

The Impedance Heating System

System Hardware

The standard HEATREX impedance heating system includes a control panel with on/off temperature control, system transformer, thermocouple sensor, electrical termination hardware and isolation kits, if required.

Standard Hardware

Control Panel — The standard control panel is a contactor controlled system with on/off process temperature control.

This control panel includes the following components built into a NEMA 12 enclosure:

- Electronic process temperature controller with thermocouple input and digital temperature indicator
- Electronic high-limit/overtemperature controller with manual or automatic reset and thermocouple input
- 2-pole definite purpose controlling contactor
- Control circuit transformer with fused secondary
- Door interlocking disconnect switch
- Heater circuit fusing
- Illuminated ON/OFF pilot switch
- "OVERTEMPERATURE" indication pilot light

Each HEATREX control panel is designed and custom-built in conformance with NEMA and UL standards.



System Transformer — A step down system transformer designed for the appropriate KVA rating of the impedance heating system is mounted in a ventilated NEMA 3R enclosure.

Custom-built HEATREX transformers are in conformance with NEMA and UL standards specifically for impedance heating service.

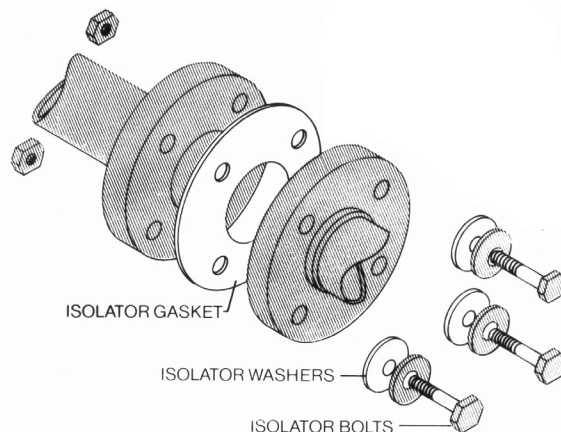
The skin temperature of HEATREX transformers is well within OSHA limits, so they can be located within reach of personnel.

The HEATREX multi-tap design allows for field adaptation to different pipe lengths.

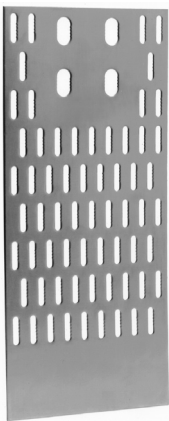
Cable — HEATREX can supply selected copper cable with the appropriate terminations for systems.

Thermocouple Sensor — Standard Type J thermocouples are designed to be customer mounted directly to the outside diameter of the pipe, under the thermal insulation.

Isolation Kits — Each impedance heating circuit is designed to be electrically uniform from end to end. For layouts with "tees" where current divides, and where grounded equipment is connected to the pipes, isolation kits are provided for installation at the customer flanges. Each isolation kit provides a flange gasket, a set of non-conductive bolt sleeves and washers and the required steel washers and nuts. Standard isolation kits are used for process temperatures up to 450° F.



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Electrical Termination Hardware

— Standard termination hardware includes stainless steel or copper-plated carbon steel terminal plates, sized and shaped for welding to the pipe. Crimped or bolted connectors are provided for field cable attachment. Specially designed perforated plates are offered for high temperature applications.

Special Options

Hardware for the standard HEATREX impedance heating system can be upgraded or modified to include any of the following special options:

Solid State Proportional Control Panel

The SCR controlled system offers precise temperature control up to $\pm 1^\circ$ F.

Built-in control components consist of:

- Temperature controller with thermocouple input and digital temperature indication
- Electronic high-limit/overtemperature controller with manual or automatic reset and thermocouple input
- Phase angle fire, single-phase SCR with soft start (current limit)
- Control circuit transformer with fused secondary
- Illuminated ON/OFF pilot switch
- Fan/filter assembly as required for heat dissipation
- 2-pole definite purpose safety contactor
- Door interlocking disconnect switch
- Heater circuit fusing

Optional control components consist of:

- Remote signals and/or interlocks
- Volt meter
- Ammeter

Temperature Sensors

HEATREX systems can be designed to operate with optional temperature sensors, including Type K thermocouples or RTD's.

Epoxy Encapsulated Transformers

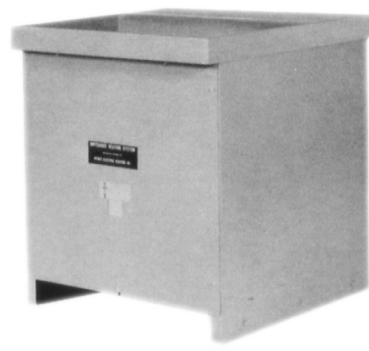
Epoxy encapsulation is available to protect the copper transformer windings for applications in corrosive environments.

Control Panel Enclosures

NEMA 4 and NEMA 4X control panel enclosures are available for applications with high humidity, washdown requirements, or corrosive environments.

System Transformer Enclosures

Transformers are available with stainless steel, copper free aluminum or fiberglass reinforced enclosures for special or corrosive environments. NEMA 4 transformer enclosures are also available.



System Start-Up

HEATREX provides a start-up manual with every impedance heating system. This includes information on: The hardware, how to install isolation kits and terminal plates, how to run and make cable connections, the start-up procedure, a check list and a troubleshooting guide.

On-Site Assistance — Extended Warranty

A recommended option is to have a trained HEATREX field service person supervise the initial start-up. Our technician will make sure the impedance heating system is installed and operating properly by making on-site recommendations during the initial start-up of the system. Use of HEATREX field start-up assistance will extend the Standard HEATREX Limited Warranty to 24 months from the date the system is placed in service.