



Capacity	kW	145.279	----- sensible:	125.465
Surface reserve	%	2.966	latent:	17.118
Present surface	m2	391.228	frost:	2.696
Required surface	m2	379.960		
k-coeff.	W/m2K	18.668		
Average temp. diff. ( 99.93 % )	K	20.482		

Company  
Branch  
Street  
Country / ZIP / City

Air humid (ff=0.00005 m2K/W)		Inlet	Outlet	Definition
Height over sea level	m			0.000
Pressure	hPa			1013.250
Temp.	°C	-14.000	-25.000	-14.000
Rel. humidity	%	90.000	100.000	90.000
Abs. humidity	g/kg	0.993	0.383	0.993
Density humid	kg/m3	1.361	1.422	1.361
Enthalpy humid	kJ/kg	-11.627	-24.211	-11.627
Volume flow humid	m3/h	30000.000	28698.517	30000.000
Mass flow dry	kg/h	40789.121	40789.121	40789.121
Condensate flow	kg/h		24.901	
Surface temperature	°C	-16.637	-27.511	
Velocity	m/s	1.447	1.384	
Pressure drop ( Frost )	Pa		387.690	

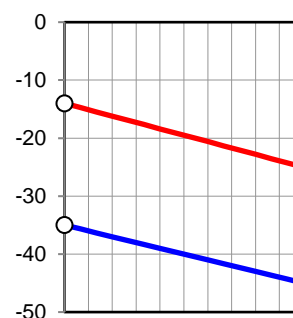
Phone: xxxxxxxxxx  
Fax: xxxxxxxxxx  
E-Mail  
Homepage

City, 9.4.2021  
With the compliments of

Representative  
Direct dialing  
xxxxxxxxxx

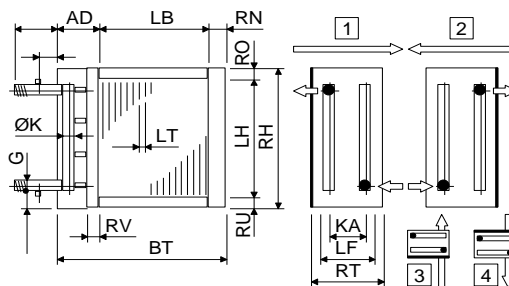
Plant  
Object  
Position

Methanol (ff=0.00005 m2K/W)		Inlet	Outlet	Average
Temp.	°C	-45.000	-35.000	-40.000
Density	kg/m3	854.345	844.851	849.600
Spec. heat	kJ/kgK	2.247	2.269	2.258
Heat cond.	W/mK	0.225	0.221	0.223
Viscosity	Pas	2.001E-03	1.586E-03	1.776E-03
Volume flow	m3/h	27.115	27.420	27.266
Velocity	m/s	0.937	0.948	0.943
Reynolds	---			6581.744
Pressure drop	kPa			25.979



### Technical data Frost thickness 1.82 mm - Deifr. cycle 12.00 h - Deifr. time 4.14 h - Availability 65.50 %

Tubes total	Piece	384	Tubes:	smooth	Cu
Tubes blank	Piece	0		in line	
Int. vent./drains	Piece	0	Collectors:	1.34 m/s	Cu
Tube rows on the depth	Piece	8	Connections:	1.34 m/s	Cu
Tube rows on the height	Piece	48	Fins:	smooth	Al
Tube coupling in series	Piece	8	Frame:	2.00 mm	AISI 304
Number of circuits (NC)	Piece	48	Circulations:	1	Default
Volume	l	193	Air flow direction:		horizontal
Weight	kg	694			
Connections	G	---			
Frame height	RH	mm			
Frame width	BT	mm			
Frame depth	RT	mm			
Finned height	LH	mm			
Finned width	LB	mm			
Finned depth	LF	mm			
Frame on top	RO	mm			
Frame on bottom	RU	mm			
Frame in front	RV	mm			
Frame on back (~65mm)	RN	mm			
Collector-Diameter	K	mm			
Collector covering	AD	mm			
Collector distance	KA	mm			
Fin spacing	LT	mm			
Fin thickness	LD	mm			
Tube diameter	DA	mm			
Tube thickness	S	mm			
Tube interval on the height	S1	mm			
Tube interval on the depth	S2	mm			



Delivery: 5-6 weeks  
Validity: 12 weeks  
Condit.: net, prepaid address  
Payment: 30 days net  
Price net: EUR 5898.00

Efficiency: Tubes-Fins	---	0.980
Heat transfer: Tubes-Fins	---	0.996
Bypass: Air-Tubes-Fins	---	0.940
<b>Efficiency: Heat exchanger total</b>	<b>---</b>	<b>0.918</b>
<b>Radiated power</b>	<b>kW</b>	<b>7.815</b>
Inside surface	m2	30.382

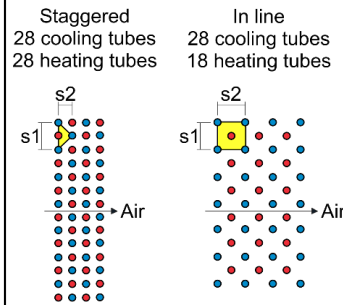
**Dowtherm J**

Fouling inside	m2K/W	5.000E-05
Temp. in	°C	125.000
Temp. out	°C	121.696
Density	kg/m3	781.711
Spec. heat	kJ/kgK	2.178
Heat cond.	W/mK	0.107
Viscosity	Pas	3.380E-04
Volume flow	m3/h	5.000
Mass flow	kg/h	3908.556
Velocity	m/s	0.461
Pressure drop	kPa	12.791

**Volume flow**  
from the air humid  
= 0.000 m3/h !!!

**Radiated power**

Example for 4 rows in air direction  
and 7 rows on the height



**Efficiency: Heat exchanger total**  $\eta = 0.918$  (---)  
**Emissivity**  $\varepsilon = 0.200$  (---)

**Stefan Boltzmann constant**  $\sigma = 5.67 \cdot 10^{-8} \text{ (W/m}^2\text{K}^4\text{)}$

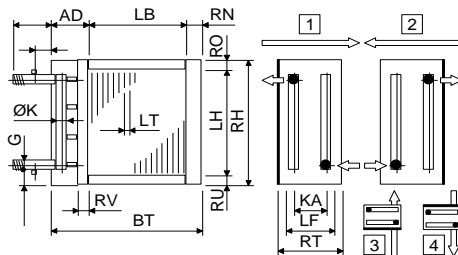
**Inside surface**  $A = 30.382 \text{ (m}^2\text{)}$

**Medium radiated temperature**  $t \sim (t_{in} + t_{out})/2 \text{ (K)}$

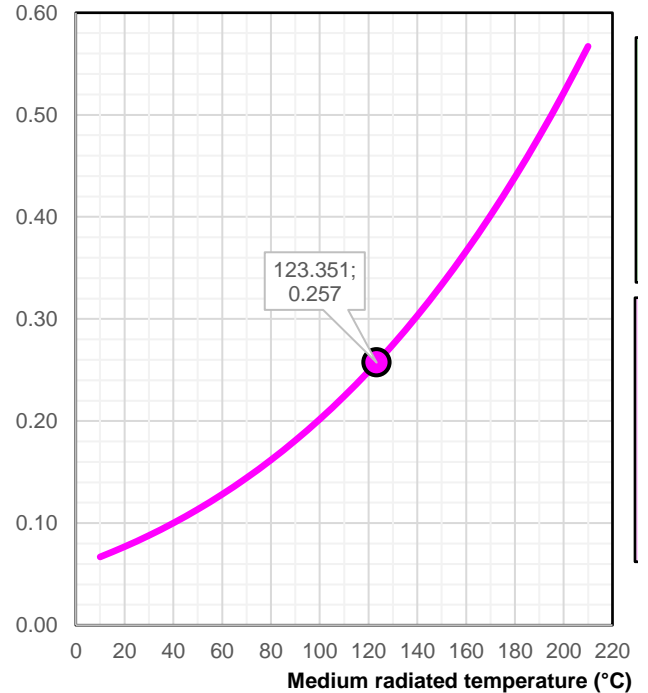
**Absolute temperature**  $T = t + 273.16 \text{ (K)}$

**Radiated power**  $\dot{Q} = \eta \varepsilon \sigma A T^4 \text{ (W)}$

**Medium radiated temperature**  $t = \sqrt[4]{\frac{\dot{Q}}{\eta \varepsilon \sigma A}} - 273.16 \text{ (}^\circ\text{C)}$



**Radiated power (kW/m2)**

**Technical data**

**Frost thickness 1.82 mm - Defr. cycle 12.00 h - Defr. time 4.14 h - Availability 65.50 %**

Tubes total	Piece	329	Tubes:	smooth	Cu
Tubes blank	Piece	5		in line	
Tube rows on the depth	Piece	7	Collectors:	1.16 m/s	Cu
Tube rows on the height	Piece	47	Connections:	1.16 m/s	Cu
Tube coupling in series	Piece	18	Fins:	smooth	Al
Number of circuits (NC)	Piece	18	Frame:	2.00 mm	AISI 304
Volume	l	146	Circulations:	1	Default
Weight	kg	150	Air flow direction:		horizontal
Collector-Diameter	K	mm			
Connections	G	---			
Finned width	LB	mm			
Fin spacing	LT	mm			
Fin thickness	LD	mm			
Tube diameter	DA	mm			
Tube thickness	S	mm			
Tube interval on the height	S1	mm			
Tube interval on the depth	S2	mm			

Delivery: 5-6 weeks  
Validity: 12 weeks  
Condit.: net, prepaid address  
Payment: 30 days net  
**Price net: EUR 3320.00**



Company  
Branch  
Street  
Country / ZIP / City

Phone: xxxxxxxxxx  
Fax: xxxxxxxxxx  
E-Mail  
Homepage

City, 9.4.2021  
With the compliments of

Representative  
Direct dialing  
xxxxxxxxxx

Plant  
Object  
Position