

**SINGLE PHASE - DESIGN**

DThermX

**HEAT EXCHANGER: 8TMx20/1****Date: 19/10/2021****SSP Alias:** 8T**DUTY REQUIREMENTS**

		Side 1		Side 2
Fluid		Water		Water
Flow type			Counter-Current	
Circuit		Inner		Outer
Heat load	kW		20.00	
Inlet temperature	°C	60.00		49.71
Outlet temperature	°C	54.70		55.00
Flow rate	kg/s	0.9013		0.9036
Pressure drop (Design PD)	kPa	59.1 (60.00)		52.8 (60.00)
Thermal length		1.062		1.060

**PLATE HEAT EXCHANGER**

		Side 1		Side 2
Total heat transfer area	m <sup>2</sup>		0.598	
Heat flux	kW/m <sup>2</sup>		33.4	
Mean temperature difference	K		4.99	
O.H.T.C. (available/required)	W/m <sup>2</sup> , °C		9250/6700	
Pressure drop - total*	kPa	59.1		52.8
- in ports	kPa	9.78		9.82
Port diameter (up/down)	mm	16.0/16.0		16.0/16.0
Number of channels per pass		13		14
Number of plates			28	
Oversurfacing	%		38	
Fouling factor	m <sup>2</sup> , °C/kW		0.040	
Reynolds number		3907		3360
Port velocity (up/down)	m/s	4.55/4.55		4.55/4.55
Channel velocity	m/s	0.482		0.448
Shear stress	kPa	0.156		0.137
Average wall temperature	°C	55.30		54.56
Largest wall temperature difference	K		0.88	
Min./Max. wall temperature	°C	52.71/58.01		51.83/57.13

\*Excluding pressure drop in connections.

**PHYSICAL PROPERTIES**

		Side 1		Side 2
Reference temperature	°C	57.35		52.35
Dynamic viscosity	cP	0.486		0.526
Dynamic viscosity - wall	cP	0.502		0.508
Density	kg/m <sup>3</sup>	984.6		987.0
Heat capacity	kJ/kg, °C	4.184		4.182
Thermal conductivity	W/m, °C	0.6517		0.6463
Film coefficient	W/m <sup>2</sup> , °C	23300		21700

**TOTALS**

		Side 1		Side 2
Total weight empty (no connections)*	kg		2.48	
Total weight filled (no connections)*	kg		3.52	
Hold-up volume (Inner Circuit)	dm <sup>3</sup>		0.51	
Hold-up volume (Outer Circuit)	dm <sup>3</sup>		0.55	
Port size F1/P1	mm		16	
Port size F2/P2	mm		16	
Port size F3/P3	mm		16	
Port size F4/P4	mm		16	
Carbon footprint	kg		17.41	