

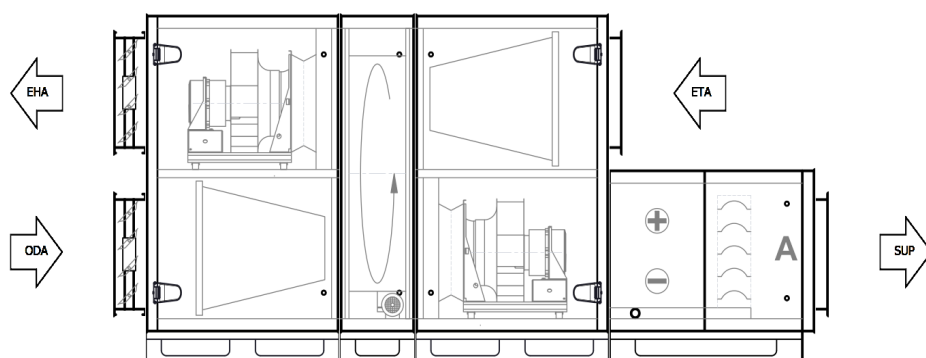
Stranka: Energetske rešitve

Projekt: TechUBi4.0

Naslov: Inkubator klet

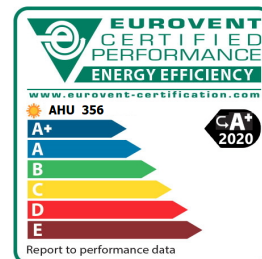
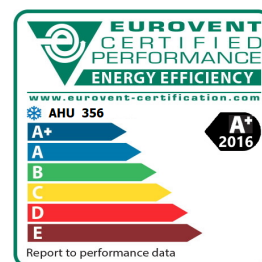
Kontaktna oseba: Rakuš R

Model:

VERSO-R-20-SL/AZ-H-PM/IE5/1.4/1.4-F7-M5-X-HCW/2R/2.6-R1-C5-X


TEHNI NA SPECIFIKACIJA

velikost klimata	20		
Tipologija	NSPE		
	DPE		
Vrsta HRS	Rotacijski toplotni izmenjevalec		
Air handling unit data			
RLT class	A+		
		Vtok	Odtok
Nominalna stopnja pretoka	[m³/h]	1500	2300
	[m³/s]	0,42	0,64
Nazivni zunanji tlak	[Pa]	300	300
Hitrost dotoka pri na rtovani stopnji pretoka	[m/s]	1,16	
SFPv	[kW/m³/s]	1,40	
The thermal efficiency of HRS	[%]	85	
Calculation data			
		Zima	Poletje
Design outdoor temperature	[°C]	-13	32



VERSO-R-20-SL/AZ-H-PM/IE5/1.4/1.4-F7-M5-X-HCW/2R/2.6-R1-C5-X

Datum: 11. 06. 2024

Outdoor relative humidity	[%]	90	45
Indoor temperature	[°C]	19	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)	[%]	85	73
Internal specific fan power, SFPint	[W/m³/s]	601	1390
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 prezraevalnih elementov ($P_{s, int}$)	[Pa]	344
Notranji padec tlaka neprezraevalnih elementov ($P_{s, add}$)	[Pa]	62
Effective electric power input of the fans (clean filter)	[kW]	0,89

Osnovna sestava STANDART5

Paneli iz dveh pocinkanih ploevin, polnilo iz termo in zvočne izolacije

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

AHU painted C3 class, RAL 7035.

Indoor 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]	583
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Pallets

AA	[mm]	1000x1500(102kg)
FVS(S)+RO	[mm]	1500x1300(319kg)
FVS	[mm]	950x1300(162kg)

Dodatna oprema

Adjustable feet (RegKoj)
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	58,1	63,6	54,9	61,6	58,2
125	53,7	61,1	54,0	59,2	53,8
250	53,2	66,1	59,9	64,1	51,4
500	52,3	65,1	55,9	63,4	44,8
1000	47,5	65,7	50,4	67,9	47,4
2000	42,8	63,3	45,8	63,7	40,7
4000	39,4	59,5	42,5	60,3	34,2
8000	35,4	53,2	35,3	54,6	31,3

dB(A)	53	70	57	71	51
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Rotacijski toplotni izmenjevalec
RR-AZ-930-SL-O-SN(1056x1060x290)-P2-A1-T

Frekven cikl	[kW]	0,25
Enthalpy		
Purge sector		
Designed for dry conditions		
Preme	[mm]	930
Višina vala	[mm]	1,5
Gostota	[kg/m³]	1,2
Heat recovery class (EN13053)		H1
Efficiency bonus (E), (EU 1253)		369

		Zima		Poletje	
		Vtok	Odtok	Vtok	Odtok
Izkoristek temperature	[%]	94,8		94,8	
Izkoristek vlage	[%]	72,3		65,4	
Tla ni padec	[Pa]	99	158	99	158
Hitrost	[m/s]	1,25	1,92	1,25	1,92
Standardni zra ni pretok	[m³/h]	1500	2300	1500	2300

Zajem

Temperatura	[°C]	-13	19	32	26
Relativna vlaga	[%]	90	40	45	50
Absolutna vlaga	[g/kg]	1,10	5,47	13,49	10,54
Enthalpy	[kJ/kg]	-10,34	32,97	66,72	53,02

Izpuh

Temperatura	[°C]	17,3	-1,0	26,3	29,8
Relativna vlaga	[%]	35	41	54	50
Absolutna vlaga	[g/kg]	4,26	1,43	11,56	13,14
Enthalpy	[kJ/kg]	28,23	2,54	55,94	63,52

Povratek energije

Sensible heat	[kW]	15,3		-2,9	
Latent heat	[kW]	3,9		-2,5	
Total heat	[kW]	19,3		-5,4	
Recovery of moisture	[g/kg]	3,2	-4	-1,9	2,6
OACF		1,2		1,2	
OACF at working point		1,19		1,19	
EATR at working point	[%]	0,06		0,06	

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]	1

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]	490x490x500
Energijska u inkovitost	[kWh/a]	1009
Število vre	6	
Število filtrov	2	
Tla ni padec (nov filter)	[Pa]	22
Tla ni padec	[Pa]	44
Priporo eni max tla ni padec (EN 13779 2007)	[Pa]	66
Velocity in the AHU filter section	[m/s]	0,76
Effective filtration area	[m²]	5,98

Changeover

CW-G10-02R-0923-0360-100-1x04C-26F-M1-C40-IS1-XX-1xR½/1xR½-180

		Zima	Poletje
Kapaciteta	[kW]	2,4	5,5
Sensible	[kW]	2,4	4,3
Latent	[kW]	0,0	1,2
Standardni zra ni pretok	[m³/h]	1500	1500
Hitrost	[m/s]	1,24	1,28
Pressure drop (standard)	[Pa]	9	11
Pressure drop dry	[Pa]	9	9
Temperatura zajema	[°C]	17,3	26,3
Rel. vlaga zajema	[%]	35	54
Outlet air temperature	[°C]	22,0	18,0
Rel. vlaga izpuha	[%]	26	82
Absolutna vlaga	[g/kg]	4,26	10,62

Medij		Voda	
Temperatura zajema	[°C]	45	9
Temperatura izpuha	[°C]	40	14
Notranji volumen	[dm³/h]	410	939
Tla ni padec	[kPa]	2,76	14,26
No glycol	[%]	0	0
Kondenzacija	[kg/h]	0,00	1,70

Tehni na specifikacija

Cevi		Baker
Plates		Aluminij
Volumen	[m³]	0,0020
Koristni prostor	[m²]	13,37
Razdalja med lamelami	[mm]	2,6
Rows		2
Circuits		4
Povezava vtoka	["]	1×R½
Povezava iztoka	["]	1×R½
L	[mm]	100
B	[mm]	1040
H	[mm]	440
Omejitev		
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]	5

Impeller

Tip		RH25C.CR
Premier kolesa	[mm]	250
Zra ni pretok	[m³/h]	1500
Built-in loss	[Pa]	22
Stati ni tlak	[Pa]	482
Skupni tlak	[Pa]	509
Izkoristek	[%]	71,6
Shaft power	[kW]	0,28
Shaft power (clean filters)	[kW]	0,27
Hitrost	[1/min]	2727
Max. speed	[1/min]	5350
K-value		60

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]	227
Frekven cikl	[kW]	1.4

Ventilator

SFPv	[kW/m³/s]	0,83
SFP class (EN16798-3)		SFP 2
Electric power to motor (Pm)	[kW]	0,36
Electric power to motor (clean filters)	[kW]	0,35
Electric power to motor class (EN13053)		P1
Pm ref (EN13053)	[kW]	0,53
Total fan efficiency	[%]	58,62
Static fan efficiency	[%]	55,35
Overall efficiency ErP	[%]	63,74

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]	3

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]	490x490x500
Energijska učinkovitost	[kWh/a]	1000
Število vre		6
Število filtrov		2
Tla ni padec (nov filter)	[Pa]	21
Tla ni padec	[Pa]	42
Priporočeni max tla ni padec (EN 13779 2007)	[Pa]	63
Velocity in the AHU filter section	[m/s]	1,16
Effective filtration area	[m²]	5,98

Impeller

Tip	RH31C.CR	
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Premier koleša	[mm]	315
Zra ni pretok	[m³/h]	2300
Built-in loss	[Pa]	21
Stati ni tlak	[Pa]	524
Skupni tlak	[Pa]	550
Izkoristek	[%]	72,5
Shaft power	[kW]	0,46
Shaft power (clean filters)	[kW]	0,44
Hitrost	[1/min]	2181
Max. speed	[1/min]	4245
K-value		95

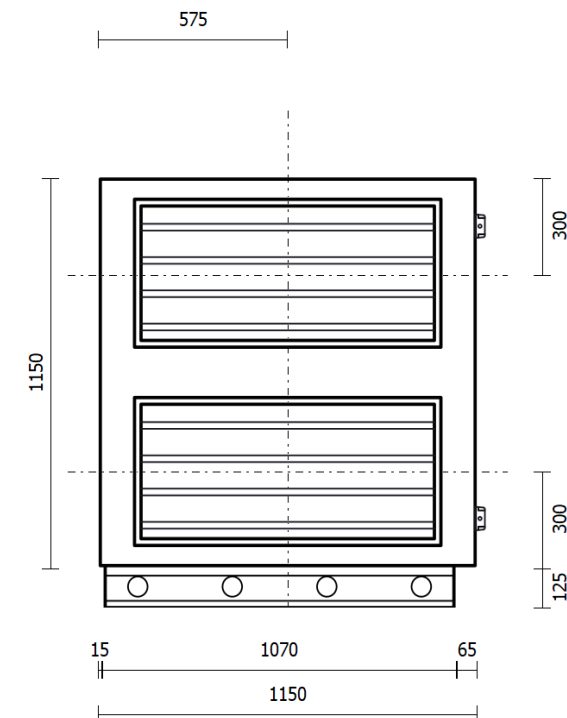
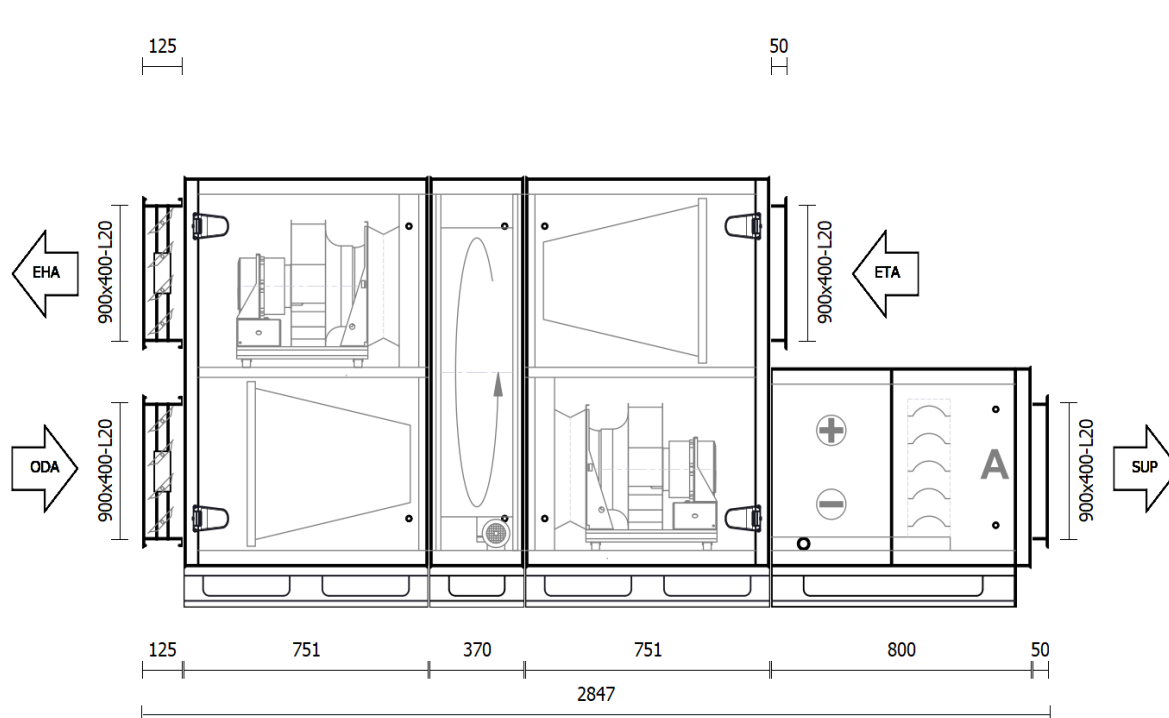
Motor PM

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]	182
Frekven nik	[kW]	1.4

Ventilator

SFPv	[kW/m³/s]	0,86
SFP class (EN16798-3)		SFP 2
Electric power to motor (Pm)	[kW]	0,57
Electric power to motor (clean filters)	[kW]	0,55
Electric power to motor class (EN13053)		P1
Pm ref (EN13053)	[kW]	0,81
Total fan efficiency	[%]	61,51
Static fan efficiency	[%]	58,57
Overall efficiency ErP	[%]	63,74

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-20-SL/AZ-H-PM/IE5/1.4/1.4-F7-M5-X-HCW/2R/2.6-R1-C5-X

Notes

Kontaktna oseba:

Nr.	Title	AX code	Quantity
1	Avtomatsko krmiljenje C5		1

Pretok vto nega zraka

2	Filter zraka: 490x490x500\6	771400092	2
3	Rotacijski toplotni izmenjevalec RR-AZ-930-SL-O-SN(1056x1060x290)-P2-A1(C5)	1007445	1
4	Changeover CW-G10-02R-0923-0360-100-1x04C-26F-M1-C40-IS1-XX-1xR½/1xR½-180	0	1
5	Ventilator RH25C.CR_1.4	1031802	1
6	Frekven niki DF2-142M0	1027232	1
7	Dodatna oprema		

Pretok odto nega zraka

8	Filter zraka: 490x490x500\6	771251133	2
9	Ventilator RH31C.CR_1.4	1031799	1
10	Frekven niki DF2-142M0	1027232	1
11	Dodatna oprema		