N-HEAT© COLLECTION

# HEATING OF SPORTS FIELDS

Nexans

BRINGS ENERGY TO LIFE

# SOIL HEATING OF SPORTS FIELDS

Soil heating in soccer fields and other sports arenas prolongs the green season, enabling the sporting activities to start earlier in the year and last much longer than the climate would normally allow. The heating also supports the growth of the grass and keeps the ground frost free.

A normal load selection for sports arenas will, however, not be sufficient to melt all snow and ice during heavy snowfalls. Normally, the heating cable installation is combined with a plastic covering on top of the grass which keeps the heat "under cover".

In combination with such a plastic covering the installation load is approx. 60-70 W/m$^2$. This means for a soccer field of 60x100 m = 6000 m$^2$ that the installed load will have to be about 360 kW.

However, less power can be used in countries with a milder climate. Previously, field maintenance staff had to remove the plastic covering every third day in order to provide oxygen to the grass.

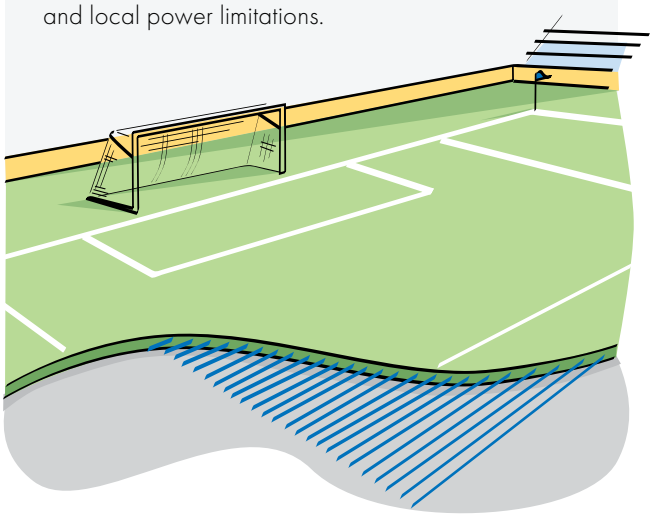
Newer systems are a combination of heating cables and a plastic covering where warm air is blown under the plastic so that it works more like a tent.

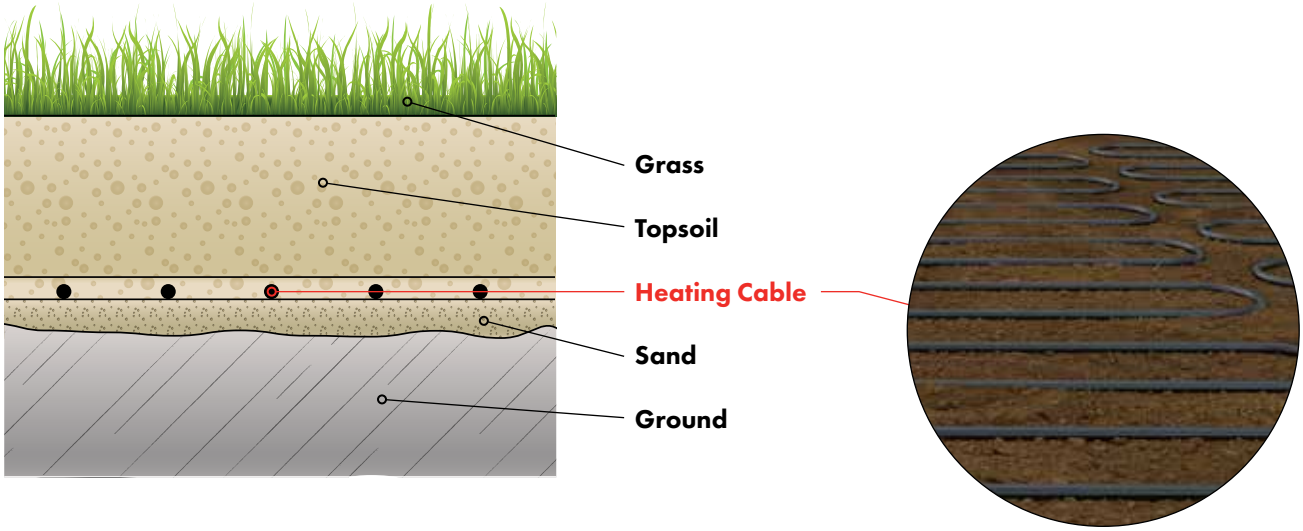
## TECHNICAL SOLUTION

In order to raise the soil temperature by 1 °C, in general an installed power of approximately 5 W/m$^2$ is needed.

Soccer fields and sports arenas are rarely used when the temperature is below -15°C. In order to keep the soil frost free with an ambient temperature of -15 °C one would need 75 W/m$^2$ of installed power.

Our recommendation varies from 50-90 W/m$^2$ depending on local climate, location, and local power limitations.






# INSTALLATION

The most convenient time to install the cables is of course when the field is totally renewed and the grass is removed. However, the cables are in most cases installed in the existing grass/soil by using a special plough.

During the installation it is important to pay attention to the pulling force applied to the heating cable, especially if using a tractor or similar when installing. A little slack is recommended, and the sand surrounding the cables should not be coarse.

The cables should be installed 25-30 cm below the surface. It will then be safe to use for example javelins on the field. The distance between the cable strands depends on the output, but will in most cases be around 20 – 40 cm.

We recommend the use of cable on drums when installing, in order to use longer lengths and a lower number of connections. The field installation is normally divided into 3 or 4 sections, in order to have full flexibility. Always measure the insulation and conductor resistance before embedding.

## Example:

| | |
|---|---|
| **Cable type:** | TXLP 0,07 Ohm * 340 meter = 6,7 kW<br>90 pieces of cable |
| **Voltage:** | 400 Volts |
| **Total cable heating power:** | 605 kW |
| **Total cable length:** | 30.600 meter |
| **Cable depth:** | 30 cm covered by special sand |
| **Cable laying geometry:** | 9 pieces of cable for each ten field portions measuring 100 x 85 meters. Each cable is looped four times thus giving an average cable separation of (c-c distance) approx 28 cm. |

All splices and junction boxes are placed on one side of the sports field.

# PRODUCTS

## N-HEAT® TXLP

Single conductor general purpose heating cable on drums

### Applications:

This heating cable is ideal for floor warming in concrete constructions. It is also used in snow melting installations, for frost protection of pipes, roof gutters and drains, and soil heating.

### Construction:

- Stranded resistance wire
- XLPE insulation
- Tinned copper earthing conductor
- Aluminium screen
- PVC outer jacket
- Overall diameter: approx. 6.5 mm (0.26")

### Technical data:

- **Max. cont. operating temperature outer jacket:** 65°C (149°F)
- **Series resistant**
- **Minimum bending radius:** 5 x cable diameter
- **Tolerance on conductor resistance:** -5/+10 %
- **Highest system voltage:** 300/500 V
- **Mechanical class:** M2
- **UV resistant**

# N-HEAT® TXLP TWIN ON DRUM

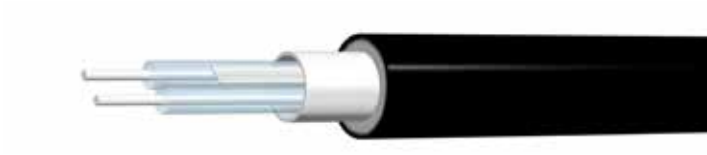
Twin conductor general purpose heating cable on drums

## Applications:

This heating cable is ideal for floor warming in concrete constructions. It is also used in snow melting installations, for frost protection of pipes, roof gutters and drains, and soil heating.

The cable is extremely versatile, and can be customized to fit almost any application. TXLP TWIN ON DRUM can be installed directly on reinforcement bars.

TXLP TWIN ON DRUM may also be installed directly in hot asphalt with a max. temperature of 160 °C (320 °F).



## Construction:

- Solid resistance wires
- XLPE insulation
- Tinned copper earthing conductor
- Aluminium screen
- PVC outer jacket
- Overall diameter: approx. 6.5 mm (0.26″)

## Technical data:

- **Max. cont. operating temperature outer jacket** 65 °C (149 °F)
- **Series resistant**
- **Minimum bending radius:** 5 x cable diameter
- **Tolerance on conductor resistance:** -5 / +10 %
- **Highest system voltage:** 300/500 V
- **Mechanical class:** M2
- **UV resistant:** Yes

# REFERENCE PROJECTS

## The Partizan Stadium, Serbia

**Purpose:** Soil heating and snow melting.

**Product:** N-HEAT® TXLP/1 and TXLP COLD LEAD

**Completion:** 2019

**Comments:** The Partizan Stadium is a football and multi-purpose sports arena located in the Serbian capital of Belgrade, and is home field of FC Partizan. It first opened in 1951. The capacity of the stadium is 32,710 seats, and it is licensed by UEFA.


## The Lviv Stadium, Ukraine

**Purpose:** Snow melting

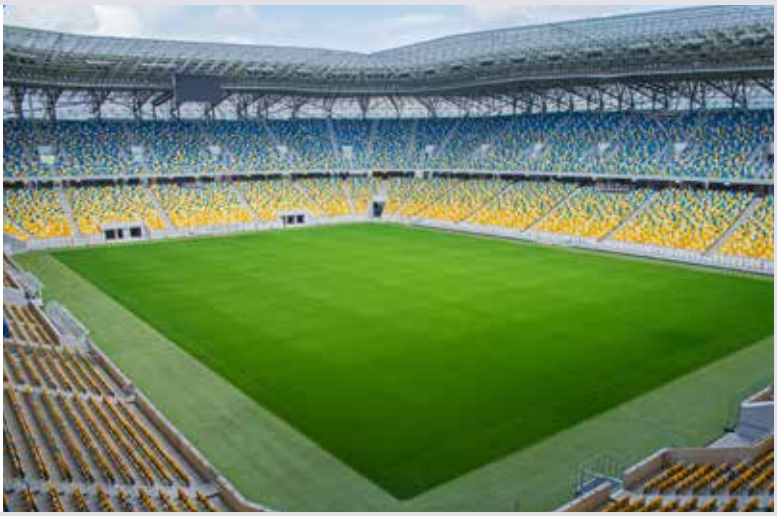
**Project:** Roof

**Product:** N-HEAT® TXLP on drum, 29 W/m

**Total power:** 121,2 kW

**Completion:** 2011

**Comments:** The Lviv football stadium was one of eight official football arenas for the UEFA Euro 2012.



## "Bird's Nest" (olympic site), Beijing, China

**Purpose:** Snow melting

**Project:** Parking lot, access to entrance/ ramp underground car park

**Project size:** 258,000 m²

**Product:** N-HEAT® TXLP/1 25 W/m

# REFERENCE PROJECTS

## "Water Cube" (olympic site), Beijing, China

**Purpose:** Pipe defrosting

**Project:** Pipe defrosting of underground car park, 4000 meters

**Project size:** 79,532 m²

**Product:** N-HEAT® TXLP/1 25 W/m


## Sivas 4 Eylül Stadium, Turkey

**Purpose:** Grass/soil heating

**Product:** N-HEAT®

**Completion:** 2009

**Comments:** The heating cables have also been installed in the athletics running tracks around the football field.

Sivas 4 Eylül Stadium is a multi-use stadium, and is currently used mainly for football matches in its capacity as the home ground of Sivasspor. The stadium holds 17,000 people. UEFA matches are played here.

Nexans Heating Cables are already installed in several football stadiums in Europe. An electrical heating system is more cost efficient compared to a water based system in that one can easily and swiftly regulate the use of energy via a purpose built control system.

# Nexans – the inventor of heating cables

When choosing the N-HEAT® electrical heating solutions you choose undisputable quality, a century of experience and the reliability of an industry leader.


The Kremlin, the Sivas stadium in Turkey, the Bird's Nest and other Olympic sites in China all have one thing in common with thousands of office buildings and private homes; electrical heating solutions from Nexans. In fact, the heating cable was invented by Nexans in Norway in 1926. Since then, we have produced and marketed high quality heating cables in every corner of the world. For the past 100 years we have focused on the continuous development of heating solutions, constantly exceeding the demands of the market.

Today, our leading heating concept, N-HEAT®, is the obvious choice for maximum comfort and reliability. The high quality heating solutions are easy to install, durable and energy saving, keeping people safe and healthy.

The Langhus factory, located 20 km south of Oslo, is a competence centre for Nexans Heating Cables. The factory was established in 1992 and produces cables for the home market in Norway, as well as to more than 30 export markets. The factory also serves as a logistics centre for all Nexans units in Norway.

More information on www.nexans.com/nheat.

**Nexans Norway AS**
is a leading supplier of power, telecommunications, installations and heating cables in Norway, and is among the world's leading manufacturers of offshore control cables and high-voltage submarine cable solutions. The company's head office is in Oslo, and it has manufacturing plants at Rognan, Langhus and Halden. The company has nearly 1,600 employees and is a part of the Nexans Group which has an industrial presence in 34 countries and commercial activities worldwide. Nexans employs more than 26,000 people and is listed on the Paris stock exchange.

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