








OVERHEAD WIRE DE-ICING

PERMANENT HEATING DE-ICE SOLUTION

BLUE WIRE is an application developed heating cable solution, powered by the overhead wire system itself. A solution to increase the traffic regularity and reduce cost for expensive ice-remover-vehicle and teams. The system works with all overhead wire systems from 600 to 1.500 V (special system for 15kV and 25kV).

-  **Permanent solution**
to increase traffic regularity during “icing” weather conditions
-  **Secure early morning exit**
of trains and trams out of the depot – every morning – on time
-  **Avoid heavy ice-build-up**
to break down the wire system
-  **Secure pantograph electrical contact**
after stop on all stations
-  **Reduce cost for “night teams”**
to remove ice on the OHL
-  **Extend the lifetime of all pantographs**
-  **Chemical and workforce free solution**



Eliminate costly interruptions of revenue service due to the effect of ice/frost accumulation on the contact wire.

Ice on the contact wire causes tramlines and light rails to lose power and in extreme cases leads to the contact wire / catenary system being brought down.

Arcing caused by the presence of ice leads to excessive wear to the pantograph conductors, all leading to traffic delays and service disruption.

Mechanical removal of ice is manpower and time consuming and mechanically stresses the contact wire.

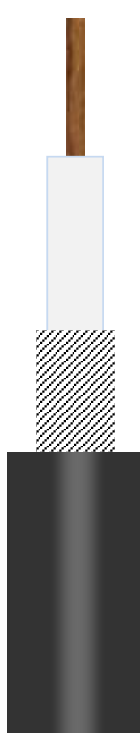


HEATING CABLE CONSTRUCTION

The heating system is a multi-layer design. Basically it consists of an electrical insulated constant wattage heater surrounded by a heat transfer material.



The heating cable is secured to the contact wire with phosphor-bronze attachment clips to avoid galvanic corrosion. The heating cable is in a triangular shape. This makes it very easy to mount on top of the contact wire and the shape provides excellent thermal contact to the contact wire. Finally it also makes the fastening clips easy to handle and very efficient to mount.



Lead wires: The heating elements consist of multiple twisted metal alloy wires.

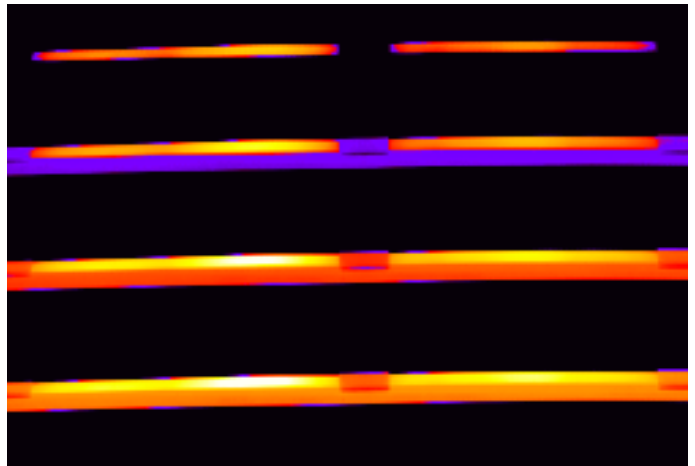
Heater strip Insulation: Consists of an electrical high isolation silicone based material.

Steel braid: Mechanical stabilizes and protects the cable. Helps the horizontal distribution of the heat to the contact wire.

Heat transfer aid: The outer material is a special UV resistant TPE compound to ease heat transfer and keep a very high electrical insulation value. TPE is immune to fungus growth such as is seen on silicone outer sheathing where birds can destroy the cable.

HEATING CABLE EFFICIENCY

Infrared picture of a heating cable on top of the contact wire. The series of pictures shows how fast the wire is heated. (at minimum power)



The 3 clips that keeps the circuit on the overhead wire are visible on all pictures.

This series of pictures was taken at -5°C, wind speed 2-3 m/sec, 78% RH, Power 28 W/m.

After just 5 minutes the contact wire is above freezing temperature and ready to avoid icing of the wire.

- 1: 1 minute
- 2: 5 minutes
- 3: 10 minutes
- 4: 15 minutes

