

FLANGED IMMERSION HEATER

HEATING & ENERGY EFFICIENT • TEMPERATURE CONTROL

FLANGED IMMERSION HEATERS

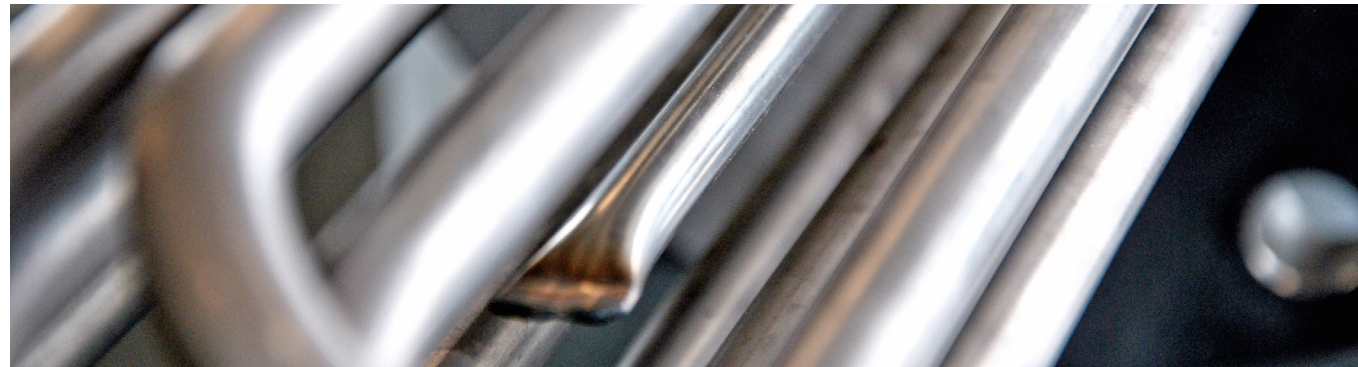


Innovations for the future

A partnership with Backer gives you a dedicated team of designers, project engineers and technical experts in the fields of electric heating, measurement and control, ready to provide you with the optimal solutions for your needs.

DESIGN FEATURES

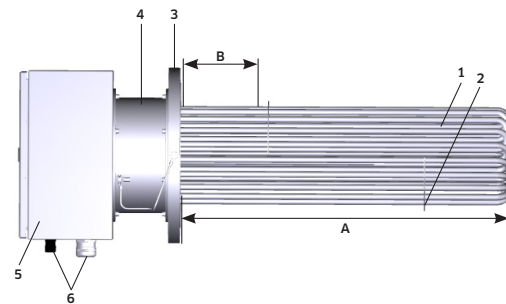
Backer's Flanged Immersion Heaters give you efficient heating with a robust, industrial design. The selection of various materials, sizes, immersion lengths, watt densities, etc. ensures an optimized configuration for every unique application. The Backer engineering team are standing by for offering the right selection of Immersion heater for your needs.



Regardless if you need a standard configuration or a customized heater, backer provides the solution for your application.

ABOUT THE PRODUCT

The Backer range of Flanged Immersion Heaters are designed for applications in tanks and vessels as well as flow heaters. The heating elements which are welded, brazed, or clamped onto the flange are either pre-designed for standard applications or will be customized for specific needs. The standard flanges, insulation necks and connection boxes are pre-assembled in various sizes. The size, number of tubular elements, immersion length and watt density can easily be modified to meet every unique application demand.



- A: Inserted length
 B: Inactive zone / Cold length
1. Tubular element
 2. Baffle
 3. Flange
 4. Isolation neck
 5. Connection box
 6. Glands (not included as standard)

WATT DENSITY SELECTION

Watt densities range from 1-10 watts per square centimetre. Choosing the correct watt density is essential for prolonging the life of the heater and prevent fluid degradation. The fluid's ability to absorb heat from the element will determine the proper watt density. Water easily absorbs heat from the elements, so a high watt density is appropriate. Fluids like Crude Oil as well as gases, do not absorb heat from the element that well and consequently a much lower watt density is required.

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ELEMENT MATERIAL

| Materials | Standard | Optional |
|------------------|---------------------------------|---------------------------------|
| Tubular elements | Select by media and temperature | |
| Baffles | EN 1.4404 | EN 1.4301 |
| Flange | EN 1.4404 | |
| Insulation neck | EN 1.4301 | |
| Connection box | EN 1.4301 | Powder coated steel / EN 1.4404 |

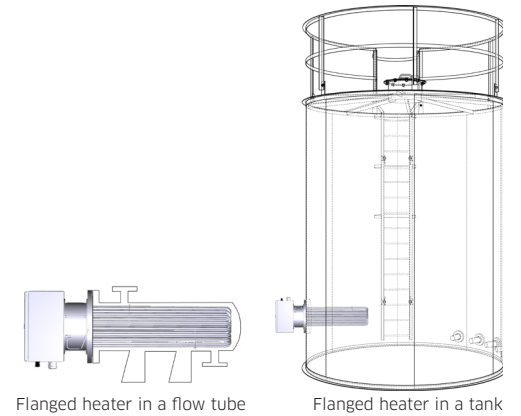
DESIGN SELECTION

The flanged heaters can be designed either as a flow heater in a flow tube or as a batch heater in a tank. The construction will differ slightly, depending on the actual installation mode.

When selecting the correct Flanged Immersion Heater, the following application parameters needs to be considered:

- Type of fluid/gas to be heated (temperature sensitivity)
- Flow rate, if designed as a Flow heater
- Physical limitations such as, materials, flange size and immersion length
- Power demand
- Voltage required
- Other relevant information such as, control system, pressure class, hazardous environment, certification, etc.

The Backer engineers are ready to help you in designing the optimum heater for your application.



ADDITIONAL OPTIONS & CAPABILITIES

Process control

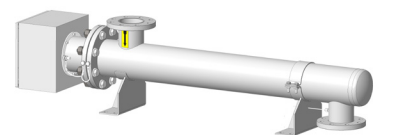
Backer can provide a both standards aswell as cusotmized sensors, controllers and regulators to achieve the appropriate control loop for every application. On/off control is normally suitable for tank applications while full PID-regulation might be needed for flow heaters.



Backer IOT smart temperature controller

Flow heater / Circulation heater

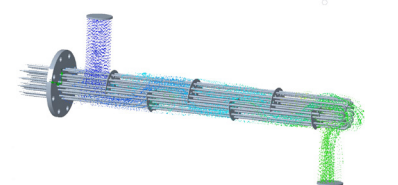
For heating continous flows of media a Flanged heater can be combined with a Flow tube and optimized for the required thermal duties. The Flow heater can either be supplied as a stand alone unit or as a skid mounted version, fitted with auxilliary equipment such as filters, pumps, sensors, controllers and expansion vessles.



Flow tube

ADDITIONAL SERVICES

- For non-generic and sensitive applications Backer offers Computational fluid dynamics (CFD) analysis analysis for ensuring the thermodynamical and fluidical performance
- When needed, pressure tests can be carried out for system designs up to PN63
- Aftermarket services, such as renovation and product maintenance are performed in our workshop. Some services can also be carried out on site.



Computational fluid dynamics (CFD) analysis

FLANGED IMMERSION HEATERS

The size, number of tubular elements, immersion length and watt density below can easily be modified to meet every unique application demand.

The selection of tables below are set up for typical watt loads of 6-10 W/cm² for water, 2-4 W/cm² for light fuel oil and 1-2 W/cm² for air and heavy fuel oil. The cold length (B) is set to 108 mm.

WATER APPLICATIONS, WATT DENSITY 6-10 W/cm²

| Flange size | No. of 14mm tubes | Immersion length (mm) | | | | | | |
|-------------|-------------------|-----------------------|--------|--------|--------|--------|--------|--------|
| | | 750 | 1 000 | 1 250 | 1 500 | 1 750 | 2 000 | 2 250 |
| DN150 | 9 | 46 kW | 63 kW | 81 kW | 99 kW | 117 kW | 135 kW | 152 kW |
| DN200 | 12 | 61 kW | 84 kW | 108 kW | 132 kW | 156 kW | 179 kW | 203 kW |
| DN250 | 18 | 91 kW | 127 kW | 162 kW | 194 kW | 234 kW | 269 kW | 305 kW |
| DN300 | 27 | 137 kW | 190 kW | 243 kW | 297 kW | 350 kW | 404 kW | 457 kW |

LIGHT FUEL OIL APPLICATIONS, WATT DENSITY 2-4 W/cm²

| Flange size | No. of 14mm tubes | Immersion length (mm) | | | | | | |
|-------------|-------------------|-----------------------|-------|-------|-------|--------|--------|--------|
| | | 750 | 1 000 | 1 250 | 1 500 | 1 750 | 2 000 | 2 250 |
| DN150 | 9 | 15 kW | 21 kW | 27 kW | 33 kW | 38 kW | 45 kW | 51 kW |
| DN200 | 12 | 20 kW | 28 kW | 36 kW | 43 kW | 52 kW | 60 kW | 68 kW |
| DN250 | 18 | 30 kW | 42 kW | 54 kW | 66 kW | 78 kW | 90 kW | 102 kW |
| DN300 | 27 | 46 kW | 63 kW | 81 kW | 99 kW | 117 kW | 135 kW | 152 kW |

AIR AND HEAVY FUEL OIL APPLICATIONS, WATT DENSITY 1-2 W/cm²

| Flange size | No. of 14mm tubes | Immersion length (mm) | | | | | | |
|-------------|-------------------|-----------------------|-------|-------|-------|-------|-------|-------|
| | | 750 | 1 000 | 1 250 | 1 500 | 1 750 | 2 000 | 2 250 |
| DN150 | 9 | 8 kW | 10 kW | 13 kW | 16 kW | 19 kW | 22 kW | 25 kW |
| DN200 | 12 | 10 kW | 14 kW | 18 kW | 22 kW | 26 kW | 30 kW | 34 kW |
| DN250 | 18 | 15 kW | 21 kW | 27 kW | 33 kW | 39 kW | 45 kW | 51 kW |
| DN300 | 27 | 23 kW | 31 kW | 40 kW | 58 kW | 58 kW | 67 kW | 76 kW |



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