

Overall Summary

Calculation mode		Design
Exchanger type		Standard axial flow
Overall heat transfer calculated	kW	22.5
Overall surface area ratio		1.3
Mean temperature difference	°K	0.43
UA value of calculated duty	W/K	52163.6
Core length	mm	1901.09
Core width	mm	533.09
Number of layers per exchanger		95
Number of fins		3
Core depth(stack height)	mm	588.5
Number of exchangers in parallel		1

Overall Summary

	Stream 1	Stream 2	Stream 3
Main stream number	T4Lb>>8MPa	8HPc>>9HPa	9LPa>>8LPa
Stream name	Cold	Hot	Cold
Stream type	End B to A (up)	End A to B (down)	End B to A (up)
Flow direction	9	32	54
Number of layers per exchanger	kg/s 0.12	0.4645	0.4555
Total mass flow rate	kW 4.8	-22.4	17.7
Heat load	100	100	100
Percent of specified heat load	1.08	1.3	1.36
Area Ratio	°K 18.68	27.04	18.68
Inlet temperature	°K 26.06	18.86	26.06
Outlet temperature	°K 26.06	18.86	26.06
Outlet temperature from input	bar 5.25648	19.415	1.26752
Inlet pressure	bar 5.24398	19.40862	1.2528
Outlet pressure	bar 0.0125	0.00638	0.01472
Pressure drop (friction)	82.09	31.89	96.62
Percent of allowed pressure drop	bar 0.01523	0.02	0.01523
Allowed pressure drop	bar 0.01523	0.02	0.01523
Estimated pressure drop			

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Thermal Performance - Streams

Main stream number		Stream 1	Stream 2	Stream 3
Stream name		T4Lb>>8MPa	8HPc>>9HPa	9LPa>>8LPa
Flow direction		End B to A (up)	End A to B (down)	End B to A (up)
Total mass flow rate	kg/s	0.12	0.4645	0.4555
Heat load	kW	4.8	-22.4	17.7
Heat load per layer	kW	0.5	-0.7	0.3
Inlet temperature	°K	18.68	27.04	18.68
Outlet temperature	°K	26.06	18.86	26.06
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	109114	151982	111479
Outlet specific enthalpy	J/kg	149224	103721	150263
Fouling resistance	m² K/W	0	0	0
Minimum [T-Twall]	°K	0.09	0.09	0.09
Mean [T-Twall]	°K	-0.26	0.28	-0.26
Mean heat transfer coefficient	W/(m² K)	453.5	526	335.7
Mean fin efficiency		0.66	0.86	0.69
Solution method		Design	Design	Design
Heat load as fraction of maximum	-			
Theoretical maximum heat load	kW			

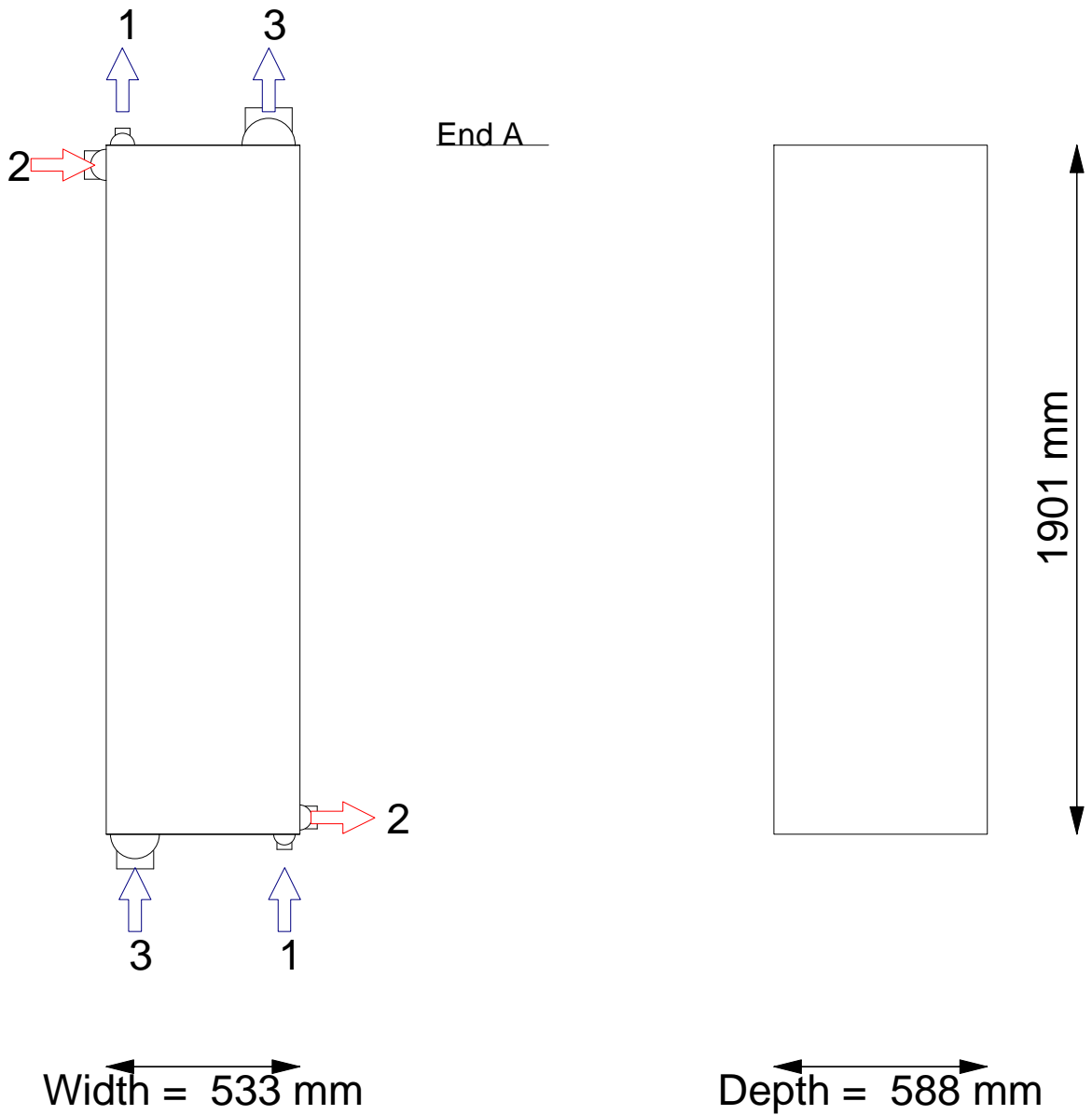
Pressure Change - Streams

	Stream 1	Stream 2	Stream 3
Stream name	T4Lb>>8MPa	8HPc>>9HPa	9LPa>>8LPa
Inlet nozzle	bar -0.00035	-0.00151	-0.00123
Inlet distributor friction	bar -0.00292	-0.00063	-0.00138
Inlet distributor gravity	bar -0.00024	0.00014	-0.00006
Main fin friction	bar -0.00569	-0.00219	-0.01002
Main fin gravity	bar -0.00178	0.0063	-0.00043
Redistributor(s) friction	bar		
Redistributor(s) gravity	bar		
Outlet distributor friction	bar -0.00291	-0.00066	-0.00168
Outlet distributor gravity	bar -0.00017	0.00017	-0.00004
Outlet nozzle	bar -0.00064	-0.00139	-0.0004
Total friction	bar -0.0125	-0.00638	-0.01472
Total gravity	bar -0.00219	0.00661	-0.00053
Total acceleration	bar -0.00001	0	-0.00001
Pressure change (total)	bar -0.0125	-0.00638	-0.01472

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		95
Orientation		Vertical, end A at top
Core length	mm	1901.09
Core width	mm	533.09
Core depth(stack height)	mm	588.5
Number of X-flow passes		0
Number of layer groups		1
Distributor length - end A	mm	190.03
Main heat transfer length	mm	1521.03
Distributor length - end B	mm	190.03
Internal (effective) width	mm	510.09
Side bar width	mm	11.5
Parting sheet thickness	mm	1
Cap sheet thickness	mm	5
Exchanger metal		Aluminum
Exchanger weight - empty	kg	645.3
Exchanger weight - full of water	kg	1002.4
Exchanger weight - operating	kg	651.8

Exchanger - Fin Geometry

		Fin 1	Fin 2	Fin 3
Fin code/bank number		2912	2	3
Fin used in exchanger		Yes	Yes	Yes
Fin type		Serrated (offset)	Perforated	Perforated
Fin height	mm	5.1	5.1	5.1
Fin thickness	mm	0.2	0.51	0.61
Fin frequency	#/m	1024	236	236
Fin porosity (fraction)			0.05	0.05
Fin serration length	mm	3.18		
Subchannel aspect ratio		6.31	1.23	1.24
Blockage fraction		0.24	0.21	0.25
Hydraulic diameter	mm	1.34	4.12	4.01
Flow area per unit width	mm	3.9	4.04	3.84
Primary perimeter per unit width		1.59	1.76	1.71
Secondary perimeter per unit width		10.03	2.06	2.01
Hydraulic diameter (hardway)	mm			
Flow area per unit width (hardway)	mm			

Exchanger - Layer Types - Layer A : T4Lb>>8MPa

Layer A

Number of layers 9

Fraction double banked 0.89

Element type	Element identifier	Axial length mm	Distance from end A mm
1 End bar		11.5	11.5
2 Outlet distributor (stream) number	1	178.53	190.03
3 Main fin: fin number	2912	1521.03	1711.06
4 Inlet distributor (stream) number	1	178.53	1889.59
5 End bar		11.5	1901.09
6			
7			
8			
9			
10			
11			
12			
13			
14			
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25			

Exchanger - Layer Types - Layer B : 8HPc>>9HPa

Layer B

Number of layers 32 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	2	86.65	98.15
3 Main fin: fin number	2912	1721.75	1819.89
4 Outlet distributor (stream) number	2	69.7	1889.59
5 End bar		11.5	1901.09
6			
7			
8			
9			
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23			
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Exchanger - Layer Types - Layer C : 9LPa>>8LPa

Layer C

Number of layers 54 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	3	178.53	190.03
3 Main fin: fin number	2912	1521.03	1711.06
4 Inlet distributor (stream) number	3	178.53	1889.59
5 End bar		11.5	1901.09
6			
7			
8			
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Inlet Distributors

		Dist. 1	Dist. 2	Dist. 3
Stream number		1	2	3
Inlet distributor: Type		End (corner)	Indirect (side)	End (corner)
Inlet header location		Right	Left	Left
Dimension a (axial length)	mm	178.53	86.65	178.53
Dimension b	mm	60.31	255.04	135.75
Inlet nozzle diameter	mm	41.14	77.92	102.26
Number of inlet nozzles/unit		3	1	2
Header diameter - inlet	mm	90.31	116.65	165.75
Fin code number for pad 1		2	3	2
Distributor fin type		Perforated	Perforated	Perforated
Distributor fin height	mm	5.1	5.1	5.1
Distributor fin thickness	mm	0.51	0.61	0.51
Distributor fin frequency	#/m	236	236	236
Fin code number for pad 2		2	3	2
Distributor surface area	m ²			
% area for heat transfer				

Outlet Distributors

		Dist. 1	Dist. 2	Dist. 3
Stream number		1	2	3
Outlet distributor: Type		End (corner)	Indirect (side)	End (corner)
Outlet header location		Left	Right	Right
Dimension a (axial length)	mm	178.53	69.7	178.53
Dimension b	mm	66.69	255.04	147.06
Outlet nozzle diameter	mm	41.14	62.68	128.2
Number of outlet nozzles/unit		2	1	2
Header diameter - outlet	mm	96.69	99.7	177.06
Fin code number for pad 1		2	3	2
Distributor fin type		Perforated	Perforated	Perforated
Distributor fin height	mm	5.1	5.1	5.1
Distributor fin thickness	mm	0.51	0.61	0.51
Distributor fin frequency	#/m	236	236	236
Fin code number for pad 2		2	3	2
Distributor surface area	m ²			
% area for heat transfer				