

WATER-WATER EXCHANGER

PROGRAM WINDOWS

★ Heat Exchanger

Water/Water Heat Exchanger Thermal Calculation

Instructions

Run File

Results

Print Results

Drawing

Print Drawing

Save File

Load File

Clear All

Press For Mechanical Calculation

Exit

INPUTS

Units Code (1 = S.I. 2 = USA)	<input type="text" value="1"/>	Press Button	<input type="button" value="Auto"/>	Job Name	<input type="text" value="AGUA0"/>
Shell Side Flow	<input type="text" value="2400"/>	m3/h		Type Of Water Box Cover:	<input type="text" value="2"/>
Inlet Shell Side Temperature	<input type="text" value="42.25"/>	oC		(1 = Plate 2 = Elliptical)	
Inlet Shell Side Pressure	<input type="text" value="6"/>	bara		Tubes Material :	Tube Sheet Material :
Expected Shell Side Pressure Drop	<input type="text" value="0.7"/>	bar		[1] ... Admiralty Brass	[1] ... Cooper Alloy
Outlet Shell Side Temperature	<input type="text" value="35"/>	oC		[2] ... Austenitic S.S.	[2] ... Cooper Nickel Alloy
Cooling Water Flow (0 If Outlet Temperature<>0)	<input type="text" value="3600"/>	m3/h		[3] ... Ferritic S.S.	[3] ... Carbon Steel
Cooling Water Pressure	<input type="text" value="5"/>	bara		[4] ... Cooper Nickel 70/30	[4] ... Stainless Steel
Tube Side Inlet Temperature	<input type="text" value="29"/>	oC		[5] ... Cooper Nickel 90/10	[5] ... Titanium
Tube Side Outlet Temperature (0 If C.W.Flow<>0)	<input type="text" value="0"/>	oC		[6] ... Carbon Steel	[6] ... Titanium Clad
Cooling Water Type (0 = Brackish 1 = Sea)	<input type="text" value="0"/>			[7] ... Titanium	
Tubes Outlet Diameter	<input type="text" value="19"/>	mm		Enter Code Tube Material	<input type="text" value="1"/>
Tubes Thickness	<input type="text" value="1"/>	mm		Enter Code Tube Sheet Material	<input type="text" value="1"/>
Tube Cleanliness Factor (0 if consider Resistances)	<input type="text" value="0"/>			Tubes Pitch	<input type="text" value="25"/> mm
Outlet Tube Side Resistance (0 If Clean Fact.<>0)	<input type="text" value="0.0000352"/>	hoCm2/kcal		Feed Water Velocity	<input type="text" value="2.3"/> m/s
Inlet Tube Side Resistance (0 If Clean Fact.<>0)	<input type="text" value="0.0000528"/>	hoCm2/kcal		Shell Side Normal Velocity	<input type="text" value="0.7"/> m/s
Exchange Coefficient Correction	<input type="text" value="1"/>			Shell Side Parallel Velocity	<input type="text" value="1.2"/> m/s
				Cooling Water Design Pressure	<input type="text" value="15"/> bar
				Expected Tube Side Pressure Drop	<input type="text" value="1"/> bar
				Number Of Tube Passes	<input type="text" value="1"/>
				Number Of Shell Passes	<input type="text" value="1"/>

DATA ENTRY WINDOW

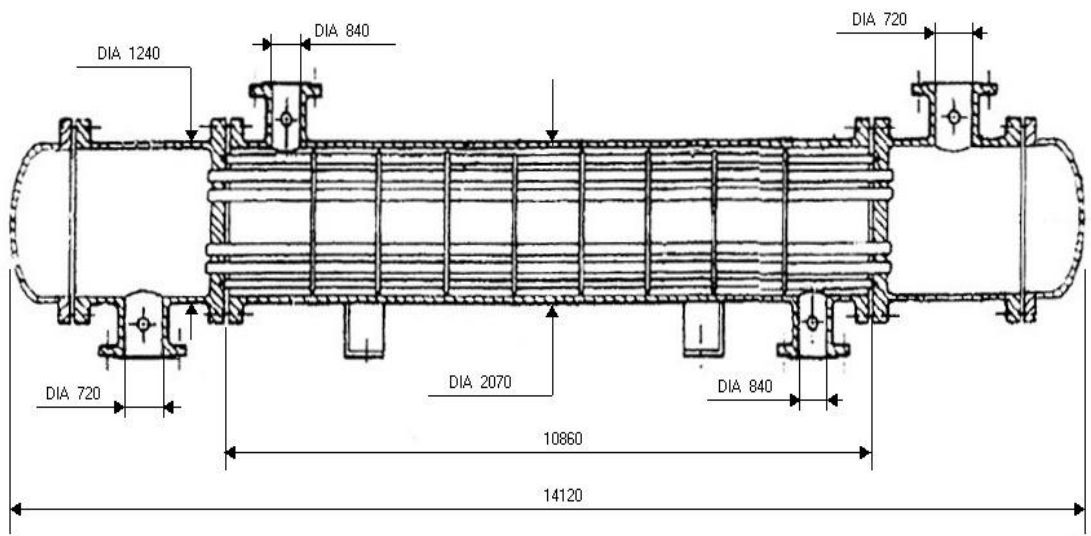


WATER/WATER HEAT EXCHANGER - Data Results

Job Name : AGUAO

■ Data			■ Results		
Shell Side Flow	2400	m3/h	Exchanged Duty	17274,6	Mcal/h
Inlet Shell Side Temperature	42,25	oC	L.M.T.D. Correction	1	
Inlet Shell Side Pressure	6	bara	L.M.T.D. Corrected	7,14	oC
Expected Shell Side Pressure Drop	0,7	bar	Exchanged Coefficient	1946	kcal/hoCm2
Outlet Shell Side Temperature	35	oC	Exchange Surface	1242	m2
Cooling Water Flow	3600	m3/h	Number Of Tubes	1915	
Tube Side Inlet Temperature	29	oC	Length Between Tube Sheets	10,86	m
Tube Side Outlet Temperatura	33,83	oC	Shell Side Velocity	0,56	m/s
Cooling Water Pressure	5	bara	Tube Side Pressure Drop	4,52	m.c.a.
Cooling Water Type	Brackish		Aprox. Shell Side Presure Drop	1,56	m.c.a.
Tube Cleanliness Factor	0		Shell Diameter	2070	mm
Outlet Tube Side Resistance	0,0000352	hoCm2/kcal	Channel Diameter	1240	mm
Inlet Tube Side Resistance	0,0000528	hoCm2/kcal	Tube Sheet Diameter Flanged Type	1400	mm
Exchange Coefficient Correction	1		Channel Nozzles Diameter	720	mm
Tube Outlet Diameter	19	mm	Shell Nozzles Inlet/Outlet Diameter	840	mm
Tube Thickness	1	mm	Full Spacing Tubes Support Plates	2	
Tubes Pitch	25	mm	Antivibration Tubes Support Plates	12	
Inlet Tubes Velocity	2,3	m/s	Length Of Equipement	14,12	m
Tubes Material	Admiralty Brass				
Expected Tube Side Pressure Drop	1	bar			
Number Of Tube Passes	1				
Number Of Shell Passes	1				

RESULTS SHEET



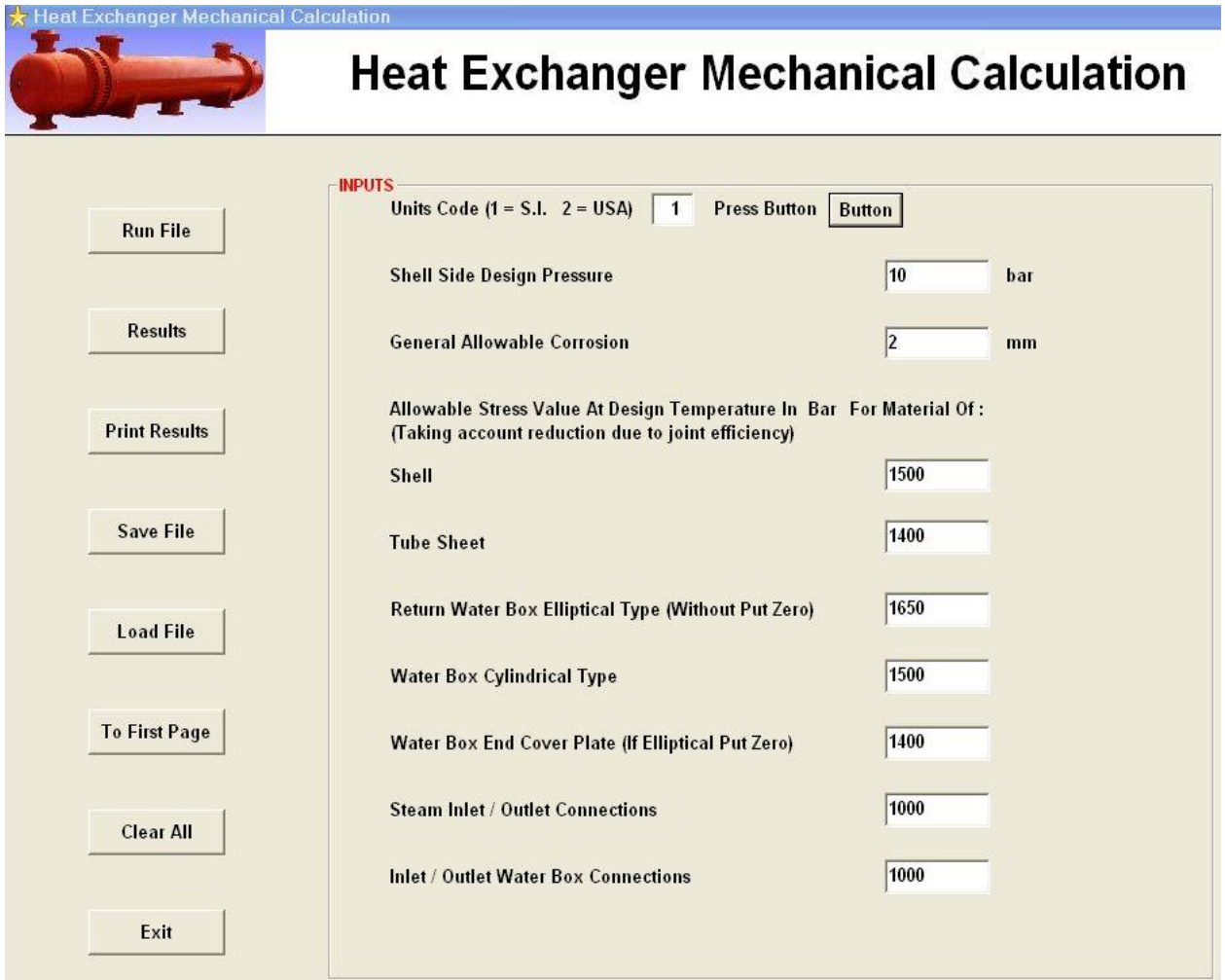
Dimensions in mm

DIMENSIONAL DRAWING

MECHANICAL CALCULATION

Pressing the button for the mechanical calculation in main window is accessed this window. Once completed and using Run File and Results buttons you see the output window on the next page. Other buttons have the same functions as those set for the main window.

★ Heat Exchanger Mechanical Calculation



Heat Exchanger Mechanical Calculation

INPUTS

Units Code (1 = S.I. 2 = USA) Press Button

Shell Side Design Pressure bar

General Allowable Corrosion mm

Allowable Stress Value At Design Temperature In Bar For Material Of :
(Taking account reduction due to joint efficiency)

Shell

Tube Sheet

Return Water Box Elliptical Type (Without Put Zero)

Water Box Cylindrical Type

Water Box End Cover Plate (If Elliptical Put Zero)

Steam Inlet / Outlet Connections

Inlet / Outlet Water Box Connections

MECHANICAL CALCULATION DATA WINDOW



EXCHANGER RESULTS - Thickness (mm) and Weights (Kg)

Job Name : AGUA0

■ THICKNESSES		■ WEIGHTS	
Shell	12	Exchange Tubes	10190
Shell Pass Partition Sheet	8	Gross Tube Sheet	1170
Tube Sheet	90	Net Tube Sheet	750
Elliptical Water Box	8	Shell With Flanges, Pipes And Internals	8580
Cylindrical Water Box	9	Water Boxes Flanges, Cover End And Pipes	1240
Flat Cover End Water Box	0	Net Tubes Support Plates (Including In Shell)	1050
Tubes Support Plate	10	Supports	490
Water Box Pass Partition Sheet	16	Total Empty	21250
Shell Inlet / Outlet Pipe	7	Total In Operation (Full Of Water)	54850
Water Box Inlet / Outlet Pipe	8		

RESULTS SHEET