CX Flange Heater
Increased Safety Engineered Solutions

FREQUENTLY ASKED QUESTIONS

The Increased Safety Immersion Heater is an enhancement to Thermon's existing immersion heater line-up. With "Increased Safety" certifications of IECEx and ATEX, the Increased Safety Immersion Heater can be custom designed to offer highly engineered solutions while meeting our customers' specific needs.

The Increased Safety Immersion Heaters are designed for large power ratings up to 4MW. There are two different enclosure designs – round or square/rectangular (panel type) with factory installed temperature sensors. These temperature sensors are used in conjunction with a remote certified temperature control to limit surface temperatures on flange and terminal box enclosure units.

The following FAQ's will help everyone understand it's true value to industry:

Question: What is "Increased Safety"?
Answer: The "Increased Safety" protection method is a certified design scheme used for equipment placed in explosive atmospheres under IECEx and ATEX design standards. It uses the principle whereby arcs and sparks do not occur in normal service or under fault conditions, and surface temperatures are controlled to limit maximum surface temperatures below incendive values.

Question: What are the available product certifications?
Answer: Thermon process flange heaters are certified for use in gaseous environments to meet the latest IEC and EN 60079-0 and 60079-7 product standards.

Electrical Ratings: Voltages up to 690 Vac, 1 or 3 PH., Wattages Up To 4,000KW
Ambient Temperature Rating: -60 °C to +80 °C
Markings: IECEx Ex eb IIC Gb, T1 to T6
ATEX Ⓔx II 2 G Ex eb IIC TI TO T6 Gb
Mounting Orientation: Horizontal or Vertical

Question: What are the available heater flange type, sizes and materials?
Answer: Thermon process flange heaters are available in sizes from 6" (150 mm) to 50" (1400 mm) diameter in standard flange ratings such as ANSI B16.5, ANSI B16.47, DIN, JIS and any other custom size. Available materials are carbon steel, stainless steel, Incoloy, Inconel or other materials as specified.

Question: What are the available heater pressure ratings?
Answer: Thermon process flange heaters are available in pressure ratings from 150 psig (10 atm) to 3000 psig (200 atm).

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Form THS2003-1020

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Question: What are the available element sheath materials?
Answer: Available sheath materials include steel, stainless steel, Incoloy, Inconel, and many others.

Question: What is the maximum design temperature?
Answer: Design temperatures up to 650 °C (1200 °F) are available based on customer specifications.

Question: What is the maximum heater flux density?
Answer: Maximum heater flux must be based on the fluid or gas being heated. Maximum available values up to 18.6 W/cm^2 (120 W/in^2), depending on the specific application.

Question: What are the available Temperature Code ratings?
Answer: Available Temperature Code ratings are T1, T2, T3, T4, T5 or T6.

Question: What are the available power ratings?
Answer: Available power ratings per heater bundle up to 4000 kW at 690Vac, 1 or 3 phase, 50 or 60Hz.

Question: What are the ambient operating temperature limitations?
Answer: Thermon process flange heaters are certified for use in ambient temperature ranges from -60 °C to +80 °C.

Question: What terminal enclosures are available?
Answer: Two different types of terminal enclosures are available – a square/rectangular panel style design suitable for IP64 protection or a round fabricated design suitable for IP66 protection. Enclosures are available in painted steel or stainless steel construction.

Question: How are the wiring connections made?
Answer: Cable or conduit connections are made through either certified cable gland fittings or threaded conduit hubs, based on customer specifications. Wire connections are made at certified Ex “e” series terminal blocks inside of the terminal enclosure.

Question: What type of temperature sensors are provided with the heater?
Answer: Each heater is provided with temperature sensors at the following locations: 1) on the heater element sheath to measure maximum sheath operating temperatures, 2) on the heater flange face to measure maximum exposed surface temperatures, and 3) for stilted designs only, a temperature sensor is placed on the inside of the terminal enclosure to measure the internal ambient temperature. The temperature sensors are either thermocouple or RTD style, based on customer specifications.

Question: What other controls are needed for safe operation of the process heater?
Answer: Depending on the particular application of the process heater, a number of safety devices are required for safe operation of the heater. Each heater is equipped with temperature sensors that must be wired to remote certified temperature controls that limit the maximum temperatures as listed on the heater nameplates. For liquid service, the end user must ensure that the heater can only operate when completely immersed in the fluid. For tank heating applications, a liquid level control is needed to ensure compliance. For heating of gaseous media, additional temperature sensors may be needed.

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Question: Are leakage currents required to be monitored and controlled?
Answer: Yes, a certified ground fault or residual current device is needed to ensure that leakage current values are maintained within acceptable ranges.

Question: Can Thermon provide anti-condensation heaters to prevent damage from moisture?
Answer: Yes, an anti-condensation heater can be provided within the heater terminal enclosure, based on customer specifications.

Question: Can Thermon provide control panels suitable for use with the process heaters?
Answer: Yes, Thermon can provide electrical control panels suitable for use in ordinary atmosphere or explosive atmosphere locations with either flameproof Ex “d”, or purge and pressurize Ex “px” or “pz” types.

Question: Can Thermon provide pressure vessels suitable for use with the process heaters?
Answer: Yes, Thermon can provide pressure vessels suitable for use with the process heaters, based on customer specifications. Contact Thermon for more details.