

SPECIFICATIONS
FOR
CUSTOM DESIGNED
ALTAIR TRAY TYPE DEAERATOR

These specifications cover the furnishing and delivering of one Altair feedwater Deaerator and auxiliary equipment for capacity and conditions outlined below:

The Deaerator shall heat, deaerate and deliver _____pounds per hour of feedwater and provide _____cu.ft. storage below the overflow level. This unit shall be capable of operating on 100 % boiler feed treated make up water @ the lowest ambient temperature encountered throughout the year and produce 7 ppb O2 effluent.

Operating Conditions

Water supply to Deaerator:

SOURCE	QUANTITY MAX.	LB/HR MIN.	TEMP MAX.	Deg F MIN.	PRESS MAX.	PSIG MIN.
Condesate from: Surface condensor Process Returns Heating System Traps Other (specify)						
Makeup * Normal Emergency						

Steam supply to the Deaerator will receive saturated steam from auxiliary exhaust at ___psig, and/or will be supplemented with live steam from a ___psig saturated header through a pressure reducing valve. This will assure an adequate supply of steam at a minimum pressure of _psig. Maximum operating pressure will be ___psig. Lowest ambient yearly temperature of the raw treated make up water temperature will be ___Deg. F. Deaeration will be accomplished at this lowest temperature at 100 % make up flow to an effluent oxygen content of 7 ppb.

All the steam shall be directed into a chamber above the trays and pass downward with the water being deaerated and then reverse flow rising into the upper primary water spray heater section. Sufficient steam will then be vented to carry the removed non-condensable gases out into the atmosphere. Vendor shall state the quantity of steam required for venting to meet the 7 ppb effluent requirement.

Capacity and Performance

The Deaerator shall have a maximum continuous deaerating capacity of _____lb./hr and shall operate satisfactorily at all loads. When operated within its rated capacity, the Deaerator is to be guaranteed to heat the water to the saturation temperature of the steam in the heater shell. It will deliver the water with an oxygen content not exceeding .005 ml/l (7 ppb), as determined by the Winkler or other standard industrial test and with a free CO₂ content of zero as determined by the APHA test.

The equipment is to be guaranteed to be free from defects in materials and workmanship for a period of one year after shipment from factory.

The storage capacity shall be _____cu.ft. within the straight shell of the storage tank or section.

Design and Construction

The Deaerator shall be of the tray type utilizing controlled parallel directional flow of steam and water through the tray stack. Water shall enter the heater through a stainless steel distributor. The steam flashed from trap returns will be utilized in the process of deaeration.

The Deaerator shall have a (vertical) (horizontal) arrangement and shall be mounted on, and connected _____to, the (horizontal) (vertical) cylindrical storage section. The Deaerator top shall be shipped detached from the storage tank to facilitate shipping and handling.

The deaerating section and storage section shall be constructed of welded steel plate, complying with ASME Code for Unfired Pressure Vessels and designed for _____psig.

The Deaerator shall be equipped with an internal direct contact type vent condenser, which will minimize the loss of steam through venting. All baffling and parts in contact with concentrated noncondensable gases shall be of corrosion resistant materials suitable for the service conditions.

Trays shall be type 430 stainless steel, which shall be one-piece stampings. Trays shall be of such size and weight that one man can easily handle them. Trays shall not require wedges or other means to hold them in position.

The trays shall form an internal compartment, so designed that the pressure shell is not subject to contact with undeaerated water or concentrated noncondensable gases.

All necessary openings shall be provided. Screwed couplings shall be provided for connections 2-1/2" and smaller, flanged or pad type openings for larger connections. Suitable doors and manholes shall be provided for inspection and access to internal parts. Supports for storage tank shall be included.

Accessories:

Accessories shall include the following:

One inlet water regulating valve for control of the (entire flow) (normal makeup). This valve shall be of the (mechanical linkage) (air operated) type and shall be actuated by suitable (external float box) (Pneumatic Controller). The valve shall be capable of passing _____lb./hr with a pressure drop not exceeding _____psig.

One inlet regulating valve for control of the flow of emergency makeup. This valve shall be of the (mechanical linkage) (air operated) type and shall be actuated by a suitable (external float box) (Pneumatic Controller). The valve shall be capable of passing _____lb./hr (full flow) with a pressure drop not exceeding _____psig.

One overflow valve of the (integral float actuated rotary seat type) (integrally float actuated double disc type) (pneumatic type, complete with air pilot mechanism. The overflow valve shall be _____“ size.

One spring-loaded sentinel type ASME relief valve, _____“ size, set at _____psig.

Two (9” Powerhouse) (dial) type, separable socket type thermometers.

Two dial type pressure gages.

Two float switches for high and low level alarms.

Tubular gauge glasses to cover the entire range of water level travel in the storage section.

One Altair exhaust head.