Baelz-thermodynamic®

www.baelz.de

This Sales Brochure intends to give you a slight insight into the Baelz Technology Brand Baelz-thermodynamic®. For deeper technical information to our products please ask for further documentation. **Your Baelz Team.**

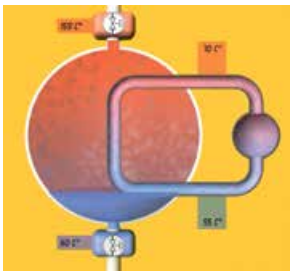
1. Technology

Steam Terminal Luxese

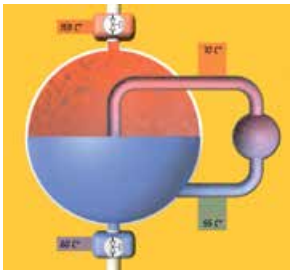
The most common and widespread control method of heat exchangers is the steam side control and the subsequent discharge of condensate. Also because it comes in this application to heat losses of the condensate due to the flash evaporation, Baelz preferres the condensate side control.

CONDENSATE SIDE CONTROL

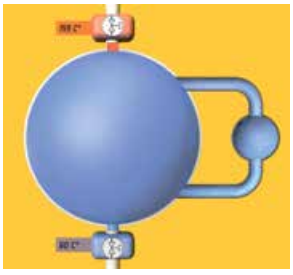
In the condensate-side control, the control valve is not on the steam side as usual, but in the condensate return. The desired heat load is regulated by the accumulation of condensate in the heat exchanger.



Case 1: 100 % load
- Condensate valve 100% open (on bottom)
- Steam valve always open (on top)
- Counter flow principle
- Steam condense in heat exchanger
- Condensate ist cooled from 159°C down to 60°C
- The medium on the secondary side is heated up from 55°C to 70°C
- Max. volume flow rate at the secondary side



Case 2: 50 % load
- Condensate valve partially open
- Steam valve always open
- Depending on the load the condensate rises to a 50 %-level
- The medium on the secondary side is heated up from 55°C to 70°C
- 50 % volume flow rate at the secondary side
  → Only 50 % medium is floated through the heat exchanger and consumer in a closed system
  → Only 50 % capacity



Case 3: 0 % load
- Condensate valve closed
- Steam valve always open
- No heat is tranferred in the heat exchanger

ADVANTAGES:

Due to the condensate cooling in the heat exchanger, the residual energy of the condensate is utilized and fed to the secondary circuit. This allows a reduction in the amount of steam at the same power.
→ up to ⅓ more efficiency
→ steam saving
→ low condensate return temperature

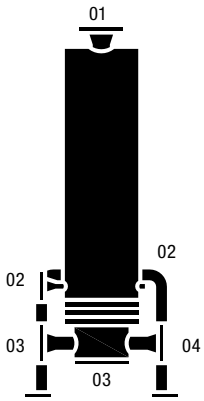
heatexchanger

Baelz offers heat exchangers for heat transfer fluids such as steam, condensate, hot and warm water. A broad spectrum of conventional devices including unique modular solutions for steam is available for all types of HVAC, district heating and industrial systems.
Overview of all different types

U TUBES

baelz 105-S

(steam / liquid)

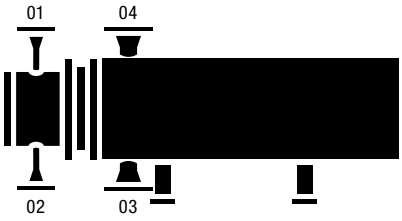


Scope of application:
- Counterflow principle
- Condensate side control
- Due to the large number of tubes and diameters can be calculated / adapted very individually

01 steam inlet
02 condensate outlet
03 water inlet
04 water outlet

baelz 105

(steam / liquid)

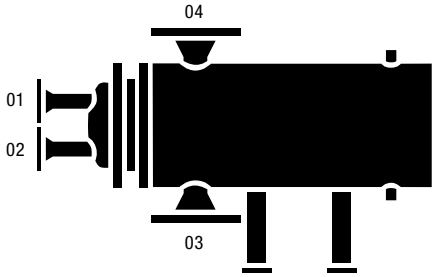


Scope of application:
- Counterflow principle
- Steam side control
- Due to the large number of tubes and diameters can be calculated / adapted very individually

01 steam inlet
02 condensate outlet
03 water inlet
04 water outlet

baelz 135

(liquid / liquid)



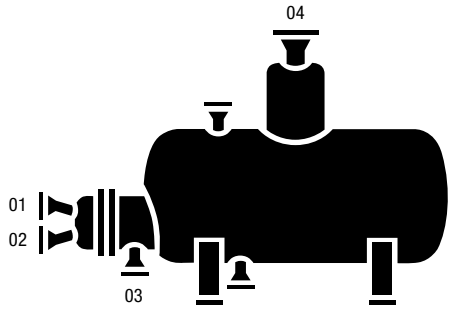
Scope of application:
- Counterflow principle
- Pipe u. Sheath side 2-/4- and 6-way, with drawable U-Rohrheizbündel
- Due to the large number of tubes and diameters can be calculated / adapted very individually

01 hot water inlet
02 hot water outlet
03 cold water outlet
04 cold water inlet

1. Technology

HORIZONTAL STEAM GENERATORS

baelz 122



steam-heated, one-piece (can be compared with type 148, except that the neck – 01 – is big dimensioned because of the steam and the nozzle – 02 – is small dimensioned because of the condensate)

Industrial applications, big performances

baelz 142

heated with hot water / thermal oil, one-piece

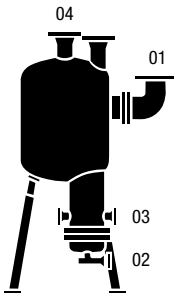
Industrial applications, big performances

baelz 148

heated with thermal oil / thermal oil steam, one-piece (can be compared with type 122, only that the nozzle – 01 – and – 02 – have the same size)

VERTICAL STEAM GENERATORS

baelz 120

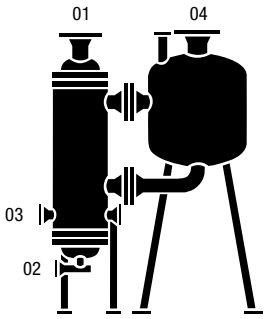


steam-heated, one-piece

generation of clean steam with the help of heating steam

HVAC, process engineering, food industry, hospitals

baelz 126

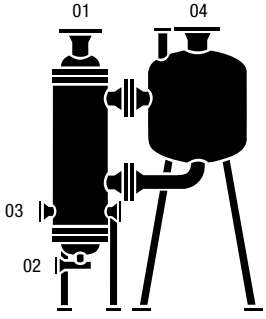


steam-heated, multi-piece

generation of clean steam with the help of heating steam

HVAC, process engineering, food industry, hospitals

baelz 146 / 149



heated with hot water / thermal oil, multi-piece

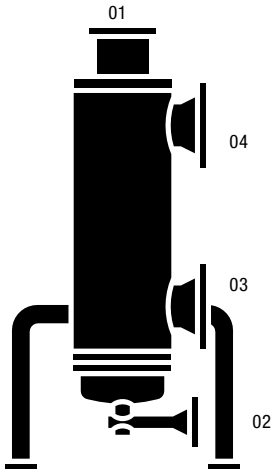
generation of clean steam with the help of heating steam

HVAC, process engineering, food industry, hospitals

SPIRAL TUBES

baelz 106

(steam / liquid)



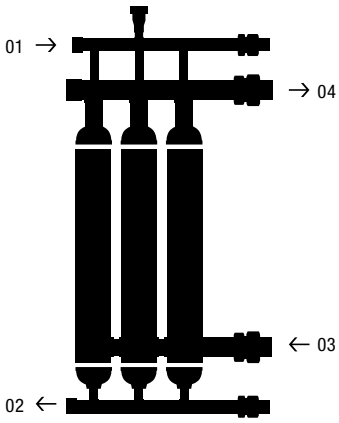
Scope of application:
- Heating of liquids by means of steam in small to large power ranges
- Particularly suitable for condensate side control
- Intangible: 0 – 100 %
- heating surfaces of 0.5 – 140 m^2
- extremely low dimensions
- Counterflow principle

01 steam inlet
02 condensate outlet
03 water inlet
04 water outlet

baelz 147

(steam / liquid)

(liquid / liquid)



Scope of application:
- Complete copper modular expandable stations
- Expensive connection clarinets
- hybrid system

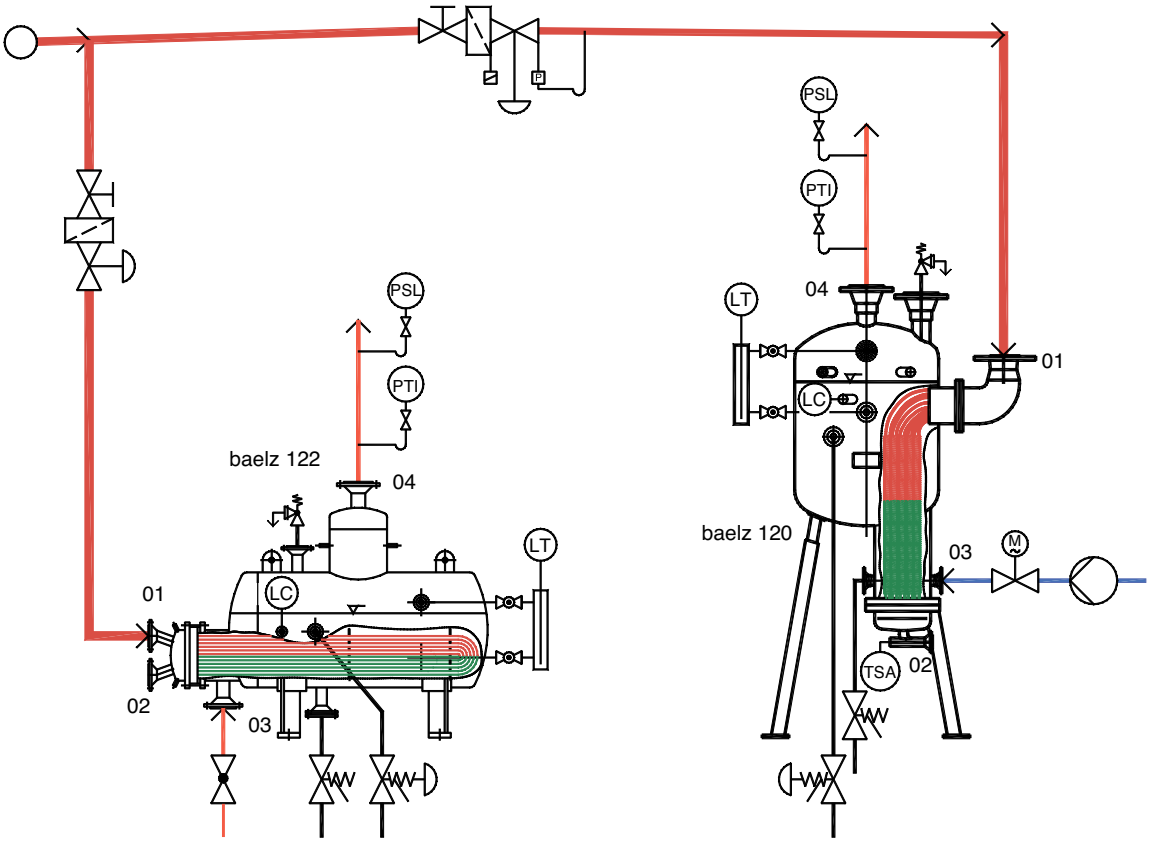
01 steam / hot water inlet
02 condensate / hot water outlet
03 water inlet / cold water outlet
04 water outlet / cold water inlet

1. Technology

Steam generators

Steam generators are designed according to the basic principle of tubular heat exchangers. Preferably in steam and pure steam generators straight tube- or U-tube bundles are inserted into the container. On the primary side, which is the heat source, usually steam, hot water or thermal oil flows and heats the boiler water on the secondary side. The medium in the primary circuit, now at a lower temparature, is returned through the inlet to the generator.

The indirect heat exchange between the two media via a heating surface transfers heat and vaporizes the boiler water. In indirect heat transfer, for example, the heating steam is passed through the tube bundle as saturated steam and separated from the medium to be heated by a dividing wall. They thus do not come into direct contact with each other and the risk of contamination of the two substances is thereby completely excluded.

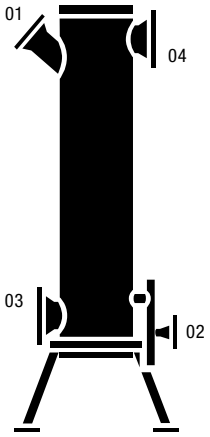


01 heating media inlet
02 heating media outlet
03 feedwater inlet
04 clean steam

STRAIGHT TUBES

baelz 111

(steam / liquid)



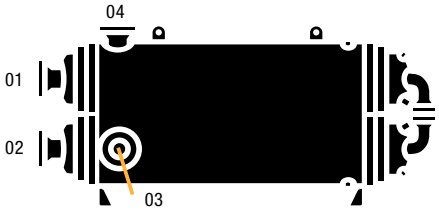
Scope of application:
- Heating, water heating, process heat
- Condensate side control
- counterflow principle
- Due to the large number of tubes and diameters can be calculated / adapted very individually

01 steam inlet
02 condensate outlet
03 water inlet
04 water outlet

baelz 138

(steam / liquid)

(liquid / liquid)



Scope of application:
- horizontal / vertical
- counterflow principle
- pipe u. Sheath side 2- / 4- and 6 ways
- with welded straight tube heating bundle
- hybrid
- Due to the large number of tubes and diameters can be calculated / adapted very individually

01 steam / hot water inlet
02 condensate / hot water outlet
03 water inlet / cold water outlet
04 water outlet / cold water inlet

2. Add-Ons

In addition to the introduced components Baelz recommends quoting/selling the products as a holistic system solution. Therefore the following product set are applicable.

VALVE SET

Control Valves

- baelz 340, baelz 340-BK-SS (thermal oil)
- baelz 342, baelz 342-BK-SS (thermal oil)
- baelz 356
- baelz 185

Electric actuator

baelz 373-E07	baelz 373-E45	baelz 373-E65-11	baelz 373-E65-20
700 N / 2.000 N	4.000 N	1.100 N	2.000 N

Pneumatic actuators

baelz 373-P21	baelz 373-P22	baelz 373-P31	baelz 373-P32
1.020 N – 2.040 N	1.846 N – 3.692 N	2.480 N – 4.960 N	4.402 N

Positioner

Combined with electric actuator:	baelz 1020
Combined with pneumatic actuator:	baelz 87

REGULATION SETS

CONTROLLER

Microprocessor controller:	baelz 6200, baelz 6164, baelz 7164

ATTACHMENT SET

Manual fittings:	shut-off valve baelz 70028, check valve 70081, strainer 70200
Temperature indicator/sensor:	baelz 71140, baelz 61, baelz 24
Pressure indicator/transmitter:	baelz 70802, baelz 828
Safety valve:	baelz 70340, baelz 70625-VA
Safety Temperature Limiter:	baelz 231
Safety Pressure Limiter:	baelz 834

3. Real Cases

DISTRICT HEATING NETWORKS

Product: Steam Terminal Luxese
Company / Country: a local energy provider / Germany
Project Description: A large energy supplier is offering waste steam to generate heating and hot water. The plan was based around making maximum use of the steam energy to operate a downstream heat and water network. A “Steam Terminal Luxese” steam transfer station was installed. The use of a static heat exchanger and condensate build-up control not only allowed the investment costs for the exchanger station to be reduced by around 15 – 18 %, but it also ensured the non-damaging and low-wear operation of the condensate system.

CHEMICALS

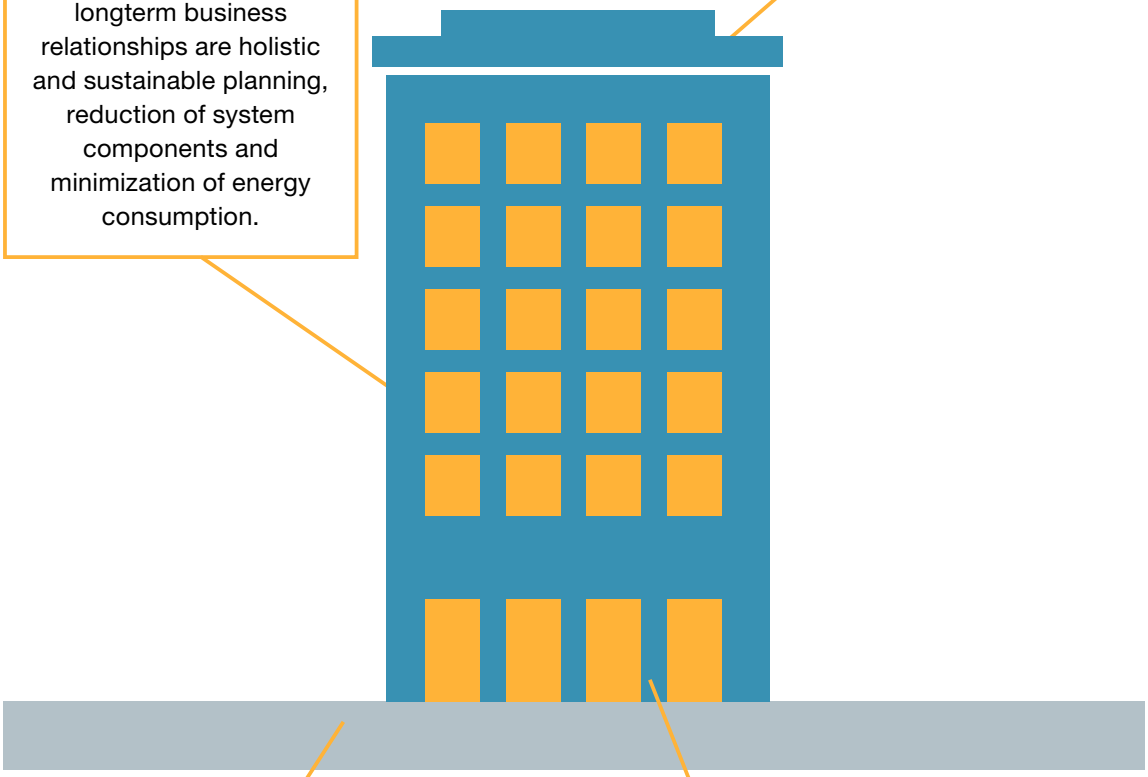
Product: Steam Terminal Luxese
Company / Country: leading chemical company / Germany
Project Description: A world market leader has about 3000 buildings in one of its largest locations. These buildings are energetically supplied with steam. Since the responsible person had made bad experiences with the condensate control system about 25 years ago, he completely rejected this type of regulation. This means that all systems of the last 25 years have been equipped with a steam side control. The hot condensate is discarded all over the area (cooled to 40°C and discharged).

4. Reference excerpt

product	company	country	branch
3 units with clean steam generators (500–1.000 kW) Each supplied with steam generator + fittings + degasser + feed water tank + control unit	University Hospital Zürich	Switzerland	Buildings
1 system: steam generator + fittings + degasser + feedwater tank (about 1.500 kW)	Tetra Pack	Switzerland	Chemical
Steam generator plant 3rd underground 257 kW steam generator 5th floor 567 kW steam generator 40th floor 567 kW For all three systems: steam generator + fittings + degasser + feedwater tank supplied	Opernturm, Frankfurt	Germany	Buildings
Plant with clean steam generator 43 kW	Nestlé, Frankfurt	Germany	Foods
Plant with pure steam generator 712 kW plant: steam generator + fittings + degasser + feedwater tank + control supplied	Controlled Flame Boilers, Essex	Netherlands	OEM
Steam generator 1.502 kW Steam generator 658 kW Steam generator 529 kW Steam generator 2 x 812 kW Steam generator 1.080 kW Steam generator 1.244 kW Steam generator 1.231 kW	GEA Niro, St. Quentin	Netherlands	OEM
approx. 600 kW plant: steam generator + fittings + degasser + feedwater tank	HGT, Berlin	Germany	Buildings
Plant with clean steam generators 10MW system: steam generator + fittings + degasser + feed water tank + control supplied	Energyplant Goethe University, Frankfurt	Germany	Energie
2 systems with clean steam generators each with 3MW system: steam generator + fittings + degasser + feed water tank + control supplied	Hospital Groß-Gerau	Germany	Public buildings
3 pcs. Heat transfer stations water / water, each 3.500 kW	Airport Düsseldorf	Germany	Airport
various heat exchangers baelz 105, 106, 107 and 147	Bayer-Schering	Germany	Pharmaceutical
2 pcs. steam condensate heat transfer stations with baelz 105, each 1.400 kW, steam pressure reducing station	RWE Emsland	Germany	Power Plant
4 pcs. steam / water heat exchanger, 2 x 5.000 kW and 2 x 6.000 kW incl. All fittings	EON Maasvlakte	Netherlands	Power Plant

Baelz Blueprint

Our Vision Statement



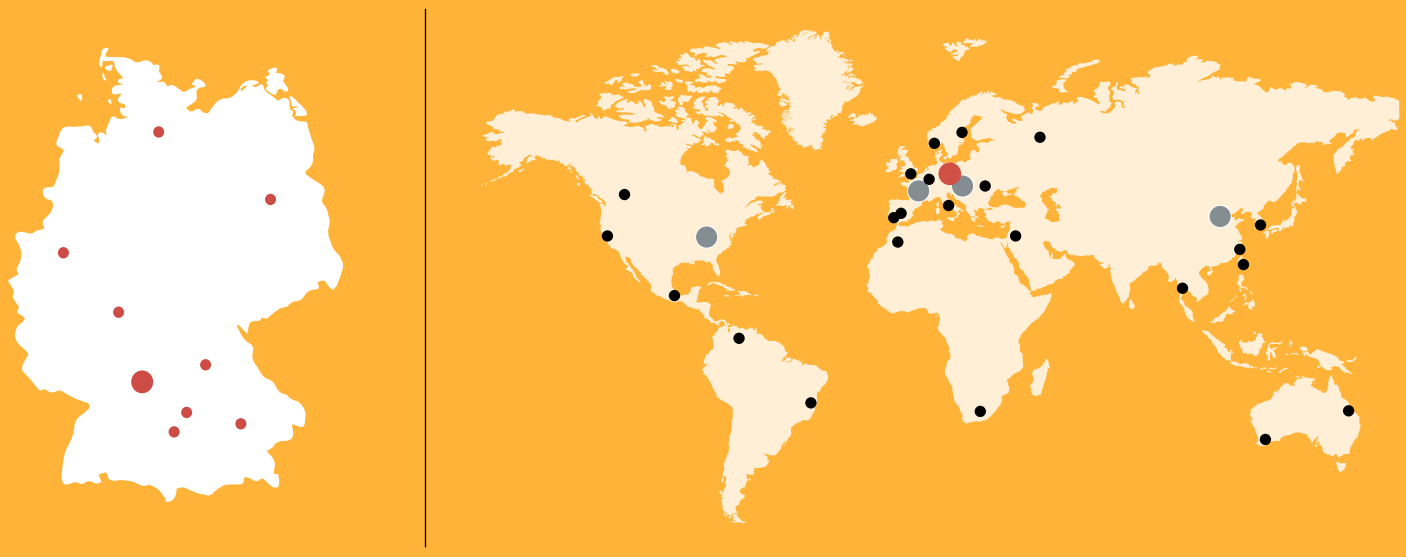
ROOF
A high level of customer satisfaction is what we are working for day by day. That is why, here at Baelz, we always put our customers' needs and requirements first.

WALLS
The essential points of creating prosperous, longterm business relationships are holistic and sustainable planning, reduction of system components and minimization of energy consumption.

FOUNDATION
In order to guarantee a worldwide presence we work closely with our partners. Thanks to our transparent network we are able to identify and master challenges immediately and solve customers' problems quickly and effectively.

PILLARS
Consistently high product quality, variability and flexibility in planning and construction are the basis of every one of our successful concepts.

HOT COOL **BAELZ**



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Baelz-vapordynamic®
Baelz-hydrodynamic®
Baelz-electrodyn®

Save Energy?
Baelz offers solutions worldwide.

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