

Overall Summary

Calculation mode		Design
Exchanger type		Standard axial flow
Overall heat transfer calculated	kW	0.6
Overall surface area ratio		1.37
Mean temperature difference	°K	0.15
UA value of calculated duty	W/K	3796.7
Core length	mm	591.61
Core width	mm	276.9
Number of layers per exchanger		48
Number of fins		2
Core depth(stack height)	mm	301.8
Number of exchangers in parallel		1

Overall Summary

Main stream number		Stream 1	Stream 2
Stream name		12MPb>>13MPt&BLPd>>12LPa	
Stream type		Hot	Cold
Flow direction		End A to B (down)	End B to A (up)
Number of layers per exchanger		16	32
Total mass flow rate	kg/s	0.4635	0.4555
Heat load	kW	-0.6	0.5
Percent of specified heat load		100	100
Area Ratio		1.3	1.45
Inlet temperature	°K	4.81	4.49
Outlet temperature	°K	4.59	4.6
Outlet temperature from input	°K	4.59	4.6
Inlet pressure	bar	3	1.283
Outlet pressure	bar	2.9949	1.28152
Pressure drop (friction)	bar	0.0051	0.00148
Percent of allowed pressure drop		50.95	98.8
Allowed pressure drop	bar	0.01	0.0015
Estimated pressure drop	bar	0.01	0.0015

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Thermal Performance - Streams

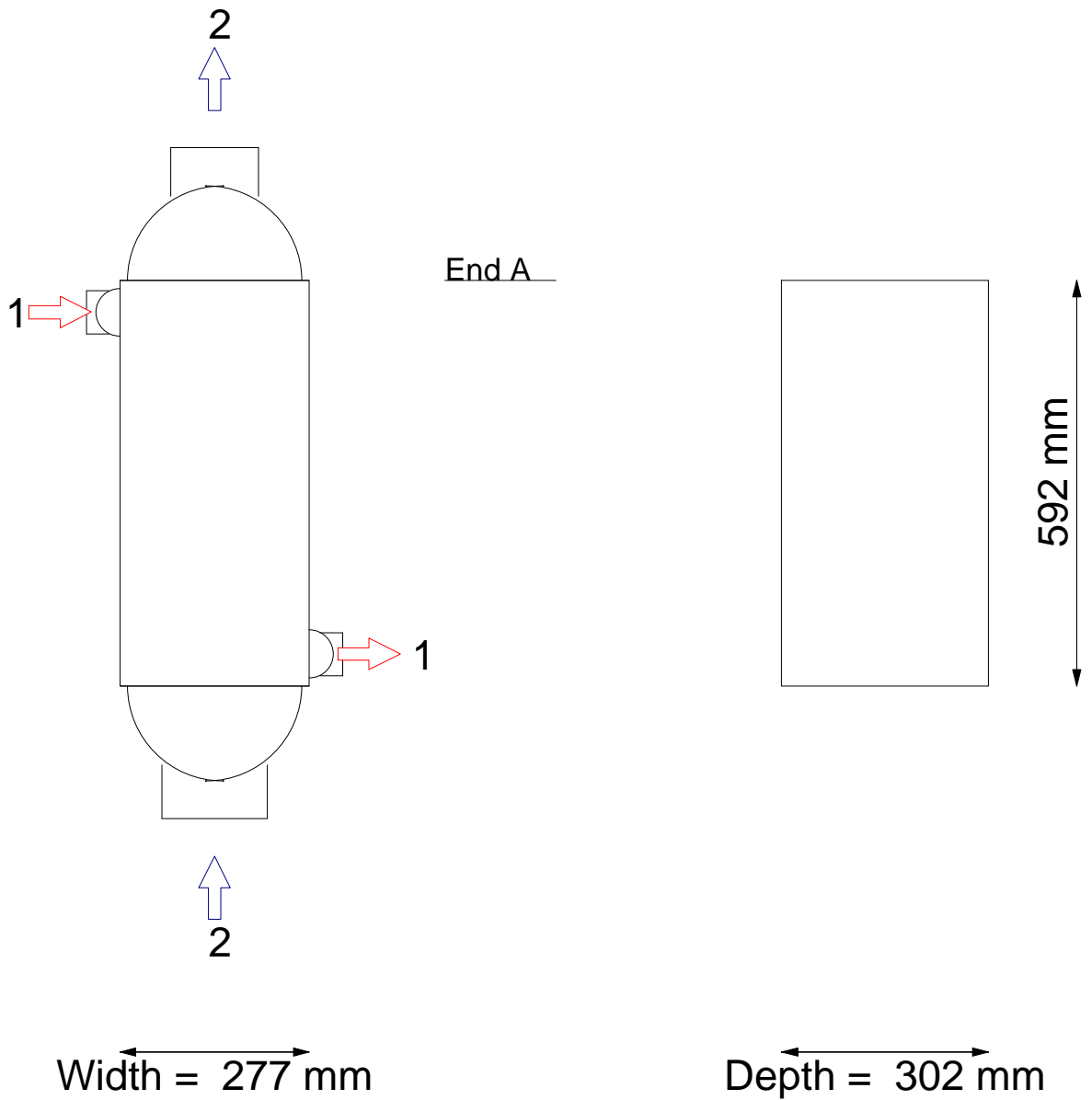
Main stream number		Stream 1	Stream 2
Stream name		12MPb>>13MPt&3LPd>>12LPa	
Flow direction		End A to B (down)	End B to A (up)
Total mass flow rate	kg/s	0.4635	0.4555
Heat load	kW	-0.6	0.5
Heat load per layer	kW	0	0
Inlet temperature	°K	4.81	4.49
Outlet temperature	°K	4.59	4.6
Bubble point	°K		
Dew point	°K		
Inlet quality(vapor mass fraction)		1	1
Outlet quality(vapor mass fraction)		1	1
Inlet specific enthalpy	J/kg	13373	30649
Outlet specific enthalpy	J/kg	12184	31735
Fouling resistance	m² K/W	0	0
Minimum [T-Twall]	°K	0.04	0.05
Mean [T-Twall]	°K	0.07	-0.09
Mean heat transfer coefficient	W/(m² K)	1106.3	697.9
Mean fin efficiency		0.43	0.26
Solution method		Design	Design
Heat load as fraction of maximum	-		
Theoretical maximum heat load	kW		

Pressure Change - Streams

	Stream 1	Stream 2
Stream name	12MPb>>13MPa	13LPd>>12LPa
Inlet nozzle	bar -0.00096	-0.00005
Inlet distributor friction	bar -0.0006	-0.00002
Inlet distributor gravity	bar 0.00042	-0.0004
Main fin friction	bar -0.00237	-0.00131
Main fin gravity	bar 0.00529	-0.0024
Redistributor(s) friction	bar	
Redistributor(s) gravity	bar	
Outlet distributor friction	bar -0.00063	-0.00003
Outlet distributor gravity	bar 0.00044	-0.00038
Outlet nozzle	bar -0.00053	-0.00007
Total friction	bar -0.0051	-0.00148
Total gravity	bar 0.00615	-0.00319
Total acceleration	bar 0	0
Pressure change (total)	bar -0.0051	-0.00148
Predicts pressure below minimum permitted		

Exchanger Diagram

Job Title:



Exchanger - Overall Geometry

Number of exchangers in parallel		1
Number of exchangers per unit		1
Number of layers per exchanger		48
Orientation		Vertical, end A at top
Core length	mm	591.61
Core width	mm	276.9
Core depth(stack height)	mm	301.8
Number of X-flow passes		0
Number of layer groups		1
Distributor length - end A	mm	81.2
Main heat transfer length	mm	429.21
Distributor length - end B	mm	81.2
Internal (effective) width	mm	253.9
Side bar width	mm	11.5
Parting sheet thickness	mm	1
Cap sheet thickness	mm	5
Exchanger metal		Aluminum
Exchanger weight - empty	kg	65.9
Exchanger weight - full of water	kg	109.4
Exchanger weight - operating	kg	69.1

Exchanger - Fin Geometry

		Fin 1	Fin 2
Fin code/bank number		2912	2
Fin used in exchanger		Yes	Yes
Fin type		Serrated (offset)	Perforated
Fin height	mm	5.1	5.1
Fin thickness	mm	0.2	0.41
Fin frequency	#/m	1024	236
Fin porosity (fraction)			0.05
Fin serration length	mm	3.18	
Subchannel aspect ratio		6.31	1.23
Blockage fraction		0.24	0.17
Hydraulic diameter	mm	1.34	4.22
Flow area per unit width	mm	3.9	4.24
Primary perimeter per unit width		1.59	1.81
Secondary perimeter per unit width		10.03	2.1
Hydraulic diameter (hardway)	mm		
Flow area per unit width (hardway)	mm		

Exchanger - Layer Types - Layer A : 12MPb>>13MPa

Layer A

Number of layers 16 Fraction double banked 0

Element type	Element identifier	Axial length mm	Distance from end A mm
1 End bar		11.5	11.5
2 Inlet distributor (stream) number	1	69.7	81.2
3 Main fin: fin number	2912	429.21	510.41
4 Outlet distributor (stream) number	1	69.7	580.11
5 End bar		11.5	591.61
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7			
8			
9			
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12			
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25			

Exchanger - Layer Types - Layer B : 13LPd>>12LPa

Layer B

Number of layers 32 Fraction double banked 1

Element type	Element identifier	Axial length mm	Distance from end A mm
1 End bar		11.5	11.5
2 Outlet distributor (stream) number	2	69.7	81.2
3 Main fin: fin number	2912	429.21	510.41
4 Inlet distributor (stream) number	2	69.7	580.11
5 End bar		11.5	591.61
6			
7			
8			
9			
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Inlet Distributors

		Dist. 1	Dist. 2
Stream number		1	2
Inlet distributor: Type		Indirect (side)	Full end
Inlet header location		Left	Central
Dimension a (axial length)	mm	69.7	69.7
Dimension b	mm	126.95	212.36
Inlet nozzle diameter	mm	62.68	154.08
Number of inlet nozzles/unit		1	1
Header diameter - inlet	mm	99.7	283.9
Fin code number for pad 1		2	2
Distributor fin type		Perforated	Perforated
Distributor fin height	mm	5.1	5.1
Distributor fin thickness	mm	0.41	0.41
Distributor fin frequency	#/m	236	236
Fin code number for pad 2		2	2
Distributor surface area	m ²		
% area for heat transfer			

Outlet Distributors

		Dist. 1	Dist. 2
Stream number		1	2
Outlet distributor: Type		Indirect (side)	Full end
Outlet header location		Right	Central
Dimension a (axial length)	mm	69.7	69.7
Dimension b	mm	126.95	213.08
Outlet nozzle diameter	mm	62.68	128.2
Number of outlet nozzles/unit		1	1
Header diameter - outlet	mm	99.7	283.9
Fin code number for pad 1		2	2
Distributor fin type		Perforated	Perforated
Distributor fin height	mm	5.1	5.1
Distributor fin thickness	mm	0.41	0.41
Distributor fin frequency	#/m	236	236
Fin code number for pad 2		2	2
Distributor surface area	m ²		
% area for heat transfer			