



TTEP Skin Effect Heating System

- Indirect Heating
- Up to 15 Miles (25 km) in Length
- Single Side Supply Voltage
- Temperatures to 300°F (150°C)
- Temperature Maintenance, Freeze Protection or Heat-up
- Third Party Certified, with Hazardous Area Certificate Available
- Low Maintenance
- Low Operating Cost
- Above Ground, Buried or Submerged Installation



Description

Skin Effect Heating is used specifically for providing indirect heat to longer runs of piping from a single electrical supply source. Skin Effect is used in markets such as Oil & Gas, Refining, Chemical, or any similar industrial market that requires heated pipelines on long runs.

A Skin Effect System is an easy-to-use arrangement made up of the heating tube, skin-effect cable, junction boxes, transformer, and control panel.

Heating Principle

A small steel tube is bonded on the pipe to be heated. A skin-effect electric cable is placed inside the tube to conduct the voltage up to the end of the pipe. The return of current goes by the small tube, but only through the internal thickness as defined by the laws of Kelvin and Maxwell. The setup provides conductive heating direct to the wall of the process pipe.

Supply connections are made in special boxes.

Application

Skin Effect can be used for freeze protection, temperature maintenance, or heating-up of multiple fluids. Heat input can be adjusted to handle a range of thermal viscosities such as water, crude or refined oils, steam, and various chemical.

The indirect heating arrangement allows it to be used with any potentially corrosive process. The simple installation provides for minimal maintenance and allows extremely low operating costs.

Skin Effect Heating can be installed in any setting. Arrangements can be made for above ground, buried, or submerged piped installations.

Advantages

Long Runs – Skin Effect can be used for pipe runs up to 15 miles (25 km) in length.

Single Supply Voltage – Skin effect only requires voltage termination at one end of the heating system, simplifying installation time.

Low Installation Cost – The Skin Effect System installs right along with the piping systems and insulation, providing no interference.

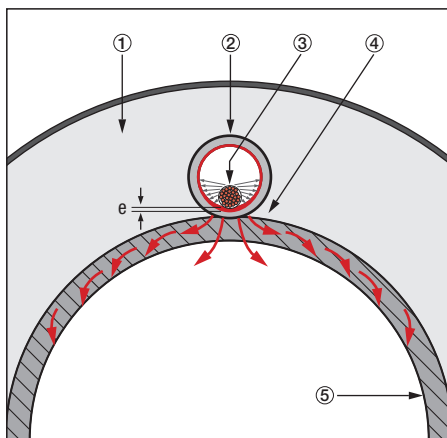
Low Operating Costs – The direct attachment of the tube and pipe provide efficient heat transfer to the process.

Low Maintenance Costs – No moving parts mean minimal yearly maintenance required for a fully operating system. Any replacements can be done without disturbing the insulation.

'Invisible' Operation – Skin Effect does not interfere with cathodic protection systems. No residual voltage is present on the surface of the tube.

Third Party Certified – Systems can be certified for ordinary or Hazardous Area use.

Effective Heating Control – Systems can be provided for multiple uses, heat-up for start-up situations or maintenance temperature for operating phase.



- 1 Insulation
 - 2 Heating Steel Tube
 - 3 Special Skin-Effect Cable
 - 4 Thermal Junction
 - 5 Traced Pipe
- Electric Current Focusing
 Heating Transfer