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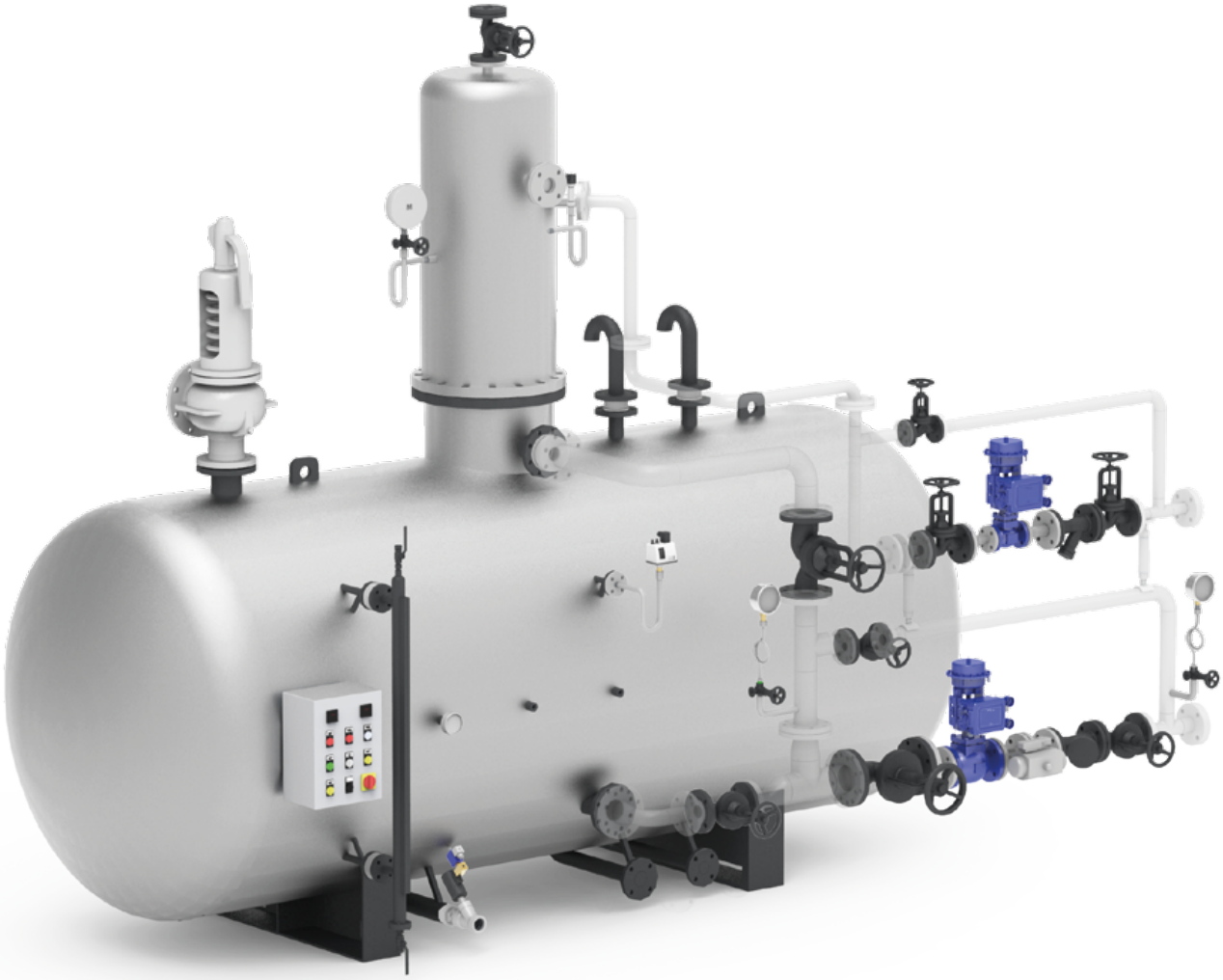
TFE



PRESSURIZED DEAERATOR FOR STEAM BOILERS IN CARBON STEEL*							
RANGE	from 1000 to 16000 liters						
DESIGN / WORKING PRESSURE	0,5 bar/0,4 bar						
WORKING TEMPERATURE	105°C						
MODELS	1500	3000	5000	8000	12000	15000	22000

*some of the internal components are made in stainless steel AISI 316 L

DESCRIPTION

Pressurized deaerator for steam boilers.

Pressurized deaerator tank, necessary for a thermal full deaeration of the feed water.
Best working conditions (temperature 105°C and internal pressure about 0.4 bar) are electronically controlled and managed.
The steam, necessary to remove the dissolved gases in the water, is introduced through injectors positioned in the lower part of the reservoir and, through a modulating valve, in the degassing tower as well.
Execution in horizontal cylindrical shape, with convex end-plates, and mounted on a stable steel support device designed for installing at proper height to avoid the cavitation phenomenon.
Complete with an electronic water level management system and related alarms (low and high levels).
Insulated with high-density rockwool and covered with embossed aluminum foil.
This devide undergoes the limits of application of the art. 3 par. 3 of the PED Directive 2014/68/UE.

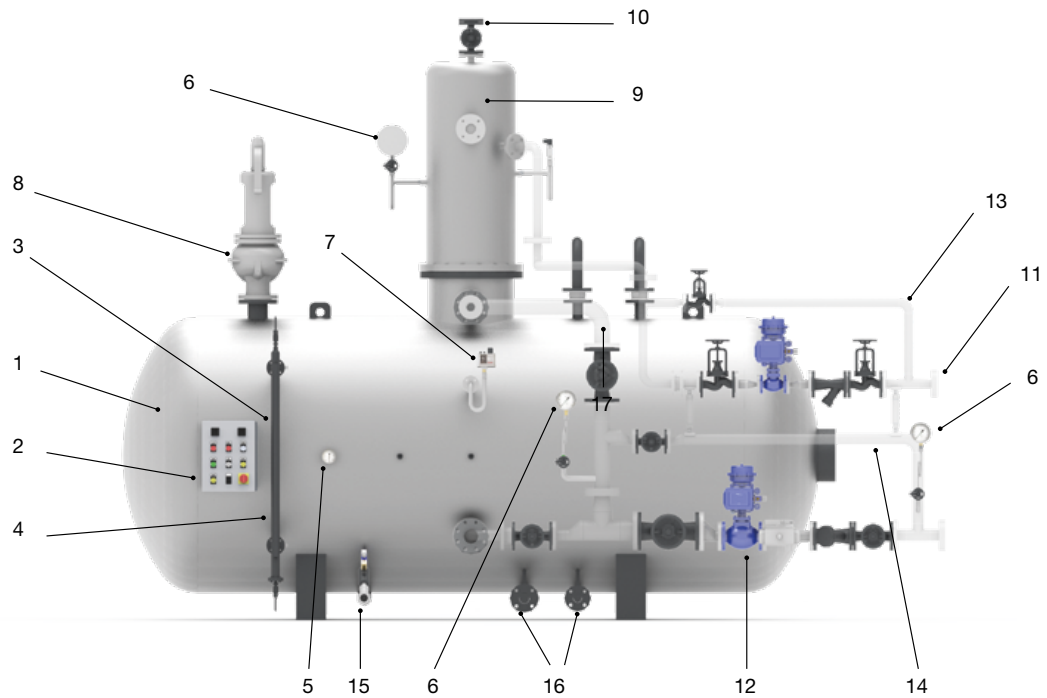
NOTE: The pressurized deaeration must always be coupled with a chemical deaeration.

Standard-production equipment:

- Steam injection system
- Magnetic level indicator
- Probes for water level control
- Inlet water line with pneumatic valve and filter
- Condensate return inlet
- Air vent
- Overflow
- Drain
- Thermometer
- Pressure gauge
- Safety valve
- Degassed hot water supply to boiler
- Board panel IP55
- Piping excluded, possible supply on request

MAIN COMPONENTS

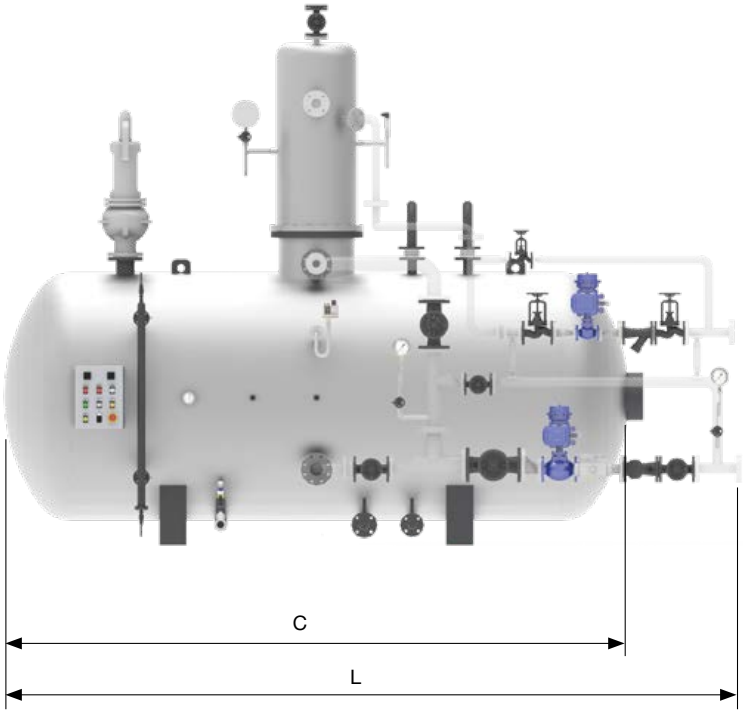
1. Deaerator tank
2. Electric panel board
3. Level indicator
4. Level regulation sensors
5. Thermometer
6. Manometer (with testing cock)
7. Regulation pressure switch
8. Safety valve
9. Degassing tower
10. Air vent
11. Reinstatement water inlet
12. Steam injection thermoregulation group
13. Water bypass
14. Steam bypass
15. Drain
16. Hot water flow to the steam boiler

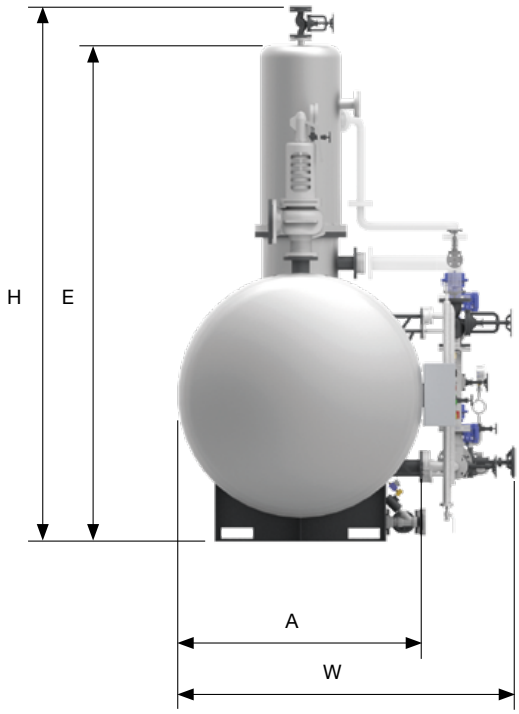


TECHNICAL DATA

Model	Min. degassed water flow	Max. degassed water flow	Nominal volume	Total volume	Feeding water pressure	Degassed water temperature
	kg/h	kg/h	lt	lt	bar	°C
1500	300	1500	700	1000	0.5	105
3000	1750	3000	1400	2000	0.5	105
5000	4000	5000	2800	4000	0.5	105
8000	6000	8000	4200	6000	0.5	105
12000	10000	12000	5600	8000	0.5	105
15000	-	15000	7000	10000	0.5	105
22000	-	22000	11200	16000	0.5	105

DIMENSIONS





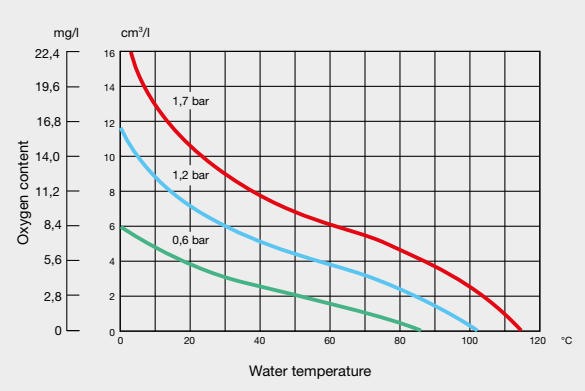
Model	W	L	H	A	C	E	Empty weight
	mm	mm	mm	mm	mm	mm	kg
1500	1550	2420	2280	950	2000	2160	890
3000	1900	2300	2730	1300	1880	2610	990
5000	2100	3030	2980	1500	2610	2860	1460
8000	1300	3270	3330	1700	2850	3210	1720
12000	2400	4545	3480	1800	4125	3360	1980
15000	2400	5045	3530	1800	4625	3410	2290
22000	2400	5980	3630	1800	5560	3510	3100

ELECTRIC PANEL BOARD

- ON / OFF type regulation of the water level in the reservoir
- Activation of automatic discharge valve due to high water level in the reservoir
- Pressure adjustment in the reservoir with pneumatic modulating valve, to allow the steam entry in the degassing tank
- Adjustment of the water temperature in the reservoir with thermometric system and regulation valve for steam injection
- Interception of steam entry line through pneumatic valve, due to high pressure in the reservoir
- Nr.1 selector of reservoir discharge operation (Auto / 0 / Man)
- Nr.1 selector of water feeding pump operation (Auto / 0 / Man)
- Nr.1 selector of water recirculation pump operation (Auto / 0 / Man)
- Nr.1 signalling of reinstatement water entry
- Nr.1 signalling of steam entry in the deaerator
- Nr.1 signalling of discharge automatic valve activation due to high water level
- Nr.1 signalling of water loading pump operation / alarm
- Nr.1 signalling of water recirculation pump operation / alarm
- Nr.1 signalling of low water level
- Nr.1 signalling of tension ON (400 V / 3 Ph / 50 Hz) to the board panel
- Electrical protection degree IP55

DEGASSING

The deaerator has the function to reduce the concentration of the corrosive gases O_2 and CO_2 dissolved in the feeding water of the boiler. The solubility of the gases in the water reduces when the temperature increases; the problem's solution is to increase the feeding water temperature. The following diagram shows the oxygen content dissolved in the water according to the pressure and the temperature. It can be noticed that at the boiling temperature of 105°C for an absolute working pressure of 1.2 bar we are in a zone where the O_2 content in the water is practically void.



Thermophysical deaerator (Total deaeration)

In the thermo-physical de-aeration the process happens under positive pressure (0.3 – 0.4 bar).
The "hot" steam, necessary to remove the gases, is introduced through injectors positioned in the low part of the reservoir and, through a modulating valve, in the degassing tank.
The steam feeding is controlled by an electromechanical thermostat, adjusted at the temperature of 95°C, and by a pneumatic regulator acting on the modulating pneumatic valve.
The topping up of the fresh water is checked through a level regulator.

NOTE: The thermo-physical de-aeration must always be coupled with a chemical deaeration.

The deaerators of the TFE series are deaerators of the thermo-physical type for the degassing of the feeding water of the steam boilers. The appliance falls in the limits of application of the art. 3 par. 3 of the PED Directive 2014/68/UE.
The water temperature is checked and maintained through the thermometric system that checks the steam injection in the reservoir. The pressure inside the tank is checked by an adjuster that controls a pneumatic modulating valve, that allows the steam passage inside the degassing tank.
Endowed with steel basement that allows the installation at a level higher than 5 meters from the axle of the boiler feeding pumps, thus avoiding the cavitation phenomenon. The deaerator is endowed with a water level management system, in mixing mode between the return condensates from the installation and the chemically treated reinstatement water.

The TFE deaerator is composed by the following groups:

- Steam feeding group interlocked with a thermometric system (regulation through a thermo-regulating valve for the holding of the planned temperature).
- Pressure regulating group interlocked with a pressure sensor for the control of a modulating pneumatic valve (regulation of the steam entrance in the degassing tank).
- Magnetic level indicator, with 4 bi-stable contacts, opportunely positioned for the ON-OFF control of the water level in the tank and for the alarms of low and high level.
- Pneumatic valve on the entry water line.
- Degassed water drawing group
- Steam vent
- Overflow
- Pneumatic discharge valve automatically operated
- Safety valve
- Recirculation pump
- Safety pressure switch for the operation of the pneumatic gate valve of the steam entry line
- Electric panel board