



**Specializing in Industrial
Heating Systems, Controls,
Service, & Rental Equipment.**



(Our 25,000 Square Foot Hamilton, NJ location)

www.HotfoilEHS.com



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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.

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.

Sincerely,
Matthew Richards
President/Owner, Hotfoil-EHS Inc.



LEGEND

HB MODULE HOPPER HEATERS FOR BAGHOUSES AND PRECIPITATORS. (Pages 4-8)

GA HEATING BLANKETS, CUSTOM DESIGNED FLEXIBLE BLANKETS FOR CONICAL HOPPERS. (Pages 9-10)

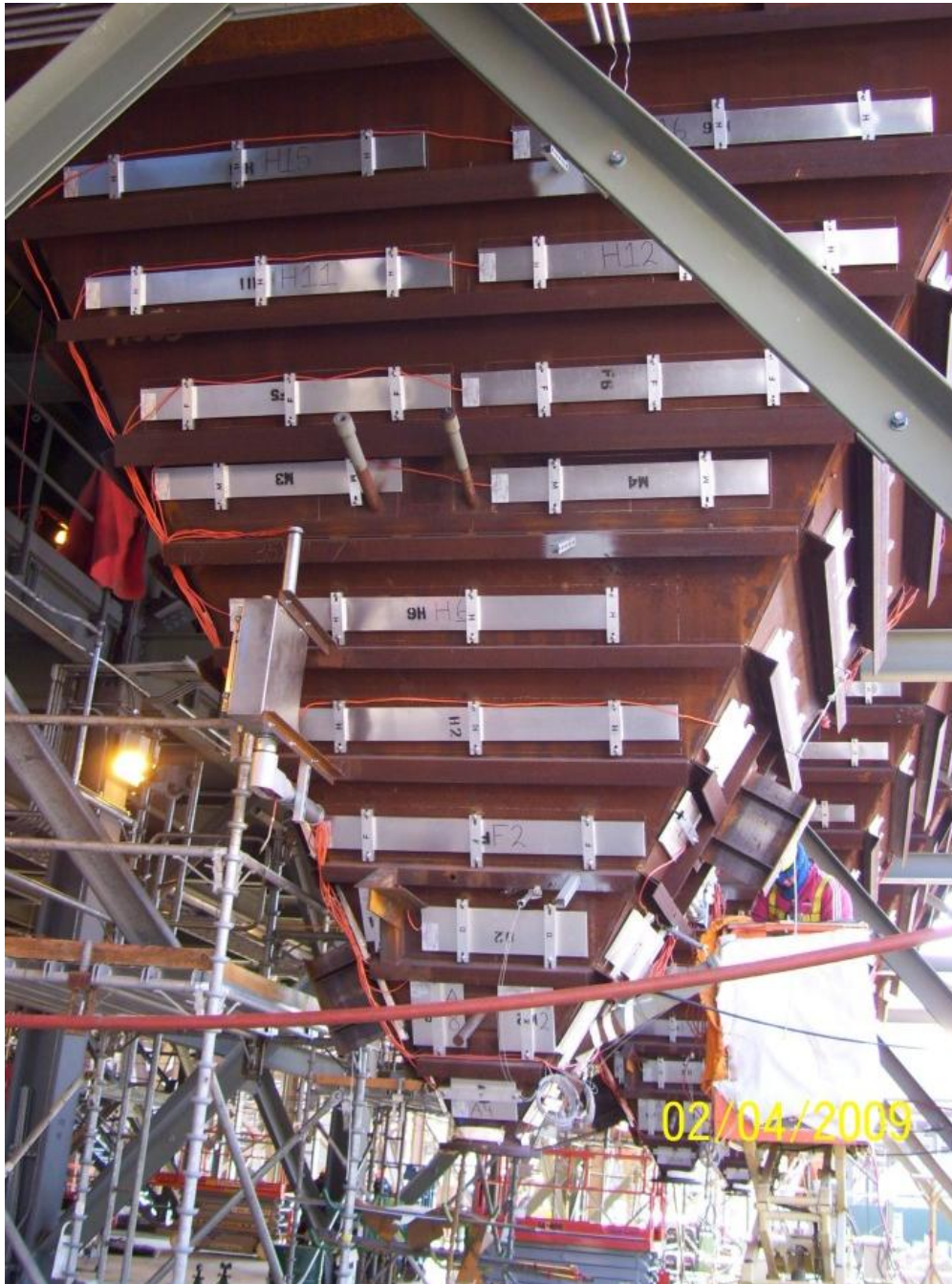
ELP TANK HEATING PANELS FOR FIBERGLASS, POLY, STAINLESS AND STEEL TANKS. (Pages 11-15)

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TYPICAL HOTFOIL-EHS HB MODULE HEATING SYSTEM

Please call for heater pricing on sets or individual heaters



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 software. Post contract design drawings involve schematic wiring details, heater mounting details, installation drawings, and installation, operating & maintenance (IOM) manuals.

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



HB MODULE 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:

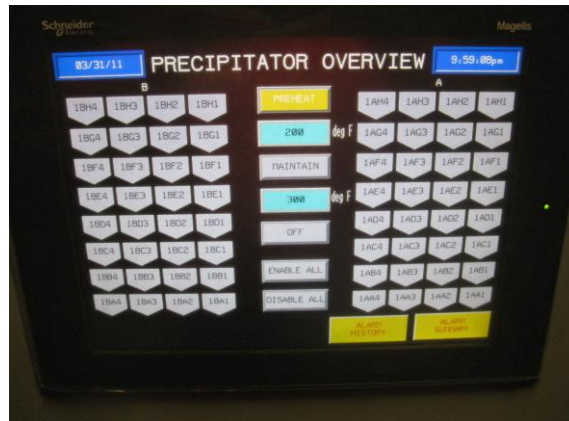
Build a heater by selecting appropriate code for each feature category. Example: **HB-2408-500-120-1-12-CC**

HB	24	08	500	120	0	12	CC
Heater Type	Length	Width	Watts	Volts	Lead Exit Point	Lead Length	Conduit Connector
Heater Type	Length	Width	Watts	Volts	Lead Exit Point	Lead Length	Conduit Connector
HB Module	24" (or as required)	8" (or as required)	500 (or as required)	120 (or as required)	0 – Middle of short side	12'-0" (or as required)	CC – Conduit Connector Blank/NC – No Connector Required

CONTROL SYSTEMS

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

- 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.
- Central control panels with main thru-the-door disconnect and 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 needs.





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 including the actual hoppers. We are offering hoppers up to 9' wide x 9' deep x 10' high in either steel or stainless steel up to a ¼ inch thickness. We are so sure of our heaters that we are willing to extend their warranty up to 10 years with the purchase of our controls and hopper. Whether it's designing systems in the field or engineering them at our Hamilton NJ location, our experience makes our "HB Modules" second to none.

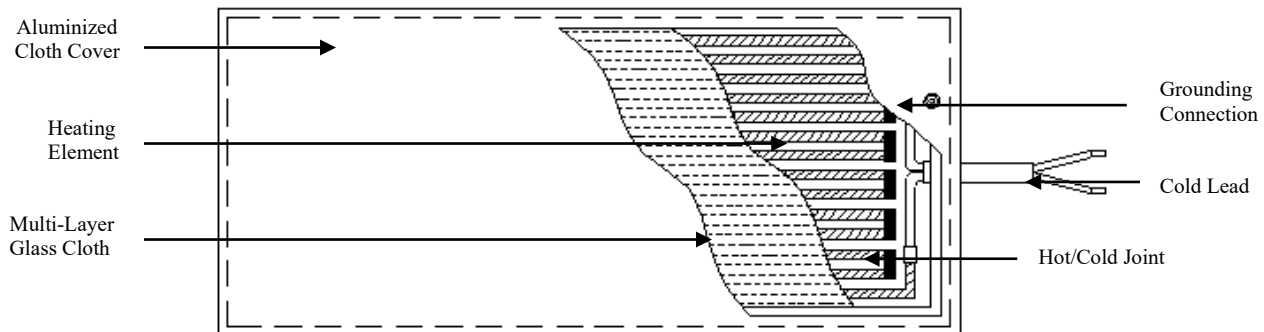
WHAT MAKES US DIFFERENT?

We can now supply the lower section of the hoppers to your specification. We will design the heating system to your specifications as normal. We will then build the hopper and 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.

GA HEATING BLANKETS - Custom designed flexible blankets for conical hoppers.

(For 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"



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/precipitator hoppers, pipes, vessels, and tanks for heat raising and temperature maintenance applications.

Control 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/or power distribution for systems based on the 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 design is required. For these applications, please contact us at the numbers at the end of this document.

There are various parameters to note 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-EHS "Type GA Blanket Ordering Information Sheet."

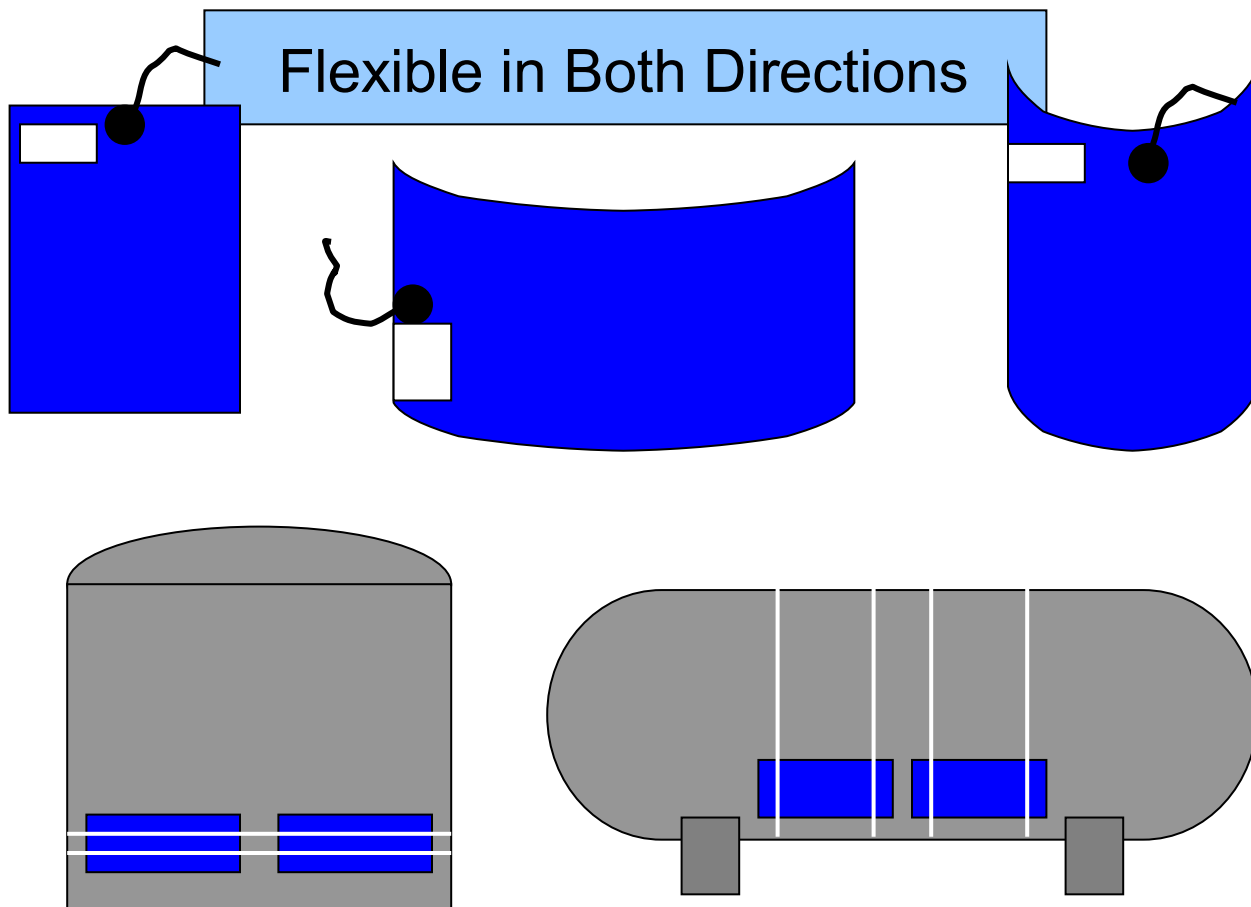
For a complete system design, the client would need to supply a completed application design parameter sheet and/or dimensional vessel (etc.) drawing to Hotfoil-EHS Inc.

Please call 609-588-0900 for more information.

ELP TANK HEATING PANELS - for Fiberglass, Poly, Stainless and Steel Tanks

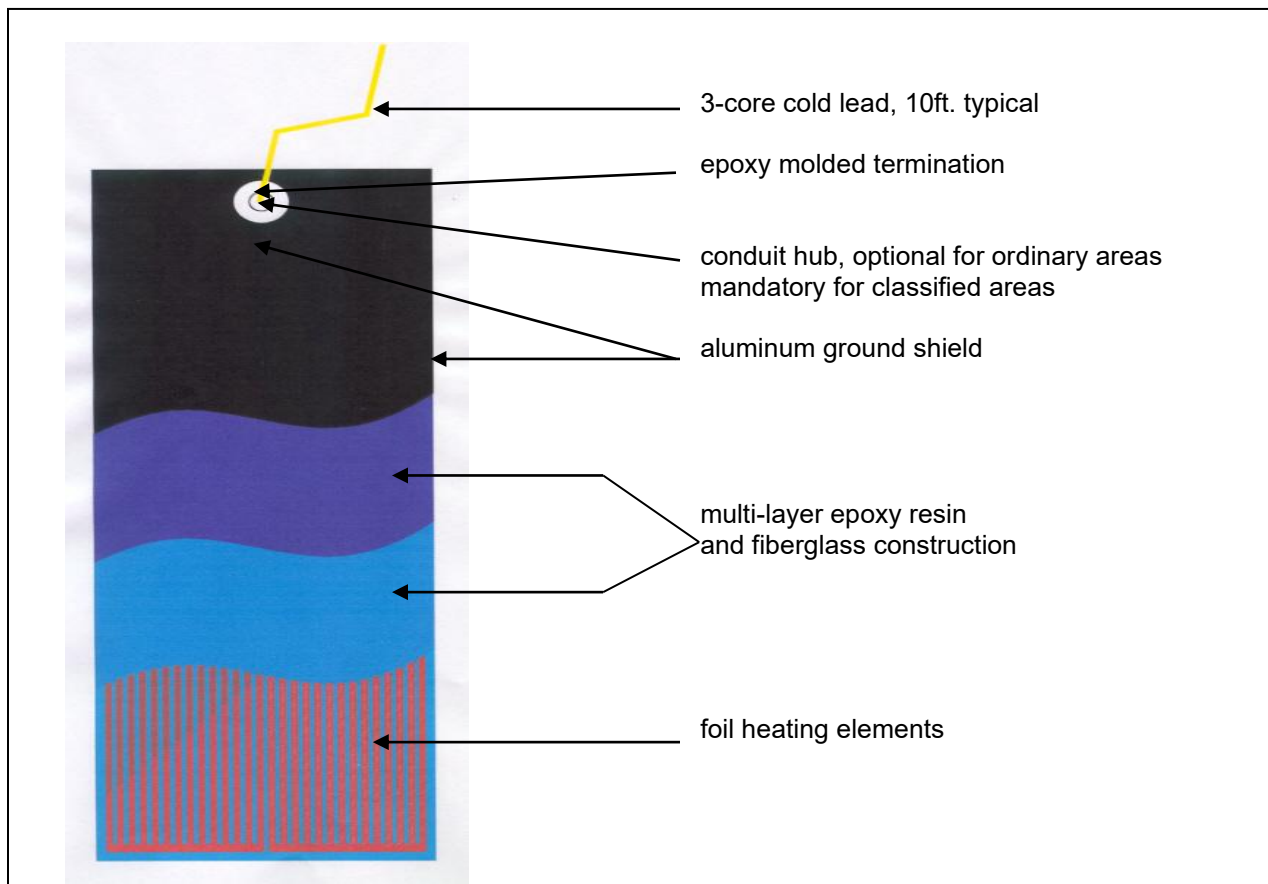
The ELP (Epoxy Laminated Panel) is the most versatile tank heater available. Possessing unique flexibility, ELP heating panels can be used in a variety of heating applications ranging from freeze protection to process heating up to 212°F (100°C).

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 Heater's unique epoxy-fiberglass construction utilizes foil resistance elements that are universal in our proven range of products. The low watt density of this heating panel, together with its low mass, provides unequaled thermodynamic performance. The ELP heater is heat and pressure cured to give its robust qualities such as strength and durability with substantial 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

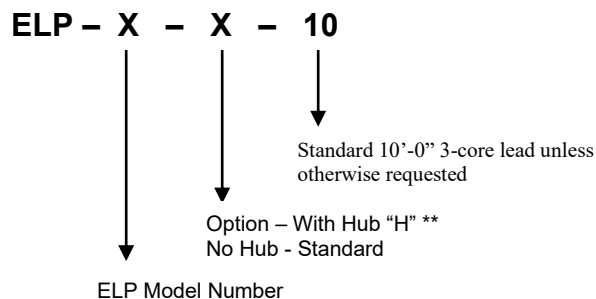
Notes:

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

Installation:

ELP heating panels are quick and easy to install and 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 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
 $\text{Tank Area} = 3.142 \times D \times (R+H)$
 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).

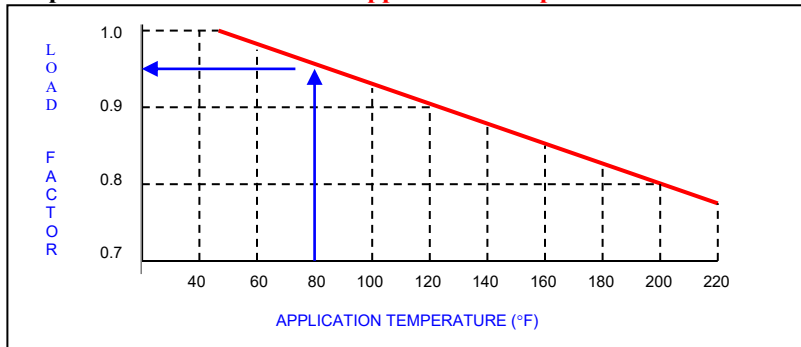
Table 1 - Basic Heat Losses (W/sq.ft.)

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

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

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:
 $\text{Tank Area} = 3.142 \times D \times (R+H) = 3.142 \times 12' \times (6'+20') = 980\text{sq.ft.}$ 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 = $3254\text{W} \div 439\text{W} = 7.4$ Panels.

Since the fraction exceeds 0.1, the total quantity of ELP tank heating panels required is 8.

SR HEATING TAPE - Self Regulating Heating Tape for Tanks and Pipes.

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-EHS 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.

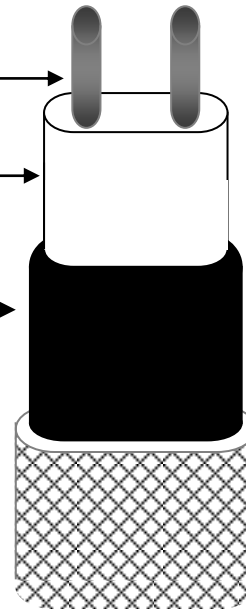
Provides additional mechanical protection in any.....
environment and a positive ground path. Complies
with NEC 427.23.

Twin 16 AWG Copper Bus
Wires

Semiconductive Polymer
Core Matrix

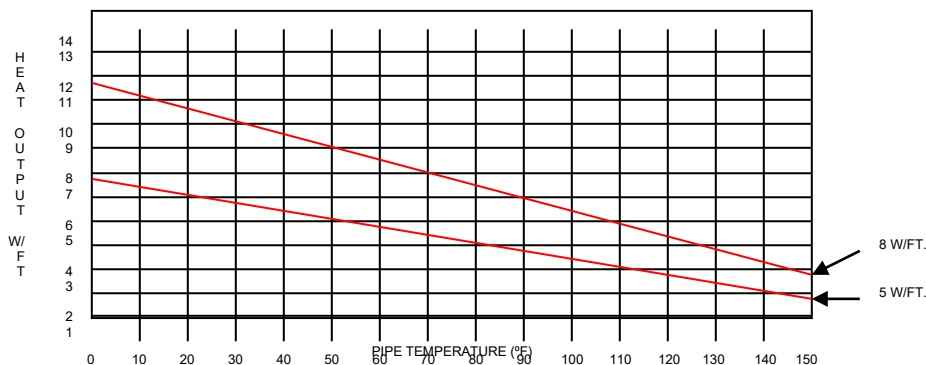
Water Resistant Polyolefin
Jacket

Tinned Copper Braid



- * 16AWG Buss Wires
- * Energy Efficient
- * Maintain Temperatures 150°F
- * Exposure Temperature up to 185°F
- * 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.)					
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-EHS.

Ordering Information

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

Output	Voltage
3 = 3w/ft.	1 = 120v
5 = 5w/ft.	2 = 240v
8 = 8w/ft.	

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.

MINERAL INSULATED (M.I.) Heating Cables

Mineral insulated, metal sheathed, heating cables have found a niche in the electric surface heating industry. These robust heaters have earned a reputation for strength and durability.

The heater is comprised of three components. A central conductor (1) of an electrically resistive metal that's surrounded by a highly compressed mineral insulant (MgO) (2) and sheathed with a metal covering of copper or stainless steel (3). 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 present. The cables should not be used above a working temperature of 300°F or where an exposure temperature of more than 400°F is required.

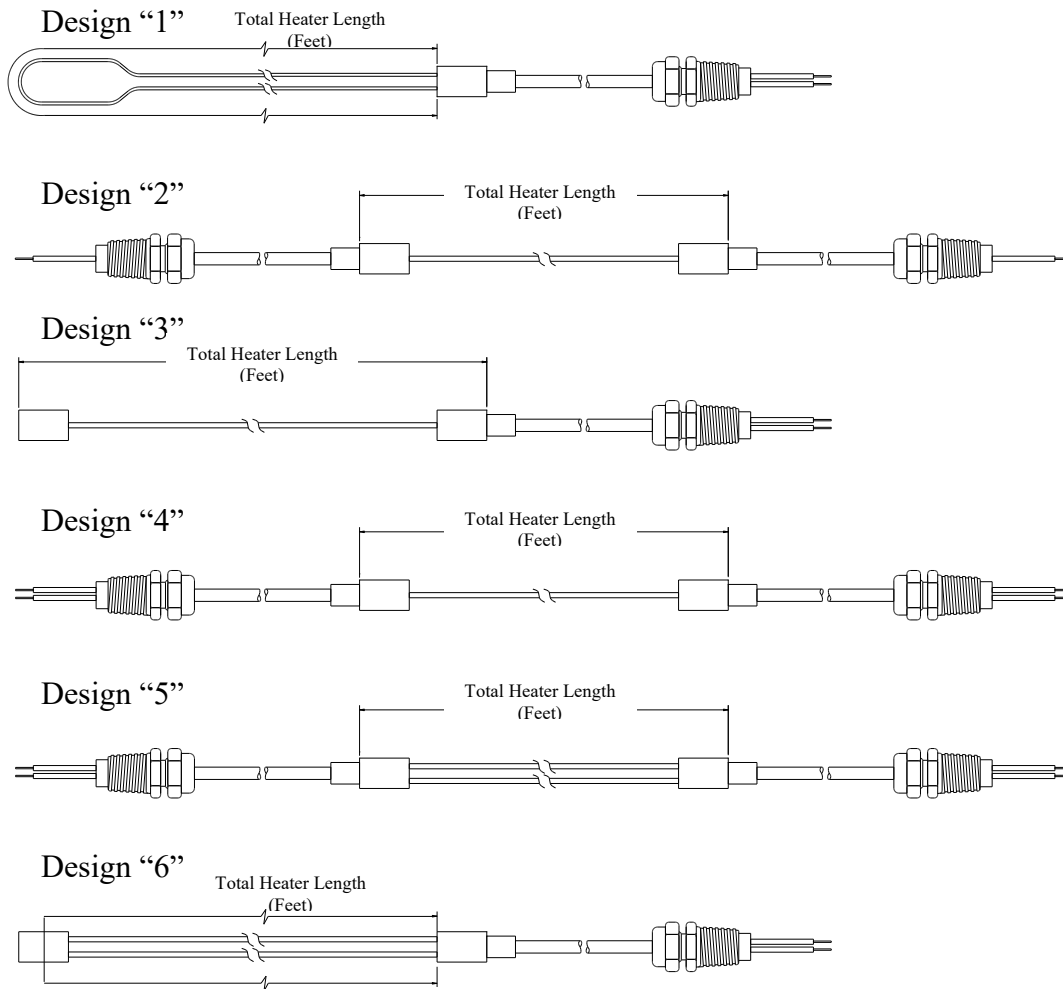
Stainless steel sheathed cables are able to withstand 1250°F energized and can maintain temperatures up to 800°F. The base nichrome sheath is unaffected by a wide range of aggressive alkalis and acids, thus making the cable ideal for projects in chemical plants, refineries, utilities, etc.

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

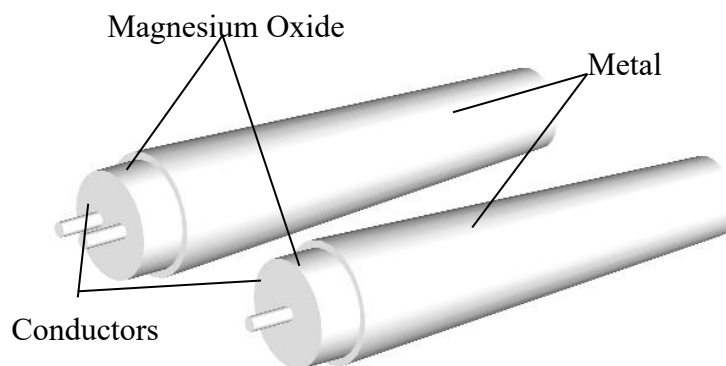
Two types of heater construction are available for designing the best system available; single and dual core. Both single and dual core heating cables are available and thorough consideration is given to each design to give the best system possible. We currently have 29 single core cables and 41 two 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

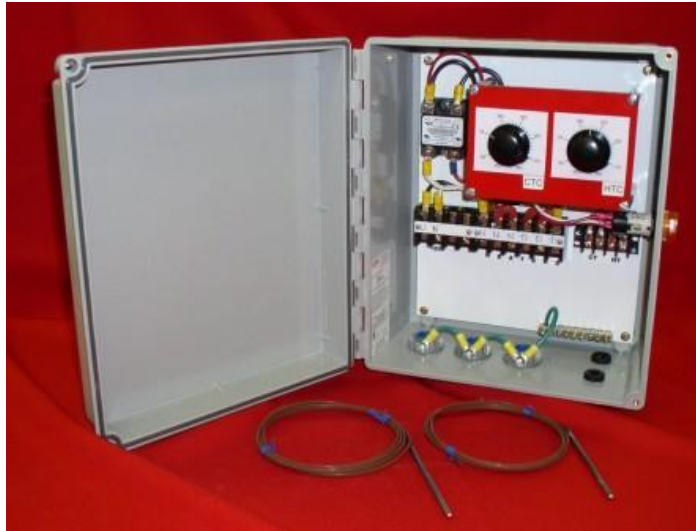


Heating cable units are supplied as complete factory fabricated assemblies consisting of the heated section joined to a length of M.I. non-heating power cable pre-terminated and ready to fasten on a junction box with an N.P.T. threaded connector.



Control Panels – Various Configurations

Hotfoil Type 120 Volt NEMA 4X Control Box
Part # N4X120V1SSR2ET1L10PT

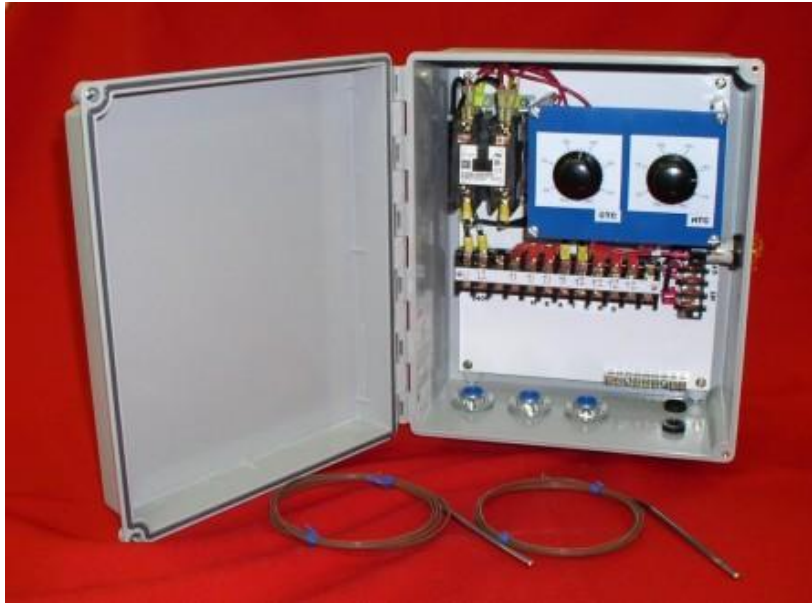


Fiberglass control box with electronic thermostats for tank heater and heating tape control.

Standard features include:

- Pak-stat dual electronic controls:
 - One controller for control 0-150°F (thermocouple located on the tank)
 - One controller for high-limit 50-175°F (thermocouple located on the heater)
- Solid-state relay, 50-amp rated.
- Fuse to protect the controllers.
- General Electric 30 Amp 10-point terminal block.
- Compensation terminal block for type “J” thermocouples, 4-point.
- 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

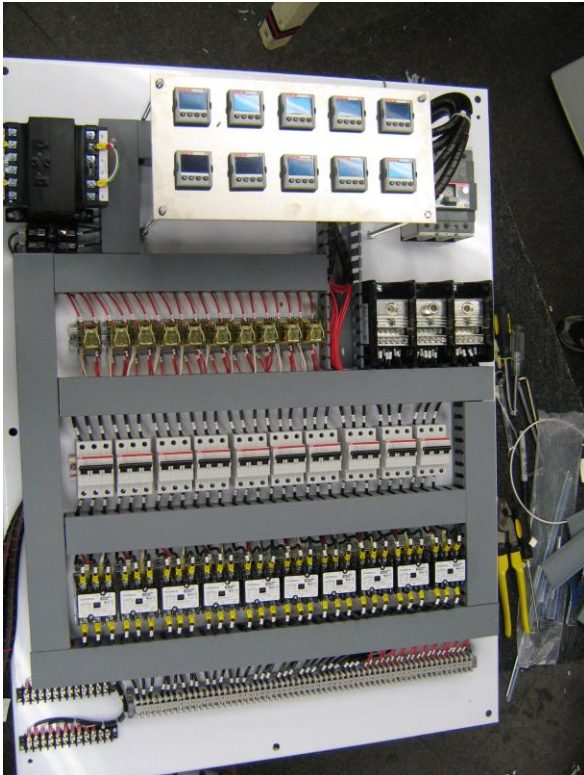


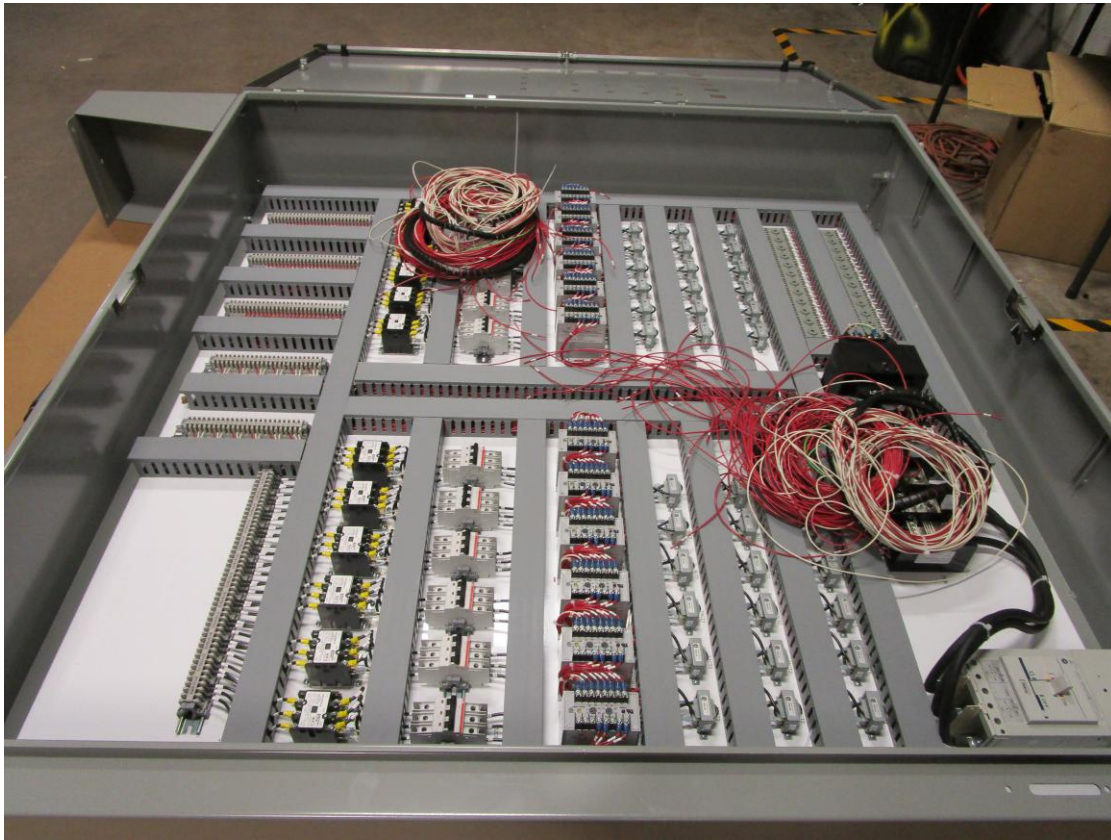
Nema 4X fiberglass control box with electronic thermostats for tank heater and heating tape control.

Standard features include:

- Pak-Stat dual electronic controls:
 - One controller for control 0-150°F (thermocouple located on the tank)
 - One controller for high-limit 50-175°F (thermocouple located on the heater)
- 30 Amp contactor, 2-pole, with a 240 Volt coil.
- Dual fuses to protect the controllers and the contactor coil.
- General Electric 30 Amp 10-point terminal block.
- Compensation terminal block for type "J" thermocouples, 4-point.
- 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 – Examples of our Work











**REMEMBER, “THE BITTERNESS OF POOR QUALITY LASTS LONG AFTER
THE SWEETNESS OF THE LOW BID!”**

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