SINGLE PHASE - DESIGN

DThermX

HEAT EXCHANGER: 8TMx30/1P

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		**9.000**	
Inlet temperature	°C	**45.00**		41.04
Outlet temperature	°C	42.63		**43.41**
Flow rate	kg/s	**0.9077**		**0.9083**
Pressure drop (Design PD)	kPa	48.2 **(100.00)**		43.8 **(100.00)**
Thermal length		1.493		1.492

PLATE HEAT EXCHANGER		Side 1		Side 2
Total heat transfer area	m²		0.690	
Heat flux	kW/m²		13.0	
Mean temperature difference	K		1.59	
O.H.T.C. (available/required)	W/m²,°C		8090/8210	
Pressure drop - total*	kPa	48.2		43.8
- in ports	kPa	9.90		9.93
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	m²,°C/kW		-0.002	
Reynolds number		2721		2480
Port velocity (up/down)	m/s	4.56/4.56		4.56/4.56
Channel velocity	m/s	0.418		0.392
Shear stress	kPa	0.121		0.107
Average wall temperature	°C	43.14		42.94
Largest wall temperature difference	K		0.25	
Min./Max. wall temperature	°C	41.97/44.34		41.73/44.10

**Excluding pressure drop in connections.*

PHYSICAL PROPERTIES		Side 1	Side 2
Reference temperature	°C	43.81	42.22
Dynamic viscosity	cP	0.609	0.627
Dynamic viscosity - wall	cP	0.617	0.619
Density	kg/m³	990.8	991.4
Heat capacity	kJ/kg,°C	4.179	4.179
Thermal conductivity	W/m,°C	0.6358	0.6337
Film coefficient	W/m²,°C	19600	18600

TOTALS		Side 1	Side 2
Total weight empty (no connections)*	kg	2.78	
Total weight filled (no connections)*	kg	3.98	
Hold-up volume (Inner Circuit)	dm³	0.58	
Hold-up volume (Outer Circuit)	dm³	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	