

Deaerator

For thermal and mechanical design and sizing of deaerators. This program is valid for small industrial units, medium vertical units or larger horizontal used in industries and thermal or nuclear power plants.

PROGRAM WINDOWS

Deaerator Thermal and Mechanical Calculation

INPUTS

Job Name: TEST

Steam Flow	16.277	Kg/s	Type Of Deaerator :	
Steam Temperature At Inlet	371	oC	[0] VERTICAL (Industrial and small units)	
Steam Pressure At Inlet	12.12	Bara	[1] VERTICAL 2 Trays	
Steam Enthalpy At Inlet	3199.41	Kj/Kg	[2] HORIZONTAL	
Stem Temperature At Saturation Pressure	188.4	oC	Enter Code Of Type	2
Steam Enthalpy At Saturation Pressure	2783.1	Kj/Kg	Volume Of Water Reserve In Storage Tank	170 M3
Steam Specific Volume At Inlet Pressure	0.2406	M3/Kg	Length Of Separated Tank (0 If Integrated Tank)	22.5 M
Water Flow Of Main Source To Be Treated	395.567	Kg/s	Height With Integrated Tank (0 If Separated Tank)	0 M
Enthalpy Of Water Of Main Source	633.2	Kj/Kg	Design Pressure	18 Bar
Water Flow Of Secondary Source	35.944	Kg/s	Allowable Stress Value At Design Temperature (Taking account reduction due to joint efficiency)	900 Bar
Enthalpy Of Water Of Secondary Source	856	Kj/Kg	General Allowable Corrosion	2 mm
Temperature Of Outlet Water	188.4	oC	Size Reduction Coefficient (< 1)	1
Enthalpy Of Outlet Water	800.43	Kj/Kg	(For conservative design, put 1. If necessary, use reduction to obtain a more competitive design)	
Specific Volume Of Outlet Water	0.001139	M3/Kg		

DATA ENTRY WINDOW



HORIZONTAL DEAERATOR - Data

Job Name : TEST

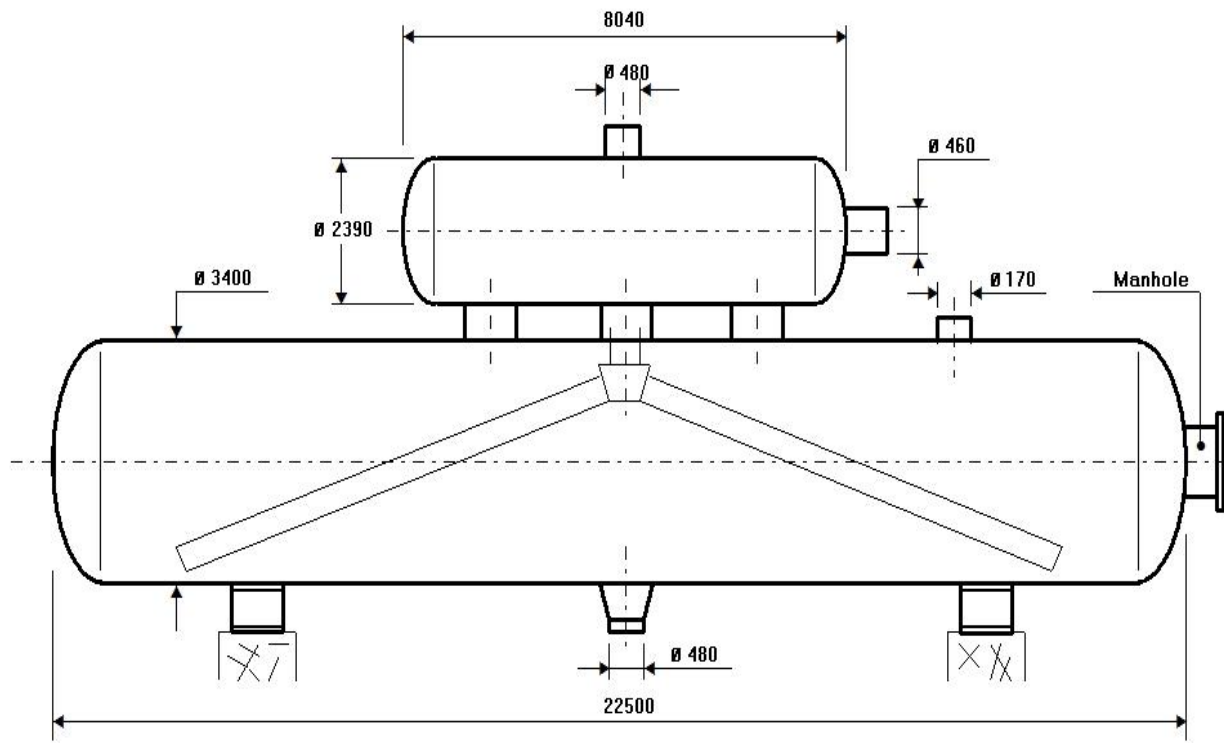
■ Data Input

Steam Flow	26,741	Kg/s
Steam Temperature At Inlet	371	oC
Steam Enthalpy At Inlet	3199,41	kJ/kg
Steam Pressure At Inlet	12,12	bara
Specific Volume Of Steam Inlet	0,2406	m3/Kg
Steam Enthalpy At Condens. Pressure	2783,1	kJ/Kg
Steam Temp. At Condensation Pressure	188,4	oC
Flow From LPs Heaters To Treat	395,567	Kg/s
Enthalpy From LPs Heaters	633,2	kJ/kg
Flow From HPs Heaters	35,944	Kg/s
Enthalpy From HPs Heaters	856	kJ/kg
Drain Outlet Temperature	188,4	oC
Drain Outlet Enthalpy	800,43	kJ/kg
Specific Volume Of Drain Outlet	0,001139	m3/Kg
Type Of Deaerator	HORIZONTAL	
Design Pressure	18	bar
Allowable Stress Value At Design Temp.	900	bar
General Allowable Corrosion	2	mm

■ Results

Diameter Of Deaerator	2390	mm
Thickness Of Deaerator	27	mm
Length Of Deaerator	8040	mm
Diameter Of Storage Tank	3400	mm
Thickness Of Storage Tank	37	mm
Length Of Storage Tank	22500	mm
Reserve Volume Of Storage Tank	170	m3
Total Volume Of Storage Tank	191,1	m3
Steam Inlet Diameter	460	mm
Water Flow Inlet Diameter From LPs	480	mm
Water Flow Inlet Diameter From HPs	170	mm
Water Flow Outlet Diameter	480	mm
Steam Deaeration Units Number	6	
Weight Of Deaerator	17,92	Tn
Weight Of Internal S.S. At Deaerator	400	Kg
Weight Of Storage Tank	76	Tn
Empty Total Weight	93,92	Tn
Weight In Operation	268	Tn
Full Of Water Weight	337	Tn
Number Of Spray Water Of 4 in. Diameter	16	
Number And Diameter Of Air Venting	16 x 4	mm

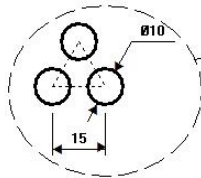
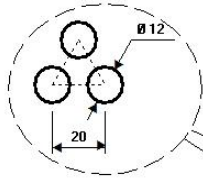
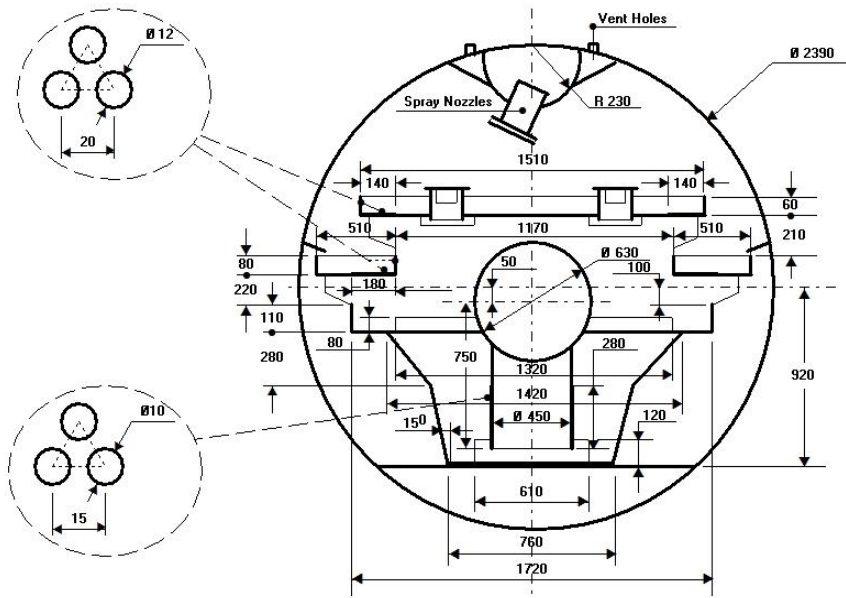
RESULTS SHEET



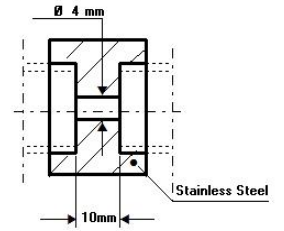
HORIZONTAL TYPE DEAERATOR

Dimensions in mm

DIMENSIONAL DRAWING



VENTING NOZZLE HOLE



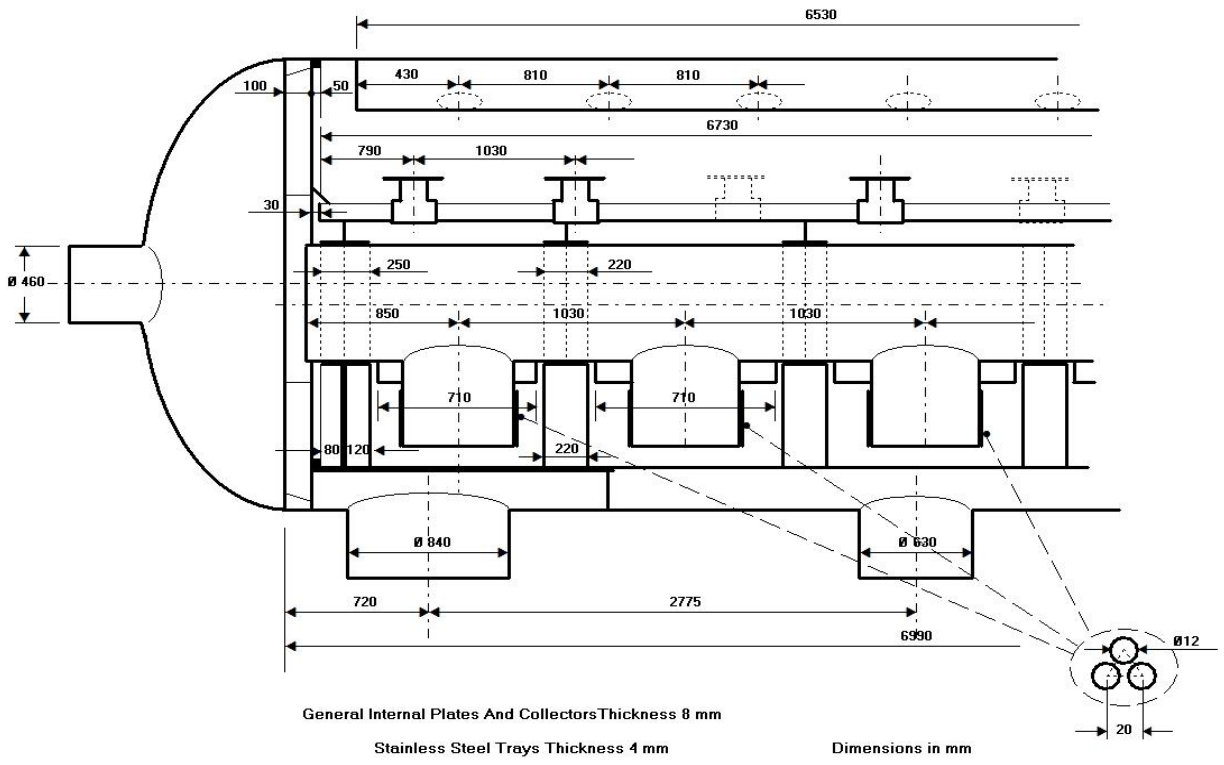
Number of Venting Nozzles 16

General Internal Plates And Collectors Thickness 8 mm

Stainless Steel Trays Thickness 4 mm

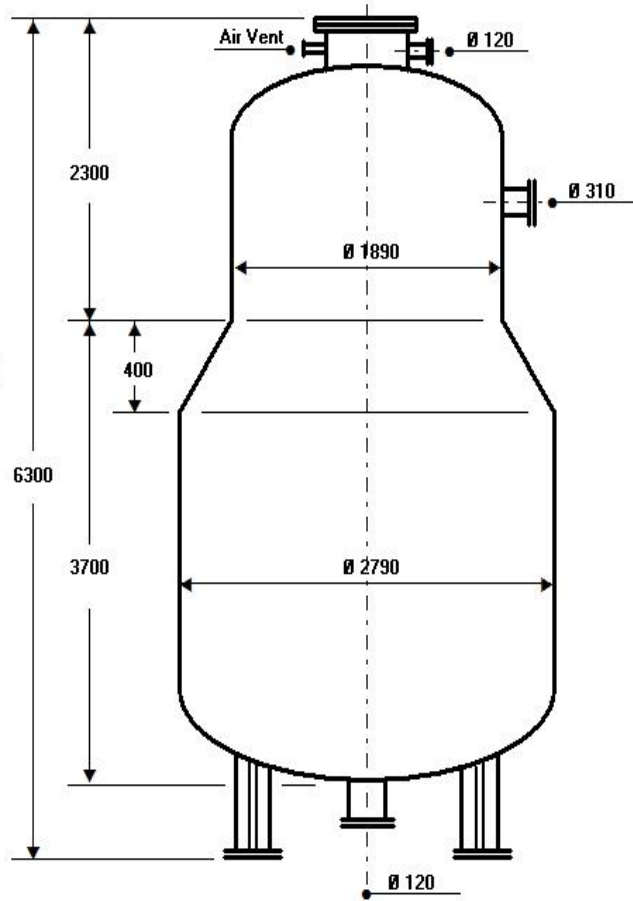
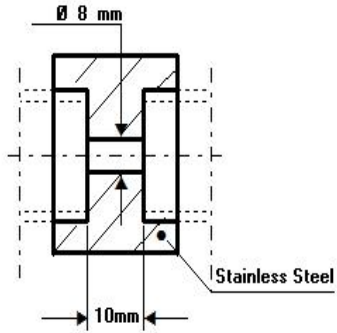
Dimensions in mm

SECTIONAL DRAWING



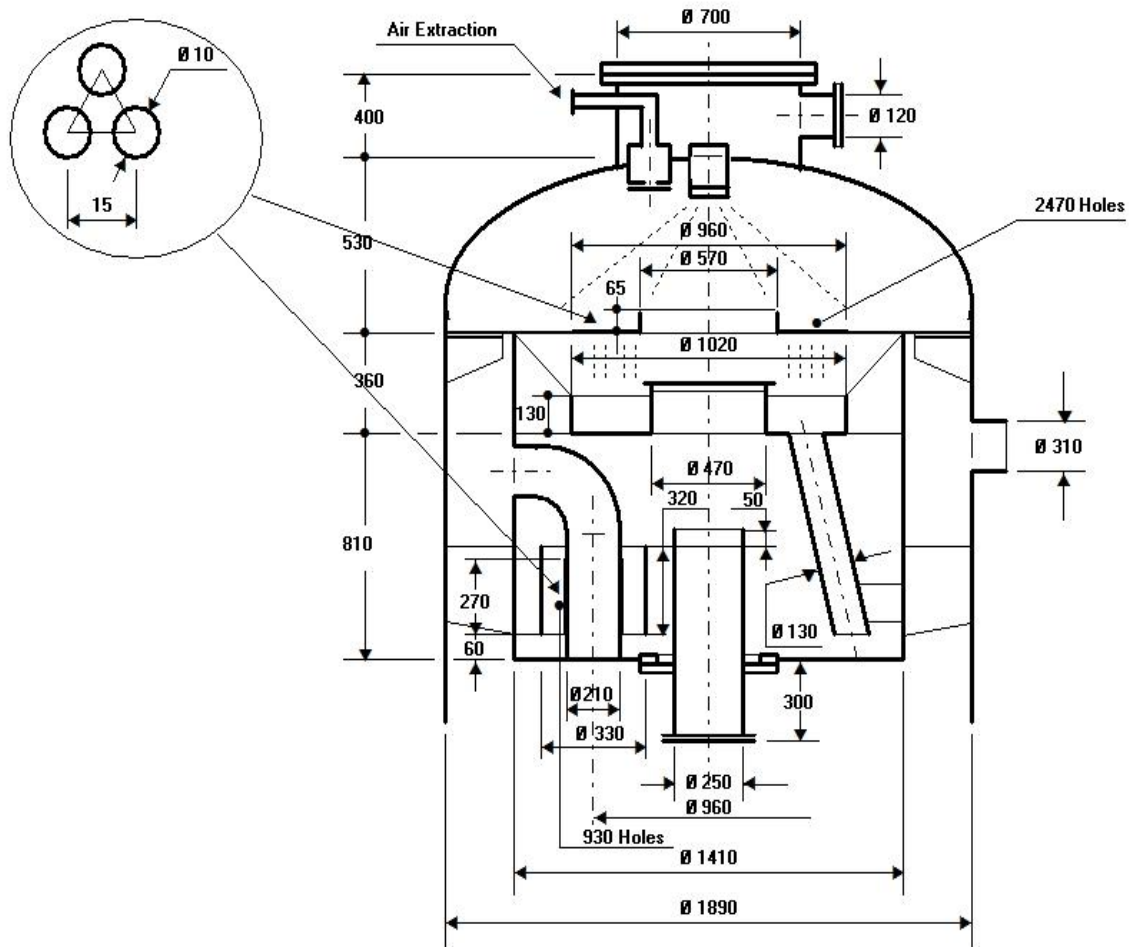
SECTIONAL DRAWING

VENTING NOZZLES HOLE



Dimensions in mm

VERTICAL INDUSTRIAL TYPE DEAERATOR WITH INTEGRATED TANK



General Internal Plates Thickness 6

Dimensions in mm

Stainless Steel Trays Thickness 4 mm

SECTIONAL DRAWING