

Electric Process HeatersSeries: **GEH**

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Note: Part of our development programs, product specifications, photos, drawings, dimensions and other information provided in catalogue/website may change without any notice.

General Specifications:**1) Flanged Immersion Electric Process Heaters:****Model: GEHIF**

Custom built to the wattage appropriate for your application and selection of suitable alloy for the heating element sheath/tube will prevent corrosion and extend the service life of heater. It is one of the most widely used industrial process heaters compared to other heaters. Since the heat is generated by electricity, virtually all of the energy is consumed by the product being heated; as a result, the electric immersion is near 100% efficient. These are directly immersed into contact with the process medium. Easier to install, maintain and replace, are specifically designed for use in pressurized vessels, tanks and boilers for heating liquids, gases and air. This construction gives an excellent heat exchange, despite its compact dimensions; it gives high performance and efficiency in keeping process medium large/ high volumes at constant temperature. Typical applications include direct heating of different grades and types of Liquids, Gases and Air.

Heating elements forming the sheath/tube bundle can take up various shapes and folds in order to be easily installed also at the bottom of process vessels, tanks & boilers, both in horizontal and vertical position, for the direct heating of process medium intended for countless uses in almost all industrial process.

The electric heating elements are constructed with high quality 80/20 nickel chrome resistance wire, centered in a metal sheath/tube and insulated with compacted magnesium oxide (MgO). The element sheath/tube material generally used variety of different alloys, including CS, SS (304, 309, 321, 316L), Incoloy (800, 825), Inconel (600) or Titanium etc.. Special flange forms and flange/sheath(Tube) materials are available on request to suit the element and the application.

The first quality materials use within our production cycle allows the products manufactured by us, to reach high operating temperatures and a medium-long term useful operative life.

Typical Applications: Heating of Fresh/Sea Water, Crude/Lubrication/Synthetic/Edible Oils, Process/Natural/Fuel Gas (CNG & LPG), Nitrogen, Thermal Fluid, Petroleum, Petrochemicals, Air, Wax, Chemicals, Pharmaceuticals, preheating process, Heat transfer, Freeze protection, Asphalt, Liquid Vaporizer, Condensate Stabilization, Viscosity Reduction, steam/ industrial boilers, Glycol / Amine Re-Boilers, Tank/vessel Heating, Heating Medium, KO Drums, Butane/Propane Vaporizer, Molecular Sleeve Regeneration, Plastic material production, Textile yarn production, textile washing process, Shipping/Aerospace industry, metal heating, water treatment and waste substances separation systems.

Design technical data requirement: Installation process/place/environment ?, Maximum overall dimensions of the tank/vessel/boiler receiving the heater ?, Process/mating connection details ?, Sheath/Tube immersion length ?, Process medium type to be heated in details (its physical, chemical and thermodynamic characteristics) ?, Operating temperature & Pressure ?.

Technical Parameters: This heaters construction consists of a bundle of sheaths/tubes made of various electric heating elements of different or same diameter and length, generally folded in U or eyelet shape, perpendicular to the electric contacts outlet or folded at 90°. Each element is **TIG-welded** or **braze welded** silver alloy with flange (DIN, ANSI B16.5 or non standard suitable to your process/mating flange) according to the operating pressure and temperature.

The electric heating elements are constructed with high quality 80/20 nickel chrome resistance wire, centered in a metal sheath/tube and insulated with compacted magnesium oxide (MgO). Electric resistors surface load (W/cm²) specifically decided from time to time according to the service conditions and type of process medium to be heated. In addition to these factors, the maximum operating temperature and operating environment are also variables directly influencing the choice of the heating element sheath/tube material, for the tube bundle of these electric heaters manufacturing. . The sheath/tube material generally used variety of different alloys, including CS, SS (304/309/321/316L), Incoloy-(800/825), Inconel-600 or Titanium etc.. Special screw plug thread forms and screw plug/sheath(Tube) materials are available on request to suit the element and the application.

Electric connections (open/cold end) is located inside a head/housing/junction box made in CS or SS, weather proof IP55/IP56 for use in safe environment or ATEX explosion proof (Temp. Class T1(450°C) to T6(85°C)) suitable for use in explosive environment. Heaters equipped with efficient thermal regulation devices like control thermostats with adjustable temperature scale, with automatic or manual reset or alternatively, surface safety thermostats with intervention cut-out or thermistors or RTDs or thermocouples can be used to precisely control the temperature of the heating system and the same is required to protect the heater from overheating and possible premature damages. Inside the electric connections head/housing/junction box, according to the customer specific needs, the electric power inlets are also properly dimensioned (NPT/ BSP / BSPT(GAS) threads) according to the number of elements and rated power installed.



2) Screwed Immersion Electric Process Heaters:

Model: GEHIS

Available in variety of sizes, voltages and wattages, ideal for direct immersion heating of different grades and types of Liquids, Gases and Air. Since the heat is generated by electricity, virtually all of the energy is consumed by the product being heated; as a result, the electric immersion is near 100% efficient. Screw Plug Heaters are easier to install/maintain/replace and are specifically designed for use in pressurized (<15 Kg recommended) vessels/tanks/boilers/pipes/equipments for heating liquids, gases and air. Screw Plug Heaters construction gives an excellent heat exchange, despite its very limited overall dimensions, it gives high performance and efficiency in keeping process medium (smaller volumes/quantity recommended) at constant temperature.

The first quality materials use within our production cycle allows the products manufactured by us, to reach high operating temperatures and a medium-long term useful operative life.

Typical Applications: Heating of Fresh/Sea Water, Crude/Lubrication/Synthetic/Edible Oils, Process/Natural/Fuel Gas (CNG & LPG), Nitrogen, Thermal Fluid, Petroleum, Petrochemicals, Air, Wax, Chemicals, Pharmaceuticals, preheating process, Heat transfer, Freeze protection, Asphalt, Liquid Vaporizer, Condensate Stabilization, Viscosity Reduction, steam/ industrial boilers, Glycol / Amine Re-Boilers, Tank/vessel Heating, Heating Medium, KO Drums, Butane/Propane Vaporizer, Molecular Sleeve Regeneration, Plastic material production, Textile yarn production, textile washing process, Shipping/Aerospace industry, metal heating, water treatment and waste substances separation systems.

Design technical data requirement: Installation process/place/environment ?, Maximum overall dimensions of the tank/vessel/boiler/equipment receiving the heater ?, Process/mating connection details ?, Sheath/Tube immersion length ?, Process medium type to be heated in details (its physical, chemical and thermodynamic characteristics) ?, Operating temperature & Pressure ?.

Technical Parameters: This heaters construction of standard and non standard models consists of heating element sheath/tube bundles generally made by 1 element (single phase) or 3 to 6 elements (Three phase) with "U" folding (parallel or cross layout) or folded as eyelet (1 or 2 eyelets), these elements are brazed or welded with a pre machined hex thread screw plug/fitting (NPT, BSP, BSPT/GAS) which can be efficiently installed/screwed directly through a threaded (matching) coupling on the vessels/tanks/boilers/pipes/equipments wall in horizontal or vertical position, for the mediums direct heating intended for countless uses in almost all industrial process.

The electric heating elements are constructed with high quality 80/20 nickel chrome resistance wire, centered in a metal sheath/tube and insulated with compacted magnesium oxide (MgO). Electric resistors surface load (W/cm²) specifically decided from time to time according to the service conditions and type of process medium to be heated. In addition to these factors, the maximum operating temperature and operating environment are also variables directly influencing the choice of the heating element sheath/tube material, for the tube bundle of these electric heaters manufacturing. . The sheath/tube material generally used variety of different alloys, including CS, SS (304/309/321/316L), Incoloy-(800/825), Inconel-600 or Titanium etc.. Special screw plug thread forms and screw plug/sheath(Tube) materials are available on request to suit the element and the application.

Electric connections (open/cold end) is located inside a head/housing/junction box made in standard Bakelite or Aluminium (IP40) or die-casted and polycarbonate Aluminium (IP55) for use in safe environment or ATEX explosion proof (Temp. Class T1(450°C) to T6(85°C)) suitable for use in explosive environment. Heaters equipped with efficient thermal regulation devices like control thermostats with adjustable temperature scale, with automatic or manual reset or alternatively, surface safety thermostats with intervention cut-out or thermistors or RTDs or thermocouples can be used to precisely control the temperature of the heating system and the same is required to protect the heater from overheating and possible premature damages. Inside the electric connections head/housing/junction box, according to the customer specific needs, the electric power inlets are also properly dimensioned (NPT/ BSP/ SPT(GAS) threads) according to the number of elements and rated power installed.

Precaution: In case of high working temperatures, it is suggested to use neutral cooling extension cords of the electric contacts outside the fitting in order to protect its integrity and to limit damages due to overheating in case of temperatures higher than 100°C reached inside their protection head/housing/box. To avoid the premature damaging of this type of electric elements, the heating section must be constantly and fully immersed in the fluid to be heated. In order to limit the overheating risk, this type of heaters can be properly equipped with efficient

Flanged Immersion Electric Heaters are custom built to the wattage appropriate for your application and selection of suitable alloy for the heating element sheath/tube will prevent corrosion and extend the service life of heater.



3) Duct Electric Heaters:

Model: GEHD

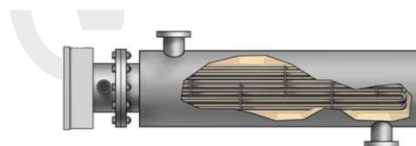
Duct heaters are used in ventilation and comfort heating applications, as well as industrial heating situations involving non-pressurized air heating. Types of duct heaters include tubular, finned tubular, and open coil. The electric heating elements are inserted directly into the duct or flanged. Duct heaters can be custom designed and built to fit the specific needs of your industrial heating product, with capacities of as much as 1000kW. Duct heaters are easy to install and maintain or service. Repairs or replacement can be performed quickly to minimize downtime. Duct heaters are versatile and offer optimal heat transfer with minimal heat loss.



4) Circulation Electric Heaters:

Model: GEHC

Circulation heaters are a type of immersion heater which is composed of a flanged heater housed in a steel, carbon steel, stainless steel, Incoloy®, Inconel®, or titanium vessel. A pump is used to flow Oils, water, or process liquids through the closed pipe circuit where heat is applied. When choosing a circulation heater for an application, viscosity must be considered to ensure the liquid will be capable of circulating within the pipes; therefore, a range of watt densities are available to achieve the appropriate viscosity. These electric heating elements feature drain valves, allowing for simplified maintenance. Vertical or horizontal mounting options are available for this water heater element.



5) In-Line Electric Heaters:

Model: GEHL

In-line heaters are also known as circulation heaters. They are suitable for applications which require intermediate heating where the process fluid must maintain a flow rate. In-line heaters are composed of a flanged heater ranging from 2 inches up to 14 inches, housed in an anti-corrosive vessel chamber made of steel, stainless steel, copper, titanium, Incoloy®, or Inconel®. This electric heating element directs heat that is transferred from an electrical power source into the liquid. In-line heaters offer regulation and control of temperature using digital control panels and thermocouples. In-line heaters can also be used to maintain the viscosity of the fluid. They are easy to install and compatible with industrial heating piping currently in use.



6) Boiler Electric Heaters:

Model: GEHB

Steam and hot water boilers are used in facilities for a variety of purposes. Electric boilers are the most efficient option available for heating steam and water, making them a popular choice for commercial and industrial operations. With pressurized fluids contained inside, boiler heaters are designed for efficient heating as well as building safety. Boiler heaters are easy to install and the flange heaters they use can be replaced easily, lowering maintenance expenses. Various sizes offering a range of wattages are available to meet the specific needs of your application. Square and round flanges are available



7) Pipe Electric Heaters:

Model: GEHP

Pipe heaters provide indirect heating to the liquid. Use pipe heaters in tank applications as water heating elements or for other substances requiring low watt densities, such as molasses, waxes, tar, and corrosive substances. During the heating process, the pipe heater never comes in contact with the liquid. Pipe heaters are specifically designed to fit within 2" to 3" horizontal schedule 40 NPS piping. Maintenance and replacement of the pipe heater is simplified, as there is no need to drain the tank in these scenarios. Pipe heaters may use coiled, tubular, flanged, or screw plug heaters depending on the needs of the application. Pipe heaters offer easy installation, even heat distribution, and extended service life.



8) Over the Side Electric Heaters:

Model: GEHOS

Over the side heaters are designed to be installed in the upper part of a tank. Using this approach, there is adequate space available in the tank for operations. Using over the side heaters creates uniform temperatures while maximizing process heating efficiency. The over the side heater can be conveniently removed upon heating the liquids to the desired temperature. The portability of over the side heaters offers the flexibility to be used in various applications. Over the side heaters utilize heating elements made of steel, copper, titanium, or cast alloy, coated in fluoropolymer or quartz for added protection; diameter sizes include 0.315", 0.375", 0.430", and 0.475".



9) Immersion Electric Heaters:

Model: GEHI

Immersion heaters are installed in Tanks, Vessels, Containers, Equipment where they are utilized for heating liquid solutions. Using the direct heat transfer process, immersion heaters are able to heat liquids to the desired temperature quickly. Electric immersion heaters are cost-efficient and use cleaner energy. Types of immersion heaters include over the side heaters, circulation heaters, screw plug heaters, and flange heaters. These electric heating elements require minimal maintenance and feature standard 1-inch conduit openings as well as 0.315", 0.375", 0.430", or 0.475" diameter elements. Sheath materials include stainless steel, steel, and Incoloy®. Immersion heaters can be custom designed for the specifications of your application.



10) Tubular Electric Heaters:

Model: GEHT

Tubular heating elements composed of steel, stainless steel, Incoloy®, Inconel®, and titanium alloys are the foundation of virtually all industrial heating elements. With a strong exterior sheath, the heater is protected from stress while facilitating efficient heat transfer. Tubular circulation heaters offer great flexibility and are suited for use in a wide variety of applications to heat gases, solids, and liquids, processing temperatures of up to 750 °C. Standard diameter sizes include 0.260", 0.315", 0.375", 0.430", 0.475", and 0.625", allowing you to adjust watt densities to achieve optimal performance and extend equipment life. Tubular heaters feature silicone seals to control humidity, offering superior moisture resistance.



11) Finned Tubular Electric Heaters:

Model: GEHFT

Finned tubular heaters are suited for forced convection heating of air or gas. Fins are attached to the electrically insulated heater sheath, offering fast heat dispersion and superior heat conductivity. Custom bends are available, and finned tubular heaters can be configured to most any shape in order to meet the needs of your application. Finned tubular heaters offer watt densities up to 120 WPSI. They are easy to install and replace, reducing down time. Standard diameters for finned tubular heaters include 0.260", 0.315", 0.375", 0.430", 0.475", and 0.625". Sheath materials available include copper, steel, stainless steel, titanium, Incoloy®, and Inconel®.



12) Strip Electric Heaters:

Model: GEHS

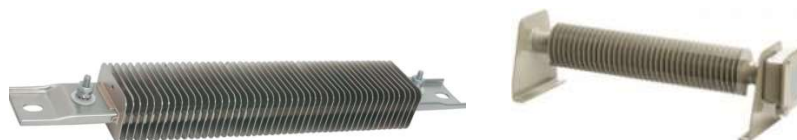
Strip heaters utilize their surface area to conduct direct heat transfer. These heaters can reach temperatures of up to 500°F, and provide adequate and inexpensive heating for smaller areas and surfaces indoors. Components of a strip heater include the heating element, a protective sheath made of steel, stainless steel, iron, aluminum, or zinc-coated steel, and mounting hardware. Strip heaters are insulated with magnesium oxide, mica, or fiberglass to minimize heat loss. Temperatures can be easily controlled by installing a mechanical thermostat or bimetal thermostat on the surface of the heater. Strip heaters can also be used in applications requiring radiant heat.



13) Finned Strip Electric Heaters:

Model: GEHFS

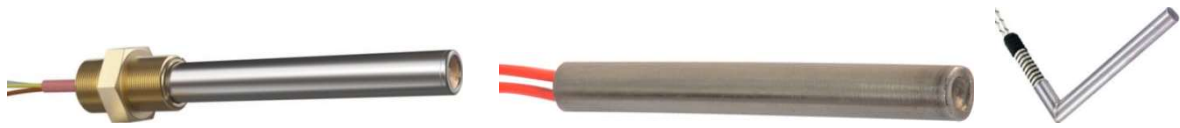
Finned strip heaters allow you to transfer heat in a targeted area effectively by increasing heating intensity as well as surface area. Finned strip heaters utilize mechanical or bimetal thermostats installed on the heater surface for temperature control. Finned strip heaters are versatile and commonly used in applications such as process air heating, space heating, and food warming. They can be used as duct heaters or radiant heaters; their fins expand surface area, allowing for optimal heat transfer. Finned strip heaters are easy to install by clamping or bolting to the surface being heated. Finned strip heaters can heat to temperatures up to 500°F.



14) Cartridge Electric Heaters:

Model: GEHCA

Cartridge heaters are fit tightly within a cartridge, and can house a thermocouple inside for accurate temperature control. The sheath of a cartridge heater can reach temperatures of up to 1400°F and are suited for high temperature applications, such as molds, sealing, and metal dies. Sheath materials include stainless steel, Incoloy®, and titanium. Cartridge heaters are made of high-grade nickel chromium resistance wire that is wrapped around a magnesium oxide core housed in a stainless steel casing. Cartridge heaters are designed for safety using high-quality materials. They are designed to maximize heat transfer as well as maintain even temperatures.



15) Band Electric Heaters:

Model: GEHBA

Band heaters provide indirect heating for tanks. Fitting around the exterior of a drum or pipe, they heat the surface of the container to create progressive, uniform heat transfer. This method of heating is safe for use to heat volatile substances which are too dangerous to heat via direct methods. Band heaters are energy efficient and offer flexibility for use in various applications. Band heaters feature a built-in insulating mat composed of ceramic fiber. The outer stainless steel shell can reach temperatures of approximately 350°F to 450°F. Medium to high range band heaters can reach internal temperatures of up to 1200°F.



16) Silicone Rubber Electric Heaters:

Model: GEHSR

Silicone rubber heaters are used in low to medium temperature applications of up to 450°F that are irregular dimensions and shapes. Silicone rubber heaters are used to provide direct heat where traditional heaters are unable to be installed. Made of fiberglass reinforced silicone rubber, these heaters are highly flexible and durable. Silicone rubber heaters can be affixed to surfaces using pressure sensitive adhesives or field-applied adhesives, or they can be mounted mechanically using various methods. The standard thickness of silicone rubber heaters is 0.056", with lengths ranging from 1" to 120" and widths ranging from 1" to 36".



17) Open Coil Electric Heaters:

Model: GEHOC

Open coil heaters offer a highly efficient option as an electric heating element which is economical for use in most applications. Using open circuits, air is directly heated by suspended resistive coils ranging in diameter from 0.250" to 0.875" with wire gauges of 6 gauge up to 38 gauge. Open coil heaters are designed to fit within 2" or 3" schedule 40 NPS pipe. Open coil heaters provide fast heating times, lowering energy consumption and improving efficiency. Use open coil heaters for applications requiring even heating distribution across broad surface areas, including duct heating, pipe heating, forced air heating, and ovens. They are easy to maintain and replacement parts are inexpensive



18) Infrared Radiant Electric Heaters:

Model: GEHIR

Infrared heaters produce clean, radiant heating for heating in exposed indoor or outdoor areas. Infrared heaters can be used in process applications, to provide comfort process heating, and can be used in food service to maintain target temperatures. Infrared heaters utilize tubular circulation heating elements to produce direct heat transfer. The terminals are protected from moisture penetration and excessive humidity by waterproof housing. They are resistant to harmful corrosion and oxidation. Mechanical or digital controls are used to adjust and regulate temperatures. Infrared heater tubing options include: singular tubing elements, double tubing elements, hairpin tubing elements, quartz tubing, double quartz tubing, and quartz lamp elements.



19) Control Panels:

Model: GEHCP

Digital control panels regulate temperatures, protect the heater element, and prevent overheating and other issues such as chemical disintegration. The control panel can be customized for your application to ensure safety while maintaining accurate and efficient heat transfer. Digital control panels offer ambient and target temperature readings for the solution being heated. There are multiple terminal box options available, including NEMA 1, NEMA 4, NEMA 7 explosion proof, dust-proof, and waterproof. The terminal box houses the various components of a digital control panel, including contactors, fuses, relays, and on-off switches. Digital control panels arrive ready to connect for quick installation, and are compatible with various materials including dangerous and corrosive materials.



Note:- Specifications other than above offered on request. Refer “optional items list” or “accessories catalogue” for more details, if required