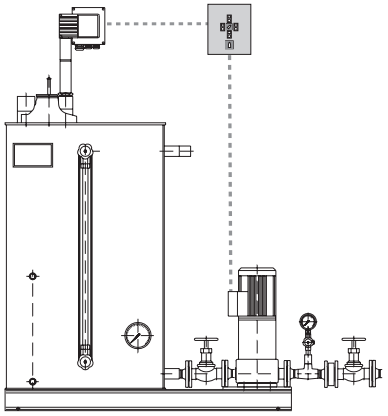


Condensate tank of rectangular design type SDR A with high-pressure centrifugal pump(s) installed next to the tank

Application

Condensate tanks are used to collect the condensate coming from steam users or flash vessels. From the tank the condensate is pumped into the feedwater tank by a level-controlled pump, in most cases via a deaerator.

Rectangular condensate tank type SDR A

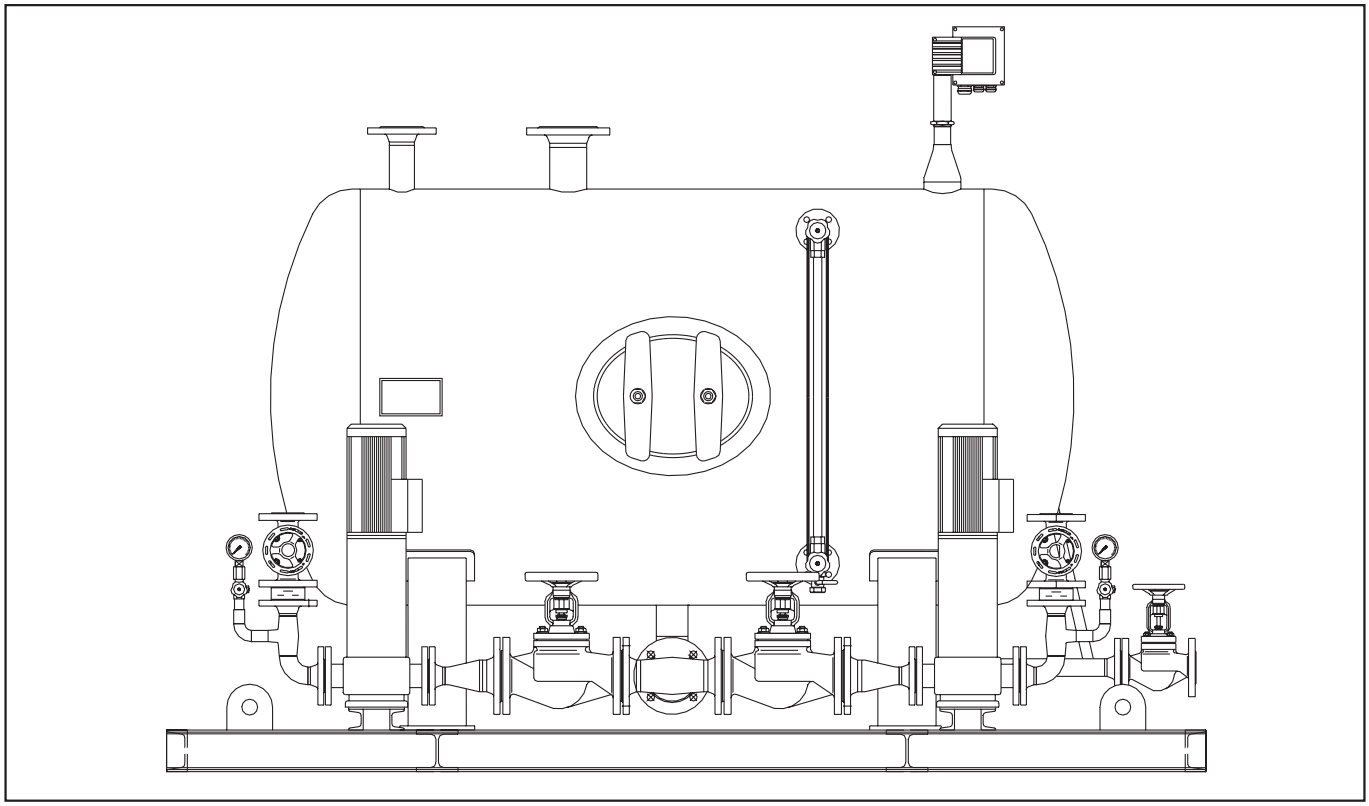
The standard range of rectangular condensate tanks is designed for condensate flowrates of up to 8 t/h and a max. service pressure of 0.1 bar g.

Tank made of steel type S235JRG2, inside: untreated, outside: anti-corrosion coating **with two condensate pumps and accessories installed next to the tank, e. g.** bimetal dial thermometer, water-level indicator, GESTRA level electrode and control for automatic pump operation, non-return valves, shut-off valves, high-pressure centrifugal pump(s) and pressure gauge. Completely assembled and interconnected, control cabinet supplied but not mounted.

Size	Volume [l]	Pumping capacity [m^3/h]
1	340	1
2	550	2
3	750	3
4	1000	4
5	1500	6
6	2000	8

Vessels in compliance with
Conformity Assessment Section 3, Paragraph 3

Tanks and valves made of other materials available on request.
Other pumping capacities and discharge heads on request.



Condensate receiver tank of cylindrical design type SD L (S) with high-pressure centrifugal pump(s) installed next to the tank
L = horizontal design; S = vertical design

Size	Volume [l]	Pumping capacity [m³/h]
I	250	1
II	390	2
III	850	4
IV	1370	6
V	2100	9
VI	2900	12
VII	3800	16
VIII	4500	20
IX	5900	25
X	6900	30

Max. condensate temperature 90 °C

Application

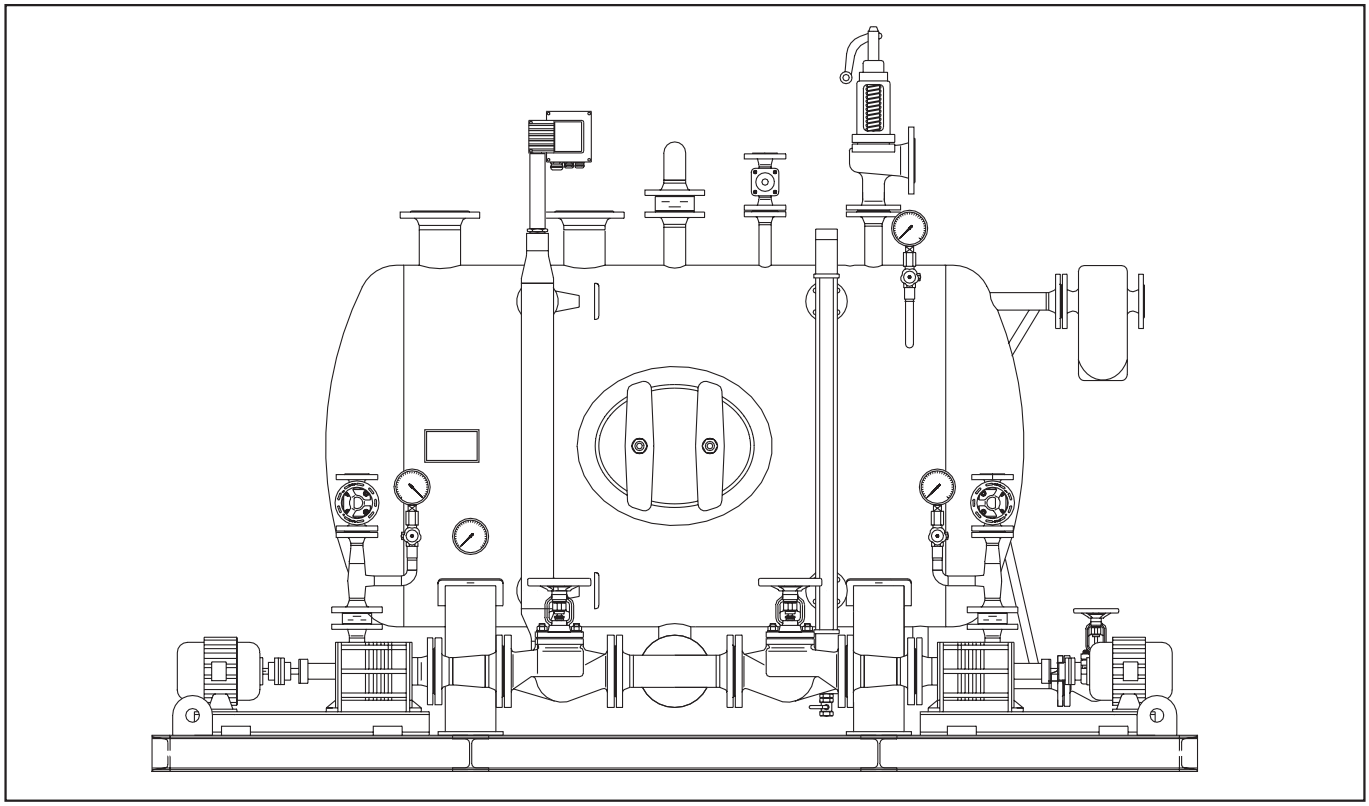
Condensate tanks are used to collect the condensate coming from steam users or flash vessels. From the tank the condensate is pumped into the deaerator by level-controlled pumps.

Open condensate tank of cylindrical design type SD L (S)

The standard range of cylindrical condensate tanks is designed for condensate flowrates of up to 30 t/h and a max. service pressure of 0.5 bar. Condensate tanks for larger flowrates available on request.

Tanks available as horizontal or vertical design, made of steel S235JRG2, inside: untreated, outside: anti-corrosion coating. **Two high-pressure pumps and associated valves and accessories installed next to the tank: e. g.** bimetal dial thermometer, pressure gauge unit, water-level indicator, GESTRA level control and level electrode for automatic pump operation and non-return valves are part of the installation.

Other valve and tank materials available on request.
Other pumping capacities and discharge heads on request.



Condensate receiver tank of cylindrical design type SD L (S) with horizontal-type centrifugal pump(s) installed next to the tank
L = horizontal design; S = vertical design

Size	Volume [l]	Pumping capacity [m³/h]
I	250	1
II	390	2
III	850	4
IV	1370	6
V	2100	9
VI	2900	12
VII	3800	16
VIII	4500	20
IX	5900	25
X	6900	30

Application

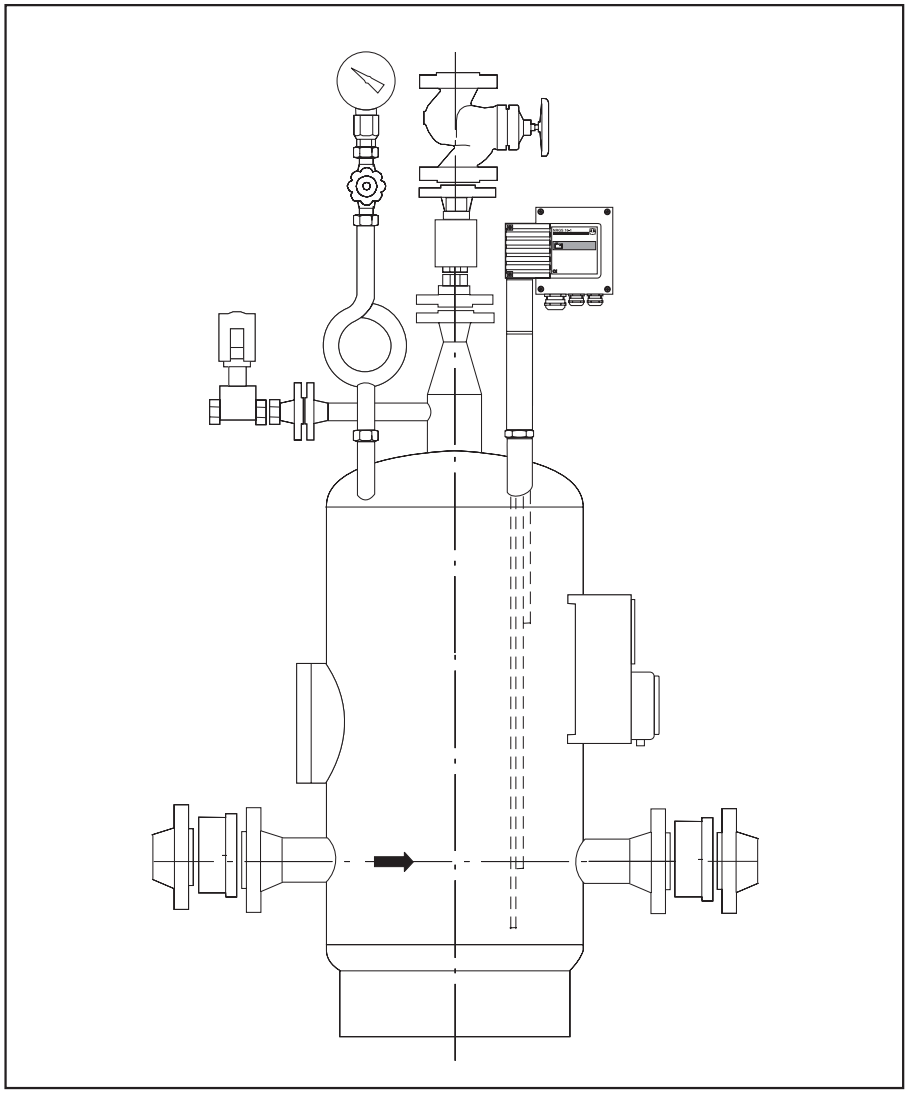
Condensate tanks are used to collect the condensate coming from steam users or flash vessels. From the tank the condensate is pumped into the deaerator by level-controlled pumps.

Closed condensate tanks of cylindrical design type SD L (S)

The standard range of cylindrical condensate tanks is designed for condensate flowrates of up to 30 t/h and a max. service pressure of 4 bar. Condensate tanks for larger flowrates available on request.

Tanks available as horizontal or vertical design, made of steel boiler plate type P265GH, inside: untreated, outside: anti-corrosion coating. **Two horizontal-type centrifugal pumps and associated valves and accessories installed next to the tank: e. g.** bimetal dial thermometer, pressure gauge assembly, magnetically operated liquid level gauge, level electrode and control for automatic pump operation, safety device, overflow, air vent, vacuum breaker, shut-off valves and non-return valves are part of the installation.

Other valve and tank materials available on request.
Other pumping capacities and discharge heads on request.



Application

Condensate tanks are used to collect the condensate from steam processors or flash vessels. From the tank the condensate is returned to the main condensate tank or deaerator with the aid of level-controlled booster steam.

Steam-powered condensate return unit KH...

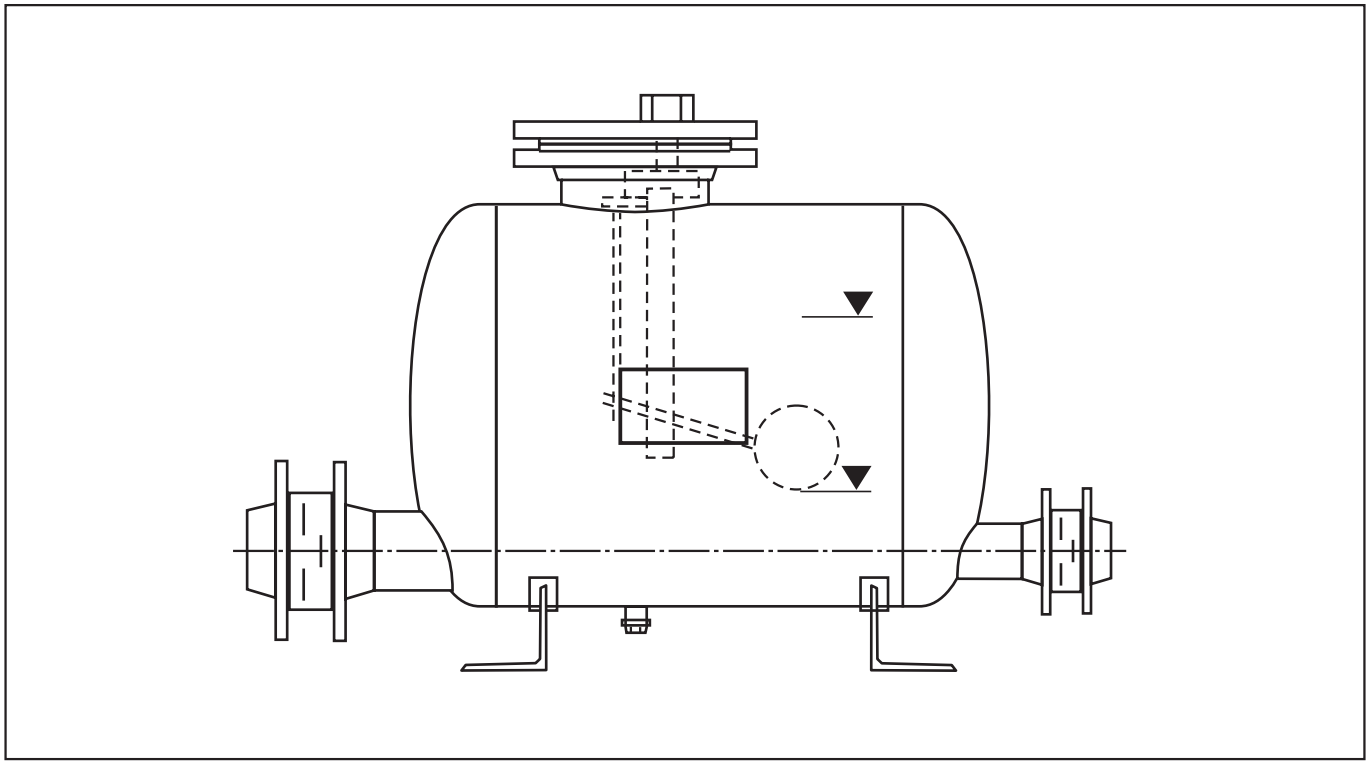
The standard version is suitable for condensate flowrates of up to 10 t/h and a max. service pressure of 12 bar g.

The condensate return tank is made from steel type P265GH. Outside: anti-corrosion coating. Inside: untreated.

Associated valves and equipment such as pressure gauge assembly, solenoid valve, level electrode and control for automatic booster steam supply, non-return valves are completely assembled and interconnected.

Size	Volume [l]	Pumping capacity [m^3/h]	Booster steam pressure	Pump capacity [bar]
KH 13-2	50	2	12	8.4
KH 13-3	75	3	12	8.4
KH 13-5	100	5	12	8.4
KH 13-10	390	10	12	8.4

Other tank and valve materials available on request.



Size	Volume [l]	Booster steam pressure [bar, ü]	Pumping capacity [m³/h] at a back pressure of 1 bar [kg/h]	2 bar [kg/h]	3 bar [kg/h]	4 bar [kg/h]
FPS 11-13	45	3	1860	1500	–	–
		6	1800	1600	1330	–
		12	1650	1550	1260	1040
FPS 23-13	75	3	2140	1630	–	–
		6	3400	2180	1260	–
		12	3600	2480	1000	–
FPS 14-13	100	3	2570	1700	–	–
		6	3400	1900	1300	–
		12	3600	1850	1100	–

UNA 25-PS and UNA 25-PK are also available for flowrates of approx. up to 600 kg/h. For more details on the equipment see page 26 and the Price List.

Application

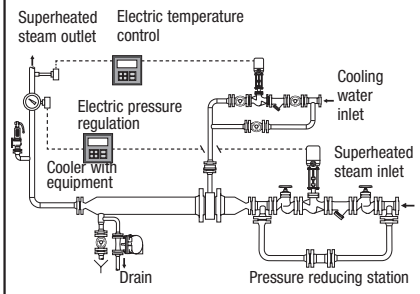
Condensate tanks are used to collect the condensate from steam processors or flash vessels. From the tank the condensate is returned to the main condensate tank or deaerator with the aid of float-controlled booster steam.

Steam-powered condensate return unit type FPS 14...

The condensate is returned to the main condensate tank with the aid of booster steam, without electric power. The standard version of the FPS 14 is suitable for condensate flowrates of 3,6 t/h and a max. service pressure of 12 bar g.

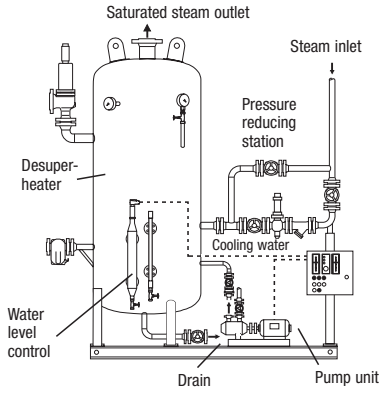
The discharge capacity decreases with rising back pressure. The tank is made of steel type S235JRG2 or of P265GH. Outside: anti-corrosion coating. Inside: untreated. The non-return valves are completely assembled and interconnected, inclusive of counter-flanges, bolts and gaskets.

System 1



Injection cooler with fixed jet orifices

System 2



Water-bath desuperheater

Application

Heating installations in all industries

Heating of drying calenders in the paper industry

Heating of boiling pans in the foodstuff industry

Heating of cable presses

Radiant panels for hardware production in the electrical industry

Steam moistening plants in the textile industry

System Description

System 1 Injection cooler with fixed jet orifices

The cooling water is injected through special jet orifice into the steam flow. The amount is adjusted by a control valve upstream of the desuperheater and controlled by the high differential pressure. The type and number of nozzles are dictated by the operating data. The internals of the pipe installed downstream of the equipment prevent temperature shocks at the external pipe.

System 2 Water-bath desuperheater

The heat of the superheated steam causes the cooling water/condensate to evaporate, thereby cooling the superheated steam. The steam produced is conducted through steam separating units and has a steam content of more than 98 % (i.e. less than 2 % residual moisture).

Criteria for System Selection

1. What is the ratio between minimum and maximum steam quantity in the control range?
2. What is the pressure and the temperature of the available cooling water?
3. How close must the temperature of the desuperheated steam be to that of saturated steam?

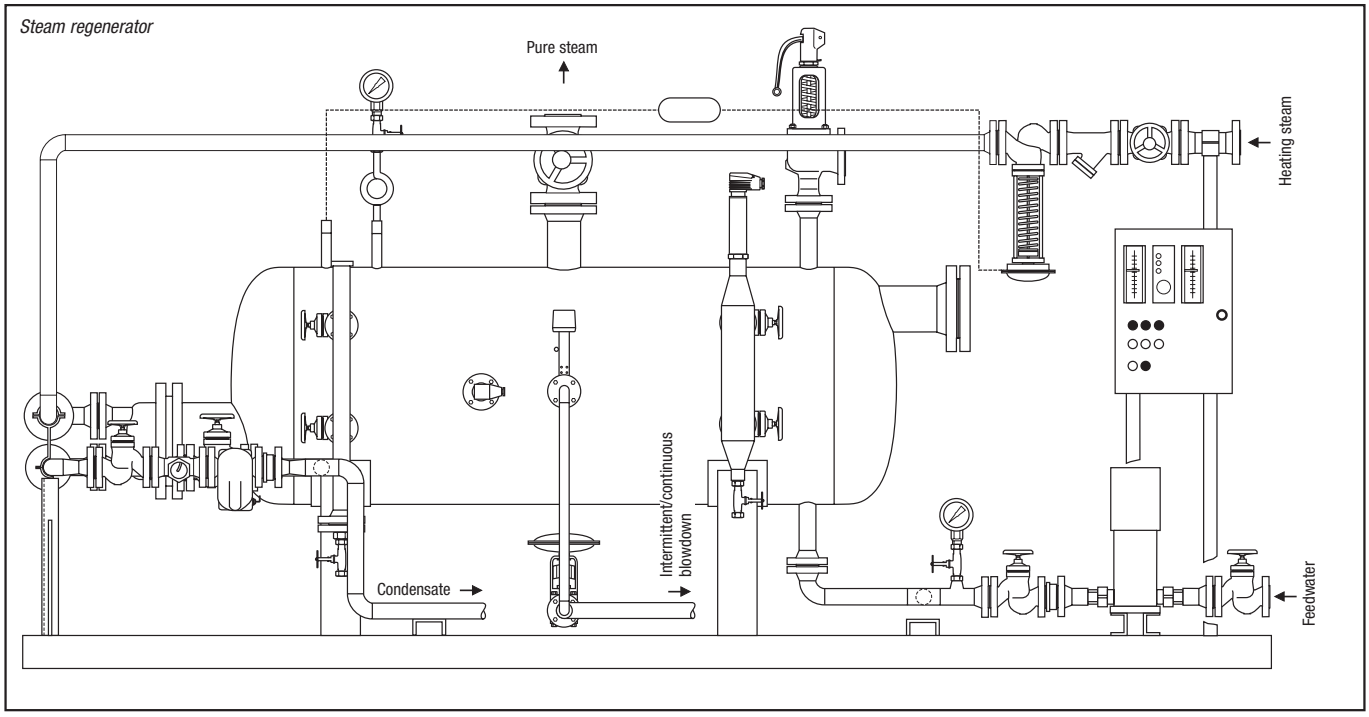
Questions concerning System Design

1. Maximum steam flow at inlet?
2. Minimum steam flow at inlet?
3. Maximum service pressure?
4. Maximum temperature at inlet?
5. Standard temperature at inlet?
6. Temperature at outlet?
7. Saturated-steam temperature?
8. Temperature of injected cooling water?
9. Injected cooling-water flow?
10. Cooling-water pressure at cooler?
11. Pump pressure?
12. Design pressure?
13. Design temperature?
14. Length of installation?

Technical Data

		System 1	System 2
Pressure rating	[bar]	28	28
Maximum temperature	[°C]	450	380
Cooling water pressure above steam pressure	[bar]	5 – 9	1
Steam flowrate	[t/h]	100	15
Steam flow ratio		1 : 5	1 : 100
Set point above saturation temperature	[K]	5	–

Higher pressures, temperatures and steam flowrates available on request.



Application

Steam regenerators are used to produce saturated steam for a secondary system from steam or pressurized hot water.

Pure steam, without any contaminants that might be detrimental to health such as hydrazine, is produced.

Steam regenerators are therefore especially suited for sterilizing equipment in hospitals, steaming and drying chambers in the foodstuff industry, and for the production of distillates.

Technical Data (standard)

Service pressure	primary	[bar]	28
Service temperature	primary	[°C]	250
Service pressure	secondary	[bar]	12
Service temperature	secondary	[°C]	200
Capacity range		[kW]	5000
Feedwater quality		[µS/cm]	< = 5
Boiler water quality		[µS/cm]	< = 100

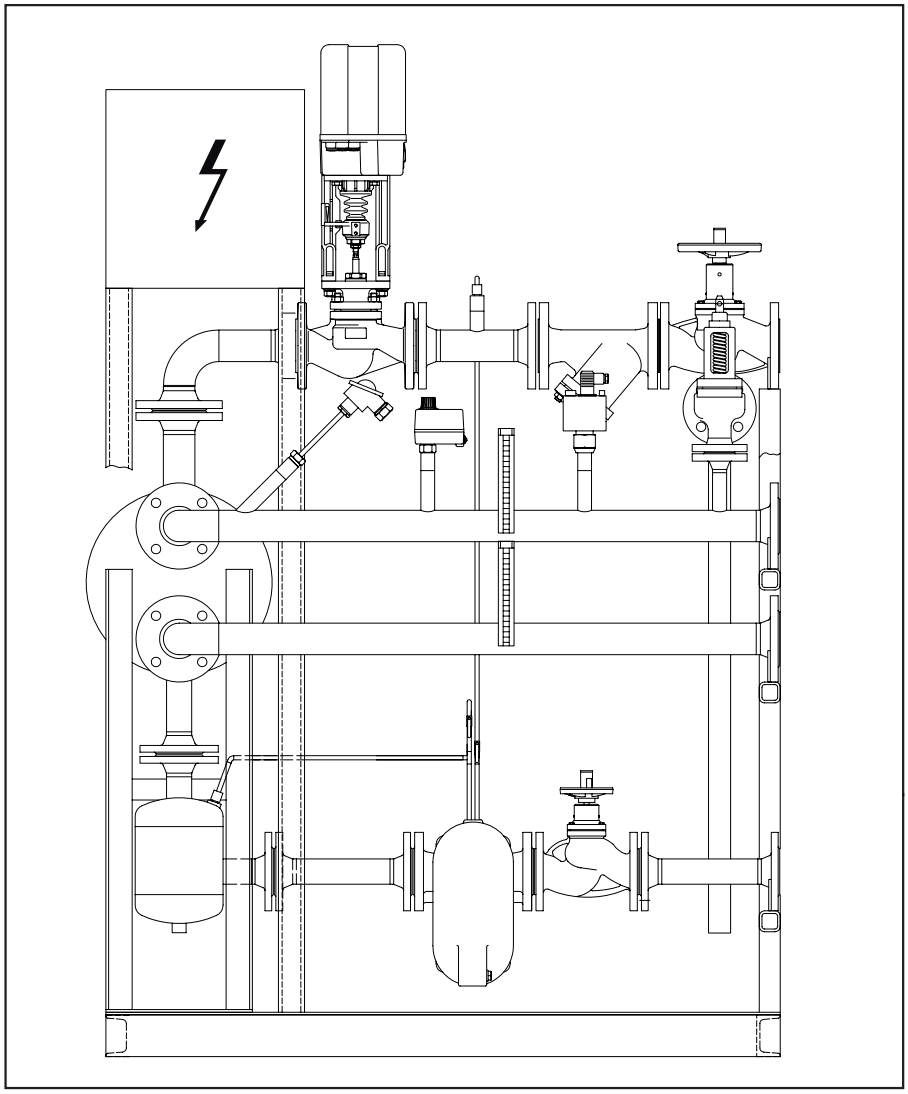
Steam regenerators for higher pressure/temperature ratings and larger capacities on request.

Standard Installation

Steam regenerators with self-acting, electric or electropneumatic heating-steam control

Compact system with manual intermittent / continuous boiler blowdown and the required basic equipment of a feedwater supply control system
Limiting conditions: Quality of feedwater ≦ 5 µS/cm, pressure of heating steam: 6 barg, pressure of pure steam: 4 barg

Type	Pure steam flowrate [kg/h]	∅ [mm]	Overall length approx. [mm]	Max. design pressure/ temperature primary [bar/°C]	Max. design pressure/ temperature secondary [bar/°C]
GRDE 5	300	450	3300	12/200	6/200
GRDE 6	600	500	3800	12/200	6/200
GRDE 7	1000	600	3500	12/200	6/200
GRDE 8	1200	700	4000	12/200	6/200



GESTRA Heat exchanger unit type PWT-XPS

consists of:
plate-type heat exchanger, completely welded, in shell & plate design

equipped with:

on steam side:
shut-off valve, strainer and electrically operated control valve with safety resetting device

on condensate side:
pump steam trap, non-return valve, shut-off valve

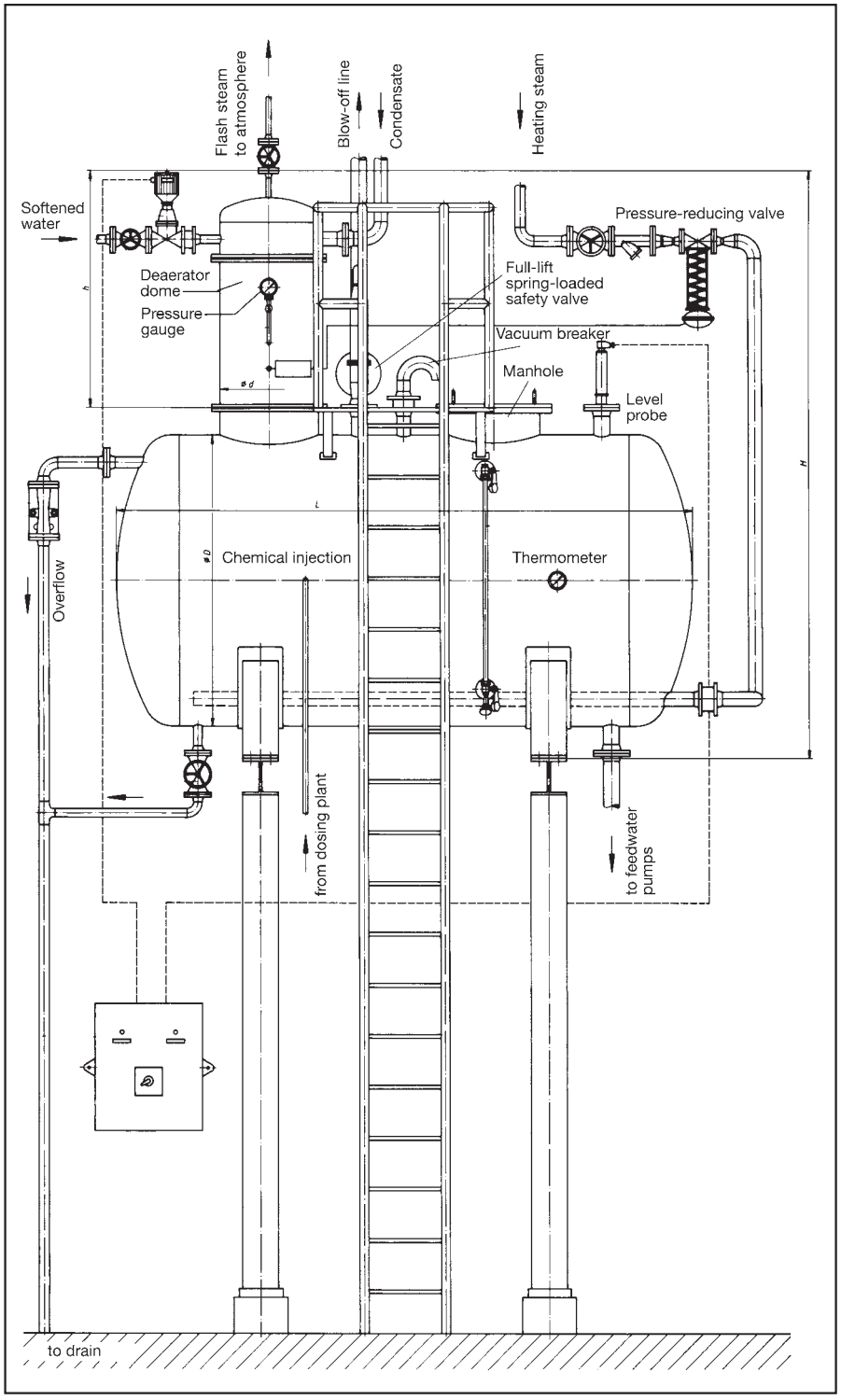
measuring & control equipment:
safety temperature limiter, safety pressure limiter, temperature sensor, temperature controller, thermometer, pressure gauge, safety valve

The unit is completely assembled and interconnected and mounted on a stable base frame.

Auxiliary energy: 230 V, 50 Hz

Type PWT-XPS	Capacity kW	Saturated steam barg	Water °C	Capacity kW	Saturated steam barg	Water °C	Capacity kW	Saturated steam barg	Water °C
50-24 H11	40	1	70/90	80	3	70/90	130	6	70/90
50-32 H11	160	1	70/90	300	3	70/90	500	6	70/90
50-44 H11	380	1	70/90	675	3	70/90	700	6	70/90
50-72 H11	700	1	70/90	1100	3	70/90	1400	6	70/90

Larger capacities available on request.



Application

To avoid corrosion damage to steam boiler plants, the content of aggressive gases, such as oxygen and carbon dioxide, in the feedwater must be as low as possible. The German Technical Supervisory Association (VdTÜV) has issued directives concerning boiler feedwater quality which are applied by German boiler manufacturers when giving a warranty on their boilers.
Thermal deaeration in addition to chemical deaeration is very important for maintaining the required feedwater quality.

Recommendation:
For quality of soft water:
Concentration of chloride approx. 50 mg/l
Conductivity approx. 250 µS/cm

Deaerating dome NDR

Type	Capacity m³/h	∅ mm	Height approx. mm
250	0.5 – 1.6	250	1050
350	1.7 – 3.0	350	1260
450	3.1 – 5.0	450	1280
550	5.1 – 8.0	555	1300
650	8.1 – 11.0	650	1820
800	11.1 – 15.0	800	1850
900	15.1 – 19.0	900	1870
1000	19.1 – 24.0	1000	1880

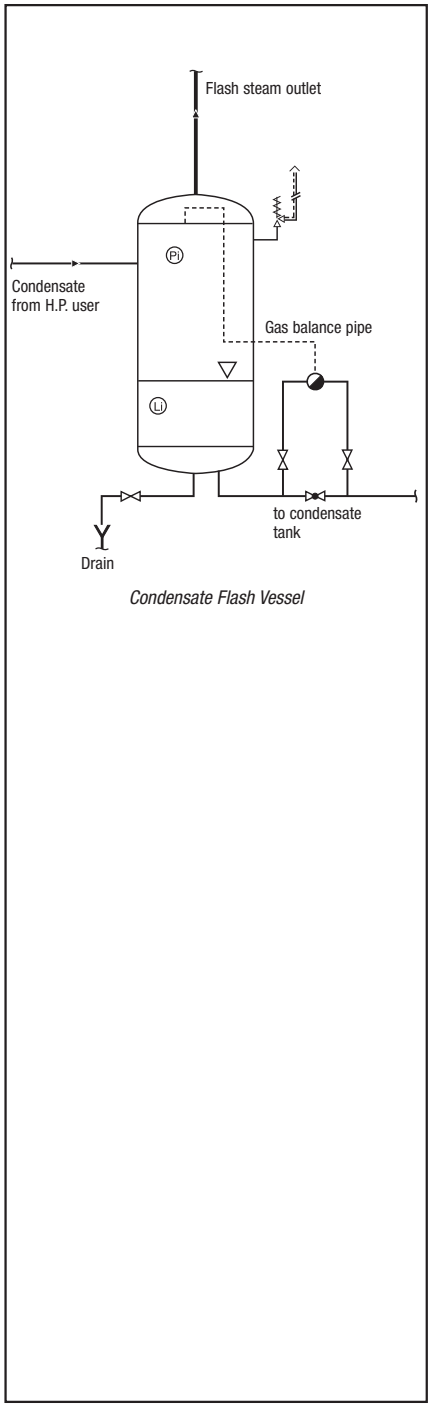
Feedwater tank SW

Size	∅ mm	Length approx. mm	Volume of tank l
I	800	2360	1000
II	1000	2940	2000
III	1200	3050	3000
IV	1200	3550	4000
V	1600	3680	6000
VI	1600	4680	8000
VII	1600	5680	10000
VIII	2000	5000	16000
IX	2000	7850	22000
X	2500	7050	30000

Technical Data (Standard)

Max. service pressure	Max. service temperature	Capacity range	Materials (DIN reference)	Residual oxygen
0.5 bar	111 °C	0.5 – 24 m³/h	S235JRG2 1.4571	< 0.02 mg/l

Higher capacities and pressures on request



Condensate Flash Vessel

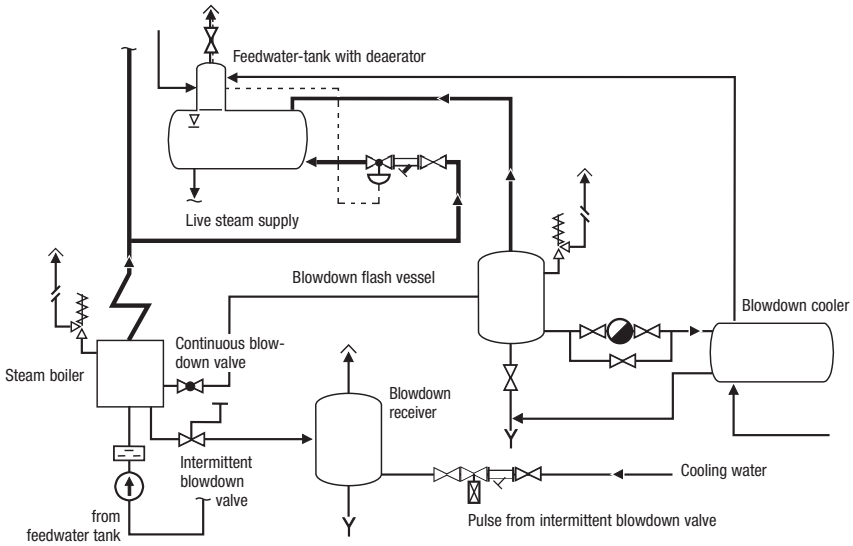
Application

Condensate flash vessel
Condensate flash vessels can be used in all steam plants where condensate from steam consumers is reduced to a lower pressure. This pressure drop constitutes a change of the energy content that causes some of the condensate to revaporize and form flash steam.

In the flash vessel the flash steam is separated from the water, and then fed into a low-pressure steam system. The condensate remaining in the flash vessel is discharged into a condensate tank.

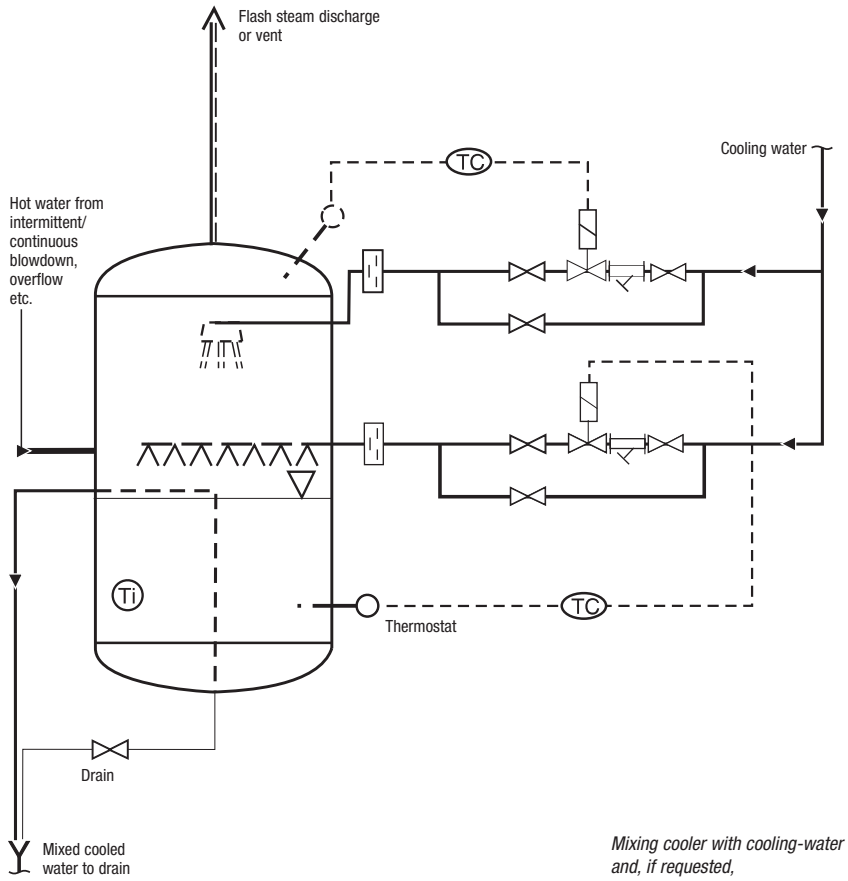
Blowdown flash vessel
Blowdown flash vessels are used if the flash steam formed downstream of continuous blowdown valves is to be utilized.

Blowdown flash-vessel system



Technical Data

Type	Service pressure [bar]	Service temperature [°C]	Condensate flowrate [t/h]	Volume [l]	Material (DIN reference)
VD	0.5 – 12	111 – 250	1.2 – 40	50 – 1400	S235JRG2 P265GH
VD 45	28	250	0.2 – 1.2	15	P265GH GGG-40.3



Mixing cooler with cooling-water control and, if requested, additional flash-steam condensation

Technical Data

Max. service pressure	Max. temperature	Capacity range	Material
0.5 bar	111 °C	up to 15 t/h	S235JRG2 (RSt 37-2)
			P265GH (H II)
			1.4541
			1.4541

Description

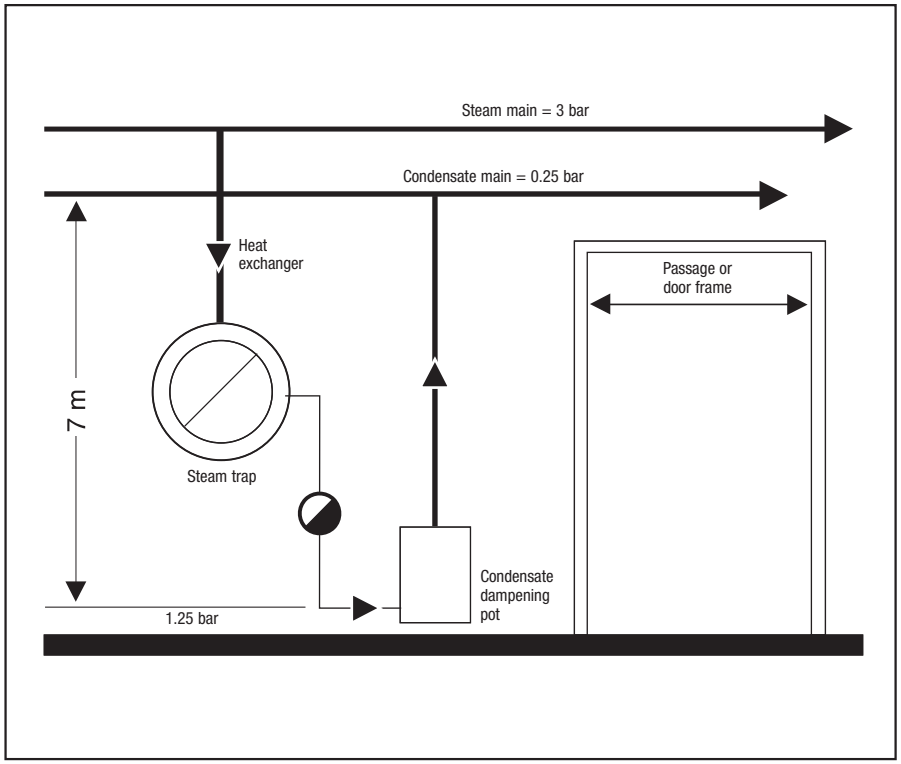
Mixing coolers are blowdown receivers that cool hot waste water that can no longer be used for heat recovery and therefore is discharged into pits, drains or sewage systems.

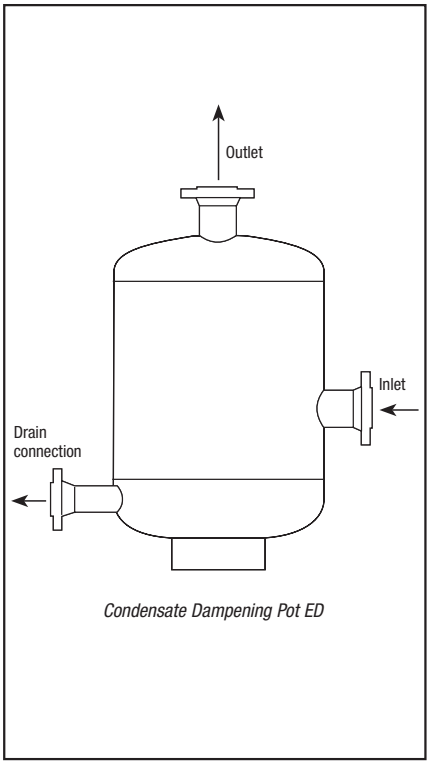
Application

Process plants where contaminated, hot waste water is being formed.

Steam boiler plants where the blowdown is cooled with untreated water.

Mixing coolers for vapours.





Condensate Dampening Pot ED

Technical Data

Service pressure	Related temperature	Capacity range	Material	Volume [l]
18 bar	250 °C	up to 15 t/h	S235JRG2 / P265GH	4 to 50

Description

The condensate dampening pot provides a cushioning effect to neutralize waterhammer. The condensate is discharged without noise.

Application

Steam and condensate systems.

Description

Steam separators are used to remove condensate and dirty water carry-over from steam. By this means trouble-free operation and a long service life of the heat exchanger and steam consumer is obtained.

Application

Downstream of steam boilers and steam-generating units.

Between boiler and superheater.

In steamlines ahead of steam manifolds.

In district-heating lines and flash steam lines.

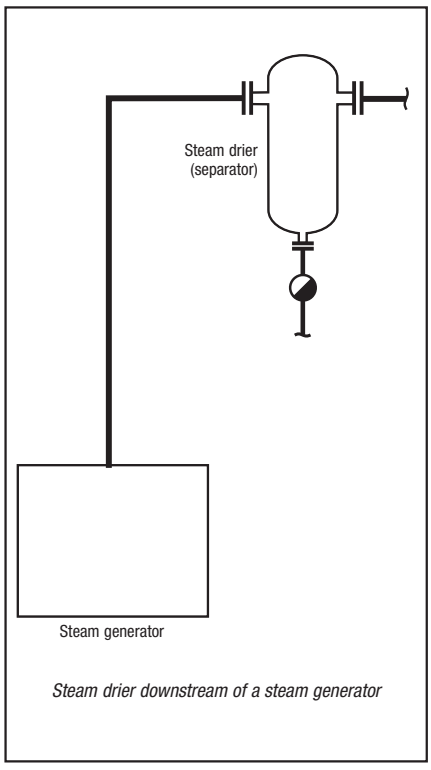
Upstream of turbines, steam engines, steam tools.

For direct heating with steam.

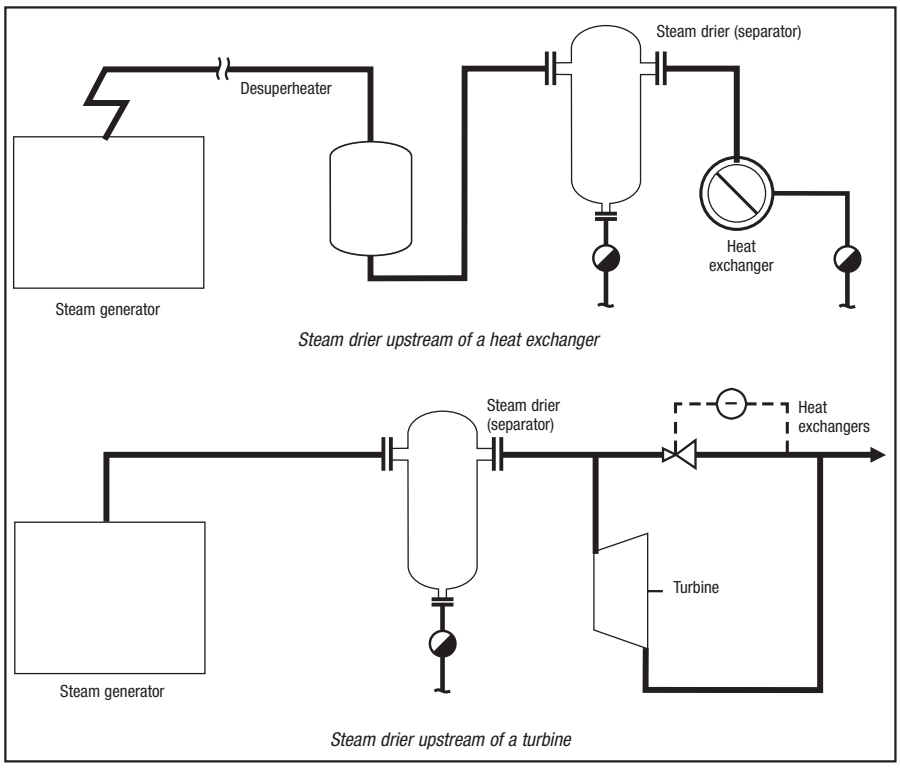
In spray-vapour humidifier systems for air-conditioning plants.

Technical Data

Pressure rating	Nominal sizes DN	Materials
PN 16 PN 40 PN 63 PN 100 PN 160	15 to 500 mm	St 37.0 / St 35.8
		S235JRG2
		P265GH
		16 Mo 3
		1.4541
		1.4571



Steam drier downstream of a steam generator



Steam drier upstream of a heat exchanger

Steam drier upstream of a turbine