

Tabular heat exchanger

First cooling stage of green beer:

Concept of an exchanger -- WP4 - 20	
Design Duty:	

		Side 1	Side 2
Medium		Beer	Water
Input temperature	°C	98	20
Output temperature	°C	26	60
Flow	kg/h	501,2	1047,2
Max. allowed pressure waste	kPa	20	20

Physical Properties of Fluid:

Reference Temperature	°C	:	67	41
Viscosity	cP	:	0,54	0,64
Viscosity Wall	cP	:	0,698	0,558
Density	kg/m ³	:	977,5	990,4
Specific Heat Capacity	kJ/kg,°C	:	4,077	4,176
Thermal Conductivity	W/m,°C	:	0,633	0,632

Designed Plate Heat Exchanger:

Power	kW	:	105
Total heat tranfer surface	m2	:	1,68
Log Mean Temperature Difference	°C	:	17,71
Overall H.T.C.	W/m2,°C	:	3751/3543
Calculated pressure waste	kPa	:	2 18,4
Number of canals		:	24 25
Connection Diameter	mm	:	32 32
Number of Heat Transfer Units	NTU	:	3,501 1,017
Total number of desks		:	50
Reserve of heat tranfer surface	%	:	6
Fouling Factor	m2,°C/kW	:	0,016

Second cooling stage of green beer

Concept of an exchanger – WP5 - 30

Design Duty:

			Side 1	Side 2
Medium		:	Pivo	Voda
Input temperature	°C	:	26	2
Output temperature	°C	:	7	20
Flow	kg/h	:	1501,2	2304
Max. allowed pressure waste	kPa	:	20	20

Physical Properties of Fluid:

Reference Temperature	°C	:	21,5	11
Viscosity	cP	:	1,31	1,27
Viscosity Wall	cP	:	1,538	1,137
Density	kg/m ³	:	1009,6	999,7
Specific Heat Capacity	kJ/kg,°C	:	4,001	4,202
Thermal Conductivity	W/m,°C	:	0,579	0,589

Designed Plate Heat Exchanger:

Power	kW	:	48	
Total heat tranfer surface	m ²	:	1,65	
Log Mean Temperature Difference	°C	:		9,46
Overall H.T.C.	W/m ² ,°C	:		3285/3097
Calculated pressure waste	kPa	:	7,2	14,2
Number of canals		:	14	15
Connection Diameter	mm	:	32	32
Number of Heat Transfer Units	NTU	:	3,066	1,903
Total number of desks		:		30
Reserve of heat tranfer surface	%	:		6
Fouling Factor	m ² ,°C/kW	:		0,019

Warranty: 36 months

