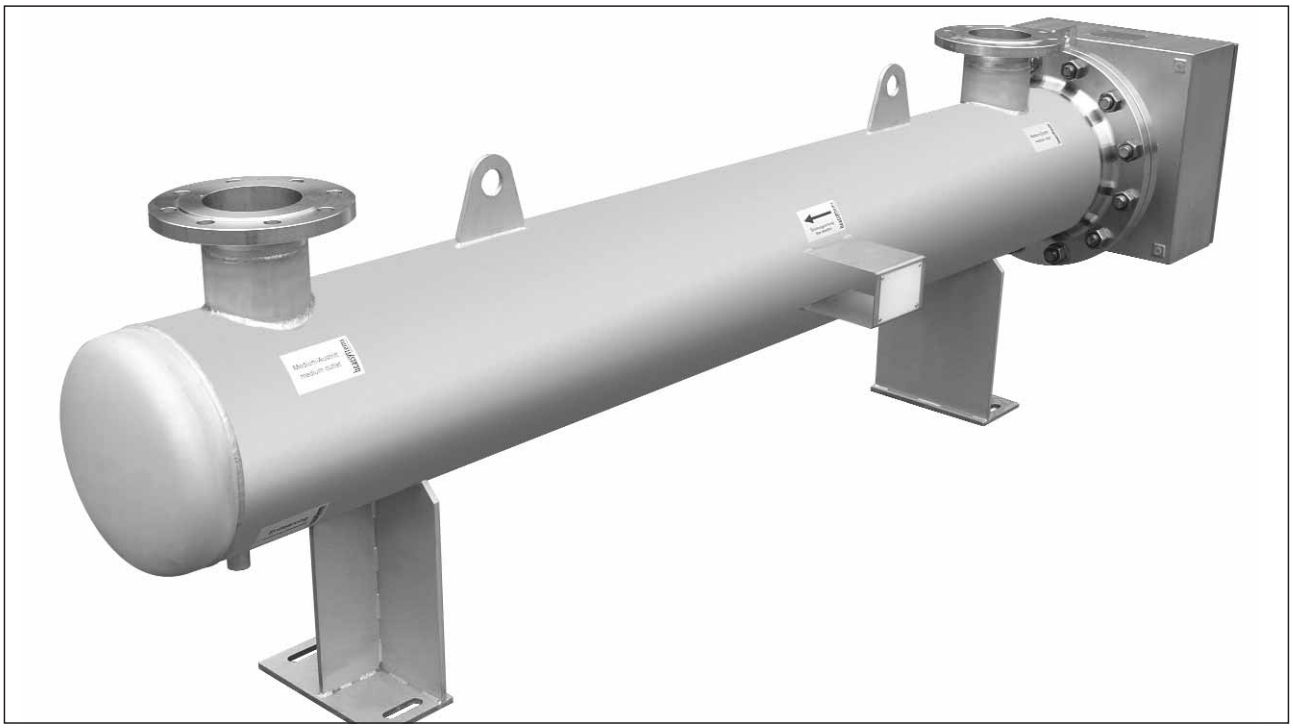
TECHNICAL INFORMATION

heatsystems
Elektrowärme-Technik

# Electric Process Heaters



*Electric process heater / capacity 800 kW.*

**heatsystems** Electric process heaters have been designed for the direct heating of various liquid and gaseous media. Electric process heaters are occasionally referred to as electric heat exchangers. **heatsystems** electric process heaters are used preferably for heating:

- demineralised water
- totally desalinated water
- drinking water
- insulating oil
- transformer oil
- circuit water
- heavy oil
- heating water
- hydraulic oil
- lubricating oil
- turbine oil
- heat transfer fluids
- other liquid media
- non-flammable gaseous media and vapours
- superheating of steam

**Usual materials for heatsystems electric process heaters**

**Shell and tube plate**
Steel
Stainless steel AISI 316Ti (1.4571)
Stainless steel AISI 316L (1.4404/1.4435)
Stainless steel AISI 904L (1.4539)

**Heating surface**
Stainless steel AISI 321 (1.4541)
Stainless steel AISI 316L (1.4404/1.4435)
Stainless steel AISI 309 (1.4828)
Stainless steel AISI 316Ti (1.4571)
Stainless steel AISI 904L (1.4539)
Stainless steel Incolloy 800 (1.4876)
Stainless steel Incolloy 825 (2.4858)
Stainless steel Hastelloy C-278 (2.4819)
Copper nickel CuNi10Fe
Titanium Grade 2

**Stand column**
Steel, optionally stainless steel

**heatsystems** electric process heaters consist of the components:

**Design and construction**
Computer-aided design of the surface load of the heating surfaces ensures optimum form and load. Optimisation based on film temperature.

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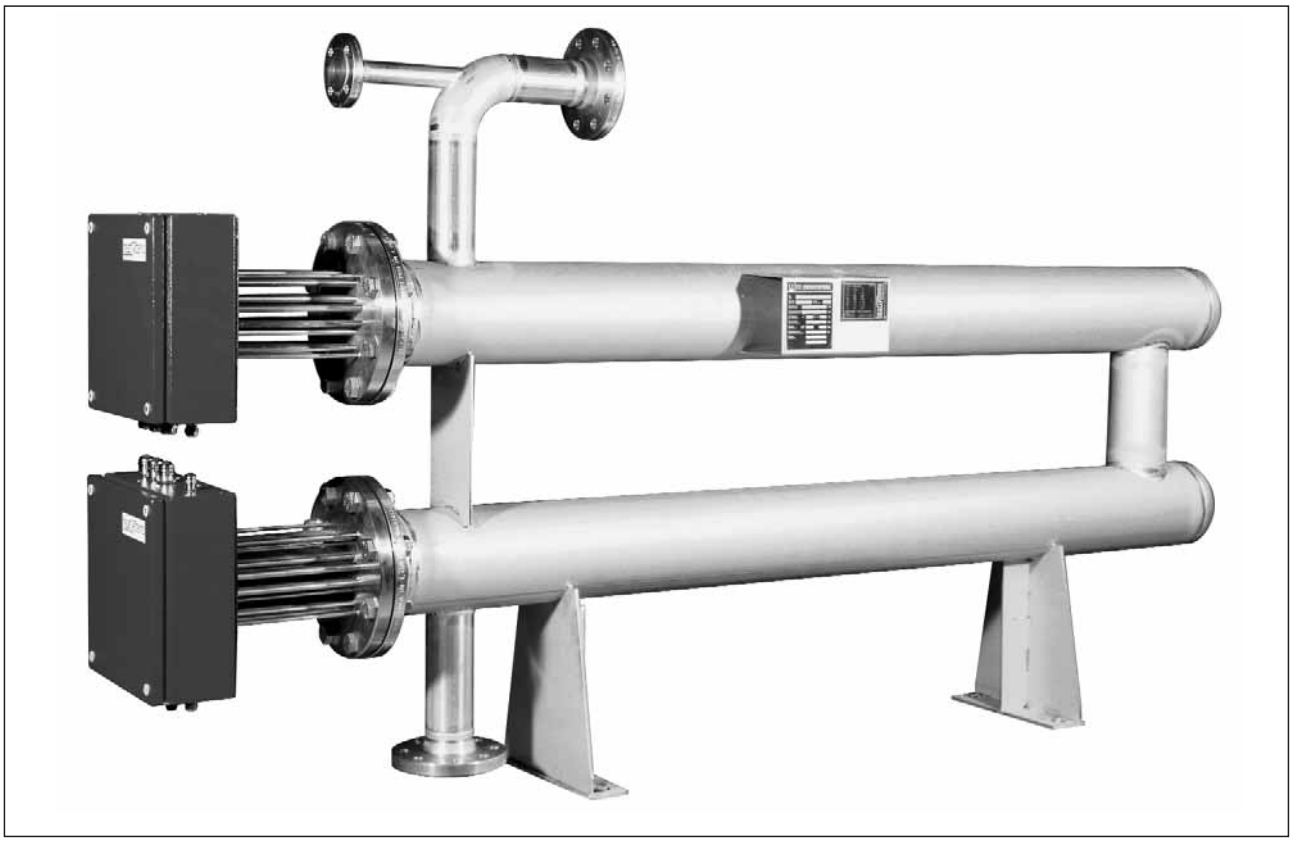

***Steam superheater consisting of two flow pipes with built-in electric flange heaters. Operating pressure 10 bar (o), operating temperature 250 °C. Capacity 160 kW.***

**Vessel**
Designed as flow pipe, medium to be heated in shell, single or multi-way version. In order to ensure a high flow velocity and therefore a good transfer of the heat to the medium to be heated, the flow pipe is designed in such a way that the heating bundle is narrowly enclosed. Connections on the medium side as well as emptying and venting as flange or screw connections.
Other connections are possible.

**Heating surface**
Highly compressed tubular heaters, rod-shaped cartridge heaters or oval pipe heaters. Material, dimensions and length individually adapted to the application. Welded gas-tight into the flange plate. Tubular heater diameter used are, e.,g. 6.5 mm, 8.5 mm, 16 mm, cartridge heaters diameter 8.5 mm,
16 mm and 25 mm, oval heater diameter 16 x 6 mm. The optimum suitable heater is determined depending on the immersion length and the medium to be heated.

**Connection housing**
Steel plate, powder coated or stainless steel. On request material stainless steel AISI 316Ti (1.4571) or stainless steel AISI 316L (1.4404/1.4435).
The heaters are wired to terminals ready to connect in the connection housing. Temperature monitors, temperature limiters or overheating protection are installed optionally. Electrical type of protection according to IP 54, IP 65 on request. Stationary heating and pressure compensation element to prevent condensation can be provided optionally.

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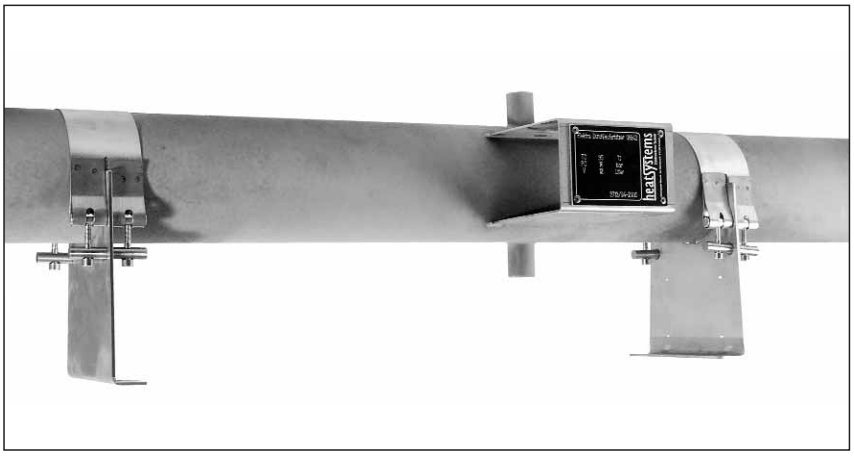
# Electric Process Heaters

**Temperature controllers and limiters**
Temperature controllers and/or temperature limiters (effective on the media) are installed in the connection housing on request. Optional: Overheating protection (effective on the heater surface).
These elements can be designed electro-mechanically and for electronic evaluation (Pt 100, thermocouple).

**Other options for heatsystems electric process heaters:**

- dead-leg-free version
- roughness depth of the wetted parts Ra <0.8 µm
- surface blasted with glass beads
- material certificate according to EN 10204-3.1
- acceptance by TÜV, BV, GL, LR
- explosion-proof connection housing
- vertical (standing or hanging) version
- complete temperature control and temperature limiting, also with control cabinet as turn key solution
- combined heating, electric and with steam, hot water or heat transfer oil
- exchangeable ceramic heating elements
- thermal insulation
- heating in the connection housing to prevent condensation
- fan in the connection housing to prevent too high temperatures
- medium pump, also with pump control
- multi-way version


*Electric process heater with removable heat insulation.*




*Mechanical fastening of the process heater, movable.*

- installations for increasing the flow velocity
- medium-side connections as TriClamp
- safety valve
- mechanical fastening movable
- mounted on frame, ready to connect with control cabinet on request
- thaw heater

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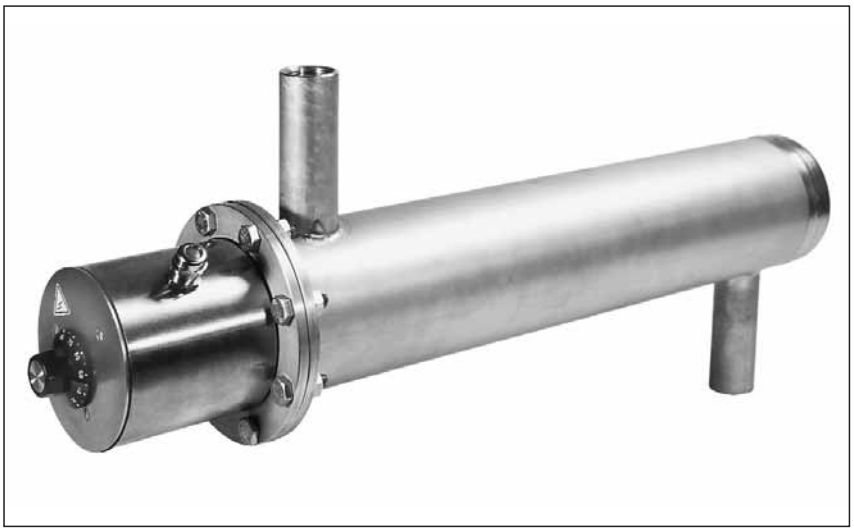
# Compact Process Heaters for Drinking Water

If drinking water is to be heated reliably by means of a compact electric process heater despite restricted space, the compact process heater for drinking water developed by **heatsystems** takes over the job. This series unites the advantages of **heatsystems** compact electric flange heaters and **heatsystems** process heaters.



***Compact process heater for drinking water. Capacity 12 kW.***

**Special features of this version are:**

- low surface load, approx. 32 W/sq. inch
- process heater made of stainless steel material AISI 316Ti (1.4571)
- flange plate made of stainless steel material AISI 316Ti (1.4571)
- heating surface made of copper nickel CuNi10Fe or stainless steel material AISI 904L (1.4539)
- welded version
- built in temperature controller, setting range 30 to 85 °C, switching difference 12 +/-6K
- built-in frost protection circuit
- built-in safety temperature limiter, switch-off temperature 110 °C -8K
- temperature controller, frost protection circuit and temperature limiter wired for direct switching. Separate contactors are not necessary, only a fused supply cable
- medium side connections as fitting
- thermal insulation optionally available

**heatsystems** compact process heater can be combined with each other in double, triple or quad units.

**Versions available standard versions with build-in temperature controllers and temperature limiters:**

| | | | | | | |
|---|---|---|---|---|---|---|
| Capacity | 2,0 kW | 4,0 kW | 6,0 kW | 8,0 kW | 10,0 kW | 12,0 kW |
| Voltage | 230 Volt AC | 400 Volt 3ph | 400 Volt 3ph | 400 Volt 3ph | 400 Volt 3ph | 400 Volt 3ph |
| Current | 8,7 Amps AC | 5,8 Amps 3 ph | 8,7 Amps 3 ph | 11,6 Amps 3 ph | 14,5 Amps 3 ph | 17,4 Amps 3 ph |
| Item no. | D910 923 | D910 924 | D910 925 | D910 926 | D910 927 | D910 928 |

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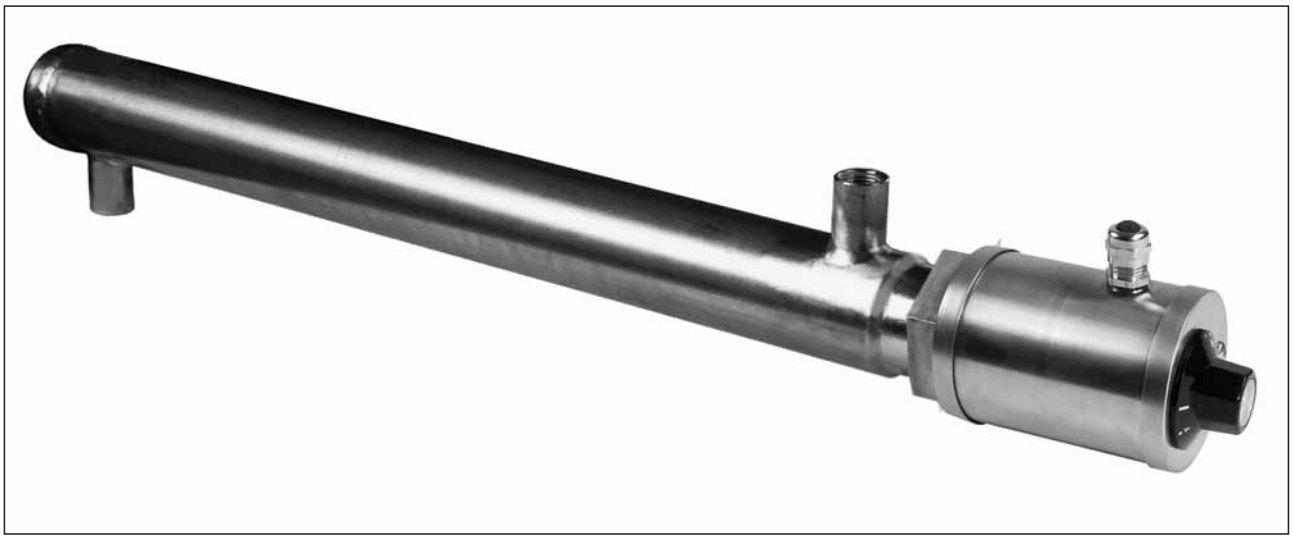
# Compact Process Heaters for Non-aggressive Circuit Water



*Compact process heater for non-aggressive circuit water, capacity 12 kW.*

Capacity 2 to 12 kW, finely graduated, medium circuit water. Horizontal installation position. Those are the conditions under which **heatsystems** compact process heaters can be used.

**Shell**
The shell is designed as a flow pipe. Stainless steel material is used. Medium side connections are designed as fitting.

**Heating surface**
Highly compressed heaters made of stainless steel are used.

**Further option for heatsystems compact process heater:**

- Vertical installation with connection housing at top or bottom
- Standard versions without temperature controllers and temperature limiters

**Standard versions with built-in temperature controllers and temperature limiters:**

| Capacity | 2,0 kW | 3,0 kW | 4,5 kW | 6,0 kW | 7,5 kW | 9,0 kW | 12,0 kW |
|---|---|---|---|---|---|---|---|
| Voltage | 230/400 Volt | 230/400 Volt | 230/400 Volt | 230/400 Volt | 230/400 Volt | 230/400 Volt | 230/400 Volt |
| Length | 1,000 mm | 1,000 mm | 1,000 mm | 1,000 mm | 1,000 mm | 1,000 mm | 1,000 mm |
| Item no. | D910 929 | D910 930 | D910 931 | D910 932 | D910 933 | D910 934 | D910 935 |

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# Electric Process Heaters

*Electric process heater for heating up 90 percent $SO_2$ gas with 10% steam.*

*Vessel made of stainless steel AISI 904L (1.4539).*
*Heating surface made of Hastelloy C 276 (2.4819).*
*Capacity 200 kW.*
*Pressure 3.5 bar.*
*Temperature 300 °C.*
*Diameter 460 mm.*
*Length approx. 3,000 mm.*

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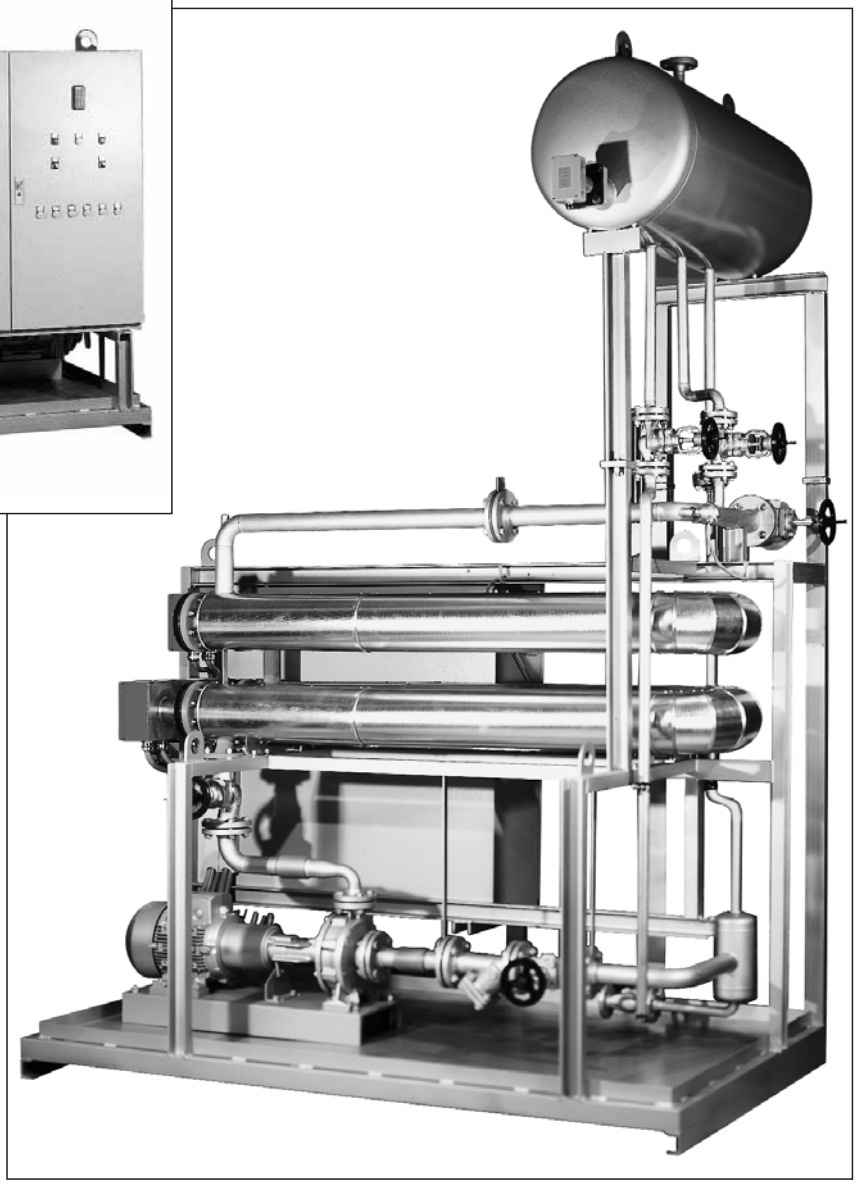
# Electrically Heat Transfer Fluid System



*Complete heat transfer fluid system with a capacity of 120 kW, equipped with heatsystems electric flange heaters.*

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