



Specializing In Industrial Heating Systems, Controls, Service & Rental Equipment.



www.HotfoilEHS.com

Our 25,000 Square Foot Hamilton, NJ location



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2

Electric Heating Systems, Inc. (EHS) was established in 1994 in Robbinsville, NJ to design and supply turnkey permanent low temperature heating systems for the Power and Tank Industries. In 1996, the name for this division became **Hotfoil**, and **EHS** became a supplier of Ceramic Heaters and accessories for the Heat Treating Industry.

From a small start importing consoles for resale, **HOTFOIL-EHS** has grown to become a major, in-house, manufacturing Corporation, producing and stocking a broad line of standard and custom designed Industrial Heat Treating Products. Our inventory includes custom control panels, heat treating power consoles, cables and splitters, temperature recorders, thermocouple attachment units and pin guns. Our ceramic heaters range from standard voltages to multi-circuit, high and low voltage elements. We also supply combustion control equipment and burners from 1 to 10 MBTU.

We have a full inventory of materials to supply and produce insulation mats, twist-lock cable connectors, thermocouple wire and plugs, and banding and tools. This supplements the main product line to a broad US and Worldwide demand from the Heat Treating Service Industry.

In 2006, several large (55' x 12') rolling modular furnaces were manufactured, containerized and shipped overseas. They were assembled on different construction sites and were in operation within ten days. These furnaces were both propane and diesel burner, fired with automatic control. Since then we have added to our furnace building the latest 18'x18'x60'.

With continued awareness to the needs of the ever fluctuating and growing Heat Treating Industry, **HOTFOIL-EHS** has risen to the challenge by maintaining an abundant inventory of parts and products. By tripling our manufacturing capability in the past three years, we have substantially improved control of cost and product design. By the addition of qualified personnel to the Management Team, **HOTFOIL-EHS** maintains a responsive and quality-oriented commitment to our customers.

Thank you for this opportunity to introduce you to the **HOTFOIL-EHS** line of Heat Treating Equipment, and industrial heaters.

Matthew Richards

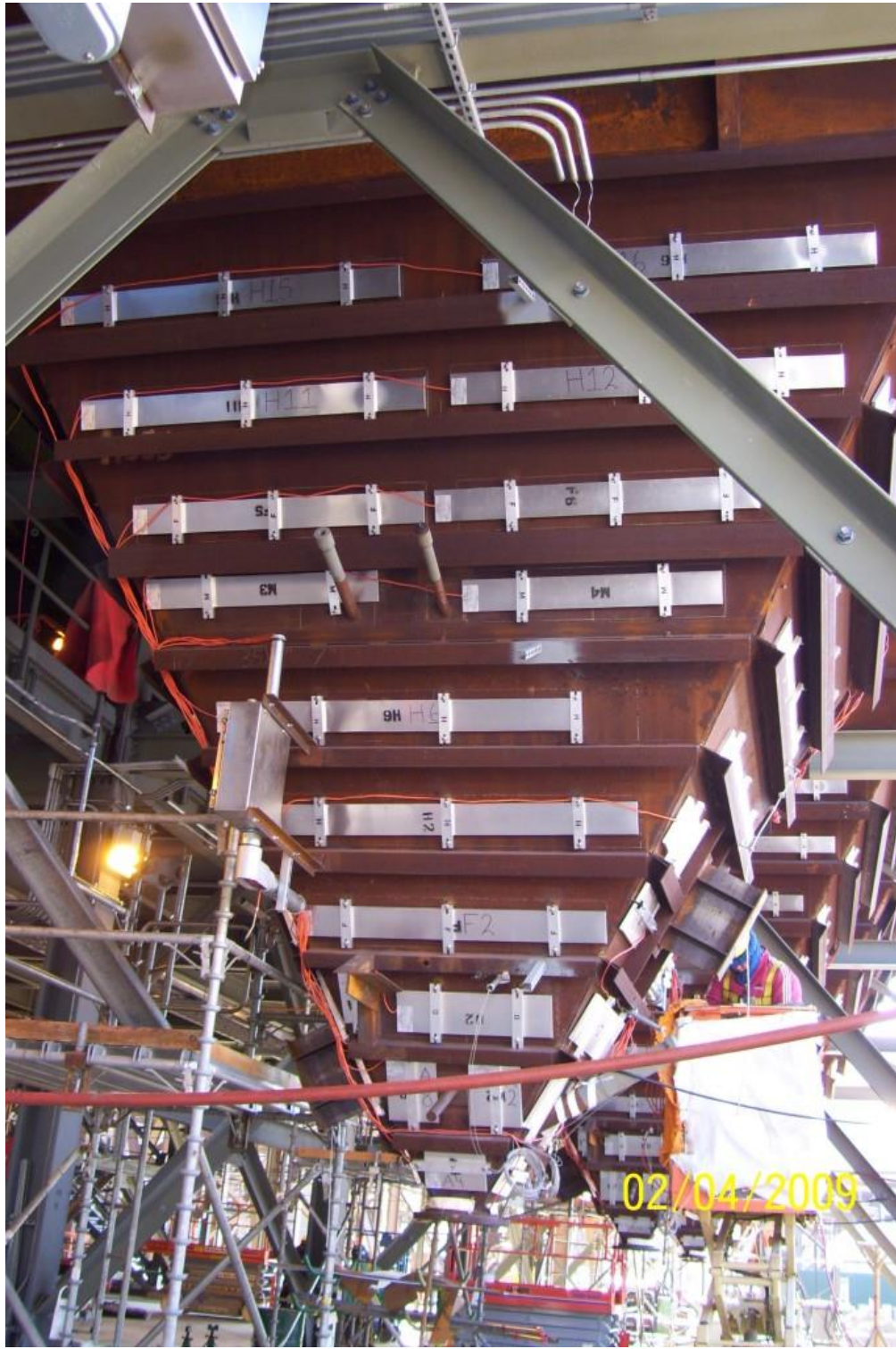


LEGEND

- Page # 4** **HB MODULE HOPPER HEATERS FOR BAGHOUSES AND PRECIPITATORS. (Pages 4-8)**
- Page # 9** **FRP PANELS FOR PREVENTING FLASH FREEZING IN HOPPERS, CHUTES AND FLOP GATES. (Pages 9-12)**
- Page # 13** **GA HEATING BLANKETS, CUSTOM DESIGNED FLEXIBLE BLANKETS FOR CONICAL HOPPERS. (Pages 13-14)**
- Page # 15** **ELP TANK HEATING PANELS FOR FIBERGLASS, POLY, STAINLESS AND STEEL TANKS. (Pages 15-19)**
- Page # 20** **SR HEATING TAPE, SELF REGULATING HEATING TAPE FOR TANKS AND PIPES. (Pages 20-21)**
- Page # 22** **PC HEATING TAPE, CONSTANT WATTAGE HEATING TAPE FOR TANKS AND PIPES. (Pages 22-24)**
- Page # 25** **MI HEATING CABLES. (Pages 25-26)**
- Page # 27** **VARIOUS CONTROL PANELS. (Pages 27-32)**

CUSTOM CONTROL PANELS AND CONTROLS (PAGE 29-32)

OUR LOCATIONS (PAGE 31-32)



TYPICAL HOTFOIL-EHS HB MODULE HEATING SYSTEM
Please call for Heater pricing on sets or individual



Hotfoil type HB Heating Modules

Pluggage of fly ash collection hoppers due to flue gas condensation is an expensive and unnecessary problem. Type HB Heating Module systems are specifically designed to eliminate the maintenance nightmare of hopper pluggage.

The HB Heating Module system is designed to provide **low watt density** heat spread over the maximum surface area available for heating. Uniform heating is essential to avoid cold spots, especially near the hopper throat where fly ash pluggage is most prevalent and problematic. To obtain maximum heater coverage, both **rectangular** and **trapezoidal** heaters are available to provide the most effective and efficient application of heat.

The heat source of the HB Heating Module is a high temperature, low watt density, flexible heating blanket. This robust, flexible, cushion-like heater face material provides **maximum heat transfer** to the hopper surface even when the hopper surface is irregular. This heating blanket incorporates a **patented** flat foil element that provides uniformly distributed heat over the total area of the module. This flat foil element is vastly superior to round wire or mesh type heating elements in heat transfer efficiency and reliability.

All Hotfoil-EHS proposals include thermal calculations and heater layout drawings using CAD. Post contract design drawings involve schematic wiring details, heater mounting details, installation drawings and Installation, Operating & Maintenance Manuals.

All HB Modules are **FM Approved** and are covered under Factory Mutual Report #J.I.1K2A8.AF.



ORDERING INFORMATION

Individual HB Modules form part of an overall hopper heating system. For spares or replacements, the following procedures can be adopted.

Either

A) Consult the project design drawing and identify the HB heater reference (letter & number).

OR

B) Complete the following –

Build a heater by selecting appropriate code for each feature category. Example: **HB-2408-500-120-1-12-CC**

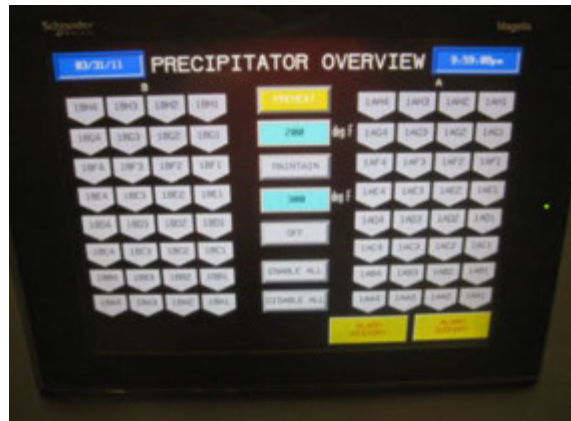
HB	24	08	500	120	1	12	CC
Heater Conduit Type Connector	Length	Width	Watts	Volts	Lead Exit Point	Lead Length	

	HB	24	08	500	120			
Heater Type	_____							
HB Module								
Length	_____							
24" (or as required)								
Width	_____							
8" (or as required)								
Watts	_____							
500 (or as required)								
Volts	_____							
120 (or as required)								
Lead Exit Point	_____							
3 (see diagram below)								
Lead Length	_____							
12'-0" (or as required)								
Conduit Connector	_____							
CC – Conduit Connector								
NC – No Connector Required								

CONTROL SYSTEMS

We supply custom control systems for all of our hopper heating systems.

- Simple on/off thermostat controls.
- Control Boxes on each Hopper with a thru-the-door disconnect, supplementary circuit breaker, contactor, control transformer, electronic thermostat or Hotfoil-EHS electronic controller with type “J” T/C, power-on light, heater-on light, and terminal blocks, completely pre-wired and tested prior to shipping.
- Control Panels with main thru-the-door circuit breaker, supplementary circuit breakers, contactors, control transformer, Hotfoil-EHS electronic controllers with type “J” T/C’s, power-on light, heater-on-lights, low-alarm lights, hand off auto switches, and terminal blocks, completely pre-wired and tested prior to shipping.
- We are now supplying full PLC controls for our clients. In recent years the idea of an HMI system talking to the plants main control system has become a priority. With the PLC controls, the main Control Panels can be up on the hopper deck and can be watched and controlled from a small Touch screen HMI system in the control house. We are also capable of controlling the rappers, and the “TR’s” with our Control systems. We can customize the controls to your specific.





AND HOPPERS: *We also build hoppers*

Hotfoil-EHS; a leader in the field of Heating Baghouse and Precipitator Hoppers.

We have taken the next step in our pursuit of offering the best hopper heating systems. Our mission is to supply a complete package. We are offering hoppers up to 9' wide x 9' deep x 10' high in both steel or stainless steel up to a ¼" in thickness. We are so sure of our heaters that we are willing to extend the warranty up to 10 years. Whether it's designing systems in the field or engineering them at our Hamilton location, our experience makes our "HB Modules" second to none.

WHAT MAKES US DIFFERENT?

We can now supply the lower section of the hoppers to your spec. We will design the heating system to your specifications as normal; we will attach the studs, junction box bracket, thermocouple or thermostat mounting kit, and another box bracket for the T/C if it's required. This allows perfect placement of the heaters. All locations will be labeled on the hopper with the heater reference and the direction of the lead. This simplifies the installation 10 fold, requires less field time for welders, and eliminates errors. It also helps with making sure that all of the lead lengths are accurate and the junction box is located correctly. In addition, the temperature sensor will be in the correct location which is the most important part of heater installation.

FREEZE PROTECTION FOR COAL HANDLING SYSTEMS



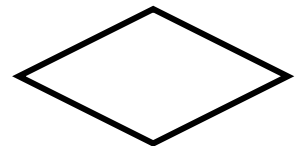
FM Approvals

Class I, Division 2, Groups B, C, D

Class II, Divisions 1 & 2, Groups F, G

Class III, Divisions 1 & 2

Ordinary Areas



PROBLEM:

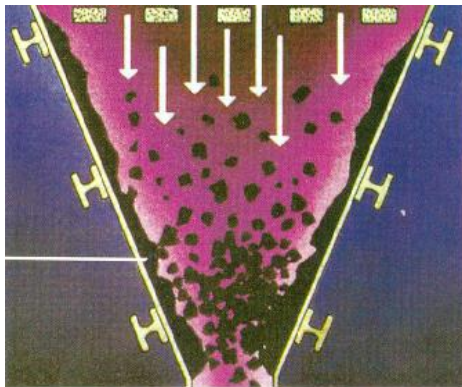
Conveying coal from stockpile to boiler during winter months is a well-documented nightmare for plant operators. Identical conveying problems exist within the mining industry as coal is moved around the mine site.

Coal stored outdoors on the stockpile or delivered by unit train or barges picks up moisture from rain and snow. When this wet or frozen coal is conveyed, it inevitably comes into contact with the plate steel of the various hoppers and chutes within the coal handling system. During winter, this plate steel is below freezing for extended periods.

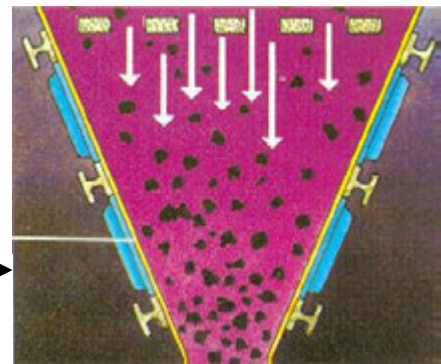
When wet or frozen coal encounters steel at subfreezing temperatures an instantaneous bond is formed. This bond causes immediate and often catastrophic blockage of the hopper and chutes. The bond and resultant blockage are so severe that often pneumatic drilling equipment and explosives are required to free up the system.

This problem, known as **FLASH FREEZING**, is extremely inconvenient and very costly. Several cases are documented where utility and industrial boilers have been shut down due to blocked conveying systems.

The Hotfoil FRP heating panels system specifically address the flash freezing problem.



← CROSS SECTION OF UNHEATED HOPPER
Plate steel is at ambient, sub freezing temperature causing flash freezing and hopper blockage.



→ CROSS SECTION OF HEATED HOPPER USING HOTFOIL FRP PANELS
Plate steel is at 40°F eliminating potential for flash freezing and hopper blockage.

SOLUTION:

Hotfoil type FRP heating panels are unique in concept and design.

The basic heat source within each panel is a heating blanket comprising of a flat foil heating system, sewn into high quality woven glass cloth. The flat foil heating system ensures even and efficient distribution of heat. The electrical circuitry design is such that the foil elements are connected in multiple parallel paths for ultra-reliability.

The finished heating blanket is embedded and totally encapsulated in a ¼" thick lamination of fiberglass reinforced plastic (FRP). This lamination process provides a completely weather, hose and dustproof heating panel with unrivaled mechanical and electrical strength. The majority of FRP Heating Panels supplied also incorporate a layer of urethane insulation as an integral part of the unit. This feature completely eliminates the need for further insulation after the heater has been installed. None insulated FRP heating panels can also be supplied for installation under client supplied thermal insulation.

Electrical termination of each FRP heating panel is achieved by use of a hazardous approved conduit hub or connection box. These devices are molded directly into the heating panels and require no installation by the end user.

The Hotfoil FRP Panels are Factory Mutual Approved for Class I Division 2 – Groups C & D, Class II Divisions 1 & 2 – Groups F & G, Class III Divisions 1 & 2 – hazardous areas.



← COAL SILO HEATED WITH FRP HEATING PANELS AT A MAJOR UTILITY IN THE NORTH EAST, USA

▶ SAMPLING CHUTE, 12" DIAMETER, HEATED WITH FRP HEATING PANELS





SYSTEM DESIGN:

When the problem of flash freezing was originally investigated, it was found that the simple application of strip and rod type electrical heaters was not the answer.

Several hoppers and chutes were instrumented to measure the distribution of heat throughout the plate steel. This research overwhelmingly proved that there was little to no lateral heat transfer from the heat source. In simple terms, the plate area covered by a heater was adequately freeze protected. The platenwork not covered by a heater was not freeze protected. For this reason, the Hotfoil system design involves **FULL HEATER COVERAGE**. All available plate area of hoppers and chutes are covered with custom built FRP heating panels. The power rating of each heating panel is approximately 80watts per square foot, a value that was empirically established to maintain 40°F inside plate temperature in -20°F ambient conditions (applicable for all mild steel plate up to 1 1/4" thickness).

Hotfoil engineering staff has designed many such systems both large and small. Our package will involve heater layout, installation equipment and instructions, electrical schematics and temperature control equipment. All applications are handled on a project management basis to ensure customer and end user satisfaction.

PRODUCT/SYSTEM FEATURES

Custom Designed System

Each client gets the assurance that the specific problem in question is being addressed with a product designed for the job.

Factory Mutual Approved/MSHA Accepted

The product and system are approved for use in hazardous, wet and dust laden atmospheres. Safety and reliability is unquestionable.

Insulated Heating Panels

This feature can save thousands of dollars through the elimination of on-site thermal insulation requirements.

Full Coverage Design

Satisfactory performance guaranteed even in the harshest of winter climates.

Simple Installation

Reduces installation costs, no special skills or tools required.

Low Watt Density

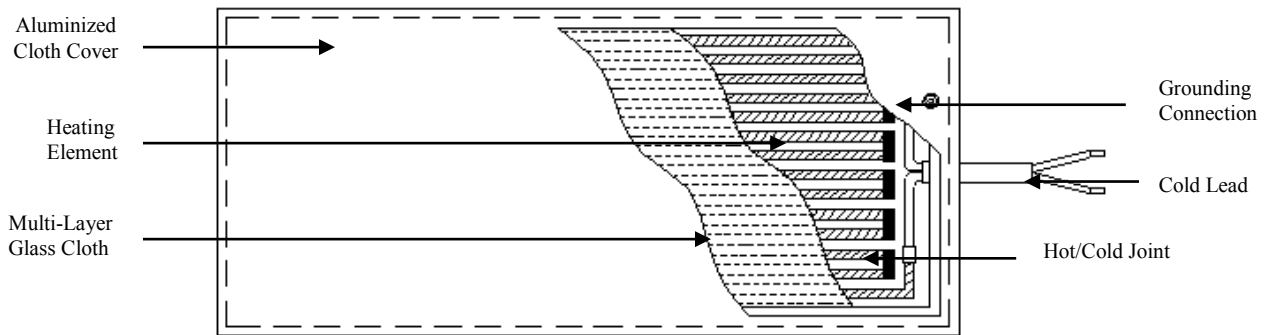
Minimal electrical consumption and running costs.

Hotfoil manufactured FRP heating panels have been reviewed by the M.S.H.A. (Mines Safety Health Association) and accepted for use in the coal mining environment and industry.

PRODUCT DATA SHEET

TYPE GA HEATING BLANKETS FOR INDUSTRIAL APPLICATIONS UP TO 350°F

The type G heating blanket is enveloped in an outer covering of industrial grade conductive aluminized cloth. This aluminized cloth meets the NEC 427.23 for grounding requirements.



The GA blanket can be made square, rectangular, trapezoidal, circular, etc., custom designed to suit the application/project. Nichrome foil elements are used to provide the heat source. Nichrome has been the element of choice for reliability and stability for decades offering unparalleled heater performance.

Data

Heating Elements	80/20 Nickel Chrome
Electrical Insulation	Fiberglass Cloth, Electrical Grade
Cold Joint Splices	Pure Nickel Splice
Cold Leads	Nickel Plated Copper, 16AWG.
Cold Lead Insulation	Double Fiberglass Braided & Varnished
Cold Lead Sheath/Overjacket	Extruded Silicone Rubber
Voltage	Up to 600volts
Outer Covering	Aluminized Fiberglass Cloth
Minimum Installation Temperature	-40°F
Maximum Exposure Temperature	+850°F
Minimum Bend Radius	2 ½"



The aluminized cloth is nominally 0.016" thick and will not support combustion. The tensile strength of the cloth is 986 N/cm and 914 N/cm on the warp and weft respectively.

Applications

Hotfoil type GA Blankets are for use in dry locations protected from contact with water or liquids. They are ideal for use on SDA, baghouse and fabric filter hoppers, pipes, vessels and tanks for heat raising and temperature maintenance applications.

Note

All forms of heating systems must use some form of temperature control. This prevents overheating, reduces power consumption and decreases thermal stress on the heaters. We can provide any form of temperature control and power distribution for systems based on client's specific requirements.

Factory Mutual Approved

Type GA Heating Blankets have been approved by Factory Mutual Research for use in dry, non-hazardous locations.

Ordering Information

The Type GA Heating Blankets are generally custom designed for specific heating applications where irregular shapes or a system of special designs are required. For these applications, please contact us at the numbers below.

There are various parameters to be observed when considering GA Blankets for projects. These are:

- | | |
|--------------------|-----------------|
| 1) Minimum Length | 12" |
| 2) Maximum Length | 60" |
| 3) Minimum Width | 1.5" |
| 4) Maximum Width | 39" |
| 5) Maximum Voltage | 600V |
| 6) Maximum Loading | 500watts/sq.ft. |

For regular shaped blankets, please consult The Hotfoil type GA Blanket Ordering Information Sheet.

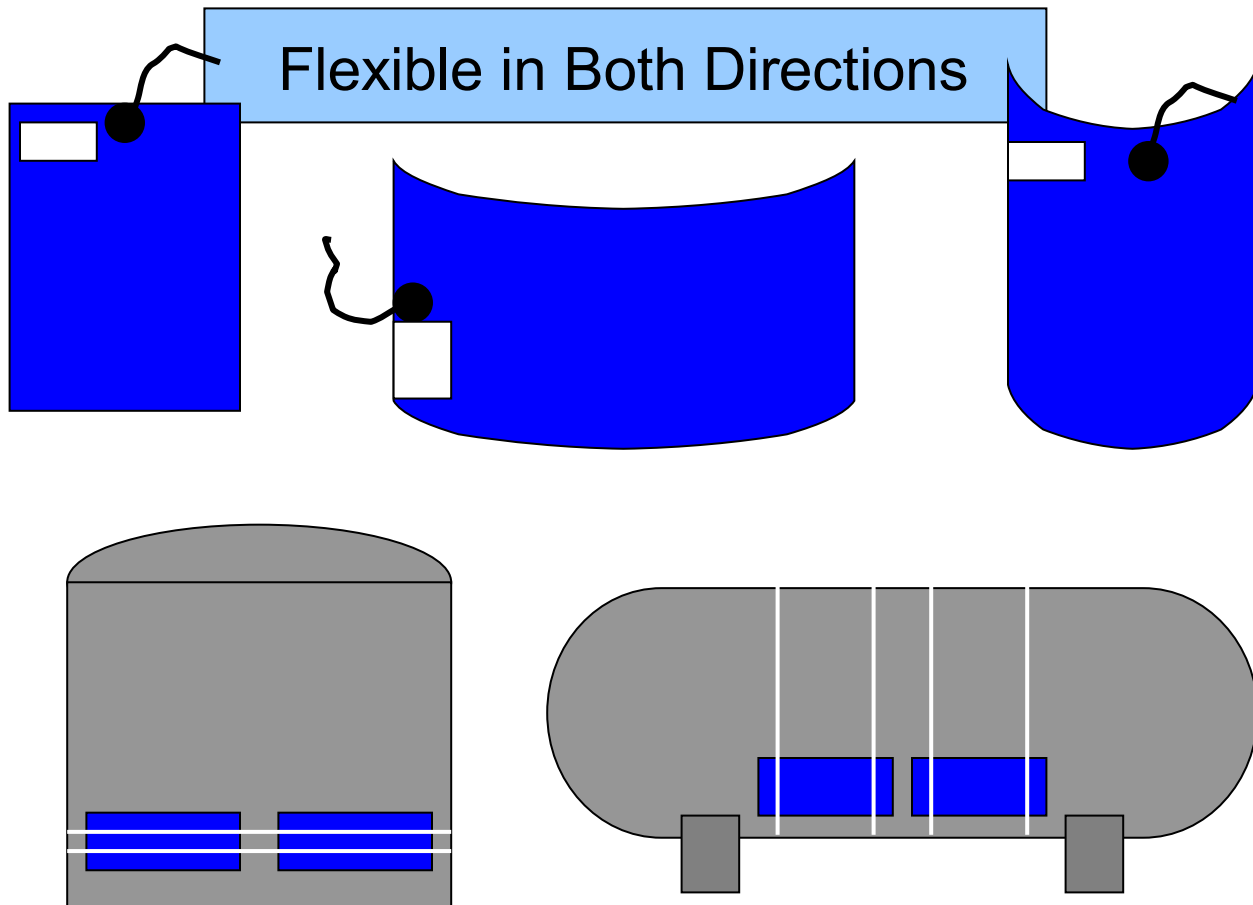
For a system design, client to supply a completed application design parameter sheet and dimensional vessel (etc.) drawing to Hotfoil Inc. for a complete Type GA Heating Blanket system design.....

ELP

TANK HEATING PANEL

The ELP (Epoxy Laminated Panel) is the most versatile tank heater available. Possessing unique flexibility, ELP heating panels can be used in a variety of heating applications ranging from freeze protection to process heating up to 212°F (100°C).

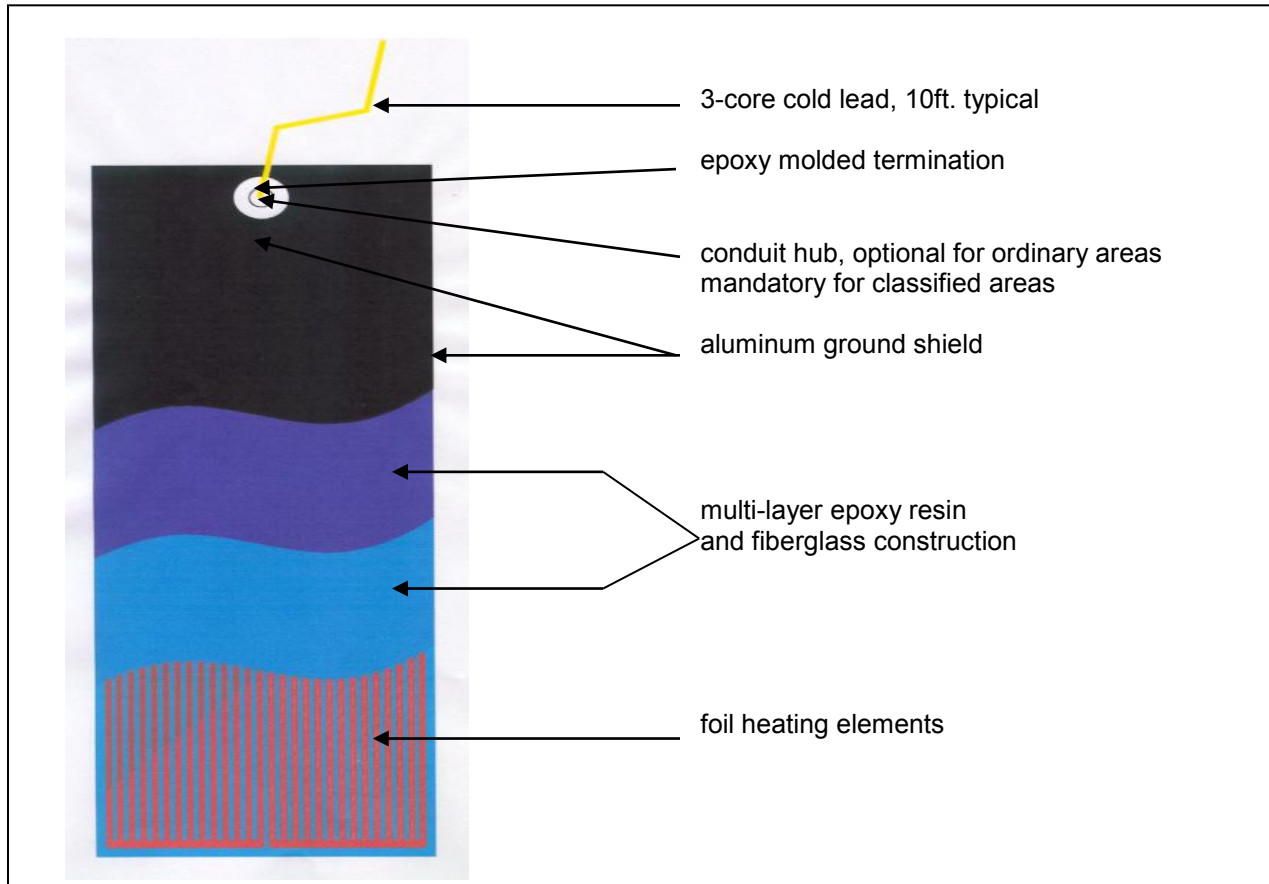
ELP Heating Panels can be used on either vertical or horizontal tanks of metallic or non-metallic construction. They can be used in dry, wet, or corrosive environments in ordinary or approved hazardous locations.



ELP Heating Panel — the Superior Heater for Tank Heating Applications up to 212°F (100°C)

The ELP panel is the heater for the 21st century.

Its unique epoxy-fiberglass construction utilizes foil resistance elements that are synonymous with our proven range of products. The low watt density of this heating panel, together with its low mass, provide unequalled thermodynamic performance. The ELP heater is heat and pressure cured to give its robust qualities such as strength, durability, heat, water, and corrosion resistance. All panels have 10'-0" long waterproof cold leads.



ELP Specifications

Model:	ELP-1	ELP-2	ELP-3	ELP-4	ELP-5	ELP-6	ELP-7	ELP-8	ELP-9
Size (inches)	24 x 18	48 x 18	48 x 24	48 x 36	48 x 40	48 x 18	48 x 24	48 x 36	48 x 40
Power (watts)	275	550	375	1100	480	550	375	1100	480
Voltage (volts)	120	120	120	120	120	240	240	240	240
D.C. Resistance* (ohms)	52	26	36	13	30	105	144	52	120
Weight (lbs.)	3	6	8	12	13	6	8	12	13
Area (sq.ft.)	3	6	8	12	13.3	6	8	12	13.3
Power Density (w/sq.ft.)	92	92	50	92	36	92	50	92	36
Current (amps)	2.3	4.6	3.3	9.2	4	2.3	1.7	4.6	2



Other information:

Maximum Exposure Temperature.....	250°F / 121°C
Cold Lead	#16awg cable, 105°C, 600V, 13A
Minimum Installation Temperature	-40°F / -40°C
Minimum Bending Radius	2 feet
Option - Conduit Hub (-H)	1/2" NPT, Aluminum

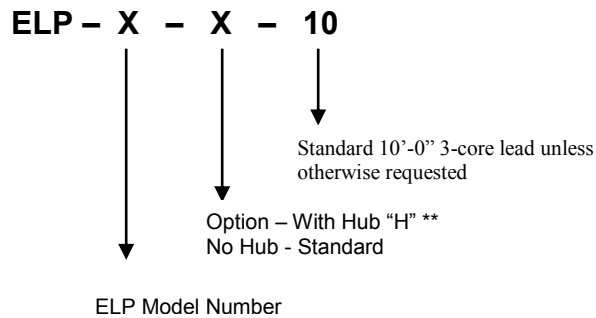
Notes:

1. Non-metallic tanks, lined tanks, tanks containing heat sensitive or viscous materials require special considerations. Consult HOTFOIL.
2. Most typical heating applications drawing less than 20 amps of current may be controlled directly by one or two 20amp rated Controllers.
3. All applications drawing more than 20amps of current, use multi-phase voltage, alarm, or monitoring, etc. require special control equipment - Consult HOTFOIL.
4. For tank "heat up" applications - consult HOTFOIL.
5. Hotfoil recommends the use of an override thermostat or controller on all applications.

Installation:

ELP heating panels are quick and easy to install, require no special tools or skills. Heaters are usually installed by banding them to the tank with metal bands or polyester straps. Installation of several ELP heating panels takes only a few minutes. Refer to ELP Installation Instructions for full details.

ELP Ordering Information:



FM Approvals

Class I, Division 2, Groups B, C, D
Class II, Divisions 1 & 2, Groups F, G
Class III, Divisions 1 & 2
Ordinary Areas

** Hubs - "A" Aluminum (Standard)
"SS" Stainless Steel
"P" PVC Coated

** Note: Hubs are supplied as standard on ELP Panels when used in hazardous locations.

Resin System: The resin system is based on a BROMINATED BISPHENOL A epoxide resin cured with DICYANDIAMIDE and BENZYL DIMETHYLAMINE.

Fire Retardancy: The resin system is approved by Underwriters Laboratory (File E 53727) to UL 94 V-0 flammability rating when used in NEMA grade FR4 laminates.



Heating System Design Guide

To determine the amount of heaters required for a typical tank heating application, follow these easy steps:

1. Calculate total Tank Surface Area
 Tank Area = $3.142 \times D \times (R+H)$
 Where, D = tank diameter
 R = tank radius
 H = tank height (or length)
2. Find Basic Heat Loss from Table 1.
3. Find Insulation Correction Factor from Table 2.
4. Find Windage Factor from Table 3.
5. Add 10% for vertical tanks standing on a concrete base - 1.1 multiplier.
6. Add 10% for safety - 1.1 multiplier.
7. Calculate the Total Heat Loss,
 Multiply steps:
 $1 \times 2 \times 3 \times 4 \times 5 \times 6 = \text{Total Heat Loss (Heat Required)}$
8. Select a suitable ELP Heating Panel for the application from the ELP Specifications.
9. Find the ELP Load Factor at the application temperature from the ELP Load Factor Graph.
10. Calculate selected ELP heater wattage at the application temperature. Multiply Load Factor from step 9 by selected ELP wattage.
11. Calculate selected ELP heater wattage due to voltage difference from design. Multiply the heater wattage (step 10) by the corresponding voltage factor from Table 4.
12. Determine the quantity of ELP Heating Panels required. Divide Total Heat Loss/Requirement by the actual ELP wattage. Divide step 7 by step 11.

Note: If this result's fraction exceeds 0.1, increase the quantity of ELP Heaters by one (to next higher whole number).

Table 1 - Basic Heat Losses (W/sq.ft.)

Delta T (°F)	Insulation Thickness (In)				
	1	1 1/2	2	3	4
50	3.6	2.3	1.7	-	-
75	5.4	3.5	2.6	2.0	-
100	7.2	4.8	3.5	2.6	-
125	9.0	6.2	4.5	3.3	-
150	10.9	7.6	5.5	4.0	3.1
175	12.9	9.0	6.6	4.7	3.7
200	14.8	10.4	7.7	5.4	4.3
225	-	11.9	8.9	6.2	4.9
250	-	13.5	10.1	7.0	5.5

Table 2 - Thermal Insulation Correction Factors

Thermal Insulation Type	Insulation Factor
Polyurethane	0.7
Fiberglass	1.0
Foamed Plastic	1.1
Polystyrene	1.2
Calcium Silicate	1.5
Cellular Glass	1.6

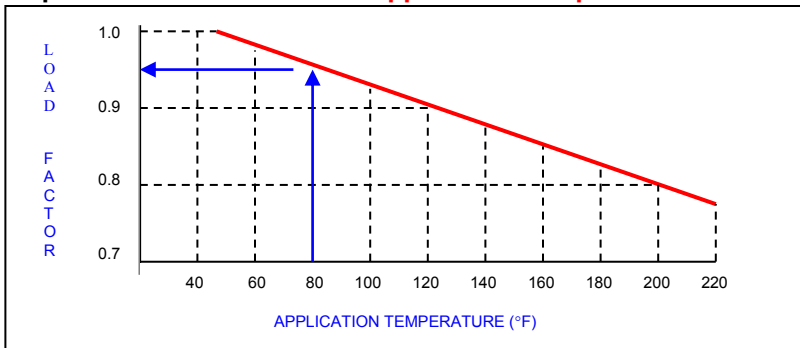
Heating System Design Example

Maintain a 12'-0" diameter by 20'-0" high vertical tank at 80°F, when the minimum ambient temperature is -20°F and wind is 25mph. Tank will be insulated with 2" thick polyurethane foam insulation and is mounted on a concrete base. Heaters will operate on 220VAC.

- To calculate total Tank Surface Area in sq.ft., multiply the following:
 Tank Area=3.142 x D x (R+H)=3.142 x 12' x (6'+20')=980sq.ft. where D = 12', R = 6', H = 20'
- The Basic Heat Loss from Table 1 for Delta T = 100°F, (80°F - (-20°F)), and 2" thermal insulation is 3.5watts/sq.ft.
- The Insulation Correction Factor from Table 2 for Polyurethane thermal insulation is 0.7.
- The Windage Factor from Table 3 for 25mph wind velocity is 1.12.
- To add 10% for vertical tanks standing on a concrete base multiply by 1.1.
- To add 10% for safety - multiply by 1.1.
- To calculate the Total Heat Loss (Heat Required), multiply steps 1 through 6.
- For this 220VAC application, an ELP-6 (48" x 18", 550W, 240V) is a suitable choice.
- To find the ELP Load Factor at 80 °F from the Graph, follow 80°F vertical line up to the graph and then horizontally across to the left and read the value of 0.95.
- To calculate actual ELP wattage, multiply 550W x 0.95 = 523W.
- Since the supply voltage is 220VAC while heater design is 240VAC, multiply heater wattage (523W) from step 10 by the corresponding voltage factor 0.84 from Table 4: 523W x 0.84 = 439W.
- To determine the total quantity of ELP Heating Panels required for this heating system, divide step 7 by step 11:

Quantity of ELP Panels = 3254W ÷ 439W = 7.4 Panels.
 Since the fraction exceeds 0.1, the total quantity of ELP tank heating panels required is 8.

Graph – ELP Load Factor vs. Application Temperature



The ELP heating panel possesses a feature of being able to "load shed". ELP heater decreases its power output as its temperature increases. Use the above graph to determine each heater's wattage at the application temperature.

Table 3 - Windage Factors

Wind Velocity (mph)	W.F.
0 - 10	1.03
11 - 20	1.07
21 - 30	1.12
31 - 50	1.17

Table 4 - Voltage Factors

Supply Voltage	V.F.
120	1.00
115	0.92
110	0.84
240	1.00
220	0.84
208	0.75

PRODUCT DATA SHEET
SR HEATING TAPE

Introduction

Hotfoil SR Self-Regulating cut-to-length Heating Tape is an efficient, reliable means of freeze protection for pipes, tanks, vessels, etc.

This robust heating tape has found full acceptance in all industrial segments. The heating tape carries **FM, UL** and **CSA** Approvals for Indoor / Outdoor / Hazardous and Non-Hazardous environments. For applications in hazardous (explosive) areas, consultation with Hotfoil is needed to ensure compliance with all requirements.

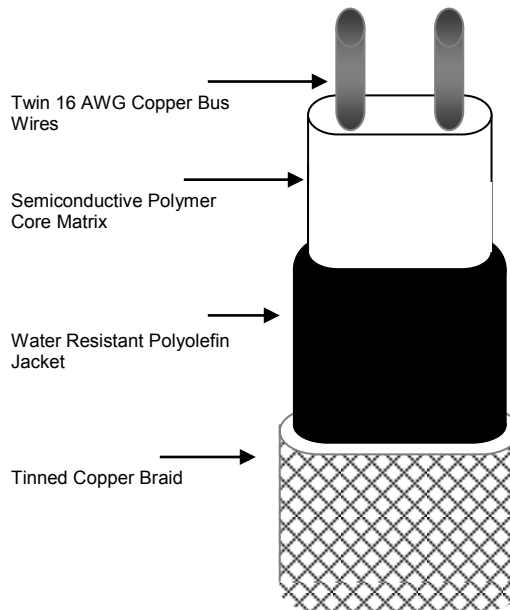
Construction Details

Provide reliable electrical..... current capability.

"Self Regulating" component of the cable, its..... electrical resistance varies with temperature. As process temperature drops, the core's heat output increases; as process temperature rises, the heat output decreases.

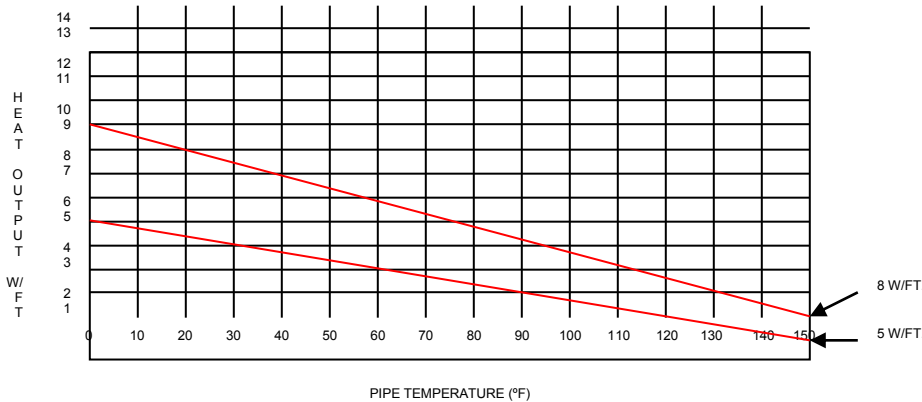
Flame retardant, electrically insulates the matrix..... and buss wires and provides resistance to water and some inorganic chemical solutions.

Provides additional mechanical protection in any..... environment and a positive ground path. Complies with NEC 427.23.



- * 16AWG Buss Wires
- * Energy Efficient
- * Maintain Temperatures 150°F
- * Exposure Temperature up to 185°
- * Full Line of Accessories
- * Can be Overlapped
- * Self Regulating
- * Cut to Length
- * Long Circuit Lengths
- * 5 & 8 Watts per Foot
- * 120volt
- * 208-277volt

Thermal Output Ratings on Insulated Metal Pipe



As the heating tape or surrounding area temperature increases, the output of the heating tape decreases for energy efficiency.

Conversely, as the temperature decreases the heating tape output increases.

For non-metallic pipe installations, consult Hotfoil.



Standard Product Range

Determine Circuits / Circuit Protection

Circuit protection depends on the breaker size being used and the start-up temperature. The National Electric Code (NEC) requires the use of ground fault protection breakers for heating cable. The following chart shows the maximum circuit length for a given breaker rating.

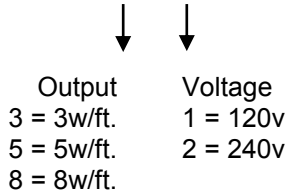
Catalog Reference	Nominal Output (W/Ft.)	Operating Voltage	Maximum Circuit Length 50°F Start-Up (ft.)						Maximum Circuit Length 0°F Start-Up (Ft.)						Maximum Circuit Length -20°F Start-Up (Ft.)					
			10A	15A	20A	25A	30A	40A	10A	15A	20A	25A	30A	40A	10A	15A	20A	25A	30A	40A
Circuit Breaker			10A	15A	20A	25A	30A	40A	10A	15A	20A	25A	30A	40A	10A	15A	20A	25A	30A	40A
SRL3-1C	3.0	120	205	305	360	NR	NR	NR	135	200	270	330	360	NR	120	185	245	300	360	NR
SRL3-2C	3.0	240	400	600	660	NR	NR	NR	275	415	555	660	NR	NR	245	370	495	600	660	NR
SRL5-1C	5.0	120	125	185	250	270	NR	NR	90	135	180	225	270	NR	80	120	160	205	245	270
SRL5-2C	5.0	240	250	375	505	540	NR	NR	180	270	360	450	540	NR	160	245	325	405	490	540
SRL8-1C	8.0	120	100	150	200	215	NR	NR	70	110	145	180	215	NR	65	100	130	165	200	210
SRL8-2C	8.0	240	185	285	375	420	NR	NR	135	200	265	335	395	420	120	175	235	300	350	420

NR = Not Required. Maximum circuit length has been reached in a smaller breaker size.

The SR heating tape can be used on other voltages i.e. 110V/115V/120V or 277V/220V/208V with the resultant change in watts. For applications other than 120V or 240V, please consult Hotfoil.

Ordering Information

SRL - X - XC → Tinned Copper Braid (NEC 427.23)



E.G.:
SRL-5-1C = 5w/ft., 120volt with Tinned Copper Braid

All SRL tape is supplied standard with tinned copper braiding.

Other Applications

- Preheating of Pipes and Vessels
- Heating of Vacuum Components in High Energy Physics
- Low Melting Point Metals
- Asphalt Plants
- Electrostatic Precipitators
- Tanks
- Temperature Maintenance
- Reactors
- Chemical Vessels
- Bitumen Pots
- Baghouses
- Etc.

PRODUCT DATA SHEET

PCW HEATING TAPE

Suitable for pipe tracing applications up to 400°F

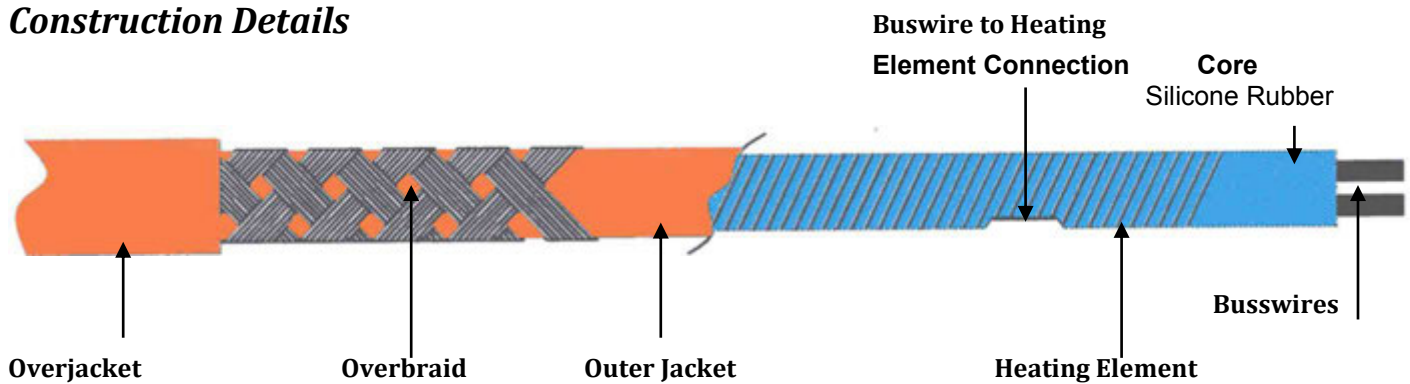
Introduction

The PCW heating tape is a parallel circuitry, constant wattage heater for pipe tracing. Using the most up to date components and production machinery results in the most technically accepted product for industry. This rugged heater gives uniform heat along its length.

The silicone rubber based heater is the ultimate in flexibility making it so easy to install in all types of installations. Pre-molded ancillary fittings allow for easy circuit termination.

A wide range of power outputs and voltages make this product ideal for temperature maintenance and/or heat raising applications.

Construction Details



Application Data

Applications	Freeze Protection of Piping Systems, Tanks & Vessels Temperature Maintenance of Pipes, Tanks & Vessels Heat Raising of Pipes, Tanks & Vessels
Maximum Exposure Temperature	400°F (204°C)
Minimum Installation Temperature	-40°F (-40°C)
Resistance to Moisture	Water Resistant

Construction

Tinned copper bus wires are extruded into a silicone rubber core. At precise intervals, a notch is made into the core to alternately expose the bus wires. A nichrome resistance wire is spiraled around the center core and is mechanically connected to the bus wires to give uniform contact. This is then extruded with silicone rubber as a continuous unbroken sheath. Overbraiding is applied to meet NEC 427.23.

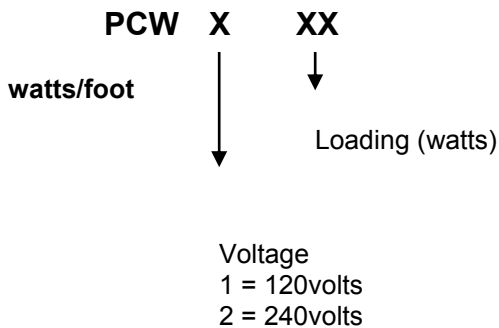


Standard Product Range

Catalog Reference	Nominal Output		Operating Voltage	Zone Length	Maximum Circuit Length		Total Amps at Maximum Circuit Length
	(W/M)	(W/Ft.)			Meters	Feet	
PCW 1/15	15	4.5	120	39"	140	460	17.3
PCW 1/20	20	6.0	120	39"	120	395	19.8
PCW 1/30	30	9.0	120	39"	100	330	24.8
PCW 1/40	40	12.0	120	39"	76	250	25.0
PCW 1/50	50	15.0	120	39"	60	200	25.0
PCW 2/15	15	4.5	240	39"	244	800	15.0
PCW 2/20	20	6.0	240	39"	213	700	17.5
PCW 2/30	30	9.0	240	39"	190	625	23.4
PCW 2/40	40	12.0	240	39"	152	500	25.0
PCW 2/50	50	15.0	240	39"	122	400	25.0

The PCW heating tapes can be used on other voltages i.e. 110V/115V/127V or 277V/220V/208V with the resultant change in watts. For applications other than 120V or 240V, please consult Hotfoil.

Ordering Information

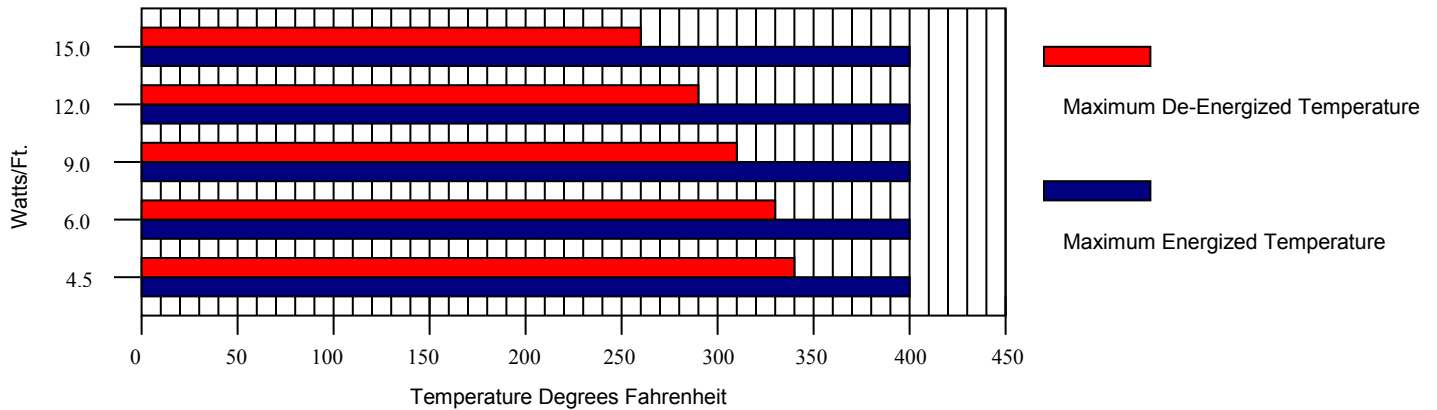


E.G.:
PCW120 = 120volt, 20 watts/meter or 6
with Tinned Copper Braid

All PCW tape is supplied standard with tinned copper braiding. 304 stainless steel is optional. PCW tape can be overheated with silicone rubber. Add "S" to the ordering details, i.e. PCW120S.

All heating systems must be adequately and correctly temperature controlled. Hotfoil will recommend a method for each applications relative to the on-site conditions.

Suggested Operating Temperatures of PCW Heating Tape



Accessory parts for the PC tape

Components

PTK – Power Termination Kit (for one circuit)

SK – Splice Kit

TA – Tee Splice Kit

JB – Junction Box, 19 cubic inch with three (3) 3/4” entries.
 Listed for wet locations with gasketed cover.



MINERAL INSULATED (M.I.) HEATING CABLES

Mineral insulated metal sheathed heating cables have found a niche in the electric surface heating industry. The robust heater has earned a reputation for strength and durability.

The heater is comprised of three components: (1) a central conductor of an electrically resistive metal, (2) surrounded by a highly compressed mineral insulant (MgO), (3) sheathed with a metal covering of copper or stainless steel. The metal sheathing provides a permanent ground to comply with NEC 427.23. The cables, approved by FM, UL, CSA and a host of other testing laboratories, can be installed in hazardous and non-hazardous areas.

Copper sheathed cables are used for general environments where corrosion and high temperatures will not be evident. The cables should not be used above a working temperature of 300°F or where a withstand temperature of more than 400°F is required.

Stainless steel sheathed cables are able to withstand 1250°F energized and can maintain temperatures up to 800°F. The base nichrome sheath is unaffected by a wide range of aggressive alkalis and acids, thus making the cable ideal for projects in chemical plants, refineries, utilities, etc.

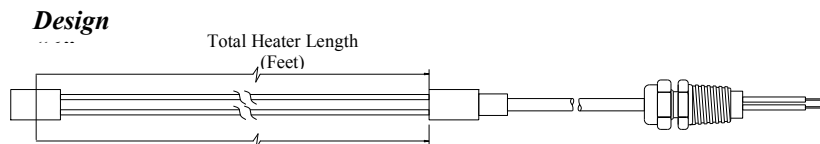
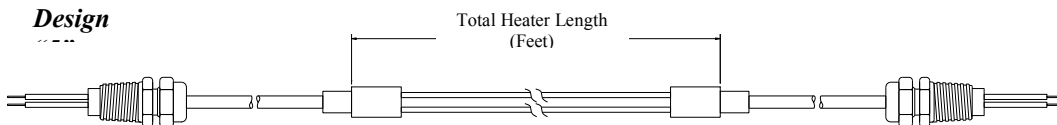
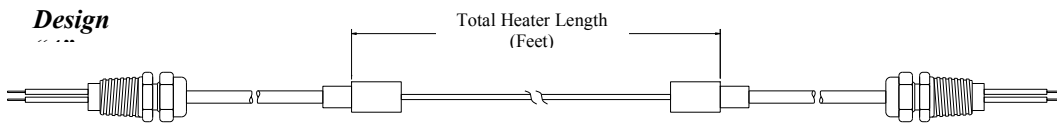
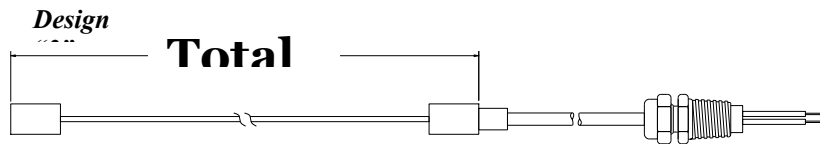
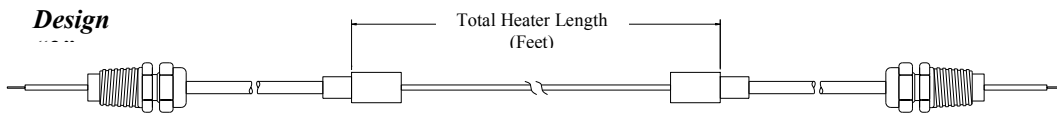
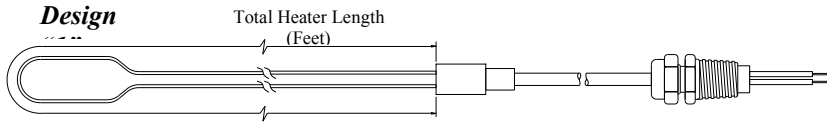
Using single or three phase supplies and carefully selecting the correct cable can make heating circuits for voltages up to 600volts. Hotfoil offers a design service to clients for all heating cables and ancillary components.

Two types of heater construction are available for designing the best system available.

Both single and two core heating cables are available and thorough consideration is given to each design to give the best system possible. We currently have 29 single core cables and 41 two core cables.

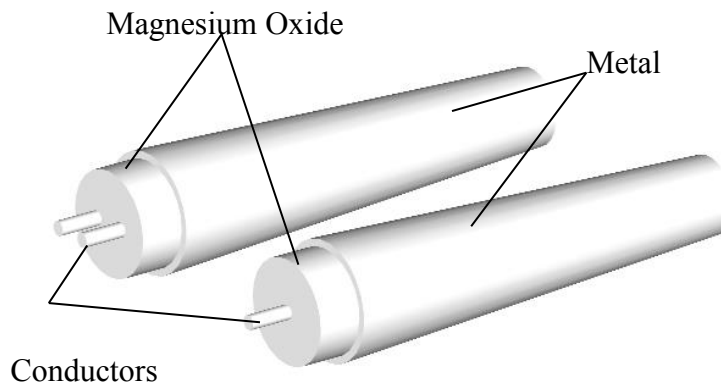
On all M.I. systems we recommend that metal tape or foil be applied over the heating cables prior to installing the thermal insulation. This will avoid any thermal insulation becoming trapped between the cable and the object being heated.

Basic Heater Configurations

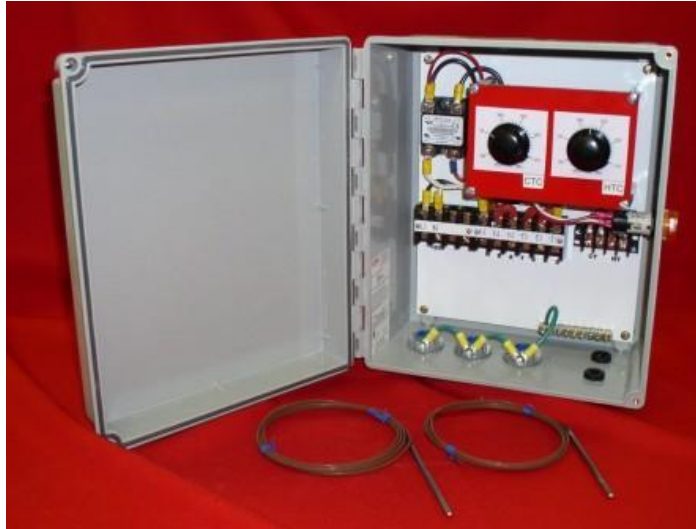


BASIC HEATER CONFIGURATIO

Heating cable units are supplied as complete factory fabricated assemblies consisting of the heated section joined to a length of M.I. non-heating power cable pre-terminated and ready to fasten it on a junction box with an N.P.T. threaded connector.



Hotfoil Type 120 Volt Nema 4X Control Box
Part # N4X120V50A2ET1L10PT

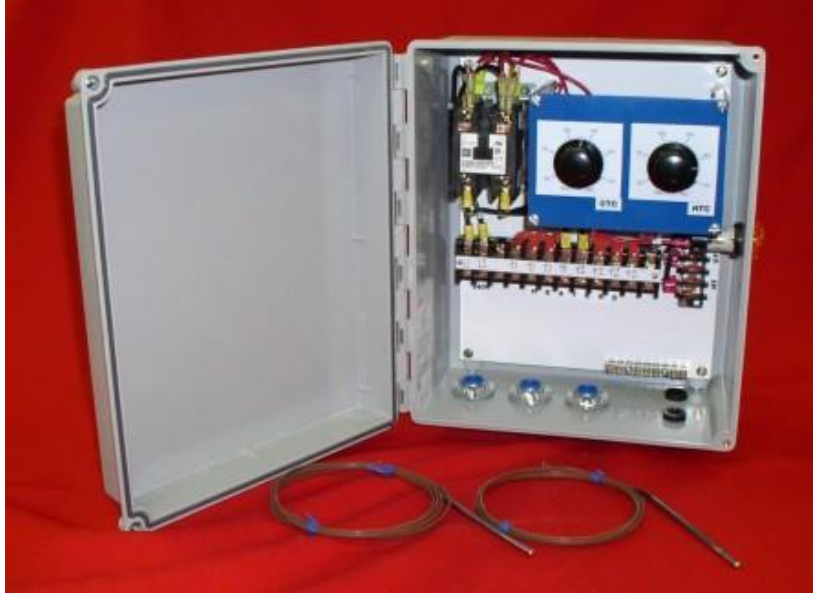


Hotfoil-EHS is proud to offer our Nema 4X Fiberglass Control Box with Electronic Thermostats for Tank Heater and Heating Tape Control

Standard features include.

- Pak-Stat Dual Electronic Controls
 - One Controller for Control 0-150 Deg.f.(Thermocouple located on the Tank)
 - One Controller for High-Limit 50-175 Deg.f. (Thermocouple located on the Heater)
- Teledyne Solid State Relay 50-Amp Rated.
- One (1) Amp Fuse to protect the Controllers.
- General Electric 30 Amp 10-point Terminal Block.
- 4-Point Compensation Terminal Block for Type “J” Thermocouples.
- Square “D” 7-Point Grounding Bar.
- Two 4” Probe Type “J” Thermocouples with 10ft. Teflon Coated Leads.
- Three (3) ½” NPT Hubs & Two Seal Tight Connectors for the T/C’s
- 120 Volt “Power on” light

Hotfoil-EHS Type 240 Volt NEMA 4X Control Box
Part # N4X240V1C2ET1L12PT

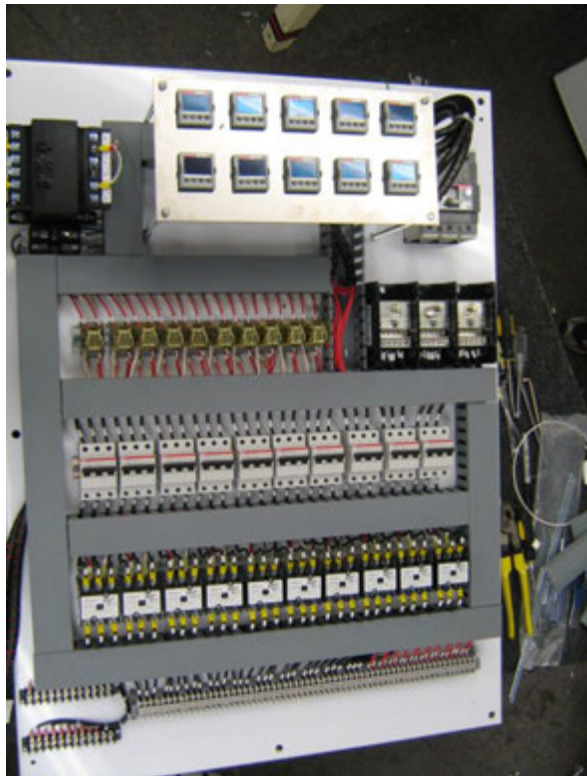


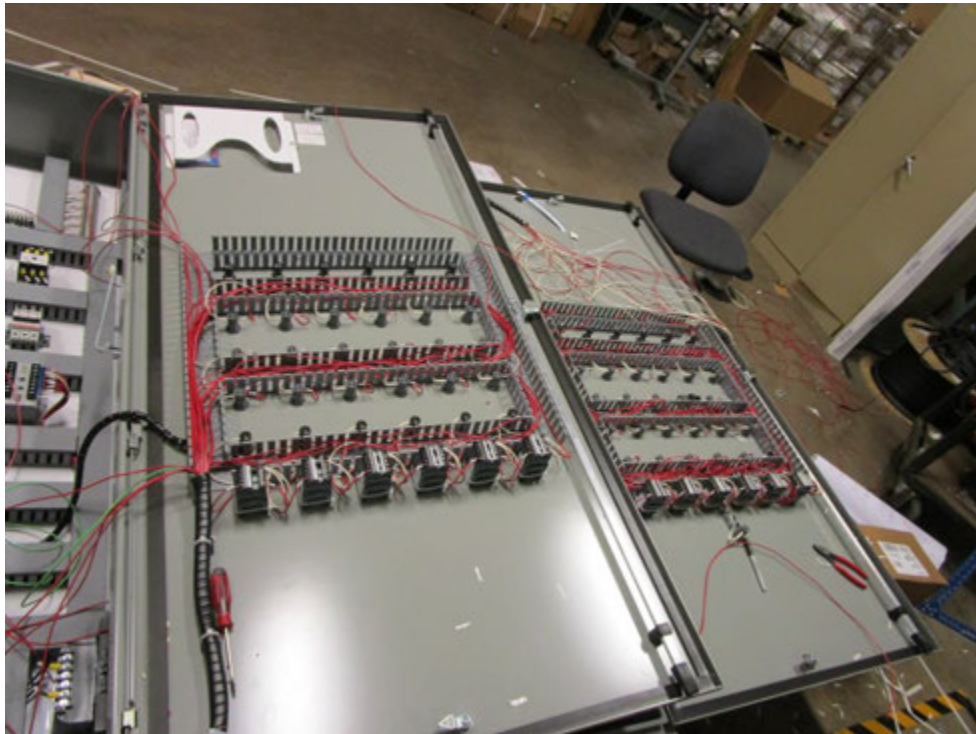
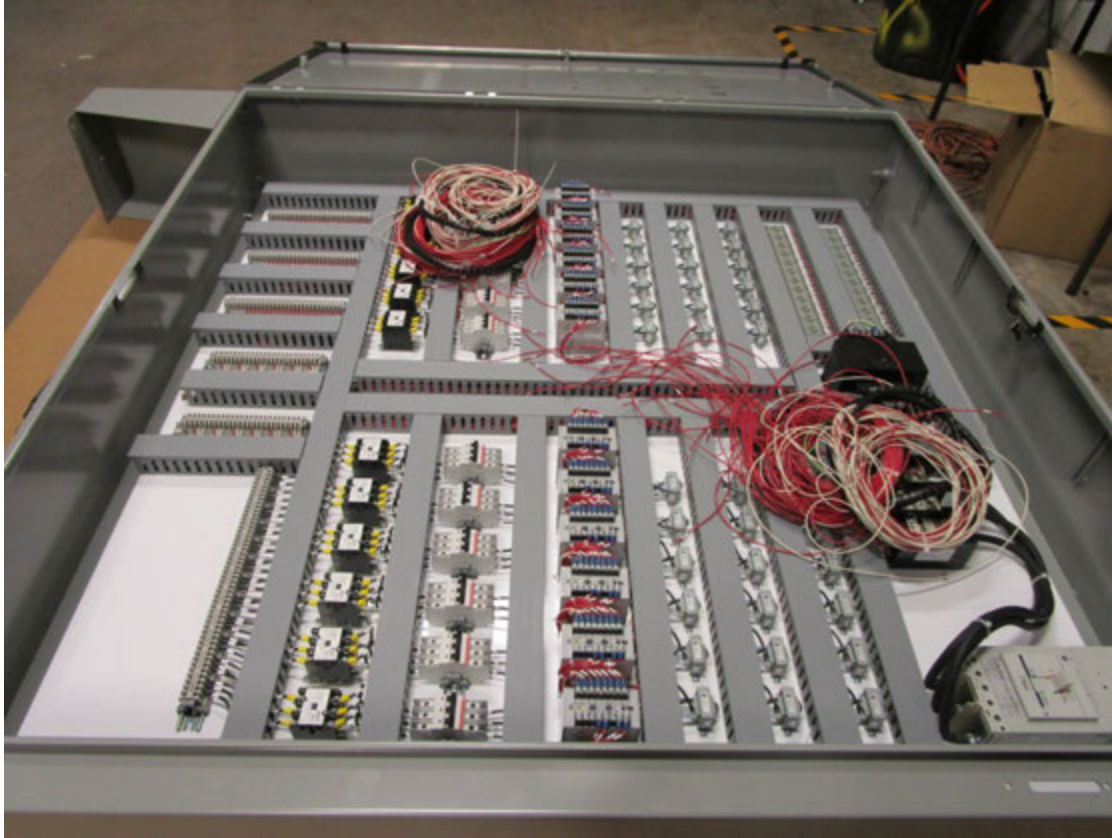
Hotfoil-EHS is proud to offer our new NEMA 4X Fiberglass Control Box with Electronic Thermostats for Tank Heater and Heat Tape Control

Standard features include.

- Pak-Stat Dual Electronic Controls 50-175 Deg.f.
One Controller for Control 0-150 Deg.f.(Thermocouple located on the Tank)
One Controller for High-Limit 50-175 Deg.f. (Thermocouple located on the Heater)
- 30 Amp Contactor, 2-Pole, with a 240 Volt Coil.
- Dual 1 Amp Fuses to protect the Controllers and the Contactor Coil.
- General Electric 30 Amp 12-point Terminal Block.
- 4-Point Compensation Terminal Block for Type “J” Thermocouples.
- Square “D” 7-Point Grounding Bar.
- Two 4” Probe Type “J” Thermocouples with 10ft. Teflon Coated Leads.
- Three (3) ½” NPT Hubs & Two Seal Tight Connectors for the T/C’s
- 240 Volt “Power on” Light

CONTROL PANELS OF VARIOUS SIZES











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Our Distribution Location(15,000 Sq.ft.) in LaPorte, TX



***Our Transformer and Welding Machine manufacturing Location
(12,000 Sq.ft.) in Chattanooga, TN***



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***REMEMBER "THE BITTERNESS OF POOR QUALITY LASTS LONG AFTER
THE SWEETNESS OF THE LOW BID!"***

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