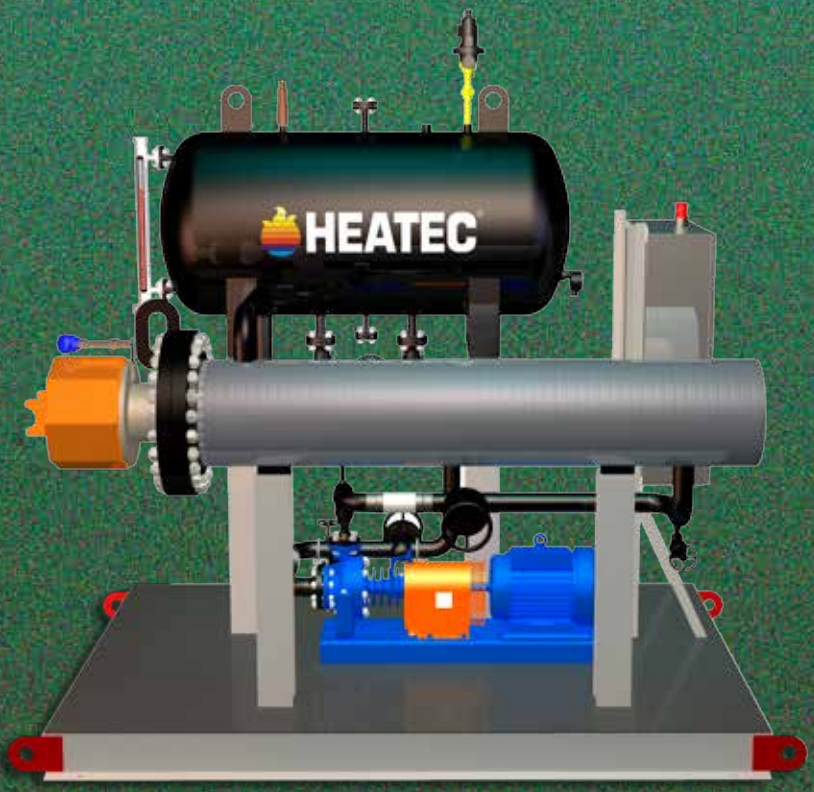
EHI HEATERS

ELECTRIC CIRCULATION HEATERS FOR INDUSTRIAL APPLICATIONS



HEATEC®

an Astec Industries Company

Heatec's electric circulation heaters can be used in a wide variety of industries.

HEATEC EHI HEATERS are commonly known as electric circulation heaters. They are used mainly by companies engaged in manufacturing and processing.

This type of heater is popular due to its small footprint, high thermal efficiency and low maintenance. They do not require an exhaust stack.

The heaters can be used to heat thermal fluid that heats other plant equipment. Or they can be used to directly heat a liquid or gas product that flows through the heater, including chemicals, oil, water, air, nitrogen and steam.

Heat is generated by electrical current flowing through sheaved resistive elements inside a heating chamber. The material being heated comes into direct contact with hot surfaces of the resistive elements. The elements are bundled for easy removal. The current is controlled by a Semi-conductor Controlled Rectifier (SCR).

Made to meet your needs

EHI heaters are available in a wide range of thermal outputs, from 100 kilowatts to about 3 megawatts. (A kilowatt is equal to 3,412 Btu.)

The heaters can be customized to meet your specific needs. We offer them as skid mounted packages with a variety of options:

- SCR control panel
- Expansion tank
- Main pump
- Backup pump
- Strainer
- Side stream filter
- Valves
- Cooler

High thermal efficiency

EHI heaters have high thermal efficiencies, ranging up to 99.5 percent (disregarding minor heat loss). This greatly reduces operating costs.

Design and Construction

We take special care to design the heater for optimum watt density and flow through its heating chamber.

The heating elements have large heat transfer surface areas, which reduce heat flux rates. The lower the better. And ours are lower than those commonly used by others.

We size the chamber and heating elements to achieve an ideal fluid velocity of 5 to 13 feet per second. The heating chamber is built to ASME code.

Watt density

Watt density relates the surface area (square inches) of the heating elements to the number of watts produced in that area. It is selected according to the material being heated.

The selected watt density must provide a suitable heating rate without exceeding the film temperature, which would cause the material to break down.

The optimum watt density for many applications is 20 watts per square inch (3.1 watts per square meter). That is what we use for our EHI heaters, unless a different watt density is needed.

Electrical power

EHI heaters can be configured to operate on electrical power provided by electrical utilities throughout the world. Our standard configuration of electrical power is for 3-phase, 480 volt, 60 hertz alternating current. Some users may need to increase available demand from their utility, depending on the wattage of their heater.

Construction materials

The types of metal used in construction of the heater are critical. They must be fully compatible with the materials being heated. We carefully select all parts that come into contact with the material being heated. Wetted parts may be carbon steel, stainless, Incoloy, Inconel, or another material, as necessary.

Baffles

Baffles inside the chamber produce turbulent flow of the heated material. Turbulent flow produces maximum heat transfer from the heating elements to the heated material.

Insulation

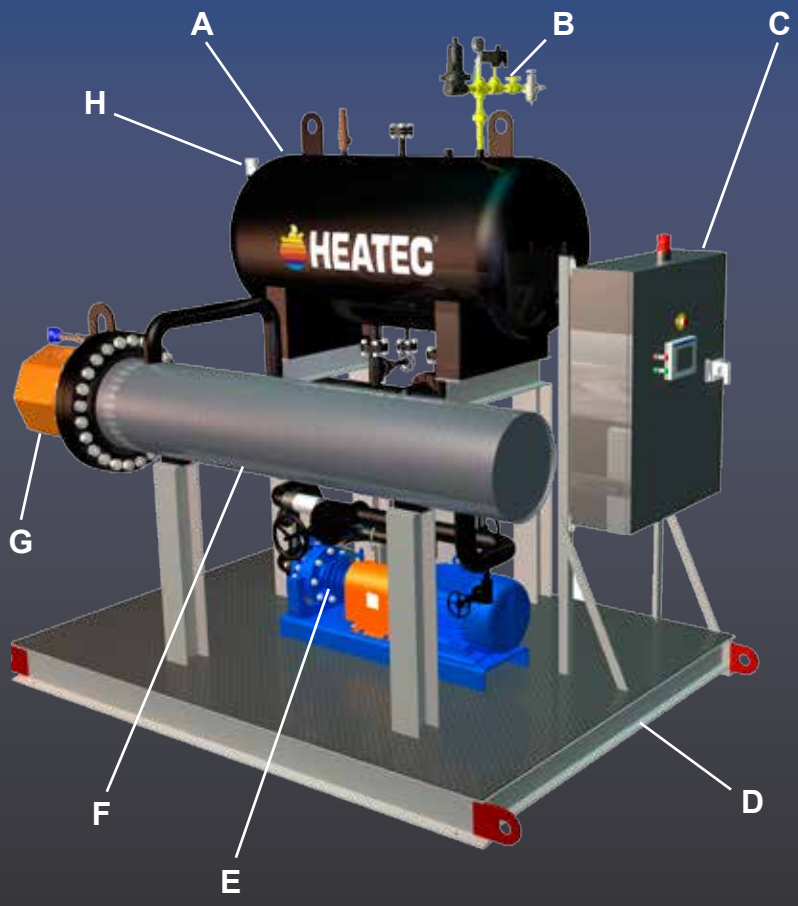
The outer surface of the chamber is covered with ceramic blanket insulation. This reduces heat loss to an absolute minimum.

Cool section

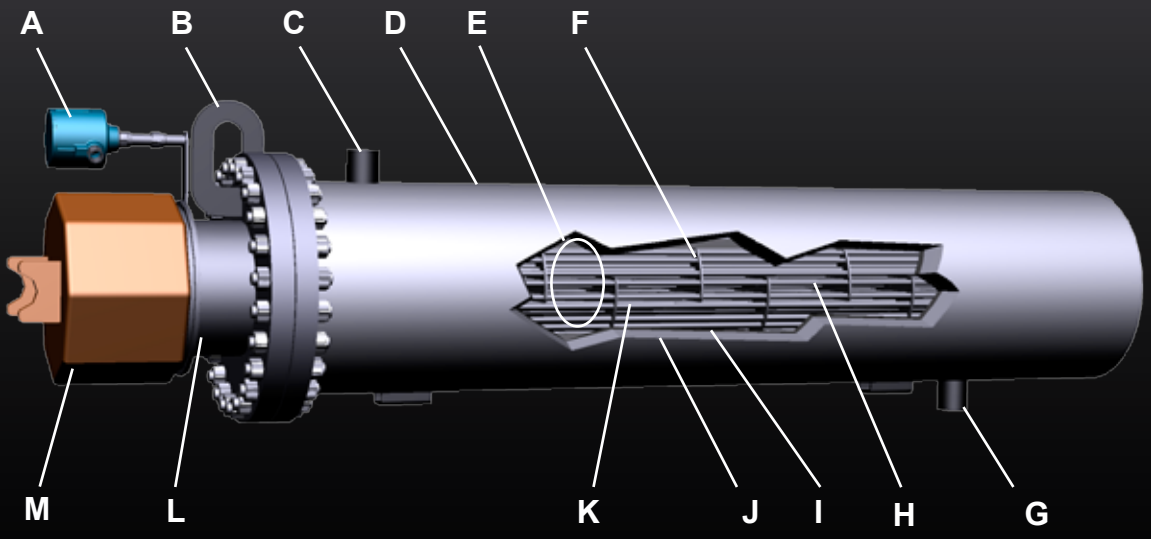
One section of the heater is extended away from the heating chamber. This section houses the electrical terminals and other electrical components. It remains cool during operation to ensure long life of its components.

SCR Control panels

We offer a variety of control panels for use on heaters that operate in locations classified as hazardous in NFPA 87 code. Please refer to Heatec Tec-Note 3-10-228 for more information on panels used in hazardous locations.



A. EXPANSION TANK
B. NITROGEN MANIFOLD
C. SCR CONTROL PANEL
D. RIGID SKID
E. THERMAL FLUID PUMP
F. HEATER
G. TERMINAL HOUSING
H. LEVEL GAUGE



A. OUTLET TEMPERATURE SENSOR
B. LIFTING LUG
C. OUTLET
D. CLADDING
E. REMOVABLE ELEMENT BUNDLE
F. BAFFLE
G. INLET
H. HI-LIMIT THERMOCOUPLE (INSIDE BUNDLE)
I. HEATING CHAMBER
J. INSULATION
K. HEATING ELEMENTS
L. STANDOFF
M. TERMINAL HOUSING

A typical NEMA Type 4 panel for areas temporarily exposed to combustible gases. Panel is equipped for Type Z pressurization and also purges the small panel on the left.

A typical NEMA Type 7 panel suitable for Class I, Division 1 areas. These panels can also be used for Class I, Division 2 areas to eliminate the need for purging.

KEY SPECIFICATIONS								
MODEL*	**EHI-100**	**EHI-200**	**EHI-300**	**EHI-400**	**EHI-500**	**EHI-600**	**EHI-800**	**EHI-1000**
Output (kW)	100	200	300	400	500	600	800	1,000
MM BTU/h	0.341	0.683	1.024	1.365	1.707	2.048	2.730	3.413
Flow Rate (gpm)	30	40	60	80	100	120	160	200
Flow Rate (m^3/hr)	6.9	9.2	13.8	18.4	23	27.6	36.8	46
Total Amps**	138	260	381	501	613	735	980	1,222

* Additional models are available.
** Amps shown is based on 3-phase, 60 hertz, 480-volt alternating current. Amps will vary for other voltages and phases..

Heatec products are designed and manufactured at our modern facility in Chattanooga, Tennessee. Moreover, we do code work and make our own heating coils, control panels and tanks. We also do our own painting, packaging and quality control.

HEATEC®

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