

**SINGLE PHASE - DESIGN**

DThermX

**HEAT EXCHANGER: 8TMx30/1****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		24.00	
Inlet temperature	°C	60.00		49.55
Outlet temperature	°C	53.64		55.90
Flow rate	kg/s	0.9013		0.9032
Pressure drop (Design PD)	kPa	47.2 (50.00)		43.1 (50.00)
Thermal length		1.554		1.552

**PLATE HEAT EXCHANGER**

		Side 1		Side 2
Total heat transfer area	m <sup>2</sup>		0.690	
Heat flux	kW/m <sup>2</sup>		34.8	
Mean temperature difference	K		4.09	
O.H.T.C. (available/required)	W/m <sup>2</sup> , °C		8570/8490	
Pressure drop - total*	kPa	47.2		43.1
- in ports	kPa	9.82		9.86
Port diameter (up/down)	mm	16.0/16.0		16.0/16.0
Number of channels per pass		15		16
Number of plates			32	
Oversurfacing	%		0	
Fouling factor	m <sup>2</sup> , °C/kW		0.001	
Reynolds number		3359		2956
Port velocity (up/down)	m/s	4.55/4.55		4.55/4.55
Channel velocity	m/s	0.418		0.392
Shear stress	kPa	0.119		0.105
Average wall temperature	°C	55.11		54.55
Largest wall temperature difference	K		0.66	
Min./Max. wall temperature	°C	51.97/58.33		51.31/57.67

\*Excluding pressure drop in connections.

**PHYSICAL PROPERTIES**

		Side 1		Side 2
Reference temperature	°C	56.82		52.72
Dynamic viscosity	cP	0.490		0.523
Dynamic viscosity - wall	cP	0.503		0.508
Density	kg/m <sup>3</sup>	984.8		986.8
Heat capacity	kJ/kg, °C	4.184		4.182
Thermal conductivity	W/m, °C	0.6512		0.6467
Film coefficient	W/m <sup>2</sup> , °C	21100		19900

**TOTALS**

		Side 1		Side 2
Total weight empty (no connections)*	kg		2.78	
Total weight filled (no connections)*	kg		3.97	
Hold-up volume (Inner Circuit)	dm <sup>3</sup>		0.58	
Hold-up volume (Outer Circuit)	dm <sup>3</sup>		0.62	
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		19.52	