

## HEATING PANELS FOR METAL AND FIBERGLASS TANKS



Class I, Div 2, Groups B, C & D

Class II, Div 2

Class III, Div 2

Retested and reapproved to current  
IEEE and NEC Standards in 2003

# EGLX TANK HEATING PANELS



## INTRODUCTION

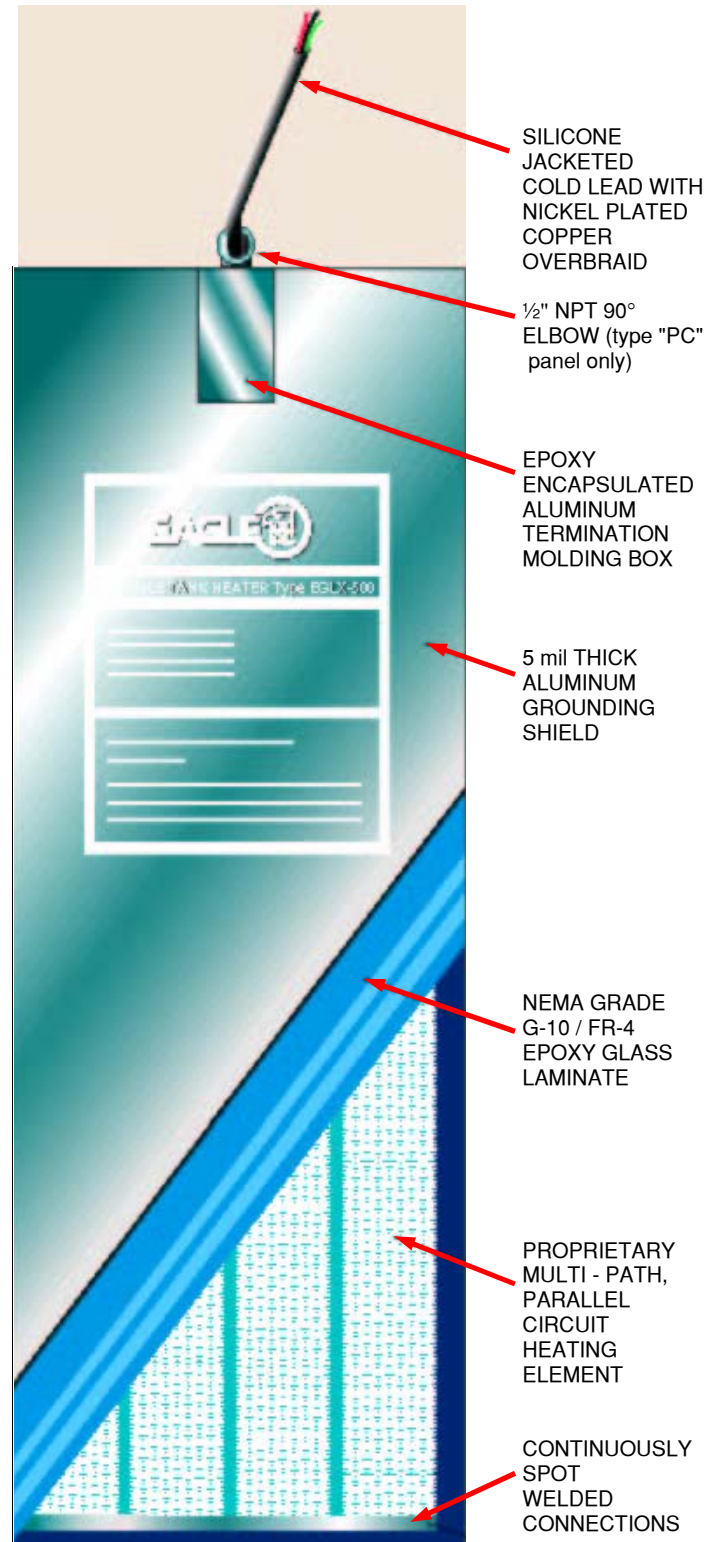
The Eagle Tank Heating Panel was first introduced in 1984 by Cooperheat, Inc. Since then, this unique product and system has been used on several thousand tank heating applications around the world. The Heat Tracing Division of Cooperheat, which developed and marketed the original Eagle panel along with many other engineered heat tracing products, was purchased by HTD Heat Trace, Inc in 1996.

Eagle Tank Heating Panels and systems have an unrivalled record of safe, reliable performance and many of the early Cooperheat installations are still operating successfully after 18 years.

Each Eagle Tank Heating Panel now incorporates an aluminum grounding shield that covers the entire back surface of the heater and improved termination features to comply with the most recent revisions to the National Electric Code. Article 427-23 b of the National Electric Code now mandates that all tank heating panels must be fitted with a full coverage ground shield.

## FEATURES

- Proprietary, multi-path, parallel circuit heating element that is virtually impossible to burn out.
- Uniform, low watt density design to avoid hot spots and overheating.
- Pressure laminated epoxy composite that provides an incredibly strong, flexible, waterproof and corrosion-resistant NEMA Grade G-10/FR-4 construction.
- Cold leads can be either routed under the tank insulation or taken directly through the tank insulation for connection to the power supply and control system.
- Low and ultra low power density heating panels are available for very heat sensitive applications.
- FM Approved for use in hazardous, unclassified, wet and corrosive environments



# EGLX TANK HEATING PANELS



## ADVANCED HEATING ELEMENT DESIGN

The Eagle (EGLX) Tank Heating Panel incorporates a proprietary, multi-path heating element that provides an evenly distributed flow of current across many **parallel connected paths**. See Figure 1 opposite.

If one or more element paths are broken or damaged, *the current flow is instantaneously, automatically and evenly re-routed around the damaged area into the remaining undamaged element paths*. See Figure 2 opposite.

This uniform redistribution of current prevents the development of hot spots and burn outs that lead to the total failure of the heating panel. Hot spots and localized overheating are also potentially disastrous failure modes that can significantly damage the structure and integrity of any fiberglass tank, or spoil, tarnish or ruin any heat-sensitive products contained within a tank.

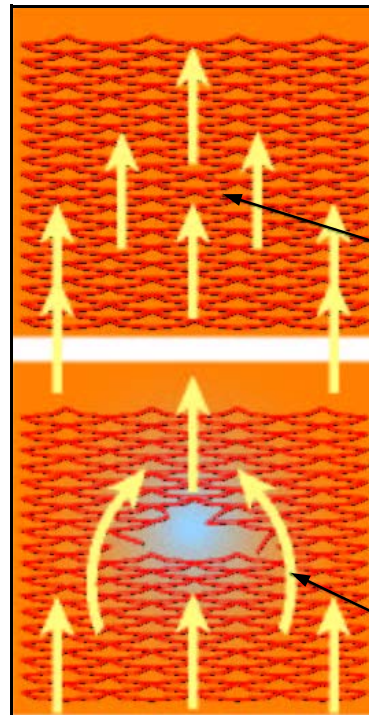
***Eagle Tank Heating Panels are the safest and most reliable form of tank heater available.***

## PARALLEL vs SERIES CIRCUITRY

Competitive styles of heating panels, heating pads and inferior copies of the Eagle Tank Heating Panel all use an outdated technology that offers a foil or wire heating element in a **series circuit path**.

As Figure 3 shows, a series type design is one continuous run of foil or wire element throughout the heating panel. If this single run of foil or wire is damaged at any one point over its entire length, the damaged area overheats and the foil or wire path is destroyed. *The destruction caused at this one single point in the whole circuit path results in the immediate and total failure of the heating panel.*

The parallel connected, multi-path circuit design unique to the Eagle Tank Heating Panel offers a durable, robust, safe and *reliable heat source* that is clearly superior to all types of series circuit designs. Thermal aging, electrical and mechanical stress and destruction testing of the Eagle Tank Heating Panel have shown that *over 70% of the circuit paths within the element must be completely destroyed and broken before total heater failure can occur.*

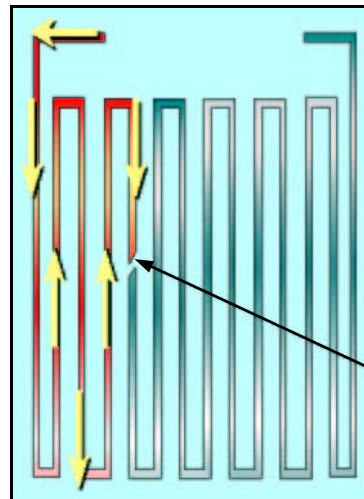


**Figure 1**

Multi-path heating element construction provides a uniform flow of current across many parallel connected circuit paths.

**Figure 2**

Current is automatically and evenly re-routed around damaged area. Integrity of the heating circuit remains intact and the heating panel continues to function normally.



**Figure 3**

Damage at any one point over the entire circuit length of a foil or wire type element, leads to localized overheating, burn out of the circuit path and **TOTAL FAILURE OF THE HEATING PANEL.**

# EGLX TANK HEATING PANELS



## HEATING PANEL SELECTION

There are two standard types and sizes of Eagle Tank Heating Panels. These are the EGLX 500 and the EGLX 400.

The EGLX 500, with a power density of 0.58 w/sq.in, is ideal for most applications that involve metal, fiberglass or lined tanks. Consult Table 1 to verify suitability.

The EGLX 400, with a reduced power density of 0.37 w/sq.in, is recommended for use on stainless steel and fiberglass tanks that have above average application temperature requirements. EGLX 400 heating panels are also ideal for applications involving very heat sensitive products. Consult Table 1 to verify suitability.

EGLX 500 and 400 are available for usage on standard 120 or 240 vac single phase power supplies. Consult HTD for system designs involving 208, 277 and 480 single and three phase power supplies.

## HEATING PANEL INSTALLATION

Eagle Tank Heating Panels can be easily and quickly installed on either flat or cylindrical tanks.

Applications on cylindrical tanks may involve horizontal or vertical style tanks with any diameter greater than 36 inches.

As shown in the opposite photograph, heating panels are normally banded into permanent position on the tank surface and they can be oriented and installed in either a vertical or horizontal plane.

The installation procedure is quick and simple and requires no special skills, knowledge or tools.

TABLE 1

TANK MATERIAL	APPLICATION RANGES	EGLX 500	EGLX 400
Mild Steel Copper Aluminum	Up to 200° F	YES	
Above tanks with liner *	Up to 160° F 160 to 200° F	YES	YES
Stainless Steel	Up to 160° F 160 to 200° F	YES	YES
Stainless Steel with liner *	Up to 120° F 120 to 200° F	YES	YES
Fiberglass (FRP)	Up to 120° F 120 to 150° F	YES	YES

\* Application ranges shown above are only typical and do not take into account the maximum exposure or operating temperature of the liner. Consult the tank and/or liner manufacturer to obtain this important design information before selecting the type of heating panel that is most appropriate for your usage.



48 by 18 inch, type EGLX 500 Heating Panels, installed on 16 ft diameter, mild steel surfactant tanks to maintain a constant temperature of 130° F in minimum ambient temperatures down to -10° F. Photograph shows the heating panels banded directly to the tank surface in a vertical plane, prior to the application of 3 inch thick thermal insulation.



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# EGLX TANK HEATING PANEL



For temperature maintenance applications on Metal and Fiberglass (FRP) tanks.

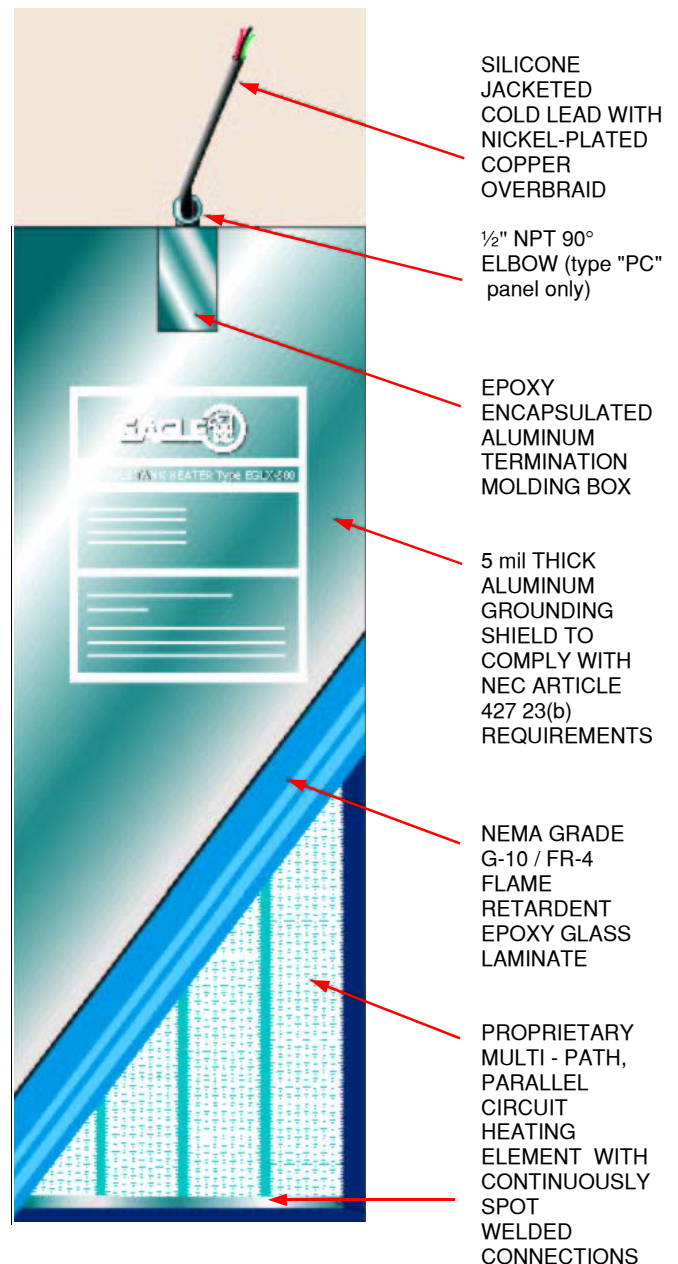
- *Specifically designed for safe, reliable operation on Metal and Fiberglass storage tanks*
- *Low watt density, high efficiency, flexible heating panels*
- *Two power densities for normal and very heat-sensitive applications*
- *Quick, simple, low cost installation*
- *Proven performance, with over 1,000 major installations worldwide*
- *FM approved to all current IEEE and NEC Standards*

The Eagle Tank Heating Panel was originally developed in 1984 by the Heat Tracing Division of Cooperheat, Inc. The original product was known as the EGL Tank Heating Panel and it was specifically designed to maintain elevated temperatures within Metal and Fiberglass (FRP) storage tanks.

HTD Heat Trace, Inc. purchased the Heat Tracing Division of Cooperheat in 1996. The original EGL Tank Heating Panel has since been modified and upgraded to meet IEEE Standard 515 and Article 427 of the National Electric Code. This upgraded version of the Eagle Tank Heating Panel is now known as the EGLX Tank Heating Panel.

Since 1984, Cooperheat and HTD have successfully designed, engineered and supplied over one thousand Eagle Tank Heating Systems to worldwide users in the Chemical, Petrochemical, Water Treatment, Power, Mining, Steel, Coal and Food Industries. The EGLX Tank Heating Panel is routinely specified by many engineering companies and it is also the product and system of choice for many metal and fiberglass tank fabricators who offer heated and insulated tanks as part of their own product portfolio.

The Eagle Tank Heating panel was originally FM Approved in 1985 and retested and reapproved to current FM, IEEE and NEC standards in 2003.



## PRODUCT FEATURES

**LOW WATT DENSITY** EGLX Tank Heating Panels have a maximum power rating of 0.58 w/sq.in for ultra safe operation and reliability on normal and heat-sensitive applications

**LAMINATED CONSTRUCTION** With its laminated, epoxy composite construction, the EGLX Tank Heating is superbly qualified to meet the rigorous requirements for use in all industrial and climatic environments. It is extremely rugged, completely waterproof, dust-tight and corrosion-resistant.

**MULTI-PATH PARALLEL CIRCUIT HEATING ELEMENT** EGLX Tank Heating Panels are built with unique, multi-path, parallel circuit heating elements that are significantly safer and more reliable than the series type elements used in competitive versions and inferior copies of this unique product.

## PRODUCT REFERENCES, RATINGS AND SIZES

**EGLX 500** 500 Watts (0.58 w/sq.in)  
48" long by 18" wide

**EGLX 400** 400 Watts (0.37 w/sq.in)  
60" long by 18" wide

## APPLICATIONS AND USAGE

TANK MATERIAL	APPLICATION RANGES	EGLX 500	EGLX 400
Mild Steel Copper Aluminum	Up to 200° F	<b>YES</b>	
Above tanks with liner *	Up to 160° F	<b>YES</b>	
	160 to 200° F		<b>YES</b>
Stainless Steel	Up to 160° F	<b>YES</b>	
	160 to 200° F		<b>YES</b>
Stainless Steel with liner *	Up to 120° F	<b>YES</b>	
	120 to 200° F		<b>YES</b>
Fiberglass (FRP)	Up to 120° F	<b>YES</b>	
	120 to 150° F		<b>YES</b>

\* Application ranges shown are only typical and do not take into account the maximum exposure or operating temperature of the liner. Consult the tank and/or liner manufacturer before selecting the type of heating panel that is most suited for your usage.

## DESIGN RATINGS

**MAX MAINTAIN TEMP** 200°F (93° C)  
**MAX EXPOSURE TEMP** 250°F (121° C)  
**MIN INSTALLATION TEMP** 0°F (-18°C)  
**MINIMUM BENDING RADIUS** 18" (do not install EGLX panels on any tank that is less than 36" diameter)  
**VOLTAGE RATINGS** 120 and 240 Vac

## CONSTRUCTION

**HEATING ELEMENTS** Multi-path, parallel circuitry  
**CIRCUIT CONNECTIONS** Stainless steel bridge pieces continuous spot welded with triple welding passes  
**DIELECTRIC CONSTRUCTION** Multi-layer glasscloth composite encapsulated within a 0.07" thick epoxy lamination  
**LAMINATE PROPERTIES** Density - 0.069 lbs/cu.in  
Rockwell Hardness - 115  
Flexural Strength - 50,000 psi  
Dielectric Strength - 550 vpm  
Flammability Rating - UL-94.V.0  
**GROUND SHIELD** 5 mil thick aluminum foil  
**TERMINATION METHOD** Epoxy encapsulated aluminum termination box  
**COLD LEAD CABLE** 3-16 AWG, silicone insulated conductors with silicone rubber outer jacket and Nickel-Plated Copper overbraid  
**COLD LEAD LENGTHS** Standard type "CL" panel - 10ft  
Custom "CL" - Specify length  
"PC" type - ½" NPT, 90° elbow fitting with 2ft cold lead cable

## APPROVALS & STANDARDS

**FM APPROVED** Unclassified areas  
Class I, Div 2 Groups B, C&D  
Class II, Div 2  
Class III, Div 2  
Retested and recertified in 2003 to current IEEE and NEC standards



## ORDERING DETAILS

**PRODUCT REF** EGLX \_\_\_\_\_  
**RATING (400 or 500w)** \_\_\_\_\_  
**VOLTAGE (120 or 240)** \_\_\_\_\_  
**STYLE (CL or PC)** \_\_\_\_\_  
**CUSTOM COLD LEAD LENGTH (type "CL only")** \_\_\_\_\_

**EXAMPLE** To order an EGLX 500 panel for operation on 120 volts with a "PC" type termination, specify:  
EGLX 500-120-PC