

About



Power Plant Equipment Company manufactures the brand name "Blue Valley" deaerators, boiler feed systems, blowdown heat recovery systems, blowdown receivers, sample coolers and other custom boiler room products.

The Blue Valley brand has been used worldwide since 1976. Many of our customers include several utility plant design consulting engineers as well as many national industrial plants, universities and hospitals.

We strive for prompt response, accurate shipment dates, superior designs and above all, a quality standard better than others. Please consider PPE manufactured products for your next project.



*Manufacturers of Boiler Room Equipment & Custom Fabrication*

## CUSTOM FABRICATION

Power Plant Equipment's custom fabrication capabilities include the design, fabrication, piping, wiring, painting and testing of deaerator systems, feedwater tanks, blowdown equipment and mechanical equipment skid packages. We can provide packaged systems with pumps, heat exchangers, boilers and other miscellaneous equipment for cost effective, convenient installations.



## TRAY DEAERATOR



Contact us:

**14400 College Blvd. ■ Lenexa, KS 66215**  
**913-592-4111**

Or visit us online:

**[www.powerplantequip.com](http://www.powerplantequip.com)**

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# TRAY DEAERATOR

## FEATURES

**THE COUNTER FLOW TRAY DESIGN** provides removal of all dissolved oxygen in excess of .005 cc/liter from 5% to 100% of the deaerator capacity.

**MULTIPLE CONFIGURATIONS** are available from vertical single tank vessels, standard "tank car" vessels or separate dual parallel horizontal vessels.

**ONLY STAINLESS STEEL** components come in contact with undeaerated water. Both the trays and tray boxes are constructed of stainless steel.

**A.S.M.E. CODE STAMPED** as per Section VIII 50 psig design pressure unless specified otherwise.

**CUSTOM ENGINEERED PACKAGED SYSTEM** available to 600,000 lb/hr. Larger deaerators to 2,000,000 #/hr capacity available as unassembled components for field installation.

## ADVANTAGES

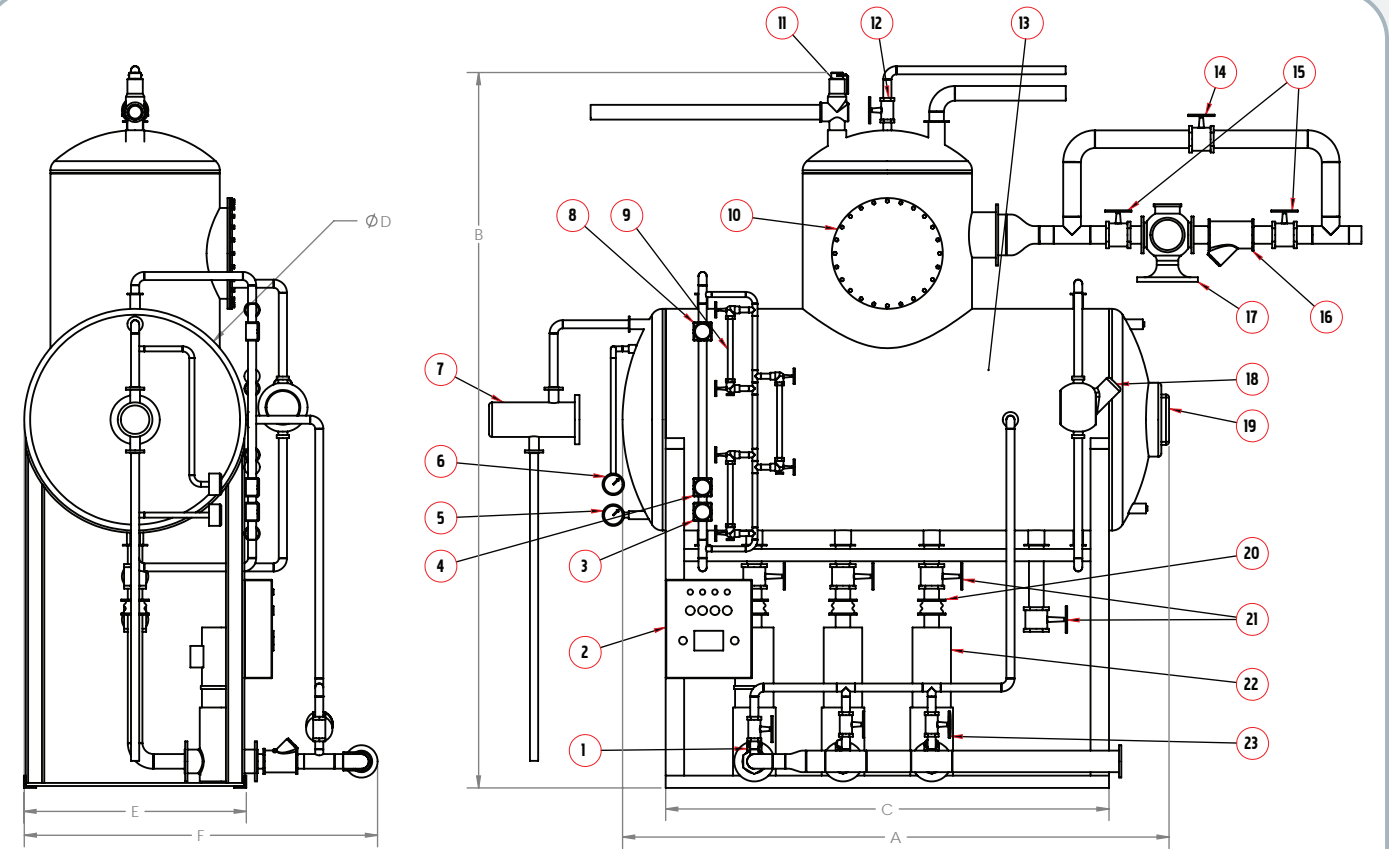
Counter flow tray type deaerators are capable of accepting high percentages of condensate returns without adverse effects on performance. This is possible because the deaeration process does not require a flow of steam for scrubbing. All second stage scrubbing is done by the cascading process through the trays. The counter flow design provides maximum performance because the cleanest incoming steam contacts the water that requires final deaeration, stripping out the last traces of oxygen.

Performance is guaranteed at all loads from 5% to 100% of rating with sizes ranging from 20,000#/hr to 2,000,000 lbs/hr.

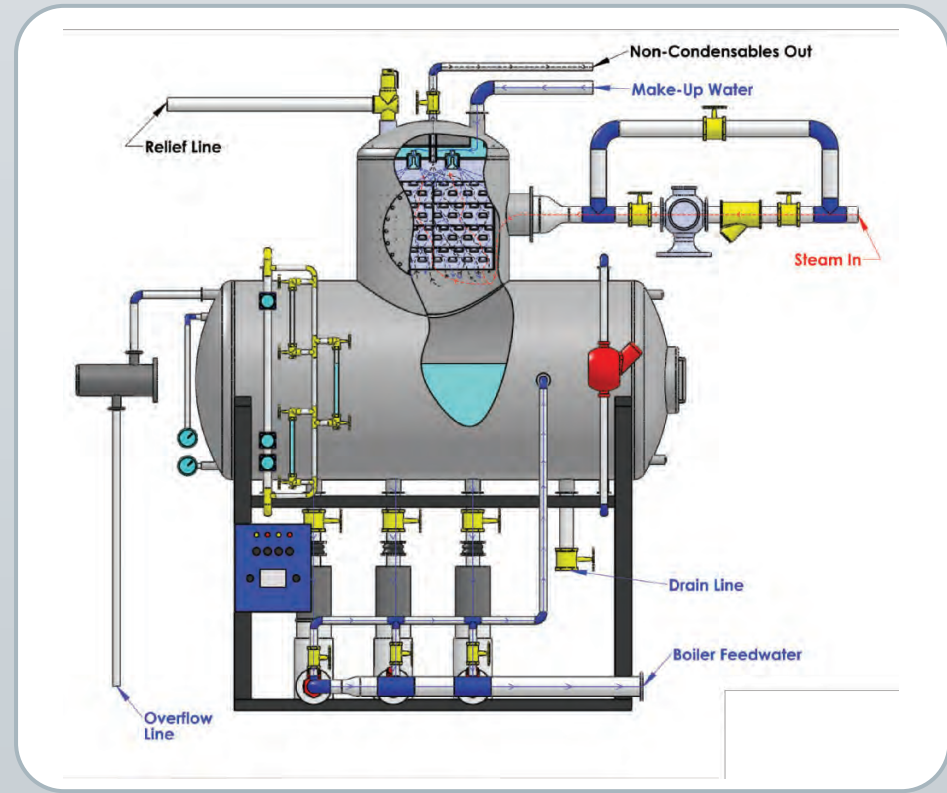
## OPERATION

Makeup water and pumped condensate returns are pumped into the deaerator stainless steel header box. The undeaerated water then passes through several stainless steel spray nozzles which form thin conical sheets of water that contacts steam where it is heated. This heating effect partially releases the dissolved oxygen and other non-condensable from the water. The continuous vent valve then exhausts these released gases to atmosphere. The partially deaerated water then begins to cascade through the trays where additional heating and deaeration occurs.

Steam entering the deaerator flows upward through the stainless steel trays in a counter flow direction where it scrubs the remaining dissolved gases from the water in a final polishing action and heats to near the saturation temperature. The trapped returns enter the deaerator storage section directly and release flash steam which also flows upward through the deaerator trays supporting the deaeration as well. The deaerated water then drops into the storage section where it remains until needed by the boiler.



- 1. Check Valve
- 2. Electrical Control Panel
- 3. Low Water Pump Cut-Off
- 4. Low Water Level Alarm
- 5. Temperature Gauge
- 6. Pressure Gauge
- 7. Overflow Trap
- 8. High Water Level Alarm
- 9. Safety Type Full Length Sight Glass Assembly
- 10. Bolted Access Manway
- 11. Pressure Relief Valve
- 12. Continuous Vent Valve
- 13. ASME Code Tank Section VIII
- 14. Steam Bypass Globe Valve
- 15. PRV Isolation Valve
- 16. Steam Y-Strainer
- 17. Pressure Reducing Valve
- 18. Level Controller
- 19. Access Manway 12 x 16
- 20. Flexible Coupling
- 21. Tank Isolation Valve
- 22. Boiler Feed Pump
- 23. Pump Isolation Valve



Cut-Away View

## Product Measurements

Model	Rate Capacity (lbs/hr)	Capacity (hp)	6 min Storage						10 min Storage					
			A	B	C	D	E	F	A	B	C	D	E	F
ST40	40,000	1,159	87	194	72	36	36	46	98	194	78	54	54	60
ST50	50,000	1,449	90	194	72	48	48	54	118	194	98	54	54	60
ST75	75,000	2,174	106	212	86	54	54	60	140	212	118	60	60	66
ST100	100,000	2,899	138	218	118	54	54	60	153	218	130	66	66	66
ST125	125,000	3,623	140	224	118	60	60	66	140	224	115	72	72	78
ST150	150,000	4,348	165	248	143	60	60	66	144	248	116	84	84	90
ST200	200,000	5,797	181	252	158	66	66	66	188	252	160	84	84	90
ST250	250,000	7,246	191	252	166	72	72	78	231	252	203	84	84	90
ST300	300,000	8,696	226	276	201	72	72	78	215	276	190	96	96	102
ST400	400,000	11,594	193	276	196	84	84	90	281	276	281	96	96	102