zich vrij kan uitspreken, zorgen kan uiten en vragen kan stellen over veiligheid en gezondheid, zonder bespottelijk of belachelijk te worden gemaakt, te worden gestraft of op enige andere manier negatieve gevolgen te ondervinden.
- We luisteren naar onze medewerkers en leveranciers, ook als dit betekent dat de werkzaamheden tijdelijk moeten worden stilgelegd om een veilige en gezonde oplossing te vinden.
- Iedereen heeft het recht het werk stil te leggen als men het gevoel heeft dat er een direct en aanwezig risico voor veiligheid en gezondheid bestaat.

Risicomanagement
- Wij passen een integrale, risicogebaseerde benadering toe op ons arbomanagementproces om continue verbetering te realiseren.
- Bij risicobeheersing werken we volgens het ALARP-principe. Dat houdt in dat we het risico terugbrengen naar een "zo laag als redelijkerwijs mogelijk"-niveau.
- We streven ernaar stoffen en processen die een mogelijk gevaar voor de gezondheid zijn uit te sluiten.

Veilige bedrijfsvoering in de keten
- We streven ernaar onze gebouwen en assets gedurende alle stadia van de levenscyclus (van ontwerp, bouw, exploitatie, tot onderhoud, vernieuwing en ontmanteling) te gebruiken op een manier die de veiligheid en gezondheid van onze medewerkers en leveranciers garandeert.
- Al onze maatregelen volgen de arbeidshygiënische strategie, waarbij wegnemen van gevaar de voorkeur heeft en gebruik van persoonlijke beschermingsmiddelen de laatste optie is.
- Wij houden ons aan de geldende wet- en regelgeving.

Lerende organisatie
- Wij leren van incidenten, maar ook van andere zaken als projectevaluaties, 'early warning' signalen, best practices, trendanalyses en suggesties en ideeën van onze medewerkers, leveranciers en andere stakeholders.
- De opgedane kennis delen we binnen onze organisatie en met onze leveranciers en de sector.

Veiligheidscultuur
- Veilig werken is de verantwoordelijkheid van iedere medewerker.
- Om veiligheidsbewustzijn te creëren voor de taken en verantwoordelijkheden en onze medewerkers in staat te stellen deze te vertalen naar specifiek gedrag en handelingen, werken we voortdurend aan de verbetering van onze veiligheidscultuur, bouwen we aan safety leadership en stimuleren we safety ownership.
- Het management toont leiderschap en fungeert als rolmodel.
- We werken op een gestructureerde manier samen om een veilige en gezonde werkomgeving te creëren.

Contractor Management
- We werken nauw samen met onze leveranciers om een veilige toeleveringsketen te garanderen.
- We werken voortdurend samen met onze leveranciers en streven naar een veiligheidscultuur in onze toeleveringsketen naar een hoger niveau.
- Alle betrokken partijen in de keten zijn voor ons even belangrijk, waarbij iedere partij zijn eigen juridische taken en verantwoordelijkheden ten aanzien van veiligheid en gezondheid heeft.
- We zorgen dat alle partijen weten wat wij van hen verwachten om hun activiteiten veilig te kunnen uitvoeren.

TenneT Executive Board

Manon van Beek, CEO | Otto Jager, CFO | Tim Meyerjürgens, COO | Ben Voorhorst, COO

Agreement DGUV/BG and TenneT on standards

Every company in Germany is legally affiliated with a Berufsgenossenschaft (BG). The BGs are centrally coordinated by the DGUV.
The DGUV/BG have an important role to play in the occupational safety of German companies. The various BGs have Arbeits Management Systeem (AMS) standards, for which certification can be obtained (not mandatory). Several contractors in Germany have asked TenneT to explain what the value of an AMS certificate is in addition to an SCL certificate.

On a hot afternoon in August, in the middle of a heatwave and the coronavirus pandemic, TenneT and DGUV/BG signed a document electronically, endorsing the harmonisation of the SCL and AMS standards. Both parties emphasise that the standards contribute positively to the creation of a safe environment and the ambition to strive for Zero Harm.
Both standards have similar focus areas and overlap each other. However, the way in which interviews are conducted and observations are made during an audit differ.
TenneT and DGUV/BG have therefore agreed that TenneT will accept an SCL Light in the first year instead of an SCL for companies that are AMS certified and are asked by TenneT or by a main contractor of TenneT to achieve SCL Step 3. In subsequent years, the contractor must carry out an annual SCL Light audit.

Transparent

This limited audit scope only applies to companies with a maximum of 100 employees and relates solely to the requirements of SCL Step 2 and 3. The underlying reason for this is that the difference in the intensity of interviews at a company with > 100 employees increases dramatically.
The regulation will be evaluated after a while. Not only are we pleased with the agreement on the harmonisation of the standards, but also with the good cooperation. We have held transparent discussions in an open setting, during which both parties spoke of their willingness to familiarise themselves with the other standard and create a common understanding. We have agreed to continue our cooperation and to join forces to create a higher level of safety awareness in our areas for the future.

Click here to read the agreement.

DGUV

TenneT

Agreement TenneT - DGUV
alignment SCL - BG AMS certification

TenneT, DGUV and the Berufsgenossenschaften share a strong focus on safety. They all want people to return safely from their work every day.

TenneT uses certification on the Safety Culture Ladder (SCL) as instrument for creating a safe working environment. DGUV and the different Berufsgenossenschaften also strive for improved working conditions and a better health and safety performance in order to reduce incidents and occupational strains. To facilitate this the DGUV/BG developed several initiatives such as the certification to AMS standards, the "KommmitMensch" campaign and a culture check. TenneT contractors, already AMS certified, have asked for an alignment of accepting both standards by TenneT, in order not to end up with double and/or overlapping audits, certifications and costs.

Alignment

DGUV/BG and TenneT invited NEN (controlling the SCL), two certification agencies, two contractor representatives from the Building and Electrical Installation sector and an advisory company to extensively discuss the characteristics of both standards in order to come to an alignment. Both standards are professional and will contribute to less incidents and a better safety performance. The standards are partly overlapping, but SCL is complementary to AMS standards. During European tender processes, TenneT requires an SCL certification from the contractors. All (potential) contractors should be treated equally, according to TenneT standards and applicable tender law.

AMS Audits

AMS audits (once per 3 year) consist of a combination of a check on the management system (process and document reviews) and interviews & observations on site. As defined by law, the BG may impose binding application of certain measures by the company as part of their governmental monitoring/surveillance role. For BG members, also medical treatment and unplanned site visits and incident investigations, conducted by the BG, are supporting their health and safety awareness. Campaigns and cultural checks are optional.

SCL audits

The SCL standard is fully focussed on safety attitude & behaviour by executing interviews and observations, both in the office and on site. SCL audits will be executed every year and a self-assessment on safety culture is part of the audit preparation. The amount of interviews & observations and time consumption is substantially higher in relation to AMS standards, especially for larger companies. The SCL themes are covered for 80-90% by AMS.

Therefore, we mutually agree that:

- If SCL is required by TenneT, and the company has a valid AMS certificate, the audit scope for the SCL certification changes according to the following table:

Run time	Year 1	Year 2	Year 3	Year 3
SCL (without AMS)	SCL	SCL Light	SCL Light	SCL
SCL (with AMS)	SCL Light	SCL Light	SCL Light	SCL Light

- The reduced audit scope will be covered by the overlap between AMS and SCL.
- The reduced audit scope is only valid for companies with maximum 100 employees.
- The reduced audit scope is only valid for SCL levels 2 and 3.

More information about the SCL and AMS standards can be found on the websites of NEN www.safetyculturladder.org and DGUV www.dguv.de/fb-org/sachgebiete/integration.

Act safe, stay safe!

On behalf of DGUV
Uwe Marx
Head of DGUV Subcommittee Systematic integration of OSH in companies

On behalf of DGUV
Dr. Stefan Dreller
Head of DGUV Expert Committee OHS organization

On behalf of TenneT TSO B.V.
Gineke van Dijk
Associate Director Safety & Security

Rising you

In the Newsletter Q4 2019 we announced that TenneT together with Rising You would organise a Meet & Greet event in the spring of 2020 for our contractors to get acquainted and to explore possibilities for cooperation in the near future. Unfortunately, because of Corona, this could not go ahead at the time. On 9 October, the event took place in digital form. We will report on the outcome of this event in the next newsletter.

Corona measures when visiting TenneT locations

TenneT applies the corona measures listed below for visitors to TenneT locations. We strongly advise you to contact your contact person at TenneT just before your planned visit to a TenneT location to check whether any additional measures apply.

General measures

- Persons who have had close contact with housemates infected with the coronavirus are not welcome at TenneT sites for 10 days from the day of recovery of the person concerned;
- Persons with flu-like symptoms (cold, sore throat, light cough, fever or tightness) are welcome at TenneT sites after 2 days without complaints.
- Persons who have visited a high-risk area during the last 10 days are not welcome at TenneT sites. For situations in which a person has to come to a TenneT location per se, this person can be tested after returning from a risk area. If the test is negative, access to a TenneT site is possible in consultation with TenneT.
- All visitors are registered in advance and informed of TenneT's current corona policy.
- All visitors are registered at each location. This information is removed after two weeks.

Energy Safety Festival

On January 28 2021, the Energy Safety Festival will take place. The aim is to have a frank conversation about safety, share knowledge and learn from each other's successes and mistakes.
The Energy Safety Festival offers a very varied and interactive programme, more about which in the next newsletter.
Click here for more information and registration.

Working together proactively on safety

TenneT is working towards the next step on the Safety Culture Ladder (SCL). Cluster North-West 30 (NW) within Large Projects Netherlands is the first to start the journey towards step 4. The aim is to raise the safety awareness of all employees in this cluster to a higher level with the ultimate goal of obtaining SCL-4 certification. Subsequently, Large Projects Netherlands as a whole will make the step towards obtaining step 4. Translated to the TenneT environment, step 4 implies the following:

- TenneT will do everything in its power to motivate its own employees and the employees of contractors and sub-contractors to work safely;
- TenneT actively promotes a high level of safety awareness, also among its contractors and sub-contractors, on an ongoing basis;
- Safety is an integral part of all project decisions;
- TenneT monitors and evaluates the effectiveness of the existing H&S instruments and makes the necessary adaptations.

Summarising: In step 4, TenneT acts decisively to promote safety awareness and continually improve the H&S instruments: safety is embedded within our genes.

Zero measurement

A zero measurement and self-assessment were carried out within the NW cluster earlier this year to establish where we now stand. For this measurement, various interviews were held with colleagues and contractors, a visit was made to the construction site and a self-assessment was carried out. The results of the zero measurement have been translated into an Action Plan, divided into four themes:

- Psychosocial safety
- KPIs, incentives, rewards
- Training, coaching, evaluation
- Communication and campaigns

A working group has been set up for each theme to address and develop these actions.

Together with contractors

Naturally, working safely during a project also means that the contractors are involved in the entire process. We can only work safely through open collaboration. For instance, TenneT organised a “welcome back session” at the end of the summer holidays for all contractors working on the North West 380 kV project. The aim was to get everyone sharp again and to thank them for their efforts over the past period.
In addition, the NW project’s safety expert has spoken to all contractors working for the North West 380 kV Cluster to find out how they feel about using the elements of the SCL as basis for the their improvement plans. Positive reactions were received and actions are already being taken. Senior management, for example, has visited the construction site to discuss safety with the employees.

In the following newsletters we will keep you informed about the step 4 certification progress of the NW project.

SCL update

The number of certified TenneT contractors now stands at almost 180. NEN has allowed follow-up audits to be carried out remotely during the coronavirus outbreak. The initial audits may only be carried out physically on site.

But despite these restrictions, the audits and follow-up audits are once again making good progress. Certification bodies (CBs) are busy catching up.
A further 150 or so contractors have committed themselves, contractually or otherwise, to implementing the SCL.
Recently, the first contractor in France has also obtained certification. In a previous Newsletter we informed you that SCL has also been introduced in Asia. In the meantime, the first contractor in Korea has been certified. Other contractors in Asia have now also started implementing SCL.

14 TenneT contractors are now Step 4 certified. These contractors are active in the engineering, construction and installation of lines & stations and in offshore work. While the development towards Step 4 is encouraged and appreciated by TenneT, it is not (yet) specified in TenneT's tenders and purcase orders.
Besides the introduction in a large part of Europe and Asia, we have also noticed that, in all categories in which TenneT tenders work, contractors have started implementing SCL or are SCL certified.

Developments in NEN

As a result of strong international growth, NEN has started refining the requirements for auditors abroad. Now that the manual, the requirements and the auditor training programmes are available in four languages, emphasis will be placed on native speaking auditors. Some CBs support this development by, on their own initiative, training and certifying local native speaking auditors to carry out SCL audits. For example, Kiwa in Norway and Lloyds in Korea have trained auditors to ensure audit quality. I
t is anticipated that NEN will introduce further requirements for auditors.
There is also an option to work with a translator, obviously following the approval of NEN. Audits using a translator are part of a pilot scheme so that, during an evaluation, NEN can determine whether the quality of the SCL audit is maintained.
The renewed certificate register on the NEN website is now operational. There is one integrated register for all SCL products, the search functions have been greatly improved and the reference to the validity of the certificates and statements has undergone improvements.

Various self-assessments

It is clear from recent communication with contractors that there is some confusion concerning the use of the self-assessment questionnaires.
NEN has now made two self-assessment questionnaires available on its website: SAQ Compact and SAQ Extended. Both self-assessment questionnaires are available in the NEN web tool. The differences and applications are explained below.

SAQ Compact

- SAQ Compact is a compact self-assessment questionnaire, which should be used if you want an Approved Self-Assessment (ASA).
- An ASA is an introduction to measuring the safety culture through self-assessment and a GAP analysis in order to subsequently draw up and implement an improvement plan.
- The audit scope is limited (1 auditor, 1 day) and is mainly to check that the correct procedure has been used. During an ASA, the level of the safety culture is not inventoried/checked by a Certification Body (CB) in any way whatsoever.

- An Approved Self-Assessment is an independent confirmation that reasonably establishes that the ASA has been carried out in accordance with the agreements. An ASA statement does not indicate a step.
- TenneT does not (yet) apply the ASA.
- Furthermore, SAQ Compact is a good way to encourage subcontractors to pursue an improved safety culture. Very little effort is required to become familiar with the method.

SAQ Extended

- SAQ Extended is NEN's standard self-assessment questionnaire with all the requirements of the SCL. This self-assessment questionnaire allows you to choose the step and an indication is given per step.
- SAQ Extended is mandatory for SCL Light certification.
- SCL or SCL Original certification requires a self-assessment to be carried out and recommends SAQ Extended. But a similar self-assessment questionnaire may also be used.
- The advantage of SAQ Extended is that, in addition to the original requirements, it also offers access to the functionality of the web tool (survey function, complete reporting).

SCL 2.0 under development

NEN evaluates its standards every five years on average. NEN began managing the SCL in 2016 and, partly based on feedback from the market, decided to initiate a revision of the SC standard. A working group was set up for this purpose.

Process Plan SCL 2.0

As a first step, NEN presented a process plan, which included the project approach. This process plan describes the steps to be taken for determining the scope of the revision, including GO/NO-GO moments and the steps for implementing any necessary revision. This plan was presented to the Committee of Experts and subsequently to the Board of Stakeholders.
The Process Plan consists of the following phases:

- Phase 1: Approval of the Process Plan
- Phase 2: Preliminary study
- Phase 3: Determining vision and principles for the revision
- Phase 4: Developing the standard and interpretation for assessment
- Phase 5: Validation
- Phase 6: Approval of the Committee of Experts and Board of Stakeholders
- Phase 7: Finalisation (publication, translations, etc.)

The working group processes the various proposals, which are then assessed by the Committee of Experts, the German Arbeitsgruppe, the Board of Stakeholders and other stakeholders. The proposal processing, assessments, GO/NO-GO points and other activities are incorporated into a tight schedule. Ultimately, the aim is to publish the revised version of the SCL, the SCL 2.0, in the 2nd half of 2021.
This is a considerable turnaround time. However, the amount of work carried out by "volunteers" from the SCL community and the proposal processing and subsequent assessments, which are required to publish a revised standard, demand a careful approach.

One of the objectives is to bring the classification of the standard and the description of the requirements more in line with measuring safety culture. This step also increases the user-friendliness of the self-assessment.
The revised standard not only focuses on occupational safety but also on integral safety. The starting point, however, is that the key points and recognisability of the standard are preserved. The working group has defined these key points in phase 3 and they have now been validated by the Committee of Experts and the Board of Stakeholders.
The revision of the standard is now in phase 3.

Statements

Is your company certified and would you like to share your experiences? We would love to hear about it with an example from real life. Let's inspire each other and so expand each other's perceptions! Send your text to safety@tennet.eu.

Aibel Norway content with SCL certification

The Norwegian energy service company Aibel has gradually implemented the Safety Culture Ladder. Now Aibel is ready for SCL certification, as the first company in Norway.

"Health, safety and environment is always the number one priority within Aibel. Even though we have good routines in place, working with safety is a continuous process. The implementation of SCL has already led to further improvement of our HSE work," says President and CEO of Aibel, Mads Andersen.

Targeted work

Aibel started using SCL in 2017 and tested the protocol for self-assessment in 2018. "The first thing we did after a self-assessment was to implement the identified improvement points in our 2019 HSE action plan. Since then, the entire HSE team and our projects have made a tremendous effort to ensure that we are now ready for the certification," explains Corporate HSSE Manager, Kari Svendsbø.

Positive introduction

The SCL and safety culture are now fixed topics in all relevant meetings at Aibel's yard in Haugesund.
"It has been positive to work with a system

also focusing on the good things we do. This has been very engaging for the organization and a valuable input to the improvement work," says project manager for the SCL implementation, Marianne Eliassen, who sees the SCL system's method of identifying areas of improvement as a major advantage. However, being the first company to be certified in Norway has not been without challenges.
"We have spent some resources translating material and finding a qualified auditor. In addition, we have worked with making the organisation accustomed to a slightly different terminology to ensure a common understanding of the new concepts," Eliassen explains.

Expecting gains

Aibel hopes that SCL can contribute to greater awareness of safety and safe behaviour and thus reduce the number of unsafe situations and incidents.

"At the same time, we believe that the certification will help strengthening the HSE culture, which is also an important parameter for several of our customers. Therefore, we will use the certification actively in future tender work for new contracts," Svendsbø concludes.

About Aibel

Aibel is a leading service company within oil, gas and offshore wind providing solutions within engineering, construction, modifications and maintenance. Aibel has 4,000 skilled employees in Norway, Singapore and Thailand. Aibel is together with Keppel FELS responsible for the DolWin 5 project for TenneT. This includes delivery of an offshore HVDC platform and an onshore converter station.

NKT

Improving an organisation's safety culture clearly cannot happen overnight. It is the result of a sometimes painstakingly slow change in behaviors and actions. Our journey towards SCL Level 3 certification helped us to facilitate and streamline that process. As an example, it helped us identify and address communicational gaps in the way we internally discuss HSE issues and define HSE targets.

The SCL audit is distinctively different from the ISO audits we are all very familiar with. It is one thing to review processes and documents, but quite another to focus on on-site visits and speak with the people doing the actual work on a daily basis. The audit preparation and the audit itself have been a positive experience which will motivate us to persistently continue to improve our safety culture.

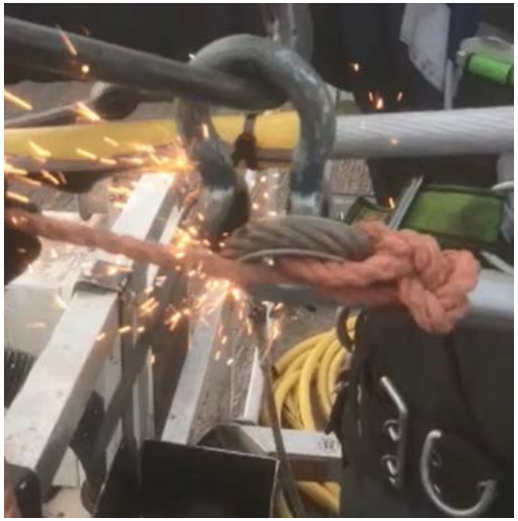
Importance good earthing when carrying out work on high voltage connections

Because the distance between the short-circuit resistant earthers (fixed line earthers on the substations) and the pylon in which work takes place is often long, there will always be an influence in the part of the connection between the short-circuit resistant earthing. The influence is inductive in the adjacent non-operating circuit(s) and capacitive for objects under the connection.

To control the consequences of induced voltages, it is necessary to always fit earthing for work (in conformity with the BEI-BHS and the applicable VWIs) on both sides of and at the workplace itself so these voltages can be discharged to earth and no dangerous situations can arise.
Please note: the information and regulations in this Safety Moment only relate to the situation in the Netherlands.

Consequences not properly functioning earthing for work

If the earthing for work is not installed in the correct way, the induced voltage can become high and cause shock reactions and (serious) muscle cramp with symptoms of paralysis or a cardiac arrest as a consequence.
There are two illustrations below with examples of situations in which undesired inductive influences occur because the earthing for work functions insufficiently, causing a voltage difference. In both photo 1 and photo 2 the current has found another (second) path with undesired effects as a consequence.



Sparks due to not properly functioning earthing for work. This involves two separate live parts earthed on 1 side (bow shackle and steel cable) so a voltage difference originates in both parts (they are never equally long). Because both parts are held against each other, the voltage difference wants to equalise, with the formation of sparks as a consequence.

Heating (smoke/vapour formation) of chain hoist due to not properly functioning earthing for work. The chain hoist is suspended here with a steel strop. If the chain hoist had been suspended with a plastic (insulated) strop, no current could have passed through so there could also have been no heating.

Competence

Those installing the earthing for work must be competent. For the installation of earthing for work in high-voltage pylons, the personnel must also have had the appropriate instruction.

Earthing mobile work equipment near/ under the connection

In order to prevent dangerous voltages due to capacitive influences, mobile work equipment such as winches and braking machines used under a high voltage connection must be provided with good conductive earthing for work that is preferably connected to the earthing grid of the nearest pylon where work is taking place. Properly conductive earthing for work (voltage practically 0 volt) is an earth wire that consists of one piece (make sure there are no breakages, kinks or thinning in it) running in one line to the earth point. So there may not be any loops in it. For mechanical strength, it is also advised to use a diameter of at least 35 mm2 for the earth wire. Make sure that this earthing for work is installed by a competent person.
If this form of earthing for work is not feasible, the work equipment can be earthed on-site with an earthing pin. It must then be checked if the earthing for work is sufficiently conductive. So also have this earthing installed by a competent person. Installing earthing for work on steel planking present is not allowed because this is no guarantee of sufficient conductivity.

Use the correct provisions

Always earth on the provisions for that purpose such as an earth ball or earthing clamp and not on the cross-arms or other metal parts which may still have a coat of paint. The current then seeks the path with the least resistance and this can cause dangerous situations. Make sure you use earth cables that are long enough to reach the earth ball. Never earth in another place. The earth balls are intended for this. When installing the work earthing, always first put the work earthing on the earth ball and then on the part of the installation to be earthed. When removing the work earthing, first disconnect the work earthing from the earthed part of the installation and then from the earth ball.

Bypass earthing

With two separate parts earthed on one side (for example with a cut through tie) always install bypass earthing between both parts so the voltage difference is equalised. This is why there are always 2 earth balls per phase in angle towers. First earth both sides and only then open the tie.

Summary

- Always have earthing for work installed by a competent person who has had the appropriate instruction.
- If in doubt about the earthing for work, ask a competent person.
- ALWAYS use the earth ball or earth clamp for a good earth connection and make sure that connections are firmly made.
- Preferably earth machines to an available (pylon) earthing grid.
- Have earthing for work with earthing pin installed by a competent person. If necessary, make a KLIC report in order to prevent the earthing pin from damaging any pipelines or cables in the ground.
- Use at least 35 mm2 for earthing objects.
- Check the earth wire for damage and protect it against mechanical damage.
- With 2 loose parts/ends, install bypass earthing on both parts.
- When opening/cutting a tie, first install bypass earthing on two sides.

Fatal accident while dismantling a replacement pylon frame

During the dismantling of a replacement pylon frame an anchor of a yoke construction loosened, an employee fell from a height of around 15 metres along with the upright (portal support). This consequently led to the employee suffering fatal injuries. Five technicians and a crane driver were engaged in the work.

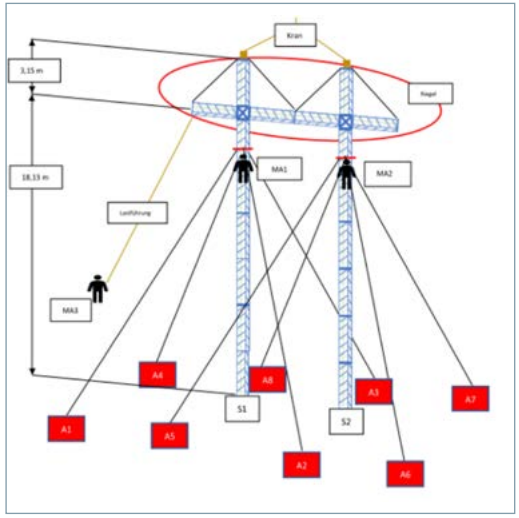
Reconstruction of the (possible) circumstances of the accident:

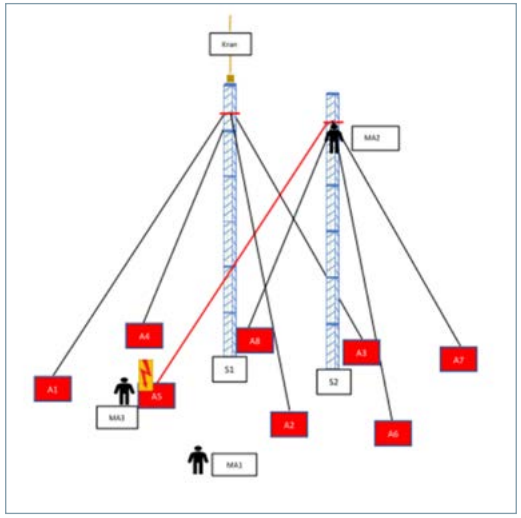
Step 1: Two employees ascend the two uprights of the replacement pylon frame, while secured, and hook the crossbeam of the replacement pylon frame up to the crane, which then exerts the tensile force stipulated.

After loosening the bolts below the cross-beam, it is lifted out completely by means of the crane and moved to the disassembly point with using a guiding line, where it is set down for subsequent dismantling.

Step 2: Employee MA1 hooks Upright S1 to the crane, which exerts the tensile force stipulated.
Employee MA1 climbs down from Upright S1 before detaching the anchoring cable, while the second employee MA2 waits at the top of Upright S2 until Upright S1 has been lowered to the ground, before hooking Upright S2 to the crane for lowering.

On loosening the bottom anchoring of Upright S1, Employee MA3 confuses an anchoring point of Upright S1 with one of Upright S2. As a result of this, Upright S2 topples with the technician, who is secured with personal fall protection equipment to the ground, as a result of which the employee suffers fatal injuries.





Causes:

This Safety Moment does not identify any cause of the accident, on account of ongoing accident investigations by the state prosecutor, the authorities and professional associations.

TenneT measures for current and future projects:

For current projects, implementation will be discussed shortly with the main contractors.

Short-term:

- A validity check on the assembly and disassembly concepts (which must be drawn up on the basis of the manufacturer's information), along with a risk assessment, taking into account the prevention measures listed below, must be carried out by the main contractor and presented to TenneT two weeks before the start of the work. Assembly/disassembly work may only be carried out following joint consultation with the TenneT project manager in charge or a person appointed by him.
- Ahead of assembly and disassembly, a discussion must be held regarding the specific construction site risk assessment with those involved in the project (those doing the work and TenneT representatives) in order to discuss the workflows, identify possible additional hazards on account of the underlying conditions and to stipulate additional protective measures.
- An inspection must be conducted before each envisaged assembly/disassembly of a replacement pylon frame by the contractor along with the TenneT project manager in charge, or a person appointed by the project manager, to see whether complete assembly and/or disassembly of the portal can be done on the ground. If the result of the inspection is that the site area released for construction is unsuitable for complete assembly/disassembly (e.g. surface unsuitable, too small or live conductor in the vicinity), a second check must be carried out of whether adjacent areas can be used where applicable, or the conductor can be disconnected for the period of assembly/disassembly.
- If complete assembly/disassembly is not possible, a check must be conducted of whether the load can be hooked up to the crane with the aid of technical equipment, such as hydraulic platforms, in order to avoid the need to ascend the uprights during assembly/disassembly.
- Before assembly/disassembly of each replacement pylon frame, specific instruction of the operative personnel by the person in charge of the work appointed in writing by the contractor must be conducted and recorded on the basis of the assembly and/or disassembly concept and the risk assessment.
- On the day of the work, before ascent of components of the replacement pylon frame, the contractor must conduct a visual inspection and check of the strength of the anchoring of the replacement pylon frame and record this.
- Before the ascent of an employee, all anchoring points should be fitted where possible with a safety device to prevent unauthorised or inadvertent loosening, or a blocking mark must be made on each anchor. The safety devices or markings may only be removed in the course of a release procedure in writing under the "four-eyes principle" by those in charge of the work. Only anchors that have been released may be loosened by authorised personnel and following instruction from the person in charge of the work.
- At the point in time that an anchor is loosened, being present in the danger zone of the upright is prohibited. This includes ascending the upright and other uprights in the vicinity within the danger zone. The presence of persons on technical equipment, such as hydraulic platforms, within the danger zone as defined by the main contractor is also prohibited. The sole exception is authorised personnel, such as for guiding a load (e.g. upright) as well as personnel to loosen the anchor.

Medium-term (by the end of 2020 if possible):

- When planning new projects or alterations to current projects, sufficient space for construction site layout areas should be incorporated in the planning that would allow disassembly by lowering the entire temporary portal to the ground and/or assembly by erecting it entirely.
- On award of contract, the main contractor must submit an assembly/disassembly concept specific to the construction site for a replacement pylon frame on the basis of the planning documentation provided by TenneT.
- A check will be made whether a work permit procedure for work on construction sites will be implemented. More detailed information will follow in due course.

Long-term (over the years ahead):

- Only systems with technical safety redundancy (e.g. structural stability even in the event of the failure of one structural component that is safety-relevant) will be admitted to tendering.
- Existing systems without technical safety redundancy must be retrofitted in order to be used by TenneT in the future. They will be evaluated and released separately.
- TenneT is looking into switching to the use of innovative temporary transmission towers over the longer term.

TenneT is ready to collaborate with manufacturers, suppliers and contractors in the development of alternative safety systems for temporary transmission towers or other technical safety innovations in overhead line construction.

A continuous improvement process will follow checks on the practical effectiveness of the measures mentioned above.

Addendum to article about chains barriers on substations

In our most recent newsletter, we have an article under the heading of “Incident Investigation” about the use of chains barriers on substations. We neglected to mention that the information in the article applies only to the Netherlands. The following information refers to the situation in Germany.

Chain barriers or other barriers in substations/switchgear/cable transition installations
Climbing over or under barrier chains or other barriers can mean mortal danger if the safe distance to live equipment is not maintained after entering the danger zone as per VDE 0105-100 Table 101. For this reason, such conduct is strictly prohibited!

Yellow-black chain or railing (set-up and removal only by the client):
Permanent blocking of a dangerous location, e.g. due to sunken system components or to block off danger areas. In addition to the chain or railing, posting of a warning sign “Unauthorised access prohibited” is required!

Red-white chain (set-up and removal by the client):
Temporary barrier to mark out a work site in the vicinity of live system components. In addition, the warning sign “Warning: Electric Voltage” and the additional symbol “Work area boundary” must be posted.

Red-white chain (set-up and removal by the contractor or client):
Temporary barrier, set up and managed by the contractor or client, e.g. for excavations, open shafts, etc.

Act safe, stay safe! Toolkit

Safety is at the heart of TenneT. Safety is getting home safe: We at TenneT want our employees and the employees of our contractors, everyone who works for TenneT to return home safely and healthy after work. Every day.

Four games

Increasing safety will not happen by adding more rules and procedures. We will turn the tide by shifting our mindset about safety and about people. We aim to create an open and proactive environment in which we can have a valuable conversation about safety and your role in it. In order to facilitate this mindset shift we have developed a set of 'simple' work methods and provide tangible tools in order to

- Facilitate the business in keeping the dialogue on Safety and Safety behavior alive on team level
- Support teams in understanding Safety in the integral chain of the organisation
- Reinforce Safety Leadership and Safety behaviour in the everyday work across the chain
- Activate the proactive role of Safety experts

Dialogue on safety

These work methods are easy to use and will be accessible for everyone to support the dialogue about safety.
Together with Simpuls - our partner that develops work methods - we have created four games. Each of them having a different approach, sub-goal, level of complexity, and duration, yet all four games provide a fun, quick and light way to increase safety awareness and open the dialogue and facilitate a learning environment.

Cross-functional team

During the development of the toolkit we have cooperated with safety experts from various TenneT units in order to deliver a

suitable set of tools. Together with this cross-functional team we have defined what the desired outcome of the toolkit would be. In the picture below is represented what is the objective of this toolkit according to the colleagues in the team:

In the development phase of the toolkit we have done four demonstration session with various groups at TenneT locations to test the work methods. These groups consisted of a mix of colleagues from various locations and regions and representing different disciplines, like project leaders, contractors, HR business partners and safety experts. In all demo-sessions – in the Netherlands and in Germany - the work methods were highly appreciated and valued for their user friendliness and added value to discuss topics that are sometimes not so easy to bring to the table.

Proactive mindset

In the coming months the safety experts will be trained to become a facilitator of the Act safe, stay safe! Toolkit and receive their own toolkit in order to further support the organization in becoming more safety aware and to shift the mindset to a proactive one. Through the safety experts the toolkit with all work methods will be made available to all colleagues, also to the contractors. Together we can create a safe working environment for everyone!

Links

Life-Saving Rules
www.tennet.eu/company/safety-at-tennet/life-saving-rules

Safety Culture Ladder
www.tennet.eu/company/safety-at-tennet/safety-culture-ladder

Safety at TenneT
www.tennet.eu/company/safety-at-tennet/safety-at-tennet

Contractor Management
www.tennet.eu/company/safety-at-tennet/contractor-management