

Immersion Heaters

for Liquids and Gases



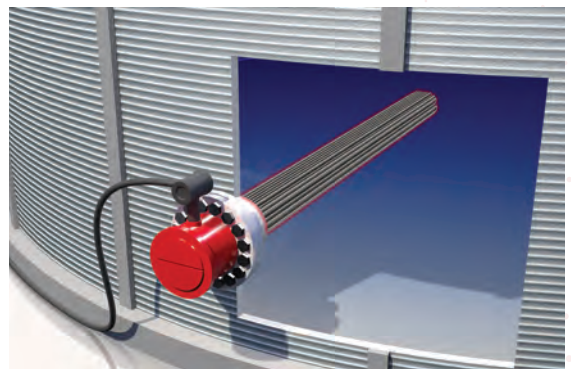
Immersion heaters are generally used when direct heat transfer to a medium like water, chemicals or gases is required. Heat transfer is through contact between the element and the medium. Depending on design the heat transfer can be enhanced by forcing the flow of the medium over the elements.

Immersion heaters are very versatile in their construction and design. Heating capacity can range from 1kW to a few MW.

Applications range is varied.

Typical Applications

- Hot water tanks
- Electrically heated boilers (better control and heat transfer than with gas or coal burners)
- Control of bulk oil temperature in lube oil reservoirs (improves lubrication)
- For heavy weight oil (for better flow, easier pumping, increased combustion efficiency)
- Industrial water tanks, vessels and process piping
- Cleaning and rinsing tanks
- Heat transfer systems
- Circulation heating
- Steam superheating
- Air or gas heating



Immersion heaters are normally mounted horizontally in the medium to be heated and preferably quite low in the medium. They can be mounted vertically into the system with special design criteria.

Design Criteria

- Sheath material (element tube) as well as flange material must be matched to the medium to be heated. Corrosion resistance, chemical stability, temperature stability, etc. must be considered.
- Heat transfer rate between element and the medium is important. If heat transfer is too high, the medium might degrade. Too low a heat transfer can result in a bulky construction.
- Degradation of the medium can result in deposition of the degraded material onto the sheath. As this can reduce the rate of heat transfer, the element is put at risk of overheating.
- Flow rate of the medium over the elements helps to improve the heat transfer from the element into the medium. In such a case flow velocities and equalised flow patterns are important.
- Physical sizing of the element bundle in relation to the mounting vessel, must be taken into consideration and balanced against all the other design criteria as mentioned.
- Terminal design needs to consider current/ voltage ratings as well as the type of electrical protection required. Typical consideration would be a dust proof or moisture proof terminal housing (IP rating).
- If the heater is used in a hazardous area, this will require substantial design considerations on the terminal layout and requires specialised certification (IEC, ATEX) by third party authorities.
- Immersion heaters mounting methods are also varied. Depending on sizing, the most common methods are either via screw in flange or a bolt on flange. Care must be taken that a good seal is established at the given pressure rating.



The quick quote form will help the user to supply design criteria to our engineers.

Typical Immersion Heaters with Screw-In Flange are listed below:

Standard stock items

Stock Code	Rating (Watts)	Power supply (Volt)	Immersion length (mm)	Fitting	Options
Elements for water (Stainless steel 321-sheath, max 10 Watt/cm ²)					
UHRBC11K00150N0	1000	230	150	2" Brass	terminals exposed
UHRBC11K00285N1	1000	230	285	2" Brass	terminals exposed, with pocket
UHRBC11K50185N0	1500	230	185	2" Brass	terminals exposed
UHRBC11K50270N1	1500	230	270	2" Brass	terminals exposed, with pocket
UHRBC12K00280N0	2000	230	280	2" Brass	terminals exposed
UHRBC12K00280N1	2000	230	280	2" Brass	terminals exposed, with pocket
UHRBC13K00350N0	3000	230	350	2" Brass	terminals exposed
UHRBC13K00350N1	3000	230	350	2" Brass	terminals exposed, with pocket
UHRBC14K00350N0	4000	230	350	2" Brass	terminals exposed
UHRBC14K00350N1	4000	230	350	2" Brass	terminals exposed, with pocket
UHRBC33K00275N0	3x1000	230 / 400 3ph	275	2" Brass	terminals exposed
UHRBC33K00275NA	3x1000	230 / 400 3ph	275	2" Brass	with terminal cover IP40
UHRBC33K00275NE	3x1000	230 / 400 3ph	275	2" Brass	with terminal cover IP65
UHRBC34K50330N0	3x1500	230 / 400 3ph	330	2" Brass	terminals exposed
UHRBC34K50330NA	3x1500	230 / 400 3ph	330	2" Brass	with terminal cover IP40
UHRBC34K50330NE	3x1500	230 / 400 3ph	330	2" Brass	with terminal cover IP65
UHRBC36K00400N0	3x2000	230 / 400 3ph	400	2" Brass	terminals exposed
UHRBC36K00400NA	3x2000	230 / 400 3ph	400	2" Brass	with terminal cover IP40
UHRBC36K00400NE	3x2000	230 / 400 3ph	400	2" Brass	with terminal cover IP65
UHRBC39K00620N0	3x3000	230 / 400 3ph	620	2" Brass	terminals exposed
UHRBC39K00620NA	3x3000	230 / 400 3ph	620	2" Brass	with terminal cover IP40
UHRBC39K00620NE	3x3000	230 / 400 3ph	620	2" Brass	with terminal cover IP65
UHRBC312K0620N0	3x4000	230 / 400 3ph	620	2" Brass	terminals exposed
UHRBC312K0620NA	3x4000	230 / 400 3ph	620	2" Brass	with terminal cover IP40
UHRBC312K0620NE	3x4000	230 / 400 3ph	620	2" Brass	with terminal cover IP65
Elements for light oils (Stainless steel 321-sheath, 3.2 Watt/cm ²)					
UHRBC31K50340N0	3x500	230 / 400 3ph	340	2" Brass	terminals exposed
UHRBC31K50340NE	3x500	230 / 400 3ph	340	2" Brass	with terminal cover IP65
UHRBC33K00620N0	3x1000	230 / 400 3ph	620	2" Brass	terminals exposed
UHRBC33K00620NE	3x1000	230 / 400 3ph	620	2" Brass	with terminal cover IP65
UHRBC34K50980N0	3x1500	230 / 400 3ph	980	2" Brass	terminals exposed
UHRBC34K50980NE	3x1500	230 / 400 3ph	980	2" Brass	with terminal cover IP65
UHRBC36K01200N0	3x2000	230 / 400 3ph	1200	2" Brass	terminals exposed
UHRBC36K01200NE	3x2000	230 / 400 3ph	1200	2" Brass	with terminal cover IP65
Elements for heavy oils (Stainless steel 321-sheath, 1.2 Watt/cm ²)					
UHRBC31K50810N0	3x500	230 / 400 3ph	810	2" Brass	terminals exposed
UHRBC31K50810NE	3x500	230 / 400 3ph	810	2" Brass	with terminal cover IP65
UHRBC32K21200N0	3x750	230 / 400 3ph	1200	2" Brass	terminals exposed
UHRBC32K21200NE	3x750	230 / 400 3ph	1200	2" Brass	with terminal cover IP65



Terminals exposed



IP40 cover

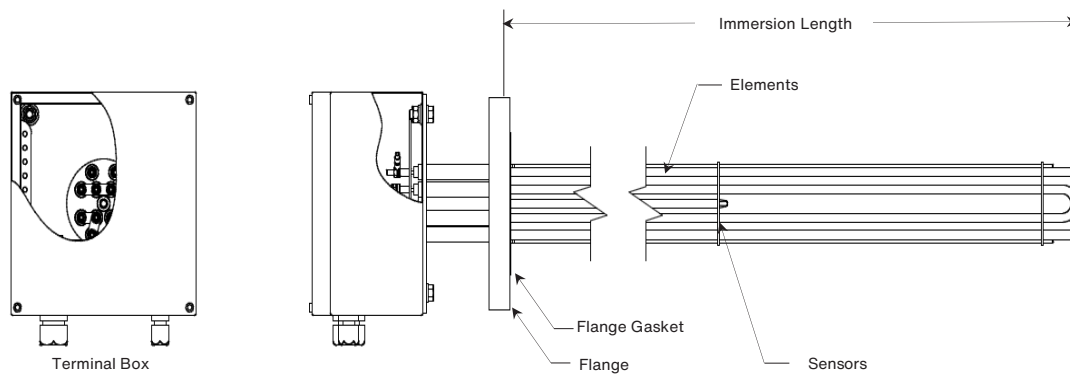


IP65 cover

Immersion Heater Quick Quote Form

ISO9001 Registered

Sales Responsible:		Project:	
Date:		Client Contact No.:	
Date Required:		Client Email:	
Client Name:		Quote Type:	☐ Desktop Study ☐ Official Quotation
Company:		Heating Type:	☐ Circulation Heater ☐ Tank



Operational and Technical Data

☐ Mandatory Information

Circulation Heater

Process Flow Rate * kg/h

Tank Heater

Tank Capacity* litre Tank Heating Time* hours

Operational Data

Product		Product Density	kg/m ³
Min. Inlet Temp.	°C	Max. Outlet Temp.	°C
Environmental Temp Min.	°C	Environmental Temp Max.	°C
Operating Pressure	barg	Indoor or Outdoors?	
Horizontal or Vertical?		Supply Voltage	Vac
Heating Capacity *	kW	Voltage Phase 1PH or 3PH	

* Complete either Heating Capacity or Circulation/Tank Heater Operational data

Heater Specifications

Immersion length mm

Process connection size and standard

Heater Mounting flange material

- ☐ Stainless Steel 304
☐ Stainless Steel 316
☐ Carbon Steel
☐ Other (If Other Please specify in comments)

Element Material

- ☐ Stainless Steel 304
☐ Stainless Steel 316
☐ Carbon Steel
☐ Incoloy 600
☐ Incoloy 800
☐ Other (If Other Please specify in comments)

Termination Enclosure

Material	
IP Rating	

Additional Services

Quote On Control Panel	☐
Circulation Vessel	☐
Heater Mounting Flange Gasket	☐

Hazardous Area Classifications and Design Data

Pressure

Design Pressure (barg)	barg
Design Regulations	
Design Temperature (T°C)	°C
AIA Inspection	

Hazardous Area Classification

Zone (eg. 22 or N/A)	
Gas Group (eg. IIA or N/A)	
Temperature Class (eg. T3 or N/A)	
Standard or N/A	

Notes