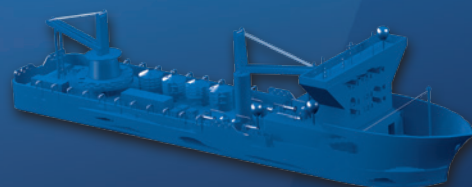
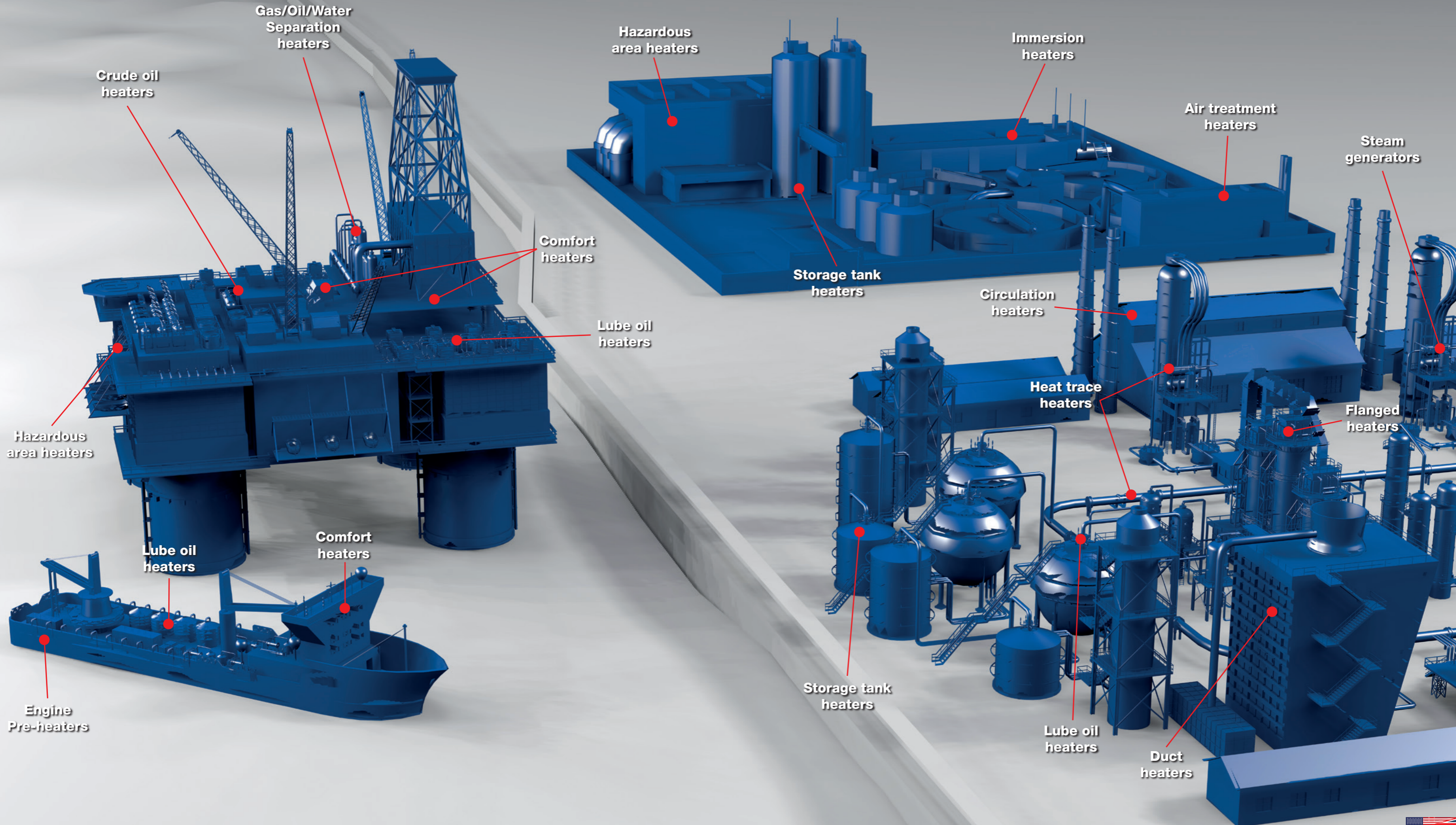




ELECTRICAL HEAT EXCHANGER FOR MARINE INDUSTRY





PRODUCTS

Zoppas Industries is specialized in the production of sheathed electrical heating elements and in a wide spectrum of electrical heating solution suitable to meet most of the applications in different industrial sectors. All our products are manufactured under the most stringent quality tests according to the main International Standards.

Our main products are:

- Screw Plug Heaters
- Flanged Immersion Heater
- Circulation Heaters
- Suction Heater
- Process Heating system
- Electric steam generator
- Engine Pre Heater
- Strip Heaters
- Etched Foil Heaters
- Control Panels
- Heating Elements

INDUSTRIES SERVED

Zoppas Industries offers several products for many industrial sectors:

- Oil & Gas
- Petrochemical
- Power generation
- Industrial gas production
- Chemical
- Marine
- Water treatment
- Energy
- Food processing
- Pharmaceutical
- Processing Plant

ENGINEERING PROJECT

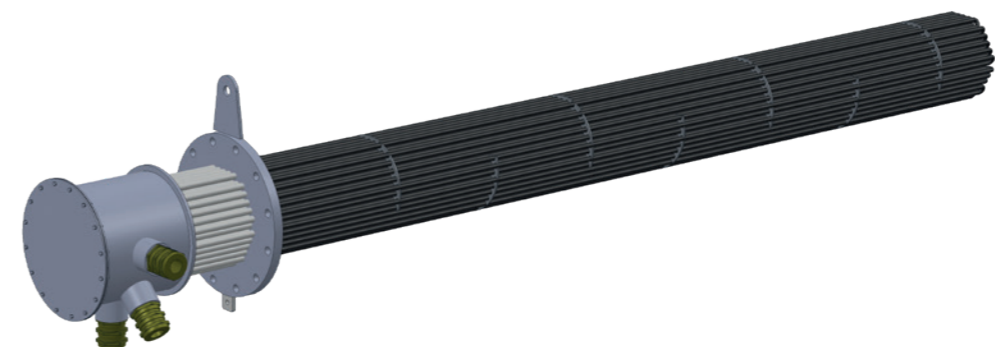
We design and manufacture electrical process heating exchangers, duct heaters and temperature control solutions to meet any specified technical customer requirement and international standards. We support our partners from conceptual design and feasibility study throughout the life cycle of the supplied products.

Our design skills include:

- Process heater design
- Thermal design
- Electrical design
- Mechanical design
- Temperature control design
- Hazardous area certification



Typical Circulation heater for hazardous area



Typical Immersion heater

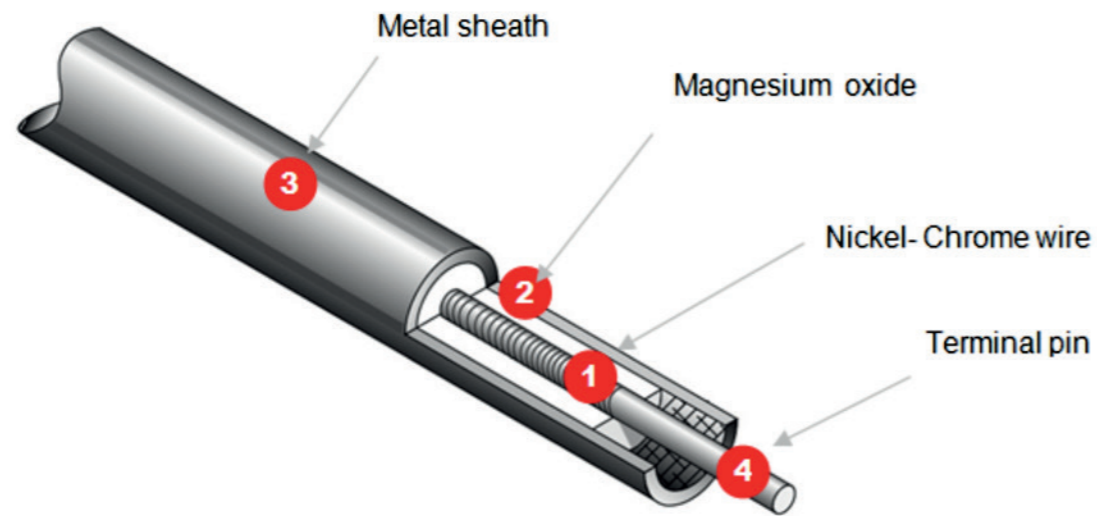


TYPICAL APPLICATION

- Fuel oil forwarding
- Lube oil preheating
- LNG heating and vaporizing
- Air separation
- KO drum
- Industrial gases (O2, N2, H2, CO2)
- Heat transfer fluids
- Fuel gas conditioning
- Water treatment
- Bilge water
- TEG reboilers
- Water heaters
- Tanks heaters
- Crude oil heaters
- Heat transfer salts
- Catalysts regeneration

HEATING ELEMENTS

We offer Tubular sheathed Heating elements having high quality Ni-Chrome resistance wire with in electric insulation made by compact magnesium oxide covered by metal sheath made of different materials (carbon Steel, SS 304/316/321/321L, Incoloy 800, Incoloy 825, Hastelloy, Inconel etc.) to suit the process condition. Heating elements can be supplied in different diameter ($\varnothing 6.25 \div 16$ mm) and lenght.



MARINE APPROVALS

The following marine approvals are available on customer request.



ELECTRICAL PREHEATERS



The preheaters in the 8801 series are designed to heat marine fuel oil and lubricants linked to the centrifugal separators installed on board ship, off shore or in permanent stations. A vertical arrangement that includes the electrical control box is used to reduce volume and make the best use of space on board. The heater comprises an insulated vessel complete with flanged attachments for fluid inlet-outlet, supports to which the base is fixed and an electrical panel with SCR control of the outgoing liquid temperature.

In particular the heaters are designed for:

- HFO
- MDO
- LO
- LO-HD

with 10 bar working pressure (tested for 15) and a maximum temperature of 110°C, in compliance with the rules laid down by several shipping registers:

- ABS
- CCS
- DNV-GL
- LR
- BV
- RINA

MAIN CHARACTERISTICS

- AISI 321 heating elements, specific load 1.1 W/cm²
- Painted carbon steel vessel
- Mineral wool insulation
- Flanged inlet/outlet of dimensions suitable for different capacities
- Painted sheet metal connection box with protection rating IP54
- Temperature control by PT100 resistance thermometer
- Safety thermostat with manual reset
- Electrical control box with thyristor control on one or two power steps

The family currently comprises 18 models of different dimensions and power from 4.5 kW to 157.5 kW.

ENGINE PREHEATER



These are plug-in compact electric heating systems mainly to heat fluids like water or oil. These heaters comprise of screw plug/flanged immersion heater fitted in a pressure vessel equipped with the required temperature controller(s), instrumentation along with a integral contactor or SCR control Panel. Typical applications for these systems are for Gensets, Power Plants, Marine, Railway, etc. like Pre Heating of Jacket water cooling systems, pre heating of jacket water cooling systems, pre heating lube oil system, combined pre heating of jacket water & lube system etc.

Technical Data Sheet & construction details

KW Rating	up to 4000 KW
Elements Metallurgy	Copper, Carbon Steel, SS304/316
Elements Dia (mm)	10, 12.5, 16 mm
Watt Density	up to 85 watts/sq inch depending on the application
Flange Class	150, 300 or more as required
Flange Metallurgy	carbon steel, SS 304/316/321
Terminal Box Metallurgy	Carbon Steel, Cast Aluminium, SS
Area of application	Available for safe areas application
No & size of entries	2 & more
Temperature Control	Thermostat/RTD/Thermocouple
Voltages	240, 480-690 VAC, single & 3 phase
Approvals	ATEX (CCOE or any other approval can be obtained on case to case basis)

CONTROL PANELS



Control Panel is very important & crucial for any electric heater performance and satisfactory & safe operation of the connected equipment. We offer Thyristor as well as contactor panels based on the application requirement. These control panels can be supplied both safe & hazardous area applications. Typically there are two types of control panels for most of the applications electrical heaters are used, though for some applications more complex control system may be required.

1. ON/OFF CONTROL

This type of control relies upon mechanical contactors and switches the load on or off from a demand signal received from the sensors mounted on the heater. It should be noted that this type of control system is best suited to static applications such as heaters for tanks/vessels as the degree of accuracy which can be applied is limited by the reaction time of the contactor and the number of stages available. Slightly more sophisticated systems incorporate multiple stages to allow a degree of flexibility.

2. THYRISTOR CONTROL

This type of control is the most common system used in flowing systems as the infinitely variable thyristor (SSR) switching device can very quickly adjust the heater power to match exactly the demand signal sensing the process fluid or gas temperature.

3. BASIC COMPONENTS FOR A HEATER CONTROL PANEL

- Enclosure typically IP44 mild steel for indoor mounting
- Main isolator
- On/off switch
- Warning lamps
- Low voltage control circuit
- Over temp controller (s)
- Process temperature controller
- Circuit protection fuses or MCCB
- Power switching device (s) either contactor or thyristor
- Trip device



SCREW PLUG IMMERSION HEATERS

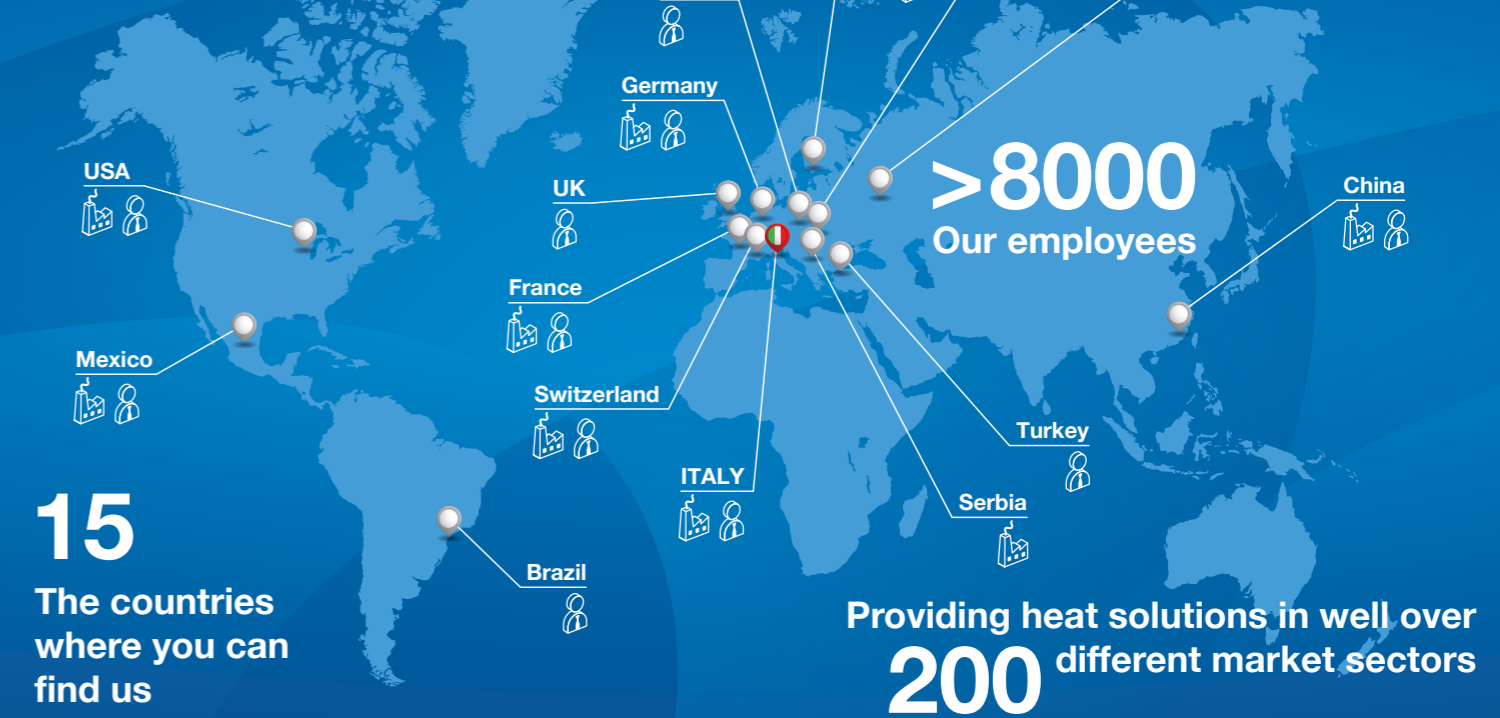


Screw Plug Heaters are constructed with U shaped tubular heating elements brazed or welded to the screw plug. Screw plug heaters are used mainly for heating liquids like chlorinated water, demineralized water, lube oil, fuel oil, mineral oil, edible oil, and so on. These heaters can be provided with a temperature controller. Screw Plug heaters can be offered in fixed type or withdrawable type configuration (the heater can be removed without draining the product from the tank).

Technical Data Sheet & construction details

KW Rating	up to 24 KW
Elements Metallurgy	Copper, Carbon Steel, SS304/316, Incoloy/Inconel
Elements Dia (mm)	8.5, 10, 12.5 mm
Number of elements	1 - 3
Watt Density	up to 85 watts/sq inch depending on the application
Screw Plug Size	1 - 2.5 inch
Plug Metallurgy	Brass / SS 304/316/321
Terminal Box Metallurgy	Carbon Steel, Cast Aluminium, SS
Area of application	Available for both Hazardous & safe areas application
No & size of entries	2 Nos - 3/4"
Temperature Control	Thermostat, RTD, hermocouple
Voltages	120, 240-480 VAC, single & 3 phase
Approvals	ATEX - Exd

60 Years of experience in design and production of heating elements and systems



ZOPPAS INDUSTRIES Partner

- Experience Zoppas Industries increasing efficiency using lean enterprise across all facilities and departments.
- Access our state-of-the-art laboratory facilities with over 30 years' design experience.
- Benefit from Zoppas Industries manufacturing and design facilities which maintain Quality Management Systems according to ISO 9001, EN 9100 and IATF 16949, Environmental Management System according to ISO 14001 and Energy Management System according to ISO 50001.
- Access one of the widest Heating Element Technology product portfolios in the world including completely integrated thermal assemblies with sensors, connectors, enclosures, etc.
- Benefit from Zoppas Industries global presence through design and manufacturing facilities across Europe, North America, South America and Asia - lowering your Total Cost of Ownership (TCO) including reduced logistics, design, communication and support costs.
- Access Zoppas Industries' in-house design, development and R&D capabilities, such as CAD 3D design, FEA, DOE, FMEA.
- Benefit from Zoppas Industries products third-party certification, such as UL and VDE: marking applied on customer's request.

We at ZOPPAS INDUSTRIES put you in the front seat of internationalization - sourcing your local needs globally.



PRODUCT TRADEMARKS



Compliance with the mark of each specific product must be properly reviewed with our Sales Department.

COMPANY CERTIFICATIONS





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