

VAPORIZER CALCULATION

GEA Brazed Select 2007.2

Date : 05.11.2007

Design Calculation - WP5 - 70

Input Data :

Design Duty :		Side 1	Side 2
Inlet Temperature	°C :	-9,8	-4
Outlet Temperature	°C :	-10	-5
Outlet Temperature - Gas	°C :	-5	
Mass Flow Rate -Total	kg/s :	0,0463	1,988
Inlet Vapor	kg/s :	0,009	
Fluid Vaporized	kg/s :	0,0371	
Inlet/Outlet Vapor Quality	:	0,2/1	
Max. Acceptable Pressure Drop	kPa :	50	50
Operating Pressure - Outlet	bar :	3,45	-

Physical Properties of Fluid :

Fluid Name	:	R-22	Propylene Glycol
Liquid Concentration	% :		20
Reference Temperature	°C :	-9,904	-4,509
Liquid Viscosity	mPas :	0,286	5,241
Density	kg/m ³ :	1329,07	1026,94
Heat Capacity	kJ/kg, °C :	1,153	4,024
Thermal Conductivity	W/m, °C :	0,098	0,486
Viscosity	mPas :	0,0117	
Density	kg/m ³ :	14,63	
Heat Capacity	kJ/kg, °C :	0,601	
Thermal Conductivity	W/m, °C :	0,01	
Latent Heat	kJ/kg :	212	
Evaporating Temperature	°C :	-10	

Designed Plate Heat Exchanger :

Heat Load	kW :		8
Total Heat Transfer Area	m ² :		4,01
Mean Temperature Difference	°C :		5,267
Overall H.T.C.	W/m ² , °C :		559/379
Pressure Drop - Total	kPa :	2,1	30,4
- In Connections	kPa :	0,119	3,25
Connection Diameter	mm :	32,5	32,5
Number of Channels	:	34	35
Total Number of Plates	:		70
Oversurfacing	% :		48
Fouling Factor	m ² , °C/kW :		0,852