

From Inspection Side

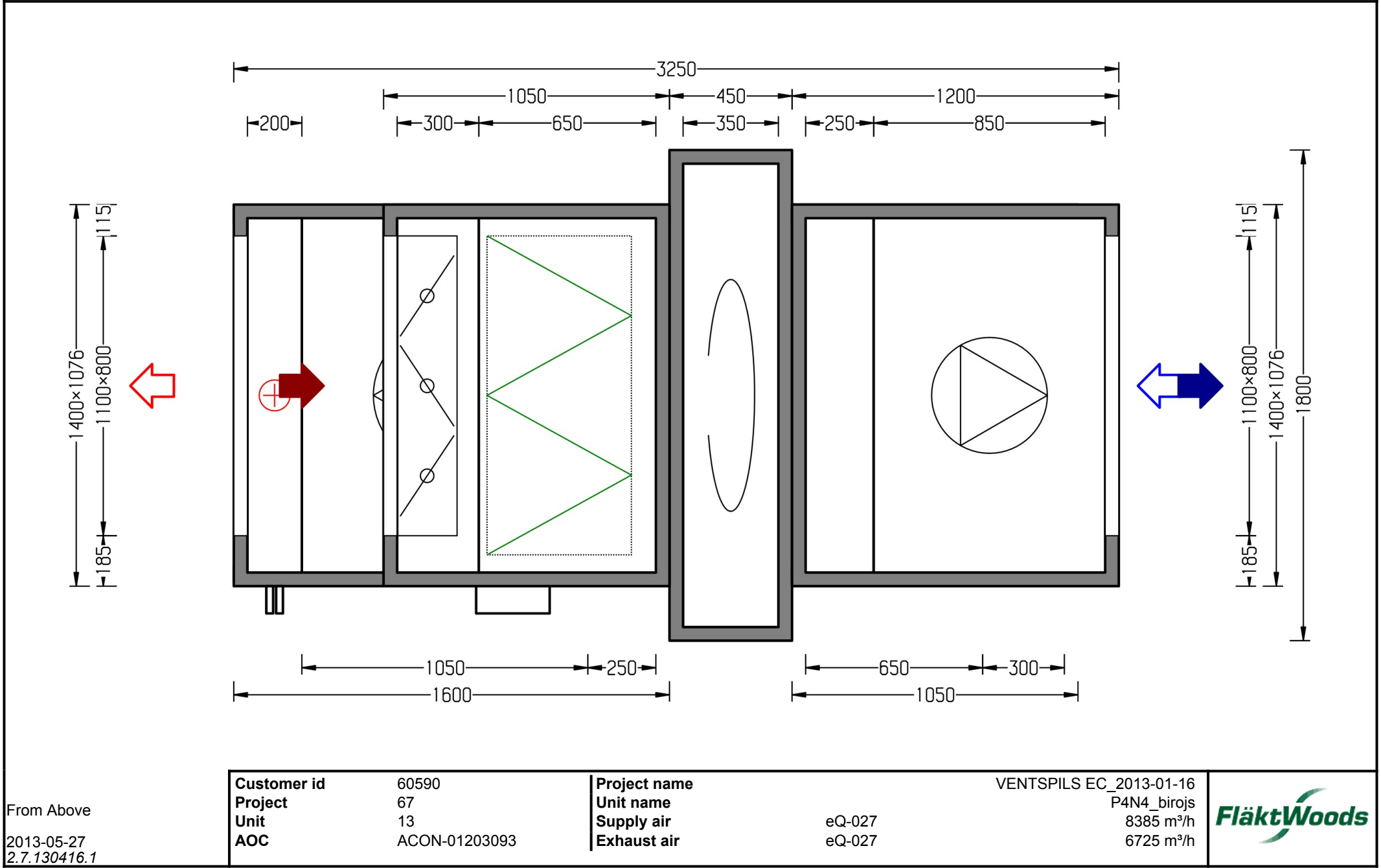
2013-05-27
2.7.130416.1

Customer id 60590
Project 67
Unit 13
AOC ACON-01203093

Project name VENTSPILS EC_2013-01-16
Unit name P4N4_birojs
Supply air eQ-027
Exhaust air eQ-027

VENTSPILS EC_2013-01-16
P4N4_birojs
8385 m³/h
6725 m³/h

FläktWoods



AIR HANDLING UNIT eQ

Project	67 () / VENTSPILS EC_2013-01-16	2.7.130416.1
AOC	ACON-01203093	
Unit	13 () / P4N4_birojs	2013-05-27
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Customer		
Customers ref.		
Our ref.	Andrejs Garders	
Supply air flow	8385 m³/h	Exhaust air flow 6725 m³/h
Ext. static pressure	350 Pa	Ext. static pressure 350 Pa
Voltage	3 x 400V + N, 50 Hz	Weight 1420 kg
SFP _v	1,63 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	2,8				4
Filter	2,3				125
Heat exchanger	2,3	69,2	-18 / 10,4		125
Inspection section					0
Plenum fan		75,3	10,4 / 11,1	30 / 30,9	659
Air heater	2,2		11,1 / 22		25
Connection section	2,7				1
Exhaust air:					
Connection section	2,2				2
Filter	1,8				73
Heat exchanger	2,0		23 / -9		96
Inspection section					0
Plenum fan		76,0			539

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	66	65	82	69	64	62	55	55	75
Supply air connection	69	69	84	82	81	74	69	66	85
Extract connection	66	73	78	68	59	57	51	49	71
Exhaust connection	69	75	80	79	78	72	69	67	82
To surroundings	63	64	71	52	49	48	42	33	63

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

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SUMMARY

Unit

Supply air flow	8385 m³/h	Installation	Indoor horizontal
Ext. static pressure	350 Pa	Material	AlZn sheet steel
Exhaust air flow	6725 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	22 °C	Temperature in, extract air, winter	23 °C
Air humidity in, supply air, winter	20 %	Air humidity in, extract air, winter	35 %
Heat recovery efficiency	69,2 %	Heat recovery capacity	97 kW
SFP _v supply air	0,96 kW/(m³/s)	Total dry weight	1420 kg
SFP _v exhaust air inlet	0,83 kW/(m³/s)	Heaviest block	416 kg
SFP _v total sum	1,63 kW/(m³/s)	Largest block	500 x 2472 x 1950 mm

Coils

	Capacity [kW]	Air In [°C/%]	Air Out [°C/%]	Water in/out [°C]	Antifreeze	Water [l/s]	Water [kPa]	Conn [mm]
Air heater	30,8	11,1/38,5	22/19,2	70/50	Ethylene glycol 35 %	0,39	4,1	25

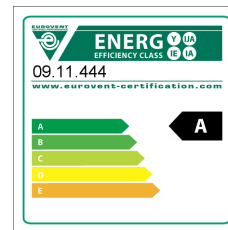
Motor data

Voltage 3 x 400V + N, 50 Hz
Power, supply flow 3,0 kW Power, extract flow 2,2 kW
Current, full load, supply flow 6,3 A Current, full load, extract flow 4,7 A

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Ref. density 1,2 kg/m³ Ref. altitude above sea level 0 m

TOLERANCE

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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 : 110

Height in cm : 080

Tightness class : CEN 3

Connection: flange

Function : Outdoor air

Location: internally end wall

Damper type: 200 mm blade

Material : galvanized sheet steel

Damper actuator

Empty section

Unit size : 027

Length: 030

Inspection door : with door (for negative pressure)

Inspection side : left

Filter

Unit size : 027

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

75 Pa

Pressure drop, dimensioning

125 Pa

Pressure drop, end

175 Pa

Face area

1,1 m²

Face velocity

2,3 m/s

Analogue differential pressure sensor

Design: U-tube manometer for air flow measuring



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REGOTERM rotary heat exchanger

Unit size: 027
Rotor type: non-hygroscopic
Output variant: Output variant 5 (1.7)
Drive/Voltage: variable speed,, 1x230V
Motor class: variable speed,
Control connection: with
Function lenght: standard (only rotor)
Supply air: lower deck
Delivery: Whole rotor
Material: galvanized sheet steel/AlZn
Inspection side : left
Version number: With cable trunking

Temperature Efficiency
Capacity reduction
Humidity efficiency
Air flow transfer

Winter
69,2 %
97 kW
45,4 %
585 m³/h

Supply air

Pressure drop
Air temperature
Relative humidity

Winter
102 Pa
-18 / 10,4 °C
90 / 40,6 %

Exhaust air

Pressure drop
Air temperature
Relative humidity

Winter
88 Pa
23 / -9 °C
35 / 100 %

Multi cable

Empty section

Unit size : 027
Length: 025
Inspection side : left

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Plenum fan Centriflow Plus

Unit size : 027
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	1759 Rpm
Fan efficiency	75,3 %
Total efficiency	62,1 %
Pressure rise, dimensioning	659 Pa
Fan shaft power at dim. data	2,12 kW
Grid Power	2,57 kW
Temperature rise	0,9 °C

SFP Calculation

Grid power according to SFP	2,24 kW
Pressure rise	597 Pa
Speed	1667 Rpm

Centriflow Plus Fan Unit + Motor

Wheel diameter: 050
Number of poles: 4
Rated output: 00300
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

85,5 %
1445 Rpm
3,0 kW
6,3 A
4
10,0 %

Frequency converter

Efficiency	96,5 %
Operating frequency	61 Hz
Max frequency at frequency control	67,2 Hz
Max speed at frequency control	1943 Rpm

Motor accessories

Motor: 1-Speed
Motor control: Mounted frequency converter
Connection accessories: Quick connection
Type: Standard
Length: 308
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: 063

Delivery options: Mounted on current sub, quick connection

Air heater for hot water

Output variant : 1

Material, coil : Cu/Al

Fin pitch: 2 mm

Fluid circuits: 04

Design: one complete coil

Material, frame : galvanized sheet steel

Connection side : left

Nom. pipe size

25

Pressure drop, dimensioning

25 Pa

Output

30,8 kW

Air temperature

11,1 / 22 °C

Face velocity

2,2 m/s

Liquid volume

5,2 l

Control principle for water heater

flow control

Water temperature

70 / 50 °C

Water flow

0,39 l/s

Water velocity

0,5 m/s

Pressure drop water

4,1 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



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Intake air section

Pressure drop, dimensioning

2 Pa

Casing end wall

Multi cable

Damper

Width cm : 110

Height in cm : 080

Tightness class : CEN 3

Connection: flange

Function : exhaust air

Location: internally end wall

Damper type: 200 mm blade

Material : galvanized sheet steel

Damper actuator

Empty section

Unit size : 027

Length: 030

Inspection door : with door (for negative pressure)

Inspection side : right

Filter

Unit size : 027

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

23 Pa

Pressure drop, dimensioning

73 Pa

Pressure drop, end

123 Pa

Face area

1,1 m²

Face velocity

1,8 m/s

Analogue differential pressure sensor

Design: U-tube manometer for air flow measuring

Empty section

Unit size : 027

Length: 025

Inspection side : right

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Project	67 () / VENTSPILS EC_2013-01-16	2.7.130416.1
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Plenum fan Centriflow Plus

Unit size : 027
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	1512 Rpm
Fan efficiency	76,0 %
Total efficiency	61,6 %
Pressure rise, dimensioning	539 Pa
Fan shaft power at dim. data	1,39 kW
Grid Power	1,71 kW
Temperature rise	0,7 °C

SFP Calculation

Grid power according to SFP	1,56 kW
Pressure rise	487 Pa
Speed	1465 Rpm

Centriflow Plus Fan Unit + Motor

Wheel diameter: 050
Number of poles: 4
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

84,3 %
1450 Rpm
2,2 kW
4,7 A
4
10,0 %

Frequency converter

Efficiency	96,1 %
Operating frequency	52 Hz
Max frequency at frequency control	59,9 Hz
Max speed at frequency control	1737 Rpm

Motor accessories

Motor: 1-Speed
Motor control: Mounted frequency converter
Connection accessories: Quick connection
Type: Standard
Length: 308
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: 047

Delivery options: Mounted on current sub, quick connection