



Capacity	kW	174.446	----- sensible:	114.515
Surface reserve	%	2.564	latent:	52.656
Present surface	m2	911.189	frost:	7.276
Required surface	m2	888.412	0.5 % Oil ISO VG32	
k-coeff.	W/m2K	25.074		
Average temp. diff.	K	7.831		

Company
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City, 9.4.2021

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Plant

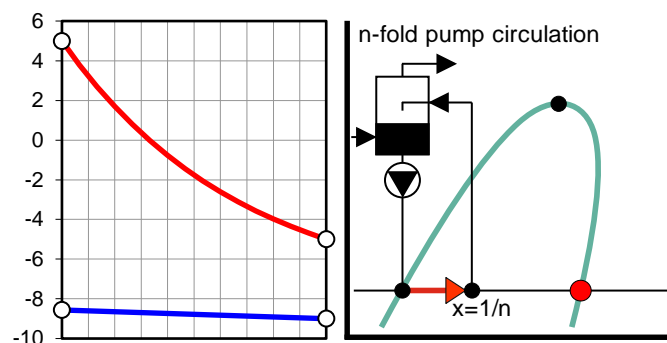
Object

Position

Air humid (ff=0.00005 m2K/W)		Inlet	Outlet	Definition
Height over sea level	m			0.000
Pressure	hPa			1013.250
Temp.	°C	5.000	-5.000	-14.000
Rel. humidity	%	80.000	100.000	90.000
Abs. humidity	g/kg	4.320	2.468	0.993
Density humid	kg/m3	1.265	1.314	1.361
Enthalpy humid	kJ/kg	15.873	1.119	-11.627
Volume flow humid	m3/h	32371.291	31115.293	30000.000
Mass flow dry	kg/h	40789.121	40789.121	40789.121
Condensate flow	kg/h		75.532	
Surface temperature	°C	-0.548	-6.636	
Velocity	m/s	1.773	1.704	
Pressure drop (Frost)	Pa		138.652	

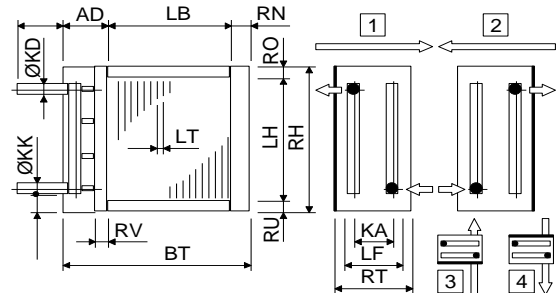
R410A Evaporation 5.927 bar (ff=0.00005 m2K/W)

Inlet	°C	-8.561
Outlet	°C	-9.000
Pump circulation factor	n	3.000
Mass flow	kg/h	8162.491
Volume flow in	m3/h	6.781
Volume flow out	m3/h	124.417
Velocity in	m/s	0.234
Velocity out	m/s	4.301
Pressure drop Evaporation	K	0.439



Technical data Frost thickness 0.26 mm - Defr. cycle 1.00 h - Defr. time 0.92 h - Availability 7.73 %

Tubes total	Piece	384	Tubes:	smooth	Cu
Tubes blank	Piece	0		in line	
Tube rows on the depth	Piece	8	Collectors:		Cu
Tube rows on the height	Piece	48	Connections:		Cu
Tube coupling in series	Piece	8	Fins:	smooth	Al
Number of circuits (NC)	Piece	48	Frame:	2.0 mm	AISI 304
Volume	l	185	Circulations:	1	Default
Weight	kg	628	Air flow direction:		horizontal
Cond. connection	KK	mm			
Steam connection	KD	mm			
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 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 7436.00

Efficiency: Tubes-Fins	---	0.980
Heat transfer: Tubes-Fins	---	0.957
Bypass: Air-Tubes-Fins	---	0.987
Efficiency: Heat exchanger total	---	0.926
Radiated power	kW	7.885
Inside surface	m2	30.382

Dowtherm J

Fouling inside	m2K/W	5.000E-05
Temp. in	°C	125.000
Temp. out	°C	121.666
Density	kg/m3	781.724
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	3908.620
Velocity	m/s	0.461
Pressure drop	kPa	12.791

Efficiency: Heat exchanger total	$\eta =$	0.926	(---
Emissivity	$\varepsilon =$	0.200	(---

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

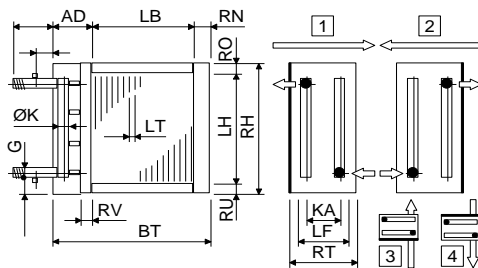
Inside surface $A = 30.382 \text{ (m}^2\text{)}$

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

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

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

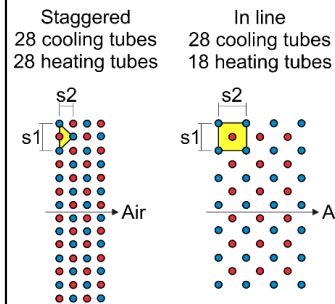
Medium radiated temperature $t = \sqrt[4]{\frac{\dot{Q}}{\eta \varepsilon \sigma A}} - 273.16 \text{ (}^\circ\text{C)}$



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



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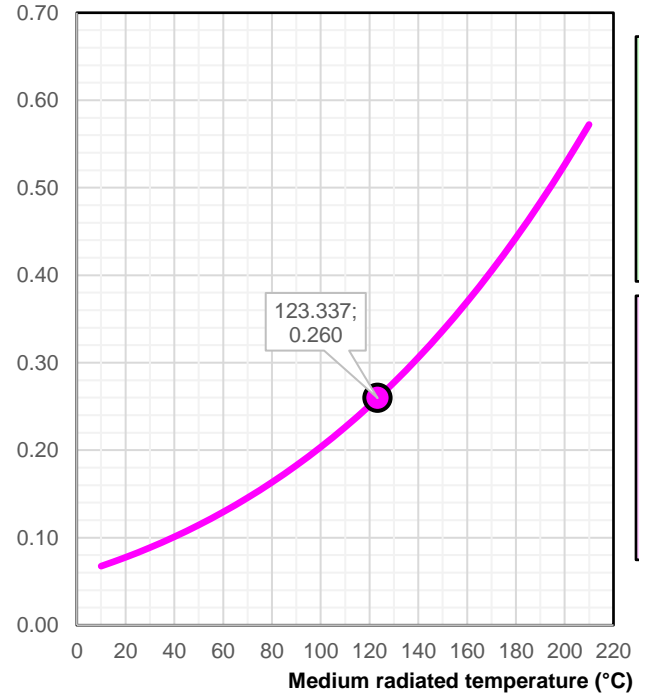
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Plant
Object
Position

Radiated power (kW/m2)

**Technical data**

Frost thickness 0.26 mm - Defr. cycle 1.00 h - Defr. time 0.92 h - Availability 7.73 %

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