

From Inspection Side

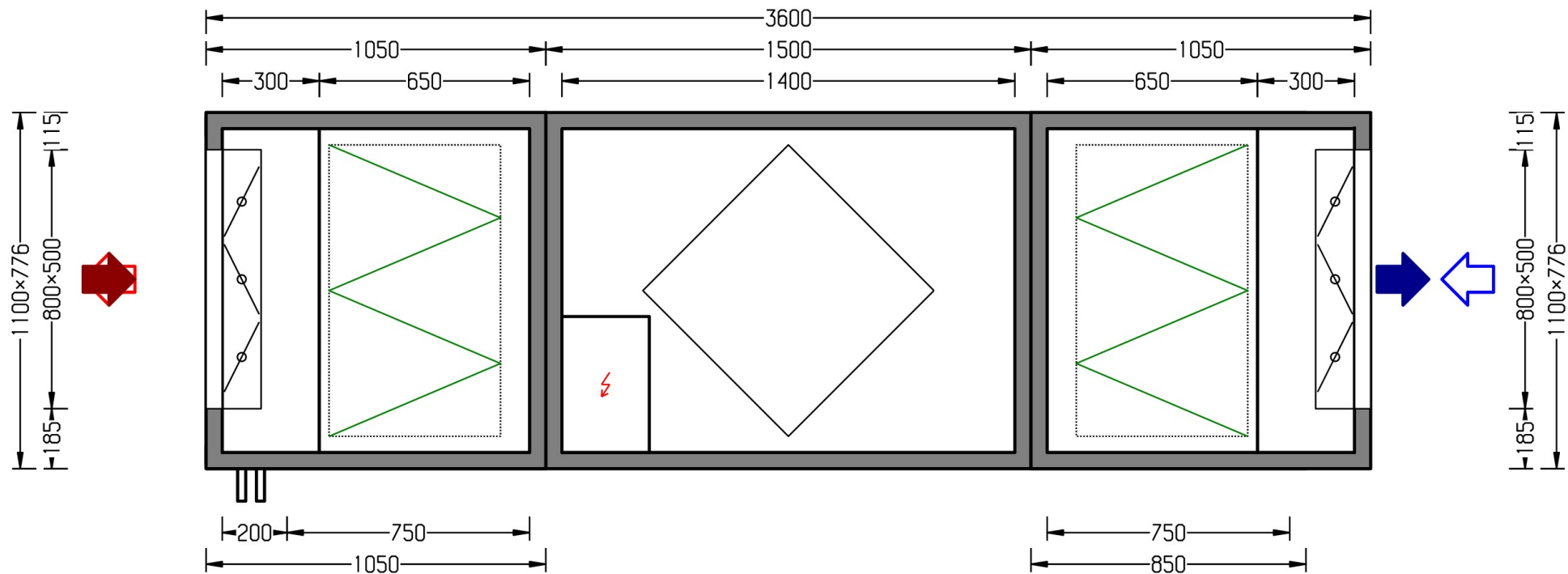
2013-05-27
2.7.130416.1

Customer id 60590
Project 67
Unit 6
AOC ACON-01203023

Project name VENTSPILS EC_2013-01-16
Unit name P3N3_darbnīcas
Supply air eQ-014
Exhaust air eQ-014

VENTSPILS EC_2013-01-16
P3N3_darbnīcas
4185 m³/h
3985 m³/h

FläktWoods



From Above

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4185 m³/h
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FläktWoods

AIR HANDLING UNIT eQ

Project	67 () / VENTSPILS EC_2013-01-16	2.7.130416.1
AOC	ACON-01203023	
Unit	6 () / P3N3_darbnīcas	2013-05-27
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Customer		
Customers ref.		
Our ref.	Andrejs Garders	
Supply air flow	4185 m³/h	Exhaust air flow 3985 m³/h
Ext. static pressure	350 Pa	Ext. static pressure 350 Pa
Voltage	3 x 400V + N, 50 Hz	Weight 1026 kg
SFP _v	1,91 kW/(m³/s)	Dimensioned for wet condition
Ref. density	1,2 kg/m³	Ref. altitude above sea level 0 m

SUMMARY

Functional sections in direction of air flow	v0 (m/s)	Et (%)	tw (°C)	ts (°C)	dP (Pa)
Supply air:					
Connection section	3,0				4
Filter	2,2				122
Heat exchanger	1,9	56,9	-18 / 2,7		107
Plenum fan		72,2	2,7 / 3,5	30 / 31	666
Air heater	2,3		3,5 / 20		48
Connection section	3,0				1
Exhaust air:					
Connection section	2,8				4
Filter	2,1				79
Heat exchanger	2,0		23 / 5,8		88
Plenum fan		71,8			544

SOUND POWER LEVELS

(standard: EN13053 ISO/CD 13347-2)

	Lw per octave band (dB)								LwA
Octave band (Hz)	63	125	250	500	1k	2k	4k	8k	dB(A)
Fresh air connection	58	58	63	56	60	58	52	51	64
Supply air connection	60	65	71	70	74	71	67	61	77
Extract connection	57	57	64	57	58	56	50	49	63
Exhaust connection	59	64	71	70	74	72	69	64	78
To surroundings	57	54	55	43	47	47	40	30	53

TOLERANCE

According to EN 13053 the LwA tolerance is 4dB. Octave band tolerances are presented in the tolerance table

	Lw per octave band (dB)								LwA
Octave band (Hz)	63	125	250	500	1k	2k	4k	8k	dB(A)
Tolerance	8	6	6	6	6	4	4	7	4

Frequency converters and motors mounted external are not included in the sound power levels

AIR HANDLING UNIT eQ

Project	67 () / VENTSPILS EC_2013-01-16	2.7.130416.1
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SFP _v	1,91 kW/(m³/s)	Dimensioned for wet condition
Ref. density	1,2 kg/m³	Ref. altitude above sea level 0 m

SUMMARY

Unit

Supply air flow	4185 m³/h	Installation	Indoor horizontal
Ext. static pressure	350 Pa	Material	AlZn sheet steel
Exhaust air flow	3985 m³/h	Thermal insulation	T3
Ext. static pressure	350 Pa	Condensation insulation	TB3
Dim. temp. summer	30 °C	Leakage class	L2
Dim. humidity summer	35 %	Casing strength	CEN D2
Dim. temp. winter	-18 °C	Filter grade supply	
Dim. humidity winter	90 %	Filter grade extract	
Temperature in, supply air, summer	20 °C	Temperature in, extract air, summer	22 °C
Air humidity in, supply air, summer	60 %	Air humidity in, extract air, summer	50 %
Temperature in, supply air, winter	20 °C	Temperature in, extract air, winter	23 °C
Air humidity in, supply air, winter	22,6 %	Air humidity in, extract air, winter	35 %
Heat recovery efficiency	56,9 %	Heat recovery capacity	29 kW
SFP _v supply air	1,05 kW/(m³/s)	Total dry weight	1026 kg
SFP _v exhaust air inlet	0,90 kW/(m³/s)		
SFP _v total sum	1,91 kW/(m³/s)	Heaviest block	380 kg
		Largest block	1550 x 1872 x 1250 mm

Coils

	Capacity [kW]	Air In [°C/%]	Air Out [°C/%]	Water in/out [°C]	Antifreeze	Water [l/s]	Water [kPa]	Conn [mm]
Air heater	23,2	3,5/14,3	20/4,8	70/50	Ethylene glycol 35 %	0,3	3,0	25

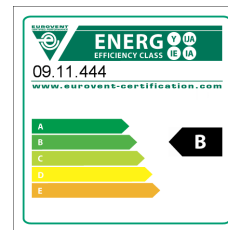
Motor data

Voltage	3 x 400V + N, 50 Hz		
Power, supply flow	2,2 kW	Power, extract flow	1,1 kW
Current, full load, supply flow	4,5 A	Current, full load, extract flow	2,5 A

SOUND POWER LEVELS

(standard: EN13053 ISO/CD 13347-2)

	Lw per octave band (dB)								LwA dB(A)
Octave band (Hz)	63	125	250	500	1k	2k	4k	8k	
Fresh air connection	58	58	63	56	60	58	52	51	64
Supply air connection	60	65	71	70	74	71	67	61	77
Extract connection	57	57	64	57	58	56	50	49	63
Exhaust connection	59	64	71	70	74	72	69	64	78
To surroundings	57	54	55	43	47	47	40	30	53



AIR HANDLING UNIT eQ

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AOC ACON-01203023
Unit 6 () / P3N3_darbnīcas 2013-05-27
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Customer

Customers ref.

Our ref. Andrejs Garders

Supply air flow	4185 m ³ /h	Exhaust air flow	3985 m ³ /h
Ext. static pressure	350 Pa	Ext. static pressure	350 Pa
Voltage	3 x 400V + N, 50 Hz	Weight	1026 kg
SFP _v	1,91 kW/(m ³ /s)	Dimensioned for wet condition	
Ref. density	1,2 kg/m ³	Ref. altitude above sea level	0 m

TOLERANCE

According to EN 13053 the LwA tolerance is 4dB. Octave band tolerances are presented in the tolerance table

Octave band (Hz)	Lw per octave band (dB)								LwA
	63	125	250	500	1k	2k	4k	8k	dB(A)
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Frequency converters and motors mounted external are not included in the sound power levels

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TECHNICAL SPECIFICATION
(components listed in direction of air flow)

SUPPLY AIR

Intake air section

Pressure drop, dimensioning

4 Pa

Casing end wall

Multi cable

Damper

Width cm : 080

Height in cm : 050

Tightness class : CEN 3

Connection: flange

Function : Outdoor air

Location: internally end wall

Damper type: 100 mm blade

Material : galvanized sheet steel

Damper actuator

Empty section

Unit size : 014

Length: 030

Inspection door : with door (for negative pressure)

Inspection side : left

Filter

Unit size : 014

Filter class : F7

Filter type : synthetic

Filter length : Long bag (vertical pockets only)

Filter frame : galvanized sheet steel

Connection side : inlet in end wall

Location: negative pressure

Material: galvanized sheet steel

Inspection side : left

Pressure drop, start

72 Pa

Pressure drop, dimensioning

122 Pa

Pressure drop, end

172 Pa

Face area

0,5 m²

Face velocity

2,2 m/s

Analogue differential pressure sensor

Design: U-tube manometer for air flow measuring



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Plate heat exchanger, RECUTERM

Unit size : 014

Installation alternative, right-hand/left-hand : 1

Exhaust air direction: downwards

Fin material : aluminium

Design : sectionalized defrosting

Control connection: with

Material : galvanized sheet steel

Inspection side: left

Version number: version 1

Performance, unregulated

Air temperature in	-18	0 °C
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Air temperature out	7	13,1 °C
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Efficiency	60,9	56,9 %
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Antifrost control

Temperature efficiency		50,4 %
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Capacity reduction		29 kW
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25% of the inlet area is blocked off during sectional defrosting

Temperature limit when frost protection starts:		-7 °C
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Supply air

Pressure drop, dimensioning		107 Pa
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Air temperature		-18 / 2,7 °C
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Relative humidity		90 / 15,2 %
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Exhaust air

Pressure drop, dimensioning		88 Pa
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Air temperature		23 / 5,8 °C
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Relative humidity		35 / 76,8 %
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Multi cable

Water trap

Type: Negative pressure –800 Pa

Water trap

Type: Negative pressure –800 Pa

AIR HANDLING UNIT eQ

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Plenum fan Centriflow Plus

Unit size : 014
Fan size : 2
Equipment: normal + pressure tapping for air flow measurement
Anti-vibration mountings : rubber
Position inside the casing : supply air
Outlet direction : forward, towards following function
Material : galvanized sheet steel
Inspection side: left

Dimensioning data

Speed	2551 Rpm
Fan efficiency	72,2 %
Total efficiency	57,7 %
Pressure rise, dimensioning	666 Pa
Fan shaft power at dim. data	1,11 kW
Grid Power	1,39 kW
Temperature rise	1 °C

SFP Calculation

Grid power according to SFP	1,23 kW
Pressure rise	605 Pa
Speed	2420 Rpm

Centriflow Plus Fan Unit + Motor

Wheel diameter: 035
Number of poles: 2
Rated output: 00220
Motor type: Fläkt Woods Asynchronous
Voltage: 220 – 240 VD / 380 – 420 VY
Brand: Fläkt Woods
Version: 2011

Multi cable

Single-speed motor

Voltage: 220-240 V delta, 380-420 V star, 220 V delta, 380 V star
Temperature sensors in stator winding: with thermistor
Design variant: FläktWoods IE2
Efficiency
Speed
Motor output
Electric current
Number of Poles
Output margin, minimum

83,2 %
2880 Rpm
2,2 kW
4,5 A
2
10,0 %

Frequency converter

Efficiency	96,0 %
Operating frequency	44 Hz
Max frequency at frequency control	51,5 Hz
Max speed at frequency control	2966 Rpm

Motor accessories

Motor: 1-Speed
Motor control: Mounted frequency converter
Connection accessories: Quick connection
Type: Standard
Length: 261
Power supply: 3x400 VAC

Fan control

Fan location: Supply fan
Control function: Flow control
Control reference: Setpoint in DUC
Pressure range: 0-5000 Pa
Fire function: Without

AIR HANDLING UNIT eQ

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Design: Standard
Delivery option: Mounted on current sub, quick connection

Start equipment fan

Fan location: Supply 1
Motor: 1-Speed
Start method: Frequency converter
Voltage: 400 VAC, 3-phase
Rated current high speed: 045
Delivery options: Mounted on current sub, quick connection

Air heater for hot water

Output variant : 2	25
Material, coil : Cu/Al	
Fin pitch: 2 mm	
Fluid circuits: 06	
Design: one complete coil	
Material, frame : galvanized sheet steel	
Connection side : left	
Nom. pipe size	25
Pressure drop, dimensioning	48 Pa
Output	23,2 kW
Air temperature	3,5 / 20 °C
Face velocity	2,2 m/s
Liquid volume	4,7 l
Control principle for water heater	flow control
Water temperature	70 / 50 °C
Water flow	0,3 l/s
Water velocity	0,4 m/s
Pressure drop water	3,0 kPa
Ethylene glycol	35 %

Frost protection sensor

Type of heater: Air heater
Sensor type: Standard
Design: Immersion sensor
Delivery option: Supplied with STEQ

End connection frame

Pressure drop, dimensioning	1 Pa
Casing end wall	

EXHAUST AIR



AIR HANDLING UNIT eQ

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Intake air section

Pressure drop, dimensioning

4 Pa

Casing end wall

Multi cable

Damper

Width cm : 080

Height in cm : 050

Tightness class : CEN 3

Connection: flange

Function : exhaust air

Location: internally end wall

Damper type: 100 mm blade

Material : galvanized sheet steel

Damper actuator

Empty section

Unit size : 014

Length: 030

Inspection door : with door (for negative pressure)

Inspection side : right

Filter

Unit size : 014

Filter class : M5

Filter type : synthetic

Filter length : Long bag (vertical pockets only)

Filter frame : galvanized sheet steel

Connection side : inlet in end wall

Location: negative pressure

Material: galvanized sheet steel

Inspection side : right

Pressure drop, start

29 Pa

Pressure drop, dimensioning

79 Pa

Pressure drop, end

129 Pa

Face area

0,5 m²

Face velocity

2,1 m/s

Analogue differential pressure sensor

Design: U-tube manometer for air flow measuring

AIR HANDLING UNIT eQ

Project	67 () / VENTSPILS EC_2013-01-16	2.7.130416.1
AOC	ACON-01203023	
Unit	6 () / P3N3_darbnīcas	2013-05-27
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Plenum fan Centriflow Plus

Unit size : 014
Fan size : 2
Equipment: normal + pressure tapping for air flow measurement
Anti-vibration mountings : rubber
Position inside the casing : exhaust air
Outlet direction : forward, to duct (rectangular)
Material : galvanized sheet steel
Inspection side: right

Dimensioning data

Speed	2325 Rpm
Fan efficiency	71,8 %
Total efficiency	54,7 %
Pressure rise, dimensioning	544 Pa
Fan shaft power at dim. data	0,85 kW
Grid Power	1,12 kW
Temperature rise	0,8 °C

SFP Calculation

Grid power according to SFP	0,999 kW
Pressure rise	493 Pa
Speed	2246 Rpm

Centriflow Plus Fan Unit + Motor

Wheel diameter: 035
Number of poles: 4
Rated output: 00110
Motor type: Fläkt Woods Asynchronous
Voltage: 220 – 240 VD / 380 – 420 VY
Brand: Fläkt Woods
Version: 2011

Multi cable

Single-speed motor

Voltage: 220-240 V delta, 380-420 V star, 220 V delta, 380 V star
Temperature sensors in stator winding: with thermistor
Design variant: FläktWoods IE2
Efficiency
Speed
Motor output
Electric current
Number of Poles
Output margin, minimum

81,4 %
1435 Rpm
1,1 kW
2,5 A
4
10,0 %

Frequency converter

Efficiency	93,6 %
Operating frequency	81 Hz
Max frequency at frequency control	86,4 Hz
Max speed at frequency control	2479 Rpm

Motor accessories

Motor: 1-Speed
Motor control: Mounted frequency converter
Connection accessories: Quick connection
Type: Standard
Length: 261
Power supply: 3x400 VAC

Fan control

Fan location: Exhaust fan
Control function: Flow control
Control reference: Setpoint in DUC
Pressure range: 0-5000 Pa
Fire function: Without



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Design: Standard

Delivery option: Mounted on current sub, quick connection

Start equipment fan

Fan location: Exhaust 1

Motor: 1-Speed

Start method: Frequency converter

Voltage: 400 VAC, 3-phase

Rated current high speed: 025

Delivery options: Mounted on current sub, quick connection