



# Universal cable system

A complete power distribution system



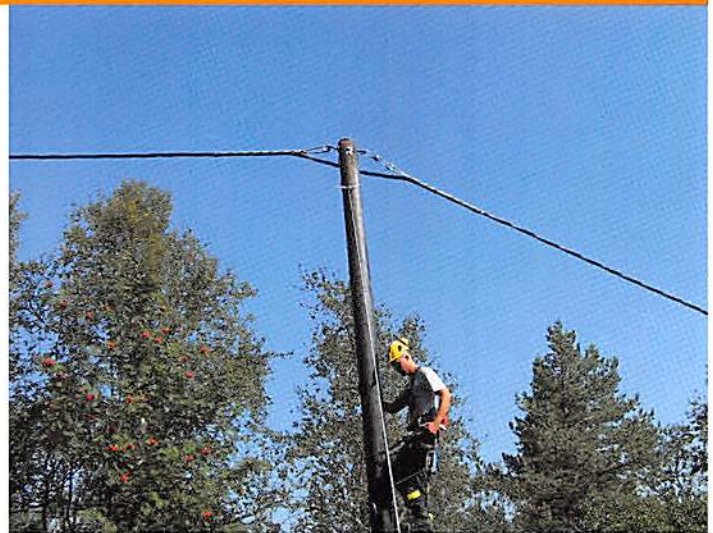
Completing the picture

**nkt** cables

**The Universal Cable System from nkt cables is a turnkey electrical distribution system for 12, 24 and 36 kV.**

**It is designed to be the market's most cost-efficient and operationally reliable system for running overhead lines.**

## Universal Cable system



### The concept

**– the best of both worlds**

Traditionally, electricity distribution has been divided into “underground cables” and “overhead lines”. The Universal Cable concept combines the advantages of overhead lines with the benefits of a ground cable design. The combination is the best of both worlds.

### The system

**– a cost effective and operationally reliable solution**

The Universal Cable System is based on strong self-supporting cables and smart suspension clamps that make installation work quick and safe. Along with a complete range of accessories and project design tools, you as a designer or electricity grid owner will enjoy unprecedented opportunities to improve efficiency and reduce costs not only for the construction and installation of new power grids, but also for having the capability of full control of the (operational), maintenance and outage costs. **nkt cables** Universal Cable System since its launch in the mid-90s has proven to be extremely reliable.

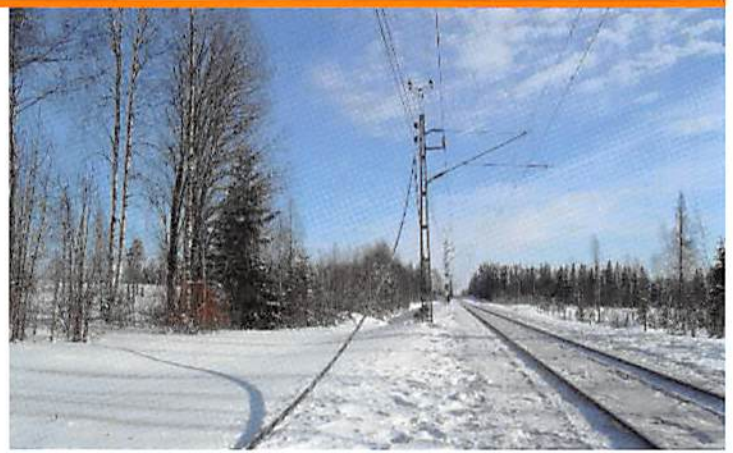
### The cable

**– new opportunities and fewer restrictions**

The system is actually based on a ground cable and not a plastic-coated overhead line which means that we get a completely insulated, touchable and safe electric grid.

Some immediate benefits with the Universal Cable System are:

- Provides a transition between air, water and underground installations without expensive joints and terminations
- Allows for slimmer corridors with less intrusion costs
- Can be combined with telecommunication and 1kV lines
- Is safe and touchable
- Provides greater freedom in the selection of line route
- Has no external electric fields and a very low magnetic field
- Does not attract lightning, no costs for lightning strikes
- Is aesthetically pleasing, less visible and takes up less space



## Strength

**- strong enough to withstand external forces**

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**nkt cables** Universal Cable System can handle the most diverse and extreme environments. All parts of the Universal Cable System, from cables to suspension clamps, are designed to be extremely strong and durable. The implication of this is that a Universal Cable line:

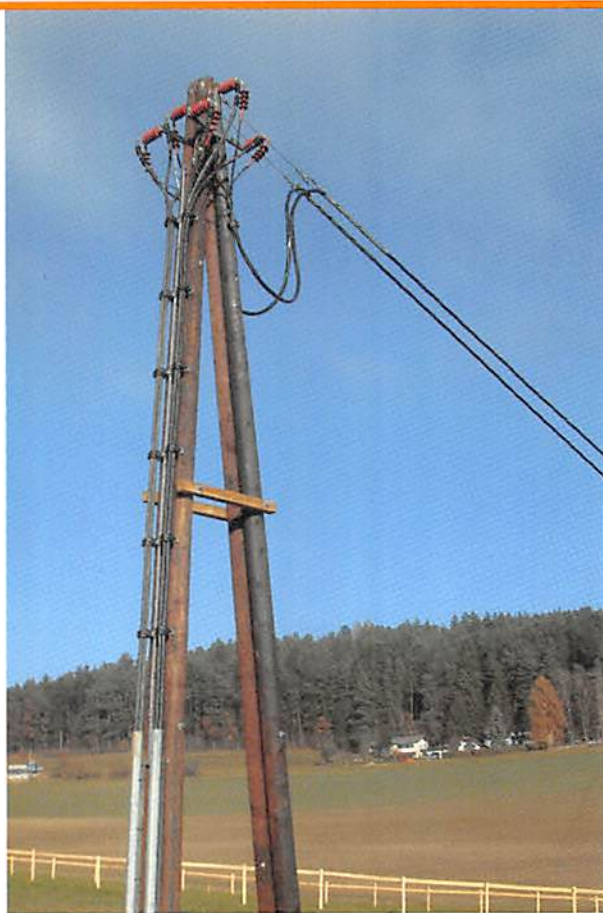
- Can handle long span lengths, an advantage in steep terrain
- Resists falling trees without any outages
- Can handle extreme snowfalls and ice loads without any outages
- The cable's wind characteristics also make it suitable in mountainous terrain and coastal environments

## Simple

**- flexible, functional and ergonomic**

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The suspension clamps included in **nkt cables** Universal Cable System are designed for multiple applications. Using the built-in wheel, the device is initially used as an installation tool. It is subsequently used as a permanent suspension clamp. In addition to its simplicity and functionality, every suspension clamp is designed to fit a wide range of Universal Cables. Overall, it ensures a quick installation process with few components and the optimum utilisation of manpower.



## Economy

- Total Cost of Ownership (TCO) ensures good economy
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An overall view of **nkt cables** Universal Cable System, taking into account its properties and potential, there are clear economic benefits for investment, installation, operation, and above all maintenance costs. The grid owners make financial gains primarily through:

- Being able to plan the clear up work after a disturbance during normal working hours
- Lower intrusion costs thanks to narrower line corridors
- Reduced maintenance costs for power line corridors
- Reduced downtime ensures higher utilisation
- More cost-effective construction and installation

## Reliability

- tested for problem free ownership
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All components in **nkt cables** Universal Cable System are tested together as one system. No components should therefore be replaced by another product outside the Universal Cable System, which could jeopardise optimal functionality.

Experience from studies of installations over many years made in some of Europe's toughest environments have shown that our system produces very satisfactory results.



## Testimonials

### - new methods and applications

**New solutions and applications for the Universal Cable concept are being added all the time. We feature some examples.**

#### - Short downtime

When replacing an existing power line, the Universal Cable can be installed on poles under the existing line while it is still in operation. When the Universal Cable is pre-installed, the power supply can be transferred to the Universal Cable with a very short downtime. As Universal Cable is touchable, the old line can now be removed and the Universal Cable lifted to the correct height on the pole without any supply interruptions.

In the case where a pole is broken due to falling trees, the cable can lie on the ground and still remain in operation. A new pole can be installed and the cable re-installed without any interruption to the power supply.

#### - Personal safety

The cable is fully insulated and safe to touch and has proven useful for track and railway work which can be performed while the power supply to other parts of the railway is still live.

As a replacement for overhead lines in places where people may otherwise be exposed to danger such as: Playgrounds, residential areas, specific fishing grounds and industrial areas with high vehicles and machinery.

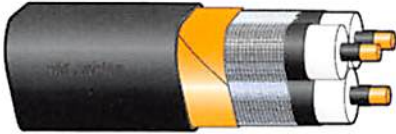
#### - Backup power or temporary power supply

Following more extensive damage to the power grid, the Universal Cable can be layed out temporarily directly on the ground or suspended temporarily to quickly re-store the power supply. More permanent solutions can be constructed later.

The Universal Cable can be run temporarily as a power supply to new establishment sites such as construction sites, tunnel constructions, festivals and the like.

The Universal Cable can be run as a temporary upgrade to the existing cable line at construction sites, festivals and the like.

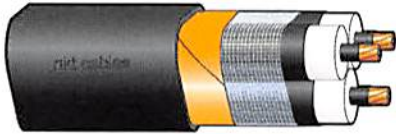
## Universal cable products



### EXCEL 3x10/10 6/10 (12) - 12/20 (24) kV

Self-suspended XLPE-insulated three-core cable for use overhead, underground or in water.

- Conductor - unannealed copper, round, solid EXCEL, stranded FXCEL
- Inner conductive layer - extruded
- Outer conductive layer - extruded
- Sheath - black LLD PE
- Insulation - XLPE
- Screen - bands of woven tinned copper wires



### FXCEL 3x16/10 6/10 (12) - 12/20 (24) kV

Self-suspended XLPE-insulated three-core cable for use overhead, underground or in water.

- Conductor - aluminium alloy, stranded, longitudinally water tight
- Inner conductive layer - extruded
- Outer conductng layer - extruded
- Sheath - black LLD PE
- Insulation - XLPE
- Screen - bands of woven tinned copper wires



### AXCES™ 3x70/16 6/10 (12) - 12/20 (24) kV

### AXCES™ 3x70/25 18/30 (36) kV

### AXCES™ 3x95/25 12/20 (24) kV

Self-suspended XLPE-insulated three-core cable for use overhead, underground or in water.

- Conductor - aluminium alloy, stranded, longitudinally water tight
- Inner conductive layer - extruded
- Outer conductng layer - extruded
- Sheath - black LLD PE
- Insulation - XLPE
- Screen - bands of woven tinned copper wires



### AXCES-O 3x70/16 6/10 (12) - 12/20 (24) kV

### AXCES-O 3x70/25 12/20 (24) kV

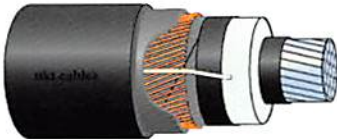
### AXCES-O 3x95/25 12/20(24kV)

Self-suspended XLPE-insulated three core cable with a microduct for installation of standard Micronet cables with up to 24 fibers. For use overhead, underground or in water.

- Conductor - aluminum alloy, stranded, round, longitudinally water tight.
- Inner conductive layer - extruded
- Outer conductive layer - extruded
- Sheath - black LLD-PE
- Microduct for installation of micronetcables
- Insulation - XLPE
- Screen - bands of woven tinned copper wires

## Universal cable products

AXCES™ 1x240/80, 1x400/35  
AXCESQ 1x240/80, 1x400/35  
18/30 (36) kV



Self-suspended XLPE-insulated single core cable for use overhead, underground or in water.

- Conductor - aluminium alloy, stranded, round, longitudinally water tight
- Inner conductive layer - extruded
- Outer conducting layer - extruded
- Screen of concentrically laid annealed copper wires bedded in corrosion resistant material
- Insulation - XLPE
- Sheath - black LLD PE

### A complete portfolio of accessories



Suspension clamp ECH 12 and ECH 14 is designed for Universal cable EXCEL, FXCEL and AXCES™. The suspension clamp is designed for permanent fixture of the cable and as an installation tool for swift, safe and easy cable drawing.



Deadend spirals have been thoroughly tested and allocated to each individual cable to guarantee that the spiral will never slip.



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