Heating Technologies

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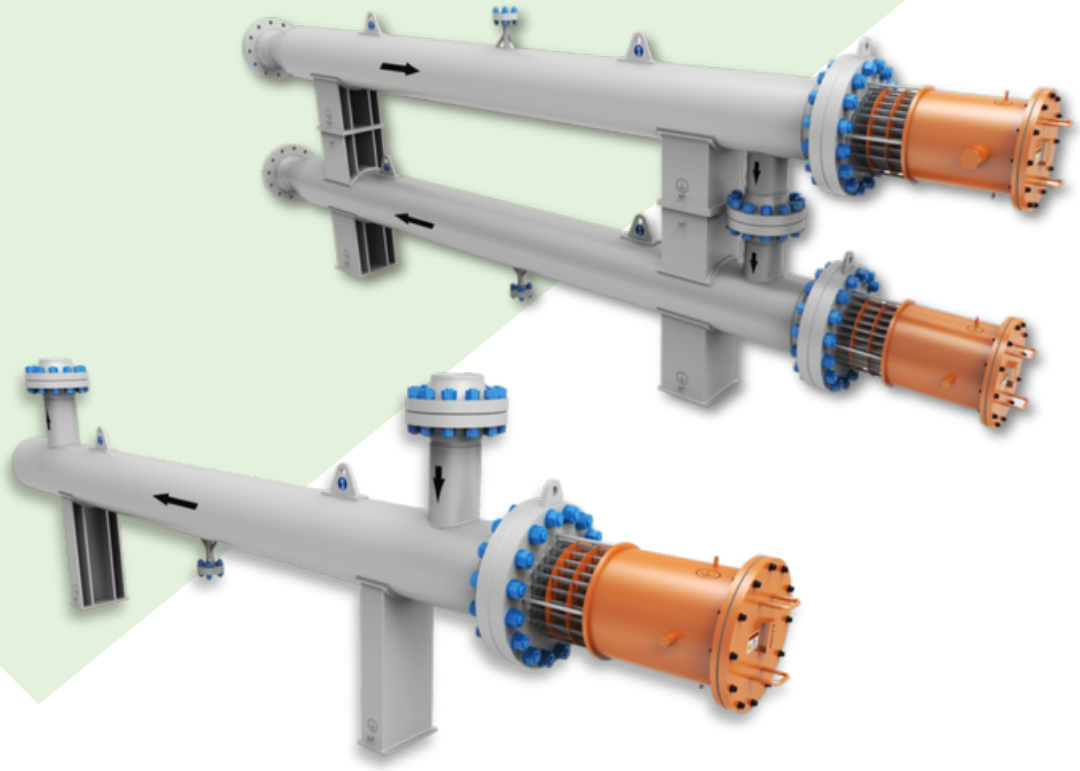

CIRCULATION HEATERS

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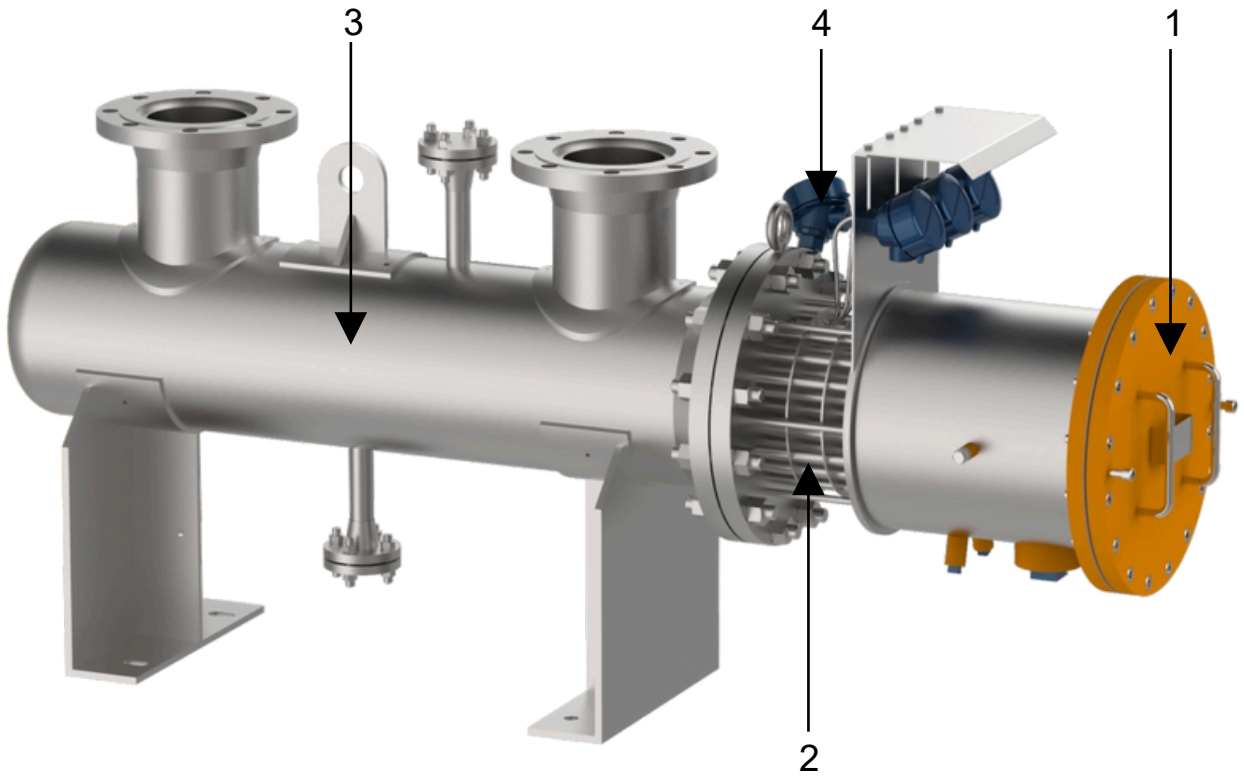
Circulation heater : is an electric heater bundle that has been integrated and placed inside a pressure vessel or shell where fluid will be flowing continually. The process fluids are heated quickly by this little heating device. A low-temperature cold process fluid enters the pressure vessel through the intake nozzle of the circulation heaters, travels through the heater bundle's active zone, and exits the vessel through the outlet nozzle at the appropriate high temperature. The system's design keeps the pressure drop across the nozzles and the skin temperature of the heating element within allowable bounds. Depending on the needs of the process, the circulation heater system can be configured in either single-stage or multi- stage vessels. Depending on the needs and available space, the system can be deployed either vertically or horizontally.

Construction

1. Terminal Enclosures: These allow power to be connected to the heater bundle while protecting connections in safe or hazardous situations (Zone 1 & 2, Gas Group IIC, Ip66). Heater Bundle: U-pin elements with tie rods and baffles supporting
2. them, intended to ensure safe element temperature and pressure drop while meeting specified outlet temperatures. Brazing, welding, or threaded couplings are used to secure the elements to the flange. For improved control, heat duty can be divided into banks. Pressure Vessel: ASME or comparable fabricated shell with vent, drain, inlet, and output nozzles. can be single or
3. multistage, vertical or horizontal. Insulation is advised to reduce heat loss and protect against thermal shock. Temperature Sensors: Track and control the skin temperature of the element. Depending on the needs, more sensors (such as tube sheets,
4. terminal boxes, vessel bodies, and process fluids) might be added. Sensors that are certified for the installation location are usually thermocouples or RTDs. Thermostats can be used with basic heaters. For high-pressure operation, a pressure safety valve, or PSV, is advised. Control Panel: Keeps an eye on and regulates the safety and operation of the heater (either by thyristor regulation or ON/OFF). With the proper certifications, it can be put in both safe and dangerous locations. shows sensor
5. readings and provides indicators (Power ON, Heater ON/OFF, Trip, High Temperature). has an emergency stop as well as safety interlocks for high element temperature, ground fault, and process over temperature.



Technical Details and Allowances

Rating Design	From 1kW to 10,000kW (Max) in Single Bundle or combination
Design Temperature	-40 deg C to 650 degree C
Design Pressure	Upto 350 bar(g)
Pressure Vessel	LTCS/ CS / SS, Alloys etc
Heating Elements:	Mineral filled insulated Heating Elements or Tubular heating Elements with Ni-Cr (80-20) as heating Coil and suitable outer sheaths.
Terminal Enclosure*	As required (Weather proof or Flameproof).
Control System	Thyristor control Panel + Local control Stations. (Safe area or Hazardous area)
Protections & control:	Element Skin Temperature controls process temperature control Earth leakage protection. Overload current protection. Temperature class Protection (for Hazardous area only)
Installation:	Horizontal / Vertical
Certification:	Will be provided based n Requirement. (U,U2, PED, ATEX, IEC Ex, CCOE, DOSH etc)

Benefits

- Eco-friendly design. There are no harmful gases, smokes, or emissions coming from the system. Compact design for rapid continuous flow heating. Both continuous and short-term operation are possible with this device. Accuracy temperature regulation. Able to fit into tiny footprints. Specially made to satisfy requirements. Highest dielectric strength and high energy efficiency. Compliant with industry-standard safety and plumbing requirements. Dependable design. Simple to use and low upkeep. Conserving energy.

Utilizes

- For industrial applications, to raise the temperature of any fluid from low to high. These are the most widely used applications. Heating skids powered by natural gas or fuel gas. Crude oil, thermodynamic fluids, and other process fluids are all heated by oil. Air, nitrogen, hydrogen, argon, fuel gas, flue gas, and so forth are examples of gas heating. Applications for water heating and vaporizer systems. Boilers that use steam. Heating of edible oil for the food industry.

Sectors We Cover

- Gas and oil. Petrochemicals & refineries. plants that process gas. units for air separation. power plants. fertilizers and chemicals. OEMs (such as boilers, skids, and compressors). Auxiliary units and steel plants. Auxiliary units and aluminum plants. Food and drink.