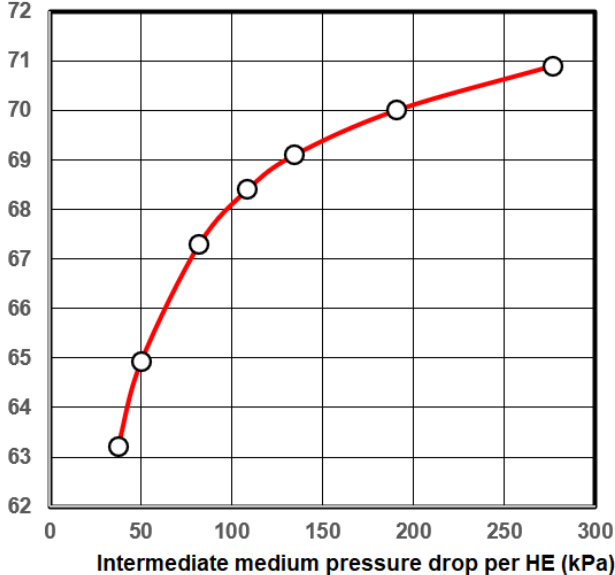




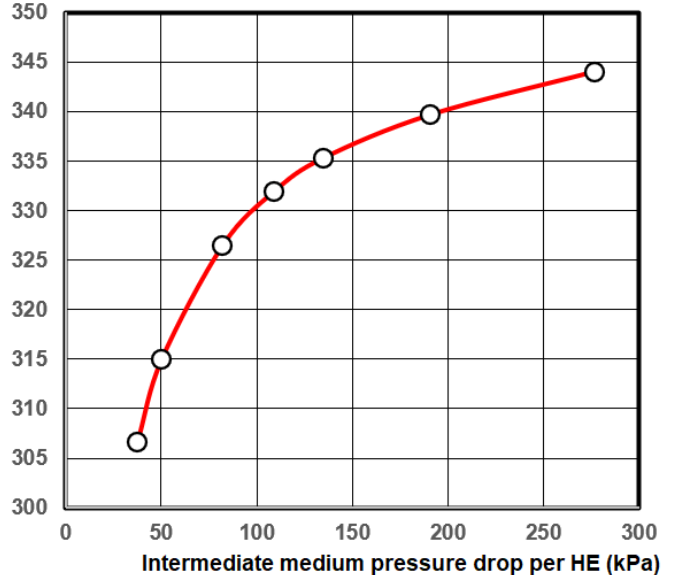
Pressure drops in Heat recovery systems

Temp. Efficiency	%	70.90	70.00	69.10	68.40	67.29	64.92	63.20
Capacity	kW	344.03	339.66	335.29	331.89	326.51	315.00	306.66
Term per year	Hours	8760.00	8760.00	8760.00	8760.00	8760.00	8760.00	8760.00
Electricity price	EUR/MWh	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Luftmenge pro WT	m3/h	50000.00	50000.00	50000.00	50000.00	50000.00	50000.00	50000.00
Pressure drop per HE	Pa	106.52	106.31	106.11	105.95	105.70	105.24	104.85
Efficiency	---	0.70	0.70	0.70	0.70	0.70	0.70	0.70
2 Fans	kW	4.23	4.22	4.21	4.20	4.19	4.18	4.16
2 Fans	MWh	37.03	36.96	36.88	36.83	36.74	36.58	36.45
2 Fans	EUR	3702.66	3695.68	3688.43	3682.87	3674.47	3658.20	3644.66
Intermediate medium	m3/h	17.59	17.33	17.17	16.97	16.57	16.10	15.70
Pressure drop per HE	kPa	276.71	190.58	134.64	108.73	82.05	50.11	37.42
Efficiency	---	0.80	0.80	0.80	0.80	0.80	0.80	0.80
1 Pump	kW	3.38	2.29	1.61	1.28	0.94	0.56	0.41
1 Pump	MWh	29.61	20.09	14.06	11.22	8.27	4.91	3.57
1 Pump	EUR	2961.44	2008.91	1406.41	1122.09	826.95	490.68	357.28

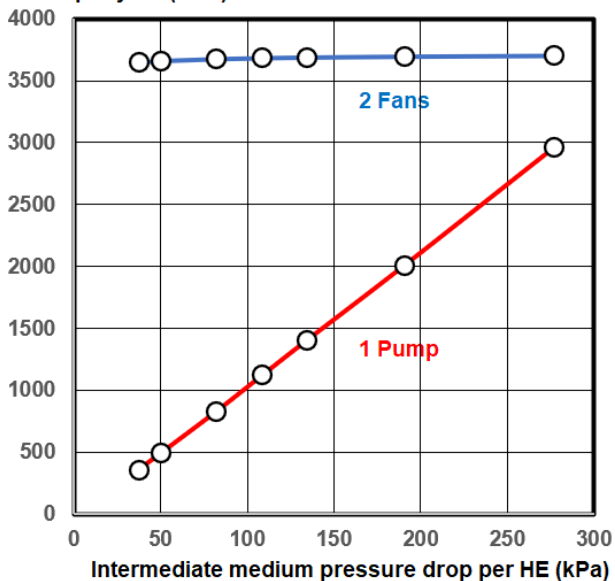
Temp. efficiency (%)



Capacity (kW)



Costs per year (EUR)



Bern 540 meter over sea level (950 hPa)

Outside air 50'000m3/h, -11°C/90%
12 tube rows 40x35x15mm
Fin spacing 2,5 mm, dickness 0,2 mm
2 m/s flow velocity on fins

Return air 50'000m3/h, 20°C/40%
12 tube rows 40x35x15mm
Fin spacing 2,5 mm, dickness 0,2 mm
2 m/s flow velocity on fins

We recommend intermediate medium pressure drops of 200 kPa per heat exchanger, which has a positive effect on the temperature efficiency and capacity. With moderately corrugated fins from Walter Roller, very small air-side pressure drops result. Nevertheless, the additional energy costs due to the heat recovery system for the two fans are significantly higher than for the pump. From this, it can be concluded, that the much smaller intermediate medium pressure drops often required make no sense. In fact, the air-side heat exchanger pressure drops are a problem if fins with too strong a profile are used.

CC-System in winter		SA-He	RA-Co	Definition
Height over sea level	m			540.000
Pressure	hPa			949.653
Efficiency	%	70.900	57.564	
Capacity sensible	kW	344.027	281.042	
Capacity latent	kW	---	61.138	
Capacity frost	kW	---	1.846	
Capacity total	kW	344.027	344.026	
Surface reserve	%	0.039	0.260	
Present surface	m2	2152.705	2152.705	



Company
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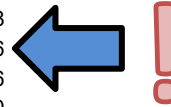
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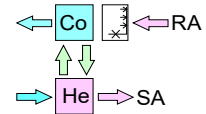
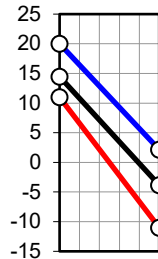
Plant
Object
Position

SA-He		Inlet	Outlet	Definition
Temp.	°C	-11.000	10.979	20.000
Rel. humidity	%	90.000	16.203	40.000
Abs. humidity	g/kg	1.394	1.394	6.175
Volume flow humid	m3/h	44372.591	48092.705	50000.000
Velocity	m/s	1.751	1.898	1.973
Pressure drop	Pa		96.650	

RA-Co		Inlet	Outlet	Definition
Temp.	°C	20.000	2.155	20.000
Rel. humidity	%	40.000	97.937	40.000
Abs. humidity	g/kg	6.175	4.622	6.175
Volume flow humid	m3/h	50000.000	46840.431	50000.000
Velocity	m/s	1.973	1.848	1.973
Pressure drop wet	Pa		116.380	

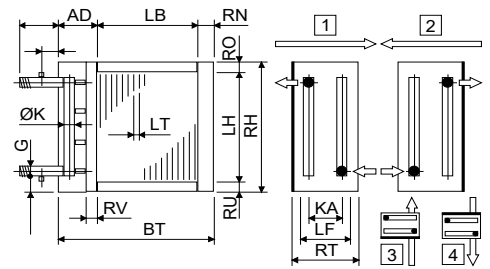


25 V% Et.glycol		SA-He	RA-Co
Temp.	in °C	14.456	-3.830
Temp.	out °C	-3.830	14.456
Volume flow	m3/h	17.593	17.599
Velocity	m/s	1.390	1.390
Reynolds	---	7256.116	7090.411
Pressure drop	kPa	276.231	277.815



Software by www.zcs.ch

Technical data		SA-He	RA-Co	SA-He	RA-Co
Tubes total	Piece	768	768	Tubes:	Cu Cu
Tubes blank	Piece	12	12	Tubes:	smooth smooth
Int. vent./drains	Piece	5	5	Tubes:	staggered staggered
Tube rows on the depth	Piece	12	12	Tubes:	circular circular
Tube rows on the height	Piece	64	64	Collectors:	Cu Cu
Tube coupling in series	Piece	36	36	Collectors:	1.20 m/s 1.20 m/s
Number of circuits (NC)	Piece	21	21	Connections:	Rg7 Rg7
Volume	l	393	393	Connections:	1.20 m/s 1.20 m/s
Weight	kg	1060	1060	Fins:	Al Al
Connections	G	---	2 1/2"	Fins:	ribbed ribbed
Frame height	RH mm	2640	2640	Frame:	AISI 304 AISI 304
Frame width	BT mm	3000	3000	Air flow direction:	horizontal horizontal
Frame depth	RT mm	530	530	Protection:	without without
Finned height	LH mm	2560	2560	Protection:	---
Finned width	LB mm	2750	2750		
Finned depth	LF mm	420	420		
Frame on top	RO mm	40	40		
Frame on bottom	RU mm	40	40		
Frame in front	RV mm	30	30		
Frame on back (~65/65mm)	RN mm	65	65		
Collector-Diameter	K mm	76	76		
Collector covering	AD mm	185	185		
Collector distance	KA mm	427	427		
Fin spacing	LT mm	2.500	2.500		
Fin thickness	LD mm	0.200	0.200		
Tube diameter	DA mm	15.400	15.400		
Tube diameter	da mm	15.400	15.400		
Tube thickness	S mm	0.400	0.400		
Tube interval on the height	S1 mm	40.000	40.000		
Tube interval on the depth	S2 mm	35.000	35.000		



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

SA-He: 40/35/15-12R-64T-2750A-2.5PA-21C-Cu/Al/AISI 304 SA-He: EUR 16839.00
RA-Co: 40/35/15-12R-64T-2750A-2.5PA-21C-Cu/Al/AISI 304 RA-Co: EUR 16839.00

CC-System in winter		SA-He	RA-Co	Definition
Height over sea level	m			540.000
Pressure	hPa			949.653
Efficiency	%	70.000	57.066	
Capacity sensible	kW	339.659	278.636	
Capacity latent	kW	---	59.164	
Capacity frost	kW	---	1.858	
Capacity total	kW	339.659	339.658	
Surface reserve	%	0.140	0.162	
Present surface	m2	2152.705	2152.705	



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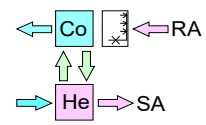
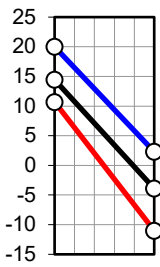
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Plant
Object
Position

SA-He		Inlet	Outlet	Definition
Temp.	°C	-11.000	10.700	20.000
Rel. humidity	%	90.000	16.506	40.000
Abs. humidity	g/kg	1.394	1.394	6.175
Volume flow humid	m3/h	44372.591	48045.483	50000.000
Velocity	m/s	1.751	1.896	1.973
Pressure drop	Pa		96.582	

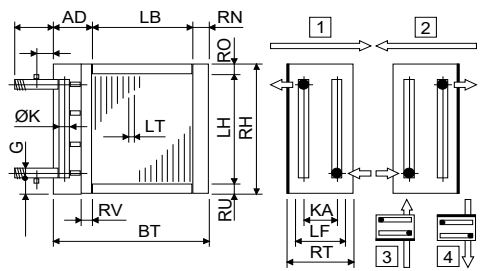
RA-Co		Inlet	Outlet	Definition
Temp.	°C	20.000	2.310	20.000
Rel. humidity	%	40.000	97.912	40.000
Abs. humidity	g/kg	6.175	4.673	6.175
Volume flow humid	m3/h	50000.000	46870.454	50000.000
Velocity	m/s	1.973	1.849	1.973
Pressure drop wet	Pa		116.046	

25 V% Et.glycol		SA-He	RA-Co
Temp.	in °C	14.430	-3.900
Temp.	out °C	-3.900	14.430
Volume flow	m3/h	17.328	17.333
Velocity	m/s	1.198	1.198
Reynolds	---	6253.268	6112.471
Pressure drop	kPa	190.041	191.113



Software by www.zcs.ch

Technical data		SA-He	RA-Co	SA-He	RA-Co
Tubes total	Piece	768	768	Tubes: Cu	Cu
Tubes blank	Piece	0	0	Tubes: smooth	smooth
Int. vent./drains	Piece	5	5	Tubes: staggered	staggered
Tube rows on the depth	Piece	12	12	Tubes: circular	circular
Tube rows on the height	Piece	64	64	Collectors: Cu	Cu
Tube coupling in series	Piece	32	32	Collectors: 1.18 m/s	1.18 m/s
Number of circuits (NC)	Piece	24	24	Connections: Rg7	Rg7
Volume	l	393	393	Connections: 1.18 m/s	1.18 m/s
Weight	kg	1060	1060	Finns: Al	Al
Connections	G	---	2 1/2"	Finns: ribbed	ribbed
Frame height	RH	mm	2640	Frame: AISI 304	AISI 304
Frame width	BT	mm	3000	Air flow direction: horizontal	horizontal
Frame depth	RT	mm	530	Protection: without	without
Finned height	LH	mm	2560	Protection: ---	---
Finned width	LB	mm	2750		
Finned depth	LF	mm	420		
Frame on top	RO	mm	40		
Frame on bottom	RU	mm	40		
Frame in front	RV	mm	30		
Frame on back (~65/65mm)	RN	mm	65		
Collector-Diameter	K	mm	76		
Collector covering	AD	mm	185		
Collector distance	KA	mm	427		
Fin spacing	LT	mm	2.500		
Fin thickness	LD	mm	0.200		
Tube diameter	DA	mm	15.400		
Tube diameter	da	mm	15.400		
Tube thickness	S	mm	0.400		
Tube interval on the height	S1	mm	40.000		
Tube interval on the depth	S2	mm	35.000		



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

SA-He: 40/35/15-12R-64T-2750A-2.5PA-24C-Cu/Al/AISI 304 SA-He: EUR 16854.00
RA-Co: 40/35/15-12R-64T-2750A-2.5PA-24C-Cu/Al/AISI 304 RA-Co: EUR 16854.00

CC-System in winter		SA-He	RA-Co	Definition
Height over sea level	m			540.000
Pressure	hPa			949.653
Efficiency	%	69.100	56.580	
Capacity sensible	kW	335.290	276.290	
Capacity latent	kW	---	57.149	
Capacity frost	kW	---	1.852	
Capacity total	kW	335.290	335.291	
Surface reserve	%	0.032	0.026	
Present surface	m2	2152.705	2152.705	



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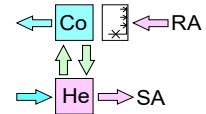
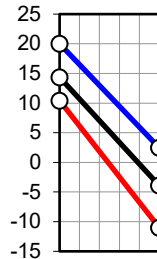
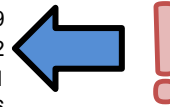
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Plant
Object
Position

SA-He		Inlet	Outlet	Definition
Temp.	°C	-11.000	10.421	20.000
Rel. humidity	%	90.000	16.814	40.000
Abs. humidity	g/kg	1.394	1.394	6.175
Volume flow humid	m3/h	44372.591	47998.260	50000.000
Velocity	m/s	1.751	1.894	1.973
Pressure drop	Pa		96.513	

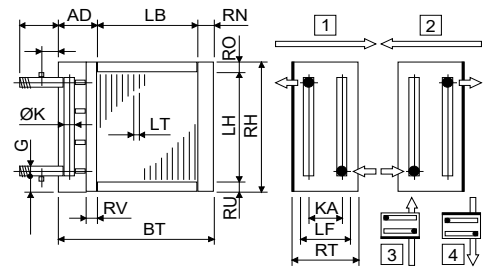
RA-Co		Inlet	Outlet	Definition
Temp.	°C	20.000	2.460	20.000
Rel. humidity	%	40.000	97.924	40.000
Abs. humidity	g/kg	6.175	4.724	6.175
Volume flow humid	m3/h	50000.000	46899.914	50000.000
Velocity	m/s	1.973	1.851	1.973
Pressure drop wet	Pa		115.698	

25 V% Et.glycol		SA-He	RA-Co
Temp.	in °C	14.350	-3.910
Temp.	out °C	-3.910	14.350
Volume flow	m3/h	17.171	17.176
Velocity	m/s	1.055	1.056
Reynolds	---	5505.047	5381.320
Pressure drop	kPa	134.264	135.017



Software by www.zcs.ch

Technical data		SA-He	RA-Co	SA-He	RA-Co
Tubes total	Piece	768	768	Tubes:	Cu
Tubes blank	Piece	12	12	Tubes:	smooth
Int. vent./drains	Piece	5	5	Tubes:	staggered
Tube rows on the depth	Piece	12	12	Tubes:	circular
Tube rows on the height	Piece	64	64	Collectors:	Cu
Tube coupling in series	Piece	28	28	Collectors:	1.17 m/s
Number of circuits (NC)	Piece	27	27	Connections:	Rg7
Volume	l	24	393	Connections:	1.17 m/s
Weight	kg	1060	1060	Fins:	Al
Connections	G	---	2 1/2"	Fins:	ribbed
Frame height	RH	mm	2640	Frame:	AISI 304
Frame width	BT	mm	3000	Air flow direction:	horizontal
Frame depth	RT	mm	530	Protection:	without
Finned height	LH	mm	2560	Protection:	---
Finned width	LB	mm	2750		
Finned depth	LF	mm	420		
Frame on top	RO	mm	40		
Frame on bottom	RU	mm	40		
Frame in front	RV	mm	30		
Frame on back (~65/65mm)	RN	mm	65		
Collector-Diameter	K	mm	76		
Collector covering	AD	mm	185		
Collector distance	KA	mm	427		
Fin spacing	LT	mm	2.500		
Fin thickness	LD	mm	0.200		
Tube diameter	DA	mm	15.400		
Tube diameter	da	mm	15.400		
Tube thickness	S	mm	0.400		
Tube interval on the height	S1	mm	40.000		
Tube interval on the depth	S2	mm	35.000		



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

SA-He: 40/35/15-12R-64T-2750A-2.5PA-27C-Cu/Al/AISI 304 SA-He: EUR 16869.00
RA-Co: 40/35/15-12R-64T-2750A-2.5PA-27C-Cu/Al/AISI 304 RA-Co: EUR 16869.00

CC-System in winter		SA-He	RA-Co	Definition
Height over sea level	m			540.000
Pressure	hPa			949.653
Efficiency	%	68.400	56.196	
Capacity sensible	kW	331.893	274.433	
Capacity latent	kW	---	55.601	
Capacity frost	kW	---	1.859	
Capacity total	kW	331.893	331.893	
Surface reserve	%	0.057	0.244	
Present surface	m2	2152.705	2152.705	



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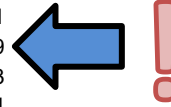
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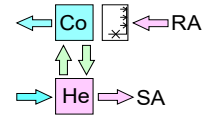
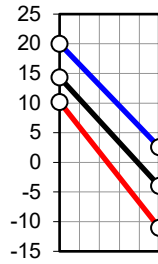
Plant
Object
Position

SA-He		Inlet	Outlet	Definition
Temp.	°C	-11.000	10.204	20.000
Rel. humidity	%	90.000	17.059	40.000
Abs. humidity	g/kg	1.394	1.394	6.175
Volume flow humid	m3/h	44372.591	47961.531	50000.000
Velocity	m/s	1.751	1.892	1.973
Pressure drop	Pa		96.460	

RA-Co		Inlet	Outlet	Definition
Temp.	°C	20.000	2.579	20.000
Rel. humidity	%	40.000	97.902	40.000
Abs. humidity	g/kg	6.175	4.763	6.175
Volume flow humid	m3/h	50000.000	46923.131	50000.000
Velocity	m/s	1.973	1.851	1.973
Pressure drop wet	Pa		115.431	

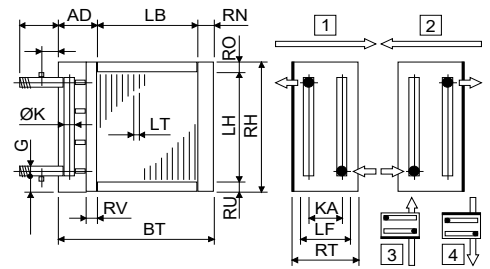


25 V% Et.glycol		SA-He	RA-Co
Temp.	in °C	14.325	-3.970
Temp.	out °C	-3.970	14.325
Volume flow	m3/h	16.965	16.970
Velocity	m/s	0.971	0.971
Reynolds	---	5061.579	4949.889
Pressure drop	kPa	108.428	109.023



Software by www.zcs.ch

Technical data		SA-He	RA-Co	SA-He	RA-Co
Tubes total	Piece	768	768	Tubes:	Cu
Tubes blank	Piece	14	14	Tubes:	smooth
Int. vent./drains	Piece	5	5	Tubes:	staggered
Tube rows on the depth	Piece	12	12	Tubes:	circular
Tube rows on the height	Piece	64	64	Collectors:	Cu
Tube coupling in series	Piece	26	26	Collectors:	1.15 m/s
Number of circuits (NC)	Piece	29	29	Connections:	Rg7
Volume	l	24	393	Connections:	1.15 m/s
Weight	kg	1060	1060	Fins:	Al
Connections	G	---	2 1/2"	Fins:	ribbed
Frame height	RH	mm	2640	Frame:	AISI 304
Frame width	BT	mm	3000	Air flow direction:	horizontal
Frame depth	RT	mm	530	Protection:	without
Finned height	LH	mm	2560	Protection:	---
Finned width	LB	mm	2750		
Finned depth	LF	mm	420		
Frame on top	RO	mm	40		
Frame on bottom	RU	mm	40		
Frame in front	RV	mm	30		
Frame on back (~65/65mm)	RN	mm	65		
Collector-Diameter	K	mm	76		
Collector covering	AD	mm	185		
Collector distance	KA	mm	427		
Fin spacing	LT	mm	2.500		
Fin thickness	LD	mm	0.200		
Tube diameter	DA	mm	15.400		
Tube diameter	da	mm	15.400		
Tube thickness	S	mm	0.400		
Tube interval on the height	S1	mm	40.000		
Tube interval on the depth	S2	mm	35.000		



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

SA-He: 40/35/15-12R-64T-2750A-2.5PA-29C-Cu/Al/AISI 304 SA-He: EUR 16879.00
RA-Co: 40/35/15-12R-64T-2750A-2.5PA-29C-Cu/Al/AISI 304 RA-Co: EUR 16879.00

CC-System in winter		SA-He	RA-Co	Definition
Height over sea level	m			540.000
Pressure	hPa			949.653
Efficiency	%	67.290	55.564	
Capacity sensible	kW	326.506	271.381	
Capacity latent	kW	---	53.259	
Capacity frost	kW	---	1.866	
Capacity total	kW	326.506	326.505	
Surface reserve	%	0.025	0.049	
Present surface	m2	2152.705	2152.705	



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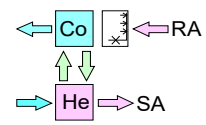
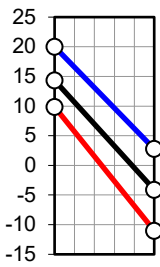
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Plant
Object
Position

SA-He		Inlet	Outlet	Definition
Temp.	°C	-11.000	9.860	20.000
Rel. humidity	%	90.000	17.456	40.000
Abs. humidity	g/kg	1.394	1.394	6.175
Volume flow humid	m3/h	44372.591	47903.289	50000.000
Velocity	m/s	1.751	1.890	1.973
Pressure drop	Pa		96.375	

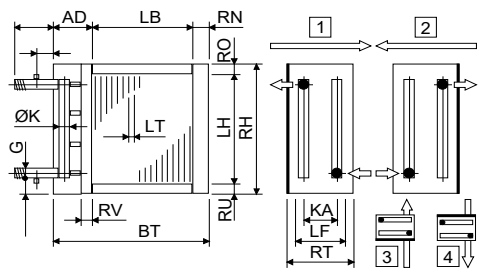
RA-Co		Inlet	Outlet	Definition
Temp.	°C	20.000	2.775	20.000
Rel. humidity	%	40.000	97.752	40.000
Abs. humidity	g/kg	6.175	4.823	6.175
Volume flow humid	m3/h	50000.000	46960.881	50000.000
Velocity	m/s	1.973	1.853	1.973
Pressure drop wet	Pa		115.033	

25 V% Et.glycol		SA-He	RA-Co
Temp.	in °C	14.330	-4.100
Temp.	out °C	-4.100	14.330
Volume flow	m3/h	16.567	16.572
Velocity	m/s	0.859	0.859
Reynolds	---	4477.273	4385.246
Pressure drop	kPa	81.817	82.288



Software by www.zcs.ch

Technical data		SA-He	RA-Co	SA-He	RA-Co
Tubes total	Piece	768	768	Tubes: Cu	Cu
Tubes blank	Piece	0	0	Tubes: smooth	smooth
Int. vent./drains	Piece	5	5	Tubes: staggered	staggered
Tube rows on the depth	Piece	12	12	Tubes: circular	circular
Tube rows on the height	Piece	64	64	Collectors: Cu	Cu
Tube coupling in series	Piece	24	24	Collectors: 1.13 m/s	1.13 m/s
Number of circuits (NC)	Piece	32	32	Connections: Rg7	Rg7
Volume	l	24	393	Connections: 1.13 m/s	1.13 m/s
Weight	kg	1060	1060	Fins: Al	Al
Connections	G	---	2 1/2"	Fins: ribbed	ribbed
Frame height	RH	mm	2640	Frame: AISI 304	AISI 304
Frame width	BT	mm	3000	Air flow direction: horizontal	horizontal
Frame depth	RT	mm	530	Protection: without	without
Finned height	LH	mm	2560	Protection: ---	---
Finned width	LB	mm	2750		
Finned depth	LF	mm	420		
Frame on top	RO	mm	40		
Frame on bottom	RU	mm	40		
Frame in front	RV	mm	30		
Frame on back (~65/65mm)	RN	mm	65		
Collector-Diameter	K	mm	76		
Collector covering	AD	mm	185		
Collector distance	KA	mm	427		
Fin spacing	LT	mm	2.500		
Fin thickness	LD	mm	0.200		
Tube diameter	DA	mm	15.400		
Tube diameter	da	mm	15.400		
Tube thickness	S	mm	0.400		
Tube interval on the height	S1	mm	40.000		
Tube interval on the depth	S2	mm	35.000		



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

SA-He: 40/35/15-12R-64T-2750A-2.5PA-32C-Cu/Al/AISI 304 SA-He: EUR 16894.00
RA-Co: 40/35/15-12R-64T-2750A-2.5PA-32C-Cu/Al/AISI 304 RA-Co: EUR 16894.00

CC-System in winter		SA-He	RA-Co	Definition
Height over sea level	m			540.000
Pressure	hPa			949.653
Efficiency	%	64.920	54.479	
Capacity sensible	kW	315.003	266.136	
Capacity latent	kW	---	48.867	
Capacity frost	kW	---	0.000	
Capacity total	kW	315.003	315.003	
Surface reserve	%	0.151	0.152	
Present surface	m2	2152.705	2152.705	



Company
Branch
Street
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Phone: xxxxxxxxxx
Fax: xxxxxxxxxx
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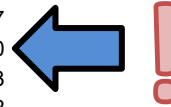
City, 14.12.2024
With the compliments of

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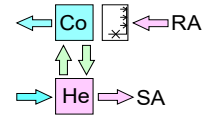
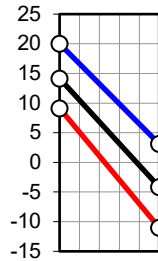
Plant
Object
Position

SA-He		Inlet	Outlet	Definition
Temp.	°C	-11.000	9.125	20.000
Rel. humidity	%	90.000	18.337	40.000
Abs. humidity	g/kg	1.394	1.394	6.175
Volume flow humid	m3/h	44372.591	47778.936	50000.000
Velocity	m/s	1.751	1.885	1.973
Pressure drop	Pa		96.212	

RA-Co		Inlet	Outlet	Definition
Temp.	°C	20.000	3.111	20.000
Rel. humidity	%	40.000	97.647	40.000
Abs. humidity	g/kg	6.175	4.934	6.175
Volume flow humid	m3/h	50000.000	47026.498	50000.000
Velocity	m/s	1.973	1.856	1.973
Pressure drop wet	Pa		114.260	

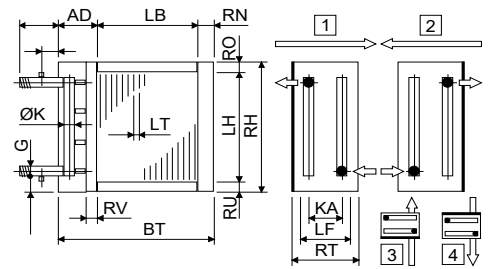


25 V% Et.glycol		SA-He	RA-Co
Temp.	in °C	14.150	-4.150
Temp.	out °C	-4.150	14.150
Volume flow	m3/h	16.098	16.102
Velocity	m/s	0.703	0.703
Reynolds	---	3655.141	3583.560
Pressure drop	kPa	49.968	50.243



Software by www.zcs.ch

Technical data		SA-He	RA-Co	SA-He	RA-Co
Tubes total	Piece	768	768	Tubes:	Cu
Tubes blank	Piece	8	8	Tubes:	smooth
Int. vent./drains	Piece	5	5	Tubes:	staggered
Tube rows on the depth	Piece	12	12	Tubes:	circular
Tube rows on the height	Piece	64	64	Collectors:	Cu
Tube coupling in series	Piece	20	20	Collectors:	1.10 m/s
Number of circuits (NC)	Piece	38	38	Connections:	Rg7
Volume	l	24	393	Connections:	1.10 m/s
Weight	kg	1060	1060	Fins:	Al
Connections	G	---	2 1/2"	Fins:	ribbed
Frame height	RH	mm	2640	Frame:	AISI 304
Frame width	BT	mm	3000	Air flow direction:	horizontal
Frame depth	RT	mm	530	Protection:	without
Finned height	LH	mm	2560	Protection:	---
Finned width	LB	mm	2750		
Finned depth	LF	mm	420		
Frame on top	RO	mm	40		
Frame on bottom	RU	mm	40		
Frame in front	RV	mm	30		
Frame on back (~65/65mm)	RN	mm	65		
Collector-Diameter	K	mm	76		
Collector covering	AD	mm	185		
Collector distance	KA	mm	427		
Fin spacing	LT	mm	2.500		
Fin thickness	LD	mm	0.200		
Tube diameter	DA	mm	15.400		
Tube diameter	da	mm	15.400		
Tube thickness	S	mm	0.400		
Tube interval on the height	S1	mm	40.000		
Tube interval on the depth	S2	mm	35.000		



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

SA-He: 40/35/15-12R-64T-2750A-2.5PA-38C-Cu/Al/AISI 304 SA-He: EUR 16924.00
RA-Co: 40/35/15-12R-64T-2750A-2.5PA-38C-Cu/Al/AISI 304 RA-Co: EUR 16924.00

CC-System in winter		SA-He	RA-Co	Definition
Height over sea level	m			540.000
Pressure	hPa			949.653
Efficiency	%	63.200	53.532	
Capacity sensible	kW	306.656	261.555	
Capacity latent	kW	---	45.100	
Capacity frost	kW	---	0.000	
Capacity total	kW	306.656	306.655	
Surface reserve	%	0.117	0.067	
Present surface	m2	2152.705	2152.705	



Company
Branch
Street
Country / ZIP / City

Phone: xxxxxxxxxx
Fax: xxxxxxxxxx
E-Mail
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City, 14.12.2024
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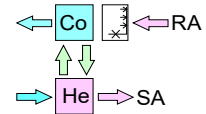
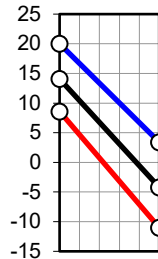
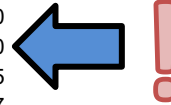
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Plant
Object
Position

SA-He		Inlet	Outlet	Definition
Temp.	°C	-11.000	8.592	20.000
Rel. humidity	%	90.000	19.007	40.000
Abs. humidity	g/kg	1.394	1.394	6.175
Volume flow humid	m3/h	44372.591	47688.687	50000.000
Velocity	m/s	1.751	1.882	1.973
Pressure drop	Pa		96.105	

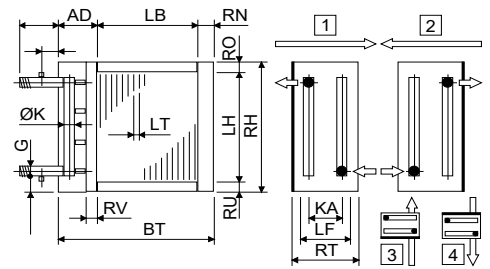
RA-Co		Inlet	Outlet	Definition
Temp.	°C	20.000	3.405	20.000
Rel. humidity	%	40.000	97.487	40.000
Abs. humidity	g/kg	6.175	5.030	6.175
Volume flow humid	m3/h	50000.000	47083.668	50000.000
Velocity	m/s	1.973	1.858	1.973
Pressure drop wet	Pa		113.588	

25 V% Et.glycol		SA-He	RA-Co
Temp.	in °C	14.070	-4.200
Temp.	out °C	-4.200	14.070
Volume flow	m3/h	15.697	15.701
Velocity	m/s	0.620	0.620
Reynolds	---	3220.628	3163.389
Pressure drop	kPa	37.322	37.508



Software by www.zcs.ch

Technical data		SA-He	RA-Co	SA-He	RA-Co	
Tubes total	Piece	768	768	Tubes:	Cu	
Tubes blank	Piece	12	12	Tubes:	smooth	
Int. vent./drains	Piece	5	5	Tubes:	staggered	
Tube rows on the depth	Piece	12	12	Tubes:	circular	
Tube rows on the height	Piece	64	64	Collectors:	Cu	
Tube coupling in series	Piece	18	18	Collectors:	1.07 m/s	
Number of circuits (NC)	Piece	42	42	Connections:	Rg7	
Volume	l	24	393	Connections:	1.07 m/s	
Weight	kg	1060	1060	Fins:	Al	
Connections	G	---	2 1/2"	Fins:	ribbed	
Frame height	RH	mm	2640	2640	Frame:	AISI 304
Frame width	BT	mm	3000	3000	Air flow direction:	horizontal
Frame depth	RT	mm	530	530	Protection:	without
Finned height	LH	mm	2560	2560	Protection:	---
Finned width	LB	mm	2750	2750		
Finned depth	LF	mm	420	420		
Frame on top	RO	mm	40	40		
Frame on bottom	RU	mm	40	40		
Frame in front	RV	mm	30	30		
Frame on back (~65/65mm)	RN	mm	65	65		
Collector-Diameter	K	mm	76	76		
Collector covering	AD	mm	185	185		
Collector distance	KA	mm	427	427		
Fin spacing	LT	mm	2.500	2.500		
Fin thickness	LD	mm	0.200	0.200		
Tube diameter	DA	mm	15.400	15.400		
Tube diameter	da	mm	15.400	15.400		
Tube thickness	S	mm	0.400	0.400		
Tube interval on the height	S1	mm	40.000	40.000		
Tube interval on the depth	S2	mm	35.000	35.000		



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

SA-He: 40/35/15-12R-64T-2750A-2.5PA-42C-Cu/Al/AISI 304
RA-Co: 40/35/15-12R-64T-2750A-2.5PA-42C-Cu/Al/AISI 304

SA-He: EUR 16944.00
RA-Co: EUR 16944.00