

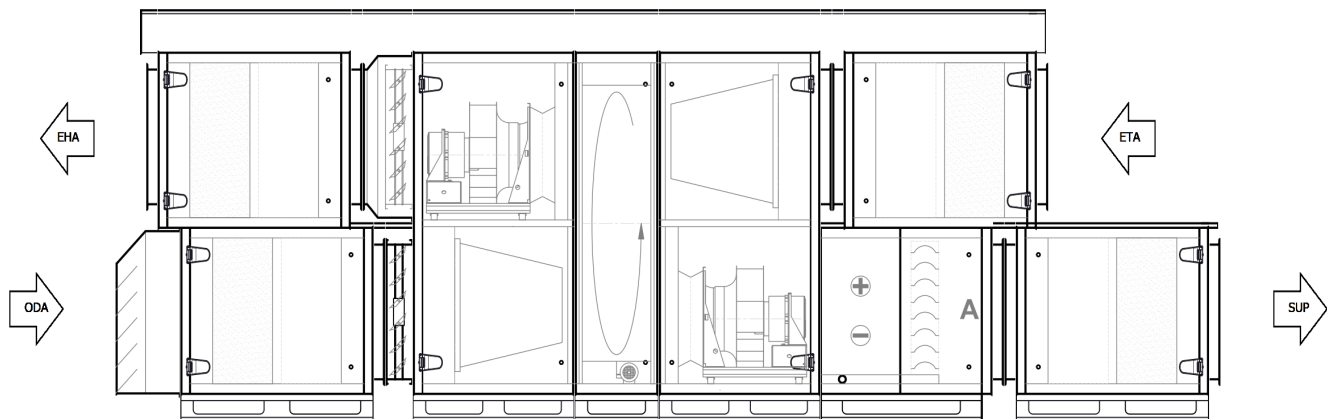
Stranka: Energetske rešitve

Projekt: TechUBi4.0

Naslov: Inkubator jug

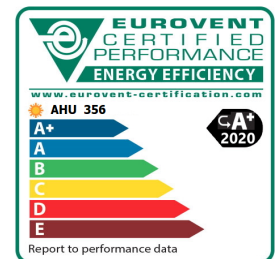
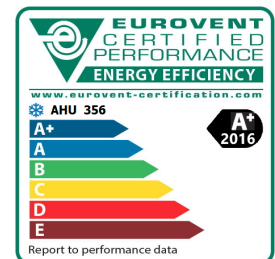
Kontaktna oseba: Rakuš R

Model:

VERSO-R-40-SL/AZ-H-PM/IE5/4.4/2-F7-M5-X-HCW/5R/2.6-R1-C5-O/Sa/Out


TEHNI NA SPECIFIKACIJA

velikost klimata	40		
Tipologija	NSPE		
	DPE		
Vrsta HRS	Rotacijski toplotni izmenjevalec		
Air handling unit data			
RLT class	A+		
		Vtok	Odtok
Nominalna stopnja pretoka	[m³/h]	5600	4800
	[m³/s]	1,56	1,33
Nazivni zunanji tlak	[Pa]	370	370
Hitrost dotoka pri na rtovani stopnji pretoka	[m/s]	1,58	
SFPv	[kW/m³/s]	2,22	
The thermal efficiency of HRS	[%]	83	
Calculation data			
		Zima	Poletje
Design outdoor temperature	[°C]	-13	32



VERSO-R-40-SL/AZ-H-PM/IE5/4.4/2-F7-M5-X-HCW/5R/2.6-R1-C5-O/Sa/Out

Datum: 11. 06. 2024

Outdoor relative humidity	[%]	90	45
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 / 16,6A
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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)	[%]	83	73
Internal specific fan power, SFPint	[W/m³/s]	897	1195
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]	540
Notranji padec tlaka neprezraevalnih elementov ($P_{s, add}$)	[Pa]	238
Effective electric power input of the fans (clean filter)	[kW]	3,46

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.

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 zunanjega puš anja - 400 Pa (R)	[%]	< 1
Najve ja stopnja zunanjega 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]	1676
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Pallets

AA	[mm]	1000x1850(160kg)
SL1(G)	[mm]	1350x1850(184kg)
SL1	[mm]	1100x1850(184kg)
SL1	[mm]	1100x1850(191kg)
SL1	[mm]	1350x1850(191kg)
FVS+RO	[mm]	1400x1850(484kg)
FVS(G)	[mm]	1200x1850(282kg)

Dodatna oprema

Adjustable feet (RegKoj)		
Streha (Sto)		
Vstopni okrov, (m/s) (TiekOrGaub)	[mm]	1495x754x300
Metal cover for damper (MetSklApsSal)		
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	53,1	64,0	52,0	59,9	62,1

VERSO-R-40-SL/AZ-H-PM/IE5/4.4/2-F7-M5-X-HCW/5R/2.6-R1-C5-O/Sa/Out

Datum: 11. 06. 2024

125	45,1	56,5	42,9	49,9	58,7
250	43,4	58,0	46,7	52,0	57,1
500	35,8	52,5	37,8	46,6	48,5
1000	31,5	52,0	30,5	48,8	51,1
2000	27,6	45,7	27,0	44,8	42,4
4000	25,4	44,5	27,1	45,4	35,9
8000	26,2	44,5	29,1	49,7	33,5
dB(A)	40	57	41	54	55

Rotacijski toplotni izmenjevalec
RR-AZ-1300-SL-O-SN(1406x1430x310)-P2-A1-T

Frekven cikl [kW] 0,25

Enthalpy

Purge sector

Designed for dry conditions

Preme [mm] 1300

Višina vala [mm] 1,5

Gostota [kg/m³] 1,2

Heat recovery class (EN13053) H1

Efficiency bonus (E), (EU 1253) 312

		Zima		Poletje	
		Vtok	Odtok	Vtok	Odtok
Izkoristek temperature	[%]	75,6		75,6	
Izkoristek vlage	[%]	85,4		77,9	
Tla ni padec	[Pa]	203	171	203	171
Hitrost	[m/s]	2,41	2,06	2,41	2,06
Standardni zra ni pretok	[m³/h]	5600	4800	5600	4800

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]	13,5	-9,1	27,5	31,3
Relativna vlaga	[%]	60	95	49	44
Absolutna vlaga	[g/kg]	5,79	1,66	11,19	12,58
Enthalpy	[kJ/kg]	28,15	-5,00	56,19	63,71

Povratek energije

Sensible heat	[kW]	49,9	-8,7
Latent heat	[kW]	21,9	-10,9

Total heat	[kW]	71,8		-19,7	
Recovery of moisture	[g/kg]	4,7	-4,9	-2,3	2
OACF		1,17		1,17	
OACF at working point		1,14		1,14	
EATR at working point	[%]	0,09		0,09	

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 bxxhxl	[mm]	592x592x500
Energijska u inkovitost	[kWh/a]	1009
Število vre		8
Število filtrov		2
Tla ni padec (nov filter)	[Pa]	68
Tla ni padec	[Pa]	118
Priporo eni max tla ni padec (EN 13779 2007)	[Pa]	168
Velocity in the AHU filter section	[m/s]	1,58
Effective filtration area	[m²]	9,36

Changeover

CW-G10-05R-1260-0540-160-1x17C-26F-M1-C40-IS1-XX-1xR1/1xR1-180			
		Zima	Poletje
Kapaciteta	[kW]	16,2	19,7
Sensible	[kW]	16,2	18,1
Latent	[kW]	0,0	1,6
Standardni zra ni pretok	[m³/h]	5600	5600
Hitrost	[m/s]	2,23	2,35
Pressure drop (standard)	[Pa]	71	75
Pressure drop dry	[Pa]	71	71

Temperatura zajema	[°C]	13,5	27,5
Rel. vlaga zajema	[%]	60	49
Outlet air temperature	[°C]	22,0	18,0
Rel. vlaga izpuha	[%]	35	84
Absolutna vlaga	[g/kg]	5,79	10,87
Medij		Voda	
Temperatura zajema	[°C]	45	9
Temperatura izpuha	[°C]	40	14
Notranji volumen	[dm³/h]	3029	3724
Tla ni padec	[kPa]	13,95	23,34
Etilenglikol volumen	[%]	30	30
Kondenzacija	[kg/h]	0,00	2,20

Tehni na specifikacija

Cevi		Baker
Plates		Aluminij
Volumen	[m³]	0,0095
Koristni prostor	[m²]	68,39
Razdalja med lamelami	[mm]	2,6
Rows		5
Circuits		17
Povezava vtoka	["]	1xR1
Povezava iztoka	["]	1xR1
L	[mm]	160
B	[mm]	1390
H	[mm]	620
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]	19

Impeller

Tip		RH45C.CR
Premer kolesa	[mm]	450
Zra ni pretok	[m³/h]	5600
Built-in loss	[Pa]	31
Stati ni tlak	[Pa]	854
Skupni tlak	[Pa]	892
Izkoristek	[%]	73,7
Shaft power	[kW]	1,8
Shaft power (clean filters)	[kW]	1,7

Hitrost	[1/min]	1923
Max. speed	[1/min]	2970
K-value		197

Motor PM

Motor efficiency class		IE5 (Ultra Premium)
Motor power	[kW]	4,4
Hitrost	[1/min]	3000
Izkoristek	[%]	91.5
Input current at 400V 50 Hz	[A]	8,9
FOP	[Hz]	160
Frekven cikl	[kW]	4.4

Ventilator

SFPv	[kW/m³/s]	1,28
SFP class (EN16798-3)		SFP 3
Electric power to motor (Pm)	[kW]	2,12
Electric power to motor (clean filters)	[kW]	2,00
Electric power to motor class (EN13053)		P1
Pm ref (EN13053)	[kW]	2,79
Total fan efficiency	[%]	65,47
Static fan efficiency	[%]	62,4
Overall efficiency ErP	[%]	64,45

Sound absorbers

Zajem		
Tip		900
Tla ni padec	[Pa]	17
Izpuh		
Tip		900
Tla ni padec	[Pa]	17

PRETOK ODTO 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
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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]	592x592x500
Energijska u inkovitost	[kWh/a]	1000
Število vre		8
Število filtrov		2
Tla ni padec (nov filter)	[Pa]	31
Tla ni padec	[Pa]	62
Priporo eni max tla ni padec (EN 13779 2007)	[Pa]	93
Velocity in the AHU filter section	[m/s]	1,35
Effective filtration area	[m²]	9,36

Impeller

Tip	RH40C.CR	
Premier kolesa	[mm]	400
Zra ni pretok	[m³/h]	4800
Built-in loss	[Pa]	36
Stati ni tlak	[Pa]	664
Skupni tlak	[Pa]	710
Izkoristek	[%]	74,9
Shaft power	[kW]	1,18
Shaft power (clean filters)	[kW]	1,13
Hitrost	[1/min]	2025
Max. speed	[1/min]	3340
K-value		154

Motor PM

Motor efficiency class	IE5 (Ultra Premium)	
Motor power	[kW]	2
Hitrost	[1/min]	3160
Izkoristek	[%]	92.5
Input current at 400V 50 Hz	[A]	4,1
FOP	[Hz]	169
Frekven nik	[kW]	2

Ventilator

SFPv	[kW/m³/s]	1,10
SFP class (EN16798-3)		SFP 3
Electric power to motor (Pm)	[kW]	1,53
Electric power to motor (clean filters)	[kW]	1,46
Electric power to motor class (EN13053)		P1
Pm ref (EN13053)	[kW]	1,89

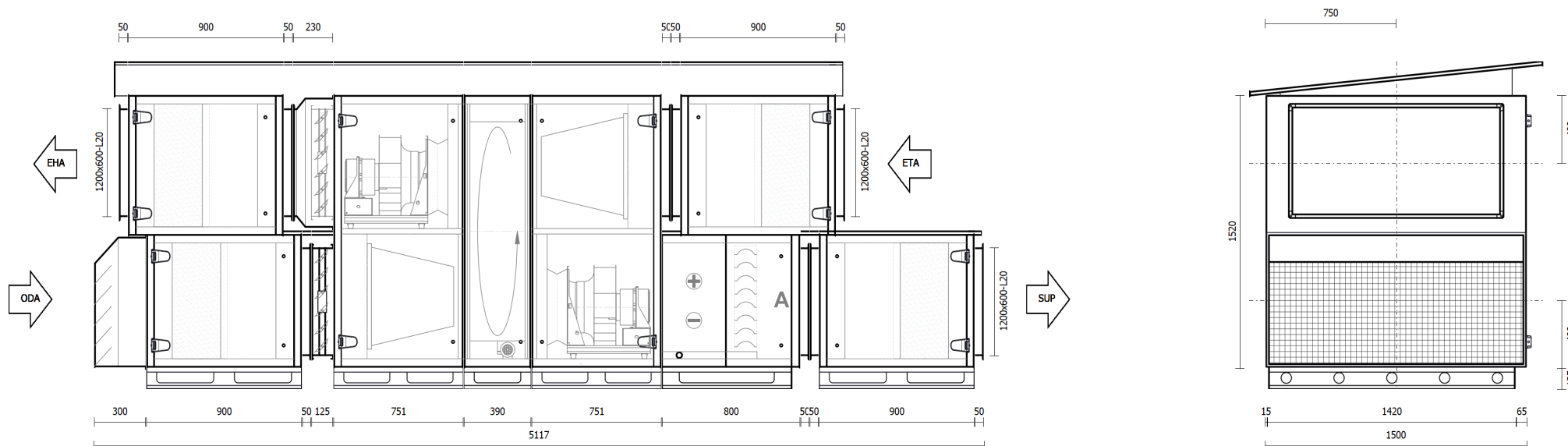
Total fan efficiency	[%]	61,7
Static fan efficiency	[%]	57,69
Overall efficiency ErP	[%]	66,63

Sound absorbers

Zajem		
Tip		900
Tla ni padec	[Pa]	11

Izpuh		
Tip		900
Tla ni padec	[Pa]	11

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



Ventilation equipment installation specification 11. 06. 2024

Ventilation device model VERSO-R-40-SL/AZ-H-PM/IE5/4.4/2-F7-M5-X-HCW/5R/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: 592x592x500\8	771400094	2
3	Rotacijski toplotni izmenjevalec RR-AZ-1300-SL-O-SN(1406x1430x310)-P2-A1(C5)	1007440	1
4	Changeover CW-G10-05R-1260-0540-160-1x17C-26F-M1-C40-IS1-XX-1xR1/1xR1-180	0	1
5	Ventilator RH45C.CR_4.4	1050481	1
6	Frekven niki DF2-442M0	1048627	1
7	Sound absorbers PRO_40_70_SE20_100_8_S	1168651	1
	PRO_40_70_SE20_100_8_S	1168651	1
8	Dodatna oprema		

Pretok odto nega zraka

9	Filter zraka: 592x592x500\8	771200195	2
10	Ventilator RH40C.CR_2	1032646	1
11	Frekven niki DF2-202M0	1027233	1
12	Sound absorbers PRO_40_71_SE20_100_8_S	1168652	1
	PRO_40_71_SE20_100_8_S	1168652	1
13	Dodatna oprema		