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Overall Summary

Calculation mode		Design
Exchanger type		Standard axial flow
Overall heat transfer calculated	**kW**	25.2
Overall surface area ratio		1.15
Mean temperature difference	**°K**	0.6
UA value of calculated duty	**W/K**	42067.5
Core length	**mm**	1351.12
Core width	**mm**	808.68
Number of layers per exchanger		87
Number of fins		5
Core depth(stack height)	**mm**	906.63
Number of exchangers in parallel		1

Overall Summary

Main stream number		Stream 1	Stream 2	Stream 3
Stream name		7HPa>>8HPa	8MPa>>7MPa	8LPa>>7LPa
Stream type		Hot	Cold	Cold
Flow direction		End A to B (down)	End B to A (up)	End B to A (up)
Number of layers per exchanger		29	6	52
Total mass flow rate	**kg/s**	0.5847	0.12	0.4555
Heat load	**kW**	-25.1	5.3	19.9
Percent of specified heat load		100	100	100
Area Ratio		1.15	1.16	1.15
Inlet temperature	**°K**	34.77	26.06	26.06
Outlet temperature	**°K**	27.04	34.42	34.42
Outlet temperature from input	**°K**	27.04	34.42	34.42
Inlet pressure	**bar**	19.48	5.24125	1.25229
Outlet pressure	**bar**	19.47594	5.22596	1.25105
Pressure drop (friction)	**bar**	0.00406	0.01529	0.00124
Percent of allowed pressure drop		20.3	76.45	98.89
Allowed pressure drop	**bar**	0.02	0.02	0.00125
Estimated pressure drop	**bar**	0.02	0.00125	0.00125

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Thermal Performance - Streams

Main stream number		Stream 1	Stream 2	Stream 3
Stream name		7HPa>>8HPa	8MPa>>7MPa	8LPa>>7LPa
Flow direction		End A to B (down)	End B to A (up)	End B to A (up)
Total mass flow rate	kg/s	0.5847	0.12	0.4555
Heat load	kW	-25.1	5.3	19.9
Heat load per layer	kW	-0.9	0.9	0.4
Inlet temperature	°K	34.77	26.06	26.06
Outlet temperature	°K	27.04	34.42	34.42
Bubble point	°K			
Dew point	°K			
Inlet quality(vapor mass fraction)		1	1	1
Outlet quality(vapor mass fraction)		1	1	1
Inlet specific enthalpy	J/kg	195106	149303	150282
Outlet specific enthalpy	J/kg	152105	193684	193935
Fouling resistance	m² K/W	0	0	0
Minimum [T-Twall]	°K	0.17	0.17	0.17
Mean [T-Twall]	°K	0.32	-0.33	-0.33
Mean heat transfer coefficient	W/(m² K)	310.4	468.7	167.5
Mean fin efficiency		0.78	0.68	0.62
Solution method		Design	Design	Design
Heat load as fraction of maximum	-			
Theoretical maximum heat load	kW			

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Pressure Change - Streams

		Stream 1	Stream 2	Stream 3
Stream name		7HPa>>8HPa	8MPa>>7MPa	8LPa>>7LPa
Inlet nozzle	**bar**	-0.00172	-0.00084	-0.00006
Inlet distributor friction	**bar**	-0.00032	-0.00383	-0.00001
Inlet distributor gravity	**bar**	0.00013	-0.00004	-0.00002
Main fin friction	**bar**	-0.00028	-0.00605	-0.00111
Main fin gravity	**bar**	0.00314	-0.0009	-0.00022
Redistributor(s) friction	**bar**			
Redistributor(s) gravity	**bar**			
Outlet distributor friction	**bar**	-0.00036	-0.00393	-0.00001
Outlet distributor gravity	**bar**	0.00014	-0.00004	-0.00002
Outlet nozzle	**bar**	-0.00138	-0.00063	-0.00005
Total friction	**bar**	-0.00406	-0.01529	-0.00124
Total gravity	**bar**	0.00341	-0.00098	-0.00026
Total acceleration	**bar**	0	-0.00001	0
Pressure change (total)	**bar**	-0.00406	-0.01529	-0.00124
Predicts pressure below minimum permitted				

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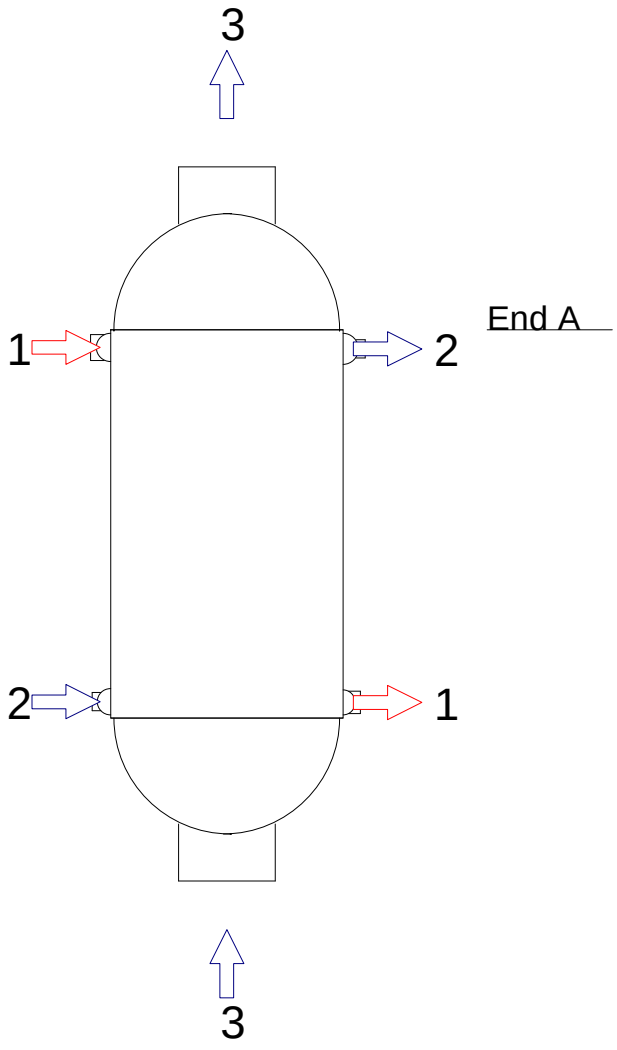
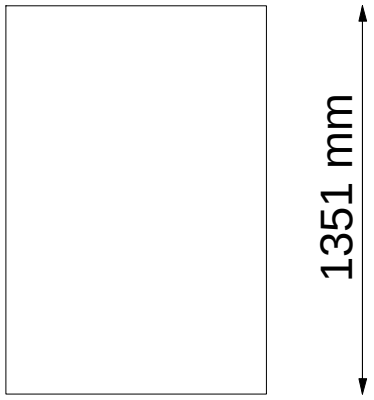
Exchanger Diagram

Job Title:





Width = 809 mm

Depth = 907 mm

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Exchanger - Overall Geometry

Number of exchangers in parallel		1
Number of exchangers per unit		1
Number of layers per exchanger		87
Orientation		Vertical, end A at top
Core length	**mm**	1351.12
Core width	**mm**	808.68
Core depth(stack height)	**mm**	906.63
Number of X-flow passes		0
Number of layer groups		1
Distributor length - end A	**mm**	121.72
Main heat transfer length	**mm**	1126.33
Distributor length - end B	**mm**	103.08
Internal (effective) width	**mm**	785.68
Side bar width	**mm**	11.5
Parting sheet thickness	**mm**	1
Cap sheet thickness	**mm**	5
Exchanger metal		Aluminum
Exchanger weight - empty	**kg**	808
Exchanger weight - full of water	**kg**	1959.8
Exchanger weight - operating	**kg**	818.5

Exchanger - Fin Geometry

		Fin 1	**Fin 2**	**Fin 3**	**Fin 4**	**Fin 5**
Fin code/bank number		2165	2912	3	4	5
Fin used in exchanger		Yes	Yes	Yes	Yes	Yes
Fin type		Serrated (offset)	Serrated (offset)	Perforated	Perforated	Perforated
Fin height	**mm**	9.63	5.1	9.63	5.1	9.63
Fin thickness	**mm**	0.2	0.2	0.61	0.51	0.51
Fin frequency	**#/m**	709	1024	236	236	236
Fin porosity (fraction)				0.05	0.05	0.05
Fin serration length	**mm**	3.18	3.18			
Subchannel aspect ratio		7.79	6.31	2.49	1.23	2.45
Blockage fraction		0.16	0.24	0.2	0.21	0.17
Hydraulic diameter	**mm**	2.15	1.34	5.17	4.12	5.29
Flow area per unit width	**mm**	8.09	3.9	7.72	4.04	8.03
Primary perimeter per unit width		1.72	1.59	1.71	1.76	1.76
Secondary perimeter per unit width		13.37	10.03	4.04	2.06	4.09
Hydraulic diameter (hardway)	**mm**					
Flow area per unit width (hardway)	**mm**					

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Exchanger - Layer Types - Layer A : 7HPa>>8HPa

Layer A

Number of layers 29 Fraction double banked 0

	Element type	Element identifier	Axial length	Distance from end A
			mm	mm
1	End bar		11.5	11.5
2	Inlet distributor (stream) number	1	100.21	111.71
3	Main fin: fin number	2165	1141.26	1252.97
4	Outlet distributor (stream) number	1	86.65	1339.62
5	End bar		11.5	1351.12
6				
7				
8				
9				
10				
11				
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25				

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Exchanger - Layer Types - Layer B : 8MPa>>7MPa

Layer B

Number of layers 6 Fraction double banked 1

	Element type	Element identifier	Axial length	Distance from end A
			mm	mm
1	End bar		11.5	11.5
2	Outlet distributor (stream) number	2	110.22	121.72
3	Main fin: fin number	2912	1126.33	1248.04
4	Inlet distributor (stream) number	2	91.58	1339.62
5	End bar		11.5	1351.12
6				
7				
8				
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Exchanger - Layer Types - Layer C : 8LPa>>7LPa

Layer C

Number of layers 52 Fraction double banked 1

	Element type	Element identifier	Axial length	Distance from end A
			mm	mm
1	End bar		11.5	11.5
2	Outlet distributor (stream) number	3	110.22	121.72
3	Main fin: fin number	2165	1126.33	1248.04
4	Inlet distributor (stream) number	3	91.58	1339.62
5	End bar		11.5	1351.12
6				
7				
8				
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Inlet Distributors

		Dist. 1	Dist. 2	Dist. 3
Stream number		1	2	3
Inlet distributor: Type		Indirect (side)	Indirect (side)	Full end
Inlet header location		Left	Left	Central
Dimension a (axial length)	**mm**	100.21	91.58	91.58
Dimension b	**mm**	392.84	392.84	688.71
Inlet nozzle diameter	**mm**	90.12	62.68	336.56
Number of inlet nozzles/unit		1	1	1
Header diameter - inlet	**mm**	130.21	121.58	815.68
Fin code number for pad 1		3	4	5
Distributor fin type		Perforated	Perforated	Perforated
Distributor fin height	**mm**	9.63	5.1	9.63
Distributor fin thickness	**mm**	0.61	0.51	0.51
Distributor fin frequency	**#/m**	236	236	236
Fin code number for pad 2		3	4	5
Distributor surface area	**m²**			
% area for heat transfer				

Outlet Distributors

		Dist. 1	Dist. 2	Dist. 3
Stream number		1	2	3
Outlet distributor: Type		Indirect (side)	Indirect (side)	Full end
Outlet header location		Right	Right	Central
Dimension a (axial length)	**mm**	86.65	110.22	110.22
Dimension b	**mm**	392.84	392.84	693.2
Outlet nozzle diameter	**mm**	77.92	62.68	336.56
Number of outlet nozzles/unit		1	1	1
Header diameter - outlet	**mm**	116.65	140.22	815.68
Fin code number for pad 1		3	4	5
Distributor fin type		Perforated	Perforated	Perforated
Distributor fin height	**mm**	9.63	5.1	9.63
Distributor fin thickness	**mm**	0.61	0.51	0.51
Distributor fin frequency	**#/m**	236	236	236
Fin code number for pad 2		3	4	5
Distributor surface area	**m²**			
% area for heat transfer				