

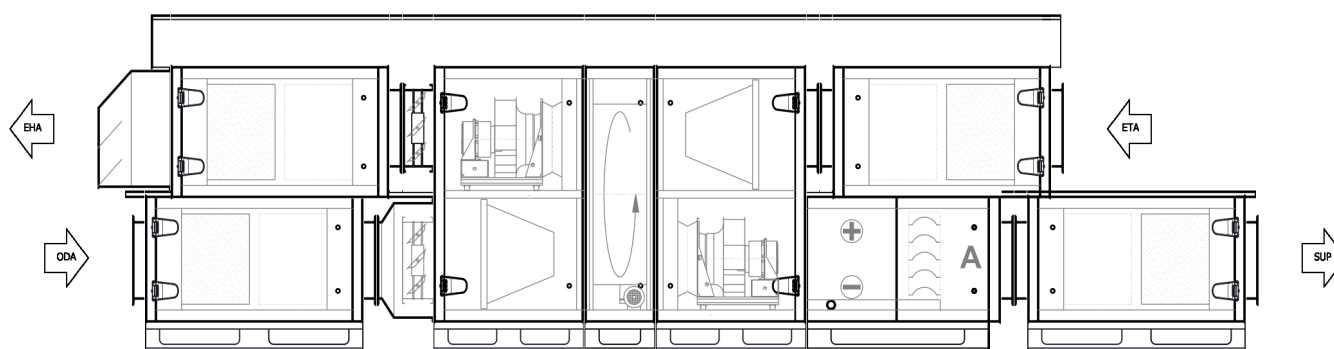
Stranka: Energetske rešitve

Projekt: TechUBi4.0

Naslov: Inkubator sever

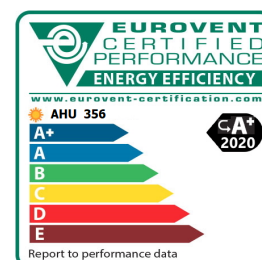
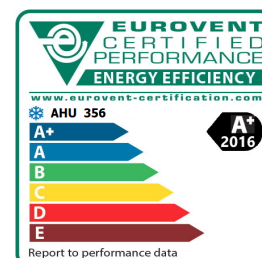
Kontaktna oseba: Rakuš R

Model:

VERSO-R-10-SL/AZ-H-PM/IE5/1.4/1.4-F7-M5-X-HCW/4R/2.6-R1-C5-O/Sa/Out


TEHNI NA SPECIFIKACIJA

velikost klimata	10		
Tipologija	NSPE		
	DPE		
Vrsta HRS	Rotacijski toplotni izmenjevalec		
Air handling unit data			
RLT class	A+		
		Vtok	Odtok
Nominalna stopnja pretoka	[m³/h]	1850	1850
	[m³/s]	0,51	0,51
Nazivni zunanji tlak	[Pa]	350	350
Hitrost dotoka pri na rtovani stopnji pretoka	[m/s]	1,28	
SFPv	[kW/m³/s]	2,35	
The thermal efficiency of HRS	[%]	84	
Calculation data			
		Zima	Poletje
Design outdoor temperature	[°C]	-13	32
Outdoor relative humidity	[%]	90	45



VERSO-R-10-SL/AZ-H-PM/IE5/1.4/1.4-F7-M5-X-HCW/4R/2.6-R1-C5-O/Sa/Out

Datum: 11. 06. 2024

Indoor temperature	[°C]	22	26
Indoor relative humidity	[%]	40	50
Atmosferski tlak	[Pa]	101325	
Gostota zraka	[kg/m³]	1,2	
Air handling unit location		Ljubljana, Slovenia	
Dry-bulb temperature (TdryS)	[°C]	31,9	
Wet-bulb temperature (TwetS)	[°C]	20,9	
Dew-point temperature (Tdw-pS)	[°C]	15,5	
Dry-bulb temperature (TdryW)	[°C]	-6,8	

Electrical data

Number of electrical input	1
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AHU

Electrical connection	~400V / 50Hz / 3-phase / 5x2,5mm² / 9,4A
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Avtomatsko krmiljenje

Tip	C5
Control panel	C5.1
Surface temperature sensor(PavTMP/J) x 1	



COMMISSION REGULATION (EU) No 1253 (ecodesign requirements)

		Value	2018
The thermal efficiency of HRS, η_{nrvu} (EN308)	[%]	84	73
Internal specific fan power, SFPint	[W/m³/s]	804	1359
Type of drive - variable speed		Installed	Necessary
Thermal by-pass facility		Exist	Necessary
Warning - filter is clogged		Exist	Necessary
Unit conformity assessment			Complies
Notranji padec tlaka prezra evalnih elementov (P_s , int)	[Pa]	465	
Notranji padec tlaka neprezra evalnih elementov (P_s , add)	[Pa]	271	
Effective electric power input of the fans (clean filter)	[kW]	1,21	

Osnovna sestava STANDART5

Paneli iz dveh pocinkanih ploevin, polnilo iz termo in zvo ne izolacije

požarno odporna miner. volna ($\lambda = 0,036$ W/mK).

AHU painted C3 class, RAL 7035.

Outdoor unit.

When filters gets dirty, unit control panel gives notice to change the filters.

Dirty filters cause increased energy consumption, which decreases performance and energy efficiency of the unit, so it is very important to change the filters regularly.

AHU shall operate with variable speed drive.

Instructions: www.komfovent.com/en/downloads

Thermal insulation class	T2
Thermal bridging class	TB2
Casing strength	D1 (M)
Filter bypass leakage	F9 (M)
Casing air leakage	L1(R)

Casing air leakage (Model Box, EN 1886)

-400 Pa (L1)	[dm ³ /(s·m ²)]	0,03
+700 Pa (L1)	[dm ³ /(s·m ²)]	0,14

Najve ja stopnja zunanega puš anja - 400 Pa (R)	[%]	< 1
Najve ja stopnja zunanega puš anja + 400 Pa (R)	[%]	< 1
Najve ja stopnja notranjega puš anja ali prenos	[%]	0,06

AHU configuration

Separate sections with base frame connected to each section

Debelina panela	[mm]	45
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Teža klimata

Teža (neto)	[kg]	985
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Pallets

AA	[mm]	1000x1350(86kg)
SL1	[mm]	1350x1350(111kg)
SL1	[mm]	1100x1350(111kg)
SL1	[mm]	1100x1350(114kg)
SL1(G)	[mm]	1350x1350(114kg)
FVS+RO	[mm]	1200x1350(275kg)
FVS(G)	[mm]	950x1350(174kg)

Dodatna oprema

Adjustable feet (RegKoj)		
Streha (Sto)		
Metal cover for damper (MetSklApsTiek)		
Izstopni okrov (SalOrGaub)	[mm]	995x484x300
Screwed dampers (PrisSkl)		

GLASNOST

Nivo zvo nega tlaka Lw	na kanale				v okolico
	Pretok vto nega zraka [dB]		Pretok odto nega zraka [dB]		[dB]
F[Hz]	Zajem	Izpuh	Zajem	Izpuh	
63	50,1	57,5	49,7	55,0	61,1
125	38,6	46,4	39,7	43,4	57,1

250	30,2	44,0	33,3	38,7	53,6
500	25,3	37,9	26,4	34,1	46,3
1000	22,7	35,7	22,6	34,2	48,1
2000	18,3	34,6	18,4	34,0	42,3
4000	16,8	35,2	17,7	35,7	35,6
8000	19,9	37,3	20,6	39,9	32,3
dB(A)	31	44	31	43	52

Rotacijski toplotni izmenjevalec
RR-AZ-800-SL-O-SN(906x910x290)-P2-A1-T

Frekven cikl	[kW]	0,25
Enthalpy		
Purge sector		
Designed for dry conditions		
Preme	[mm]	800
Višina vala	[mm]	1,5
Gostota	[kg/m³]	1,2
Heat recovery class (EN13053)		H1
Efficiency bonus (E), (EU 1253)		336

		Zima		Poletje	
		Vtok	Odtok	Vtok	Odtok
Izkoristek temperature	[%]	84,2		84,2	
Izkoristek vlage	[%]	84,1		76,6	
Tla ni padec	[Pa]	175	175	175	175
Hitrost	[m/s]	2,1	2,1	2,1	2,1
Standardni zra ni pretok	[m³/h]	1850	1850	1850	1850

Zajem

Temperatura	[°C]	-13	22	32	26
Relativna vlaga	[%]	90	40	45	50
Absolutna vlaga	[g/kg]	1,10	6,59	13,49	10,54
Enthalpy	[kJ/kg]	-10,34	38,88	66,72	53,02

Izpuh

Temperatura	[°C]	16,5	-7,5	27,0	31,1
Relativna vlaga	[%]	49	95	50	45
Absolutna vlaga	[g/kg]	5,72	1,91	11,23	12,80
Enthalpy	[kJ/kg]	31,04	-2,77	55,75	63,98

Povratek energije

Sensible heat	[kW]	18,4		-3,2	
Latent heat	[kW]	7,1		-3,6	
Total heat	[kW]	25,5		-6,8	

Recovery of moisture	[g/kg]	4,6	-4,7	-2,3	2,3
OACF		1,21		1,21	
OACF at working point		1,18		1,18	
EATR at working point	[%]	0,08		0,08	

PRETOK VTO NEGA ZRAKA

Žaluzija s pogonom

Zra na žaluzija iz alu profila		
Tip pogona	ON/OFF with spring return (AC/DC 24V)	
Torque	[Nm]	5
Tla ni padec	[Pa]	4

Filter zraka

Filter correction (F), (EU 1253)		0
Tip	Vre ast filter	
Energy efficiency class		
Air velocity class (EN13053)		V1
Razred filtra:		F7
Razred filtra (EN ISO 16890)		ePM1 60%
Dimenzije bxhxl	[mm]	792x392x400
Energijska u inkovitost	[kWh/a]	1009
Število vre		10
Število filtrov		1
Tla ni padec (nov filter)	[Pa]	47
Tla ni padec	[Pa]	94
Priporo eni max tla ni padec (EN 13779 2007)	[Pa]	141
Velocity in the AHU filter section	[m/s]	1,28
Effective filtration area	[m²]	3,23

Changeover

CW-G10-04R-0773-0300-130-1x05C-26F-M1-C40-IS1-XX-1xR½/1xR½-180			
		Zima	Poletje
Kapaciteta	[kW]	3,5	6,3
Sensible	[kW]	3,5	5,7
Latent	[kW]	0,0	0,6
Standardni zra ni pretok	[m³/h]	1850	1850
Hitrost	[m/s]	2,19	2,27
Pressure drop (standard)	[Pa]	52	55
Pressure drop dry	[Pa]	52	52
Temperatura zajema	[°C]	16,5	27,0

Rel. vlaga zajema	[%]	49	50
Outlet air temperature	[°C]	22,0	18,0
Rel. vlaga izpuha	[%]	35	84
Absolutna vlaga	[g/kg]	5,72	10,85
Medij		Voda	
Temperatura zajema	[°C]	45	9
Temperatura izpuha	[°C]	40	14
Notranji volumen	[dm³/h]	647	1184
Tla ni padec	[kPa]	6,34	22,38
Etilenglikol volumen	[%]	30	30
Kondenzacija	[kg/h]	0,00	0,85

Tehni na specifikacija

Cevi		Baker
Plates		Aluminij
Volumen	[m³]	0,0027
Koristni prostor	[m²]	18,63
Razdalja med lamelami	[mm]	2,6
Rows		4
Circuits		5
Povezava vtoka	["]	1×R½
Povezava iztoka	["]	1×R½
L	[mm]	130
B	[mm]	890
H	[mm]	380
Omejitve		
Max hidravli ni tlak	[bar]	15
Max temperatura medija	[°C]	52

Separator kapljic z odvodom kondenza

Condensate drip pan material		Stainless steel
Tla ni padec	[Pa]	17

Impeller

Tip		RH28C.CR
Premier kolesa	[mm]	280
Zra ni pretok	[m³/h]	1850
Built-in loss	[Pa]	22
Stati ni tlak	[Pa]	778
Skupni tlak	[Pa]	805
Izkoristek	[%]	71,1
Shaft power	[kW]	0,56
Shaft power (clean filters)	[kW]	0,53
Hitrost	[1/min]	2861

Max. speed	[1/min]	4775
K-value		75

Motor PM

Motor efficiency class		IE5 (Ultra Premium)
Motor power	[kW]	1,4
Hitrost	[1/min]	3400
Izkoristek	[%]	90
Input current at 400V 50 Hz	[A]	2,9

FOP	[Hz]	238
Frekven cikl	[kW]	1.4

Ventilator

SFPv	[kW/m³/s]	1,24
SFP class (EN16798-3)		SFP 3
Electric power to motor (Pm)	[kW]	0,68
Electric power to motor (clean filters)	[kW]	0,64
Electric power to motor class (EN13053)		P1
Pm ref (EN13053)	[kW]	0,99
Total fan efficiency	[%]	60,86
Static fan efficiency	[%]	58,62
Overall efficiency ErP	[%]	63,74

Sound absorbers

Zajem		
Tip		900
Tla ni padec	[Pa]	31
Izpuh		
Tip		900
Tla ni padec	[Pa]	31

PRETOK ODTOK NEGA ZRAKA
Žaluzija s pogonom

Zra na žaluzija iz alu profila		
Tip pogona		ON/OFF with spring return (AC/DC 24V)
Torque	[Nm]	5
Tla ni padec	[Pa]	4

Filter zraka

Filter correction (F), (EU 1253)		0
Tip		Vre ast filter

Energy efficiency class

Air velocity class (EN13053)		V1
Razred filtra:		M5
Razred filtra (EN ISO 16890)		ePM10 60%
Dimenzije bxhxl	[mm]	792x392x400
Energijska u inkovitost	[kWh/a]	1000
Število vre		10
Število filtrov		1
Tla ni padec (nov filter)	[Pa]	26
Tla ni padec	[Pa]	52
Priporo eni max tla ni padec (EN 13779 2007)	[Pa]	78
Velocity in the AHU filter section	[m/s]	1,28
Effective filtration area	[m²]	3,23

Impeller

Tip		RH28C.CR
Premier kolesa	[mm]	280
Zra ni pretok	[m³/h]	1850
Built-in loss	[Pa]	22
Stati ni tlak	[Pa]	658
Skupni tlak	[Pa]	685
Izkoristek	[%]	69,7
Shaft power	[kW]	0,49
Shaft power (clean filters)	[kW]	0,47
Hitrost	[1/min]	2682
Max. speed	[1/min]	4775
K-value		75

Motor PM

Motor efficiency class		IE5 (Ultra Premium)
Motor power	[kW]	1,4
Hitrost	[1/min]	3400
Izkoristek	[%]	90
Input current at 400V 50 Hz	[A]	2,9
FOP	[Hz]	224
Frekven nik	[kW]	1.4

Ventilator

SFPv	[kW/m³/s]	1,11
SFP class (EN16798-3)		SFP 3
Electric power to motor (Pm)	[kW]	0,59
Electric power to motor (clean filters)	[kW]	0,57
Electric power to motor class (EN13053)		P1
Pm ref (EN13053)	[kW]	0,84
Total fan efficiency	[%]	59,2

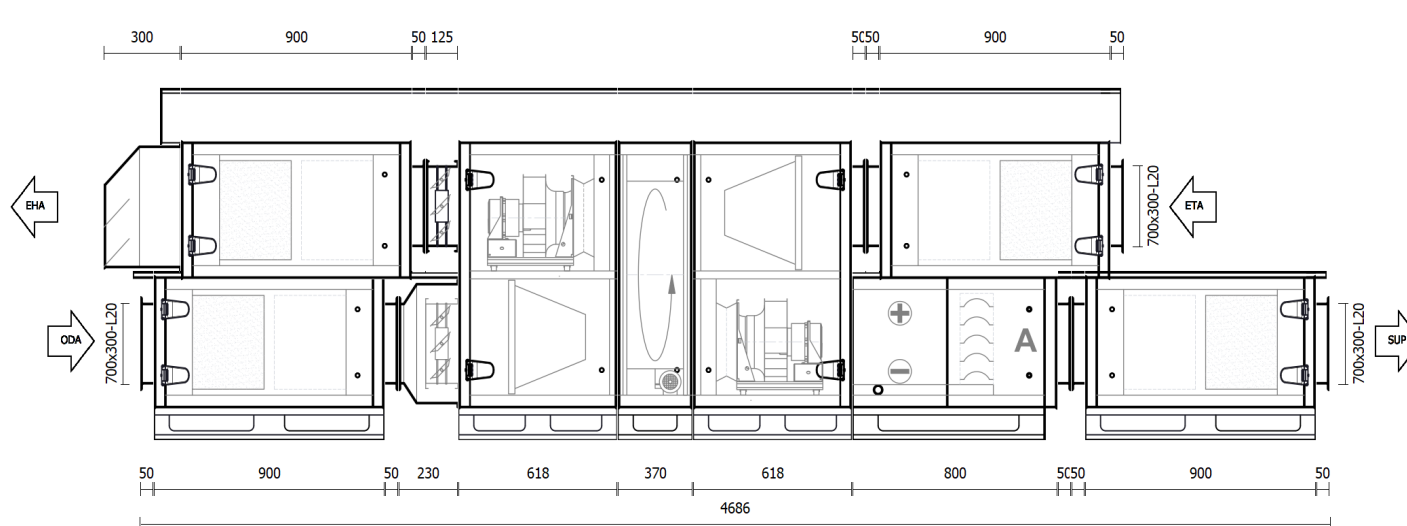
Static fan efficiency	[%]	56,86
Overall efficiency ErP	[%]	63,74

Sound absorbers

Zajem		
Tip		900
Tla ni padec	[Pa]	28

Izpuh		
Tip		900
Tla ni padec	[Pa]	28

We reserve the rights to change technical data of the products in the process of their improvement without advance notice. Validity period of presented data - 1 month



ODA - Outdoor air;
SUP - Supply air;
ETA - Extract air;
EHA - Exhaust air;

Note: Due to the tolerances of the individual parts and the sealing gaskets used, the actual dimensions may vary slightly.

Ventilation equipment installation specification 11. 06. 2024

Ventilation device model VERSO-R-10-SL/AZ-H-PM/IE5/1.4/1.4-F7-M5-X-HCW/4R/2.6-R1-C5-O/Sa/Out

Notes

Kontaktna oseba:

Nr.	Title	AX code	Quantity
1	Avtomatsko krmiljenje C5		1

Pretok vto nega zraka

2	Filter zraka: 792x392x400\10	771421037	1
3	Rotacijski toplotni izmenjevalec RR-AZ-800-SL-O-SN(906x910x290)-P2-A1(C5)	1007454	1
4	Changeover CW-G10-04R-0773-0300-130-1x05C-26F-M1-C40-IS1-XX-1xR½/1xR½-180	1185153	1
5	Ventilator RH28C.CR_1.4	1031582	1
6	Frekven niki DF2-142M0	1027232	1
7	Sound absorbers PRO_10_70_SE20_100_6_S	1168633	1
	PRO_10_70_SE20_100_6_S	1168633	1
8	Dodatna oprema		

Pretok odto nega zraka

9	Filter zraka: 792x392x400\10	771253094	1
10	Ventilator RH28C.CR_1.4	1031582	1
11	Frekven niki DF2-142M0	1027232	1
12	Sound absorbers PRO_10_71_SE20_100_6_S	1168635	1
	PRO_10_71_SE20_100_6_S	1168635	1
13	Dodatna oprema		