

From Inspection Side

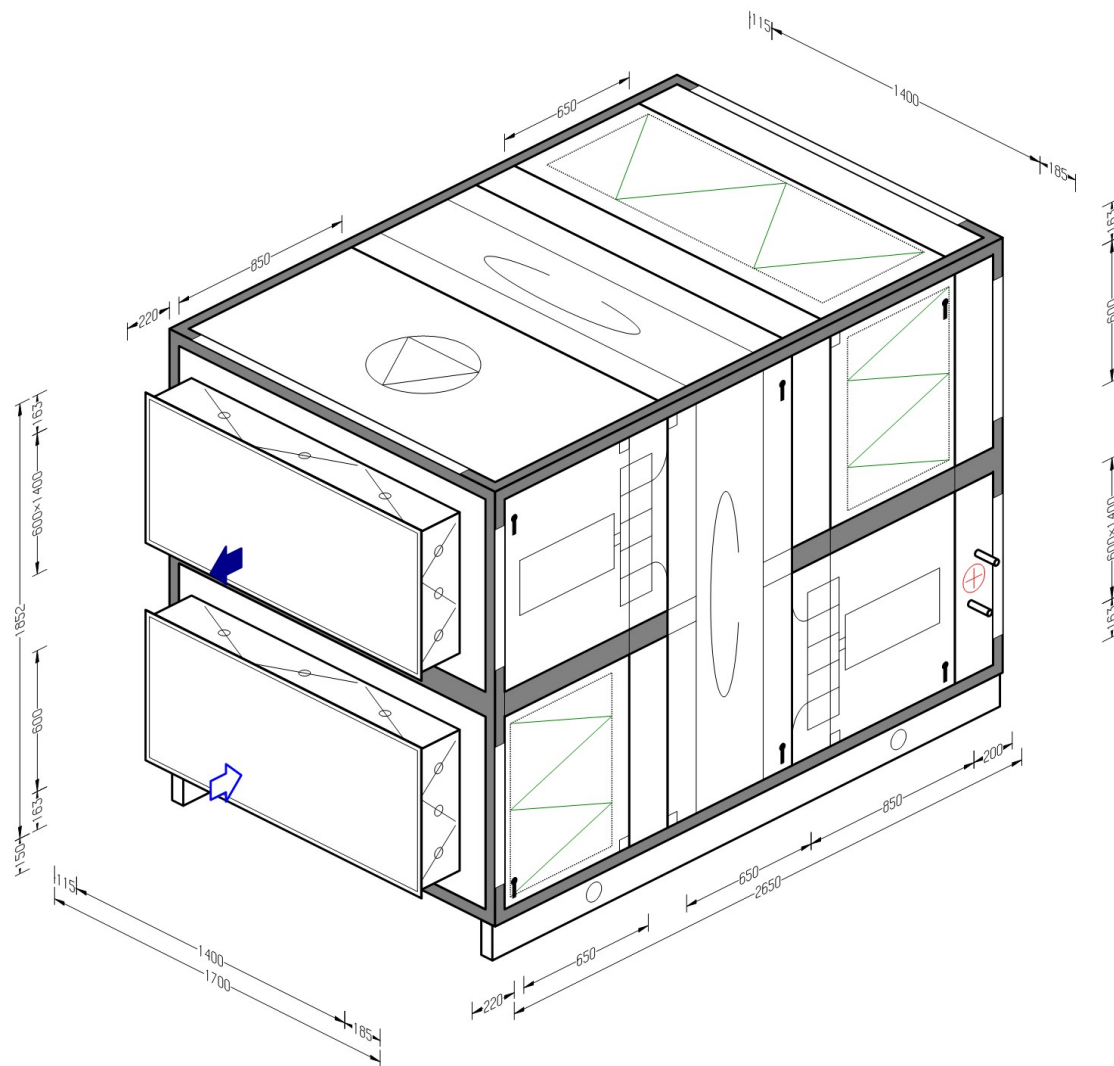
2012-11-05
2.6.121031.3

Customer id 2460
Project 1530
Unit 3
AOC ACON-01159233

Project name
Unit name
Supply air eQ-023
Exhaust air eQ-023

Olaines sporta zale
PN-1
9140 m³/h
6965 m³/h





Isometric South West

2012-11-05
2.6.121031.3

Customer id	2460
Project	1530
Unit	3
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Project name	
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Supply air	eQ-023
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Olaines sporta zale
PN-1
9140 m³/h
6965 m³/h



AIR HANDLING UNIT eQ

Project 1530 () / Olaines sporta zale 2.6.121031.3
AOC ACON-01159233
Unit 3 () / PN-1 2012-11-05
Size 023 Page 3

Customer

Customers ref.

Our ref. Olga Luzgina

Supply air flow	9140 m³/h	Exhaust air flow	6965 m³/h
Ext. static pressure	500 Pa	Ext. static pressure	500 Pa
Voltage	3 x 400V + N, 50 Hz	Weight	1165 kg
SFP _v	2,46 kW/m³/s	Designed for wet conditions	
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	3,2				5
Filter	3,0				188
Heat exchanger	2,8	68,7	-20,7 / 10,0		236
Plenum fan		73,9	10,0 / 11,2	27,0 / 28,3	1012
Air heater	2,4		11,2 / 22,0		17
Connection section	3,1				1
Exhaust air:					
Connection section	2,4				1
Filter	2,2				82
Heat exchanger	2,2		24,0 / -12,0		178
Plenum fan		73,6			802

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	68	67	82	71	66	64	57	57	75
Supply air connection	70	70	85	83	82	75	70	67	86
Extract connection	65	64	81	70	62	60	53	53	74
Exhaust connection	67	67	83	81	80	74	70	68	84
To surroundings	63	59	71	54	51	50	43	35	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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AOC	ACON-01159233	
Unit	3 () / PN-1	2012-11-05
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Customer		
Customers ref.		
Our ref.	Olga Luzgina	
Supply air flow	9140 m³/h	Exhaust air flow 6965 m³/h
Ext. static pressure	500 Pa	Ext. static pressure 500 Pa
Voltage	3 x 400V + N, 50 Hz	Weight 1165 kg
SFP _v	2,46 kW/m³/s	Designed for wet conditions
Ref. density	1,2 kg/m³	Ref. altitude above sea level 0 m

SUMMARY

Unit

Supply air flow	9140 m³/h	Installation	Indoor horizontal
Ext. static pressure	500 Pa	Material	AlZn sheet steel
Exhaust air flow	6965 m³/h	Thermal insulation	T3
Ext. static pressure	500 Pa	Condensation insulation	TB3
Dim. temp. summer	27 °C	Leakage class	L2
Dim. humidity summer	60 %	Casing strength	CEN D2
Dim. temp. winter	-20,7 °C	Filter grade supply	F7
Dim. humidity winter	79,9 %	Filter grade extract	F5
Temperature in, supply air, summer	18 °C	Temperature in, extract air, summer	24 °C
Air humidity in, supply air, summer	50 %	Air humidity in, extract air, summer	30 %
Temperature in, supply air, winter	22 °C	Temperature in, extract air, winter	24 °C
Air humidity in, supply air, winter	40 %	Air humidity in, extract air, winter	40 %
Heat recovery efficiency	69 %	Heat recovery capacity	120 kW
SFP _v supply air	1,4 kW/m³/s	Total dry weight	1165 kg
SFP _v exhaust air inlet	1,2 kW/m³/s		
SFP _v total sum	2,4 kW/m³/s	Heaviest block	1165 kg
		Largest block	2920 x 2172 x 1850 mm

Coils

	Capacity [kW]	Air in [°C/%]	Air out [°C/%]	Water in/out [°C]	Antifreeze	Water [l/s]	Water [kPa]	Conn [mm]
Air heater	33,4	11/47	22/24	80/60	0 %	0,42	4,2	25

Motor data

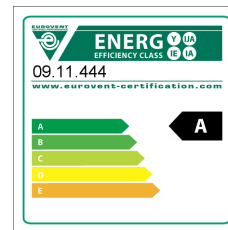
Voltage	3 x 400V + N, 50 Hz		
Power, supply flow	5,5 kW	Power, extract flow	3 kW
Current, full load, supply flow	11,2 A	Current, full load, extract flow	6,3 A

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	68	67	82	71	66	64	57	57	75
Supply air connection	70	70	85	83	82	75	70	67	86
Extract connection	65	64	81	70	62	60	53	53	74
Exhaust connection	67	67	83	81	80	74	70	68	84
To surroundings	63	59	71	54	51	50	43	35	63

TOLERANCE



AIR HANDLING UNIT eQ

Project 1530 () / Olaines sporta zale 2.6.121031.3
 AOC ACON-01159233
 Unit 3 () / PN-1 2012-11-05
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Customer
 Customers ref.
 Our ref. Olga Luzgina
 Supply air flow 9140 m³/h Exhaust air flow 6965 m³/h
 Ext. static pressure 500 Pa Ext. static pressure 500 Pa
 Voltage 3 x 400V + N, 50 Hz Weight 1165 kg
 SFP_v 2,46 kW/m³/s Designed for wet conditions
 Ref. density 1,2 kg/m³ Ref. altitude above sea level 0 m

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

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AIR HANDLING UNIT eQ

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TECHNICAL SPECIFICATION

(components listed in direction of air flow)

SUPPLY AIR

End connection frame

Pressure drop, dimensioning

5 Pa

Casing end wall

Damper

Width cm : 140

Height in cm : 060

Tightness class : CEN 3

Connection: slip joint (PG)

Function : Outdoor air

Location: externally end wall

Damper type: 200 mm blade

Material : galvanized sheet steel

Filter

Unit size : 023

Filter class : F7

Filter type : glass fibre

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

138 Pa

Pressure drop, dimensioning

188 Pa

Pressure drop, end

238 Pa

Face area

0,9 m²

Face velocity

3,0 m/s



AIR HANDLING UNIT eQ

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REGOTERM rotary heat exchanger

Unit size: 023
Rotor type: non-hygroscopic
Output variant: Output variant 7 (TURBOTERM)
Drive/Voltage: variable speed,, 1x230V
Motor class: variable speed,
Function lenght: rotary with fan section before and after
Supply air: lower deck
Delivery: Whole rotor
Material: galvanized sheet steel/AlZn
Inspection side : right
Version number: With cable trunking

Temperature Efficiency
Capacity reduction
Humidity efficiency
Air flow transfer

Winter
68,7 %
120,1 kW
48,7 %
0,20 m³/s

Supply air

Pressure drop
Air temperature
Relative humidity

Winter
195 Pa
-20,7 / 10,0 °C
79,9 / 50,8 %

Exhaust air

Pressure drop
Air temperature
Relative humidity

Winter
160 Pa
24,0 / -12,0 °C
40,0 / 99,9 %

AIR HANDLING UNIT eQ

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Plenum fan Centriflow Plus

Unit size : 023
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: right

Dimensioning data

Speed	2047 rpm
Fan efficiency	73,9 %
Total efficiency	63,4 %
Pressure rise, dimensioning	1012 Pa
Fan shaft power at dim. data	3,59 kW
Grid Power	4,18 kW
Temperature rise	1,3 °C

SFP Calculation

Grid power according to SFP	3,78 kW
Pressure rise	945 Pa
Speed	1961 rpm

Single-speed motor

Voltage: 380-420 V delta, 660-690 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

87,7 %
1465 rpm
5,5 kW
11,2 A
4
10 %

Frequency converter

Efficiency	98,0 %
Operating frequency	70,0 Hz
Max frequency at frequency control	80,4 Hz
Max speed at frequency control	2351 rpm

Motor accessories

Motor: 1-Speed
Motor control: Mounted frequency converter
Type: Standard
Length: 100
Power supply: 3x400 VAC

AIR HANDLING UNIT eQ

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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 : right	
Nom. pipe size	25
Pressure drop, dimensioning	17 Pa
Output	33,4 kW
Air temperature	11,2 / 22,0 °C
Face velocity	2,4 m/s
Liquid volume	4,0 l
Control principle for water heater	flow control
Water temperature	80,0 / 60,0 °C
Water flow	0,42 l/s
Water velocity	0,6 m/s
Pressure drop water	4,2 kPa

End connection frame

Pressure drop, dimensioning	1 Pa
Casing end wall	

EXHAUST AIR

End connection frame

Pressure drop, dimensioning	1 Pa
Casing end wall	

Filter

Unit size : 023	
Filter class : F5	
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	32 Pa
Pressure drop, dimensioning	82 Pa
Pressure drop, end	132 Pa
Face area	0,9 m ²
Face velocity	2,2 m/s

AIR HANDLING UNIT eQ

Project	1530 () / Olaines sporta zale	2.6.121031.3
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Plenum fan Centriflow Plus

Unit size : 023
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: left

Dimensioning data

Speed	1755 rpm
Fan efficiency	73,6 %
Total efficiency	60,5 %
Pressure rise, dimensioning	802 Pa
Fan shaft power at dim. data	2,27 kW
Grid Power	2,77 kW
Temperature rise	1,1 °C

SFP Calculation

Grid power according to SFP	2,46 kW
Pressure rise	744 Pa
Speed	1681 rpm

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	85,5 %
Speed	1445 rpm
Motor output	3,0 kW
Electric current	6,3 A
Number of Poles	4
Output margin, minimum	10 %

Frequency converter

Efficiency	96,1 %
Operating frequency	61,0 Hz
Max frequency at frequency control	67,2 Hz
Max speed at frequency control	1930 rpm

Motor accessories

Motor: 1-Speed
Motor control: Mounted frequency converter
Type: Standard
Length: 100
Power supply: 3x400 VAC

Damper

Width cm : 140
Height in cm : 060
Tightness class : CEN 3
Connection: slip joint (PG)
Function : extract air
Location: externally end wall
Damper type: 200 mm blade
Material : galvanized sheet steel

**AIR HANDLING UNIT eQ**

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PRODUCT LIST

Qty.	Product
1	Unit casing (frame, unit)
1	Installation instructions
1	Base frame
1	Casing end wall
1	Damper
1	Filter
1	Plenum fan Centriflow Plus
1	Frequency converter
1	Single-speed motor
1	Motor accessories
1	Damper
1	REGOTERM rotary heat exchanger
1	Plenum fan Centriflow Plus
1	Frequency converter
1	Single-speed motor
1	Motor accessories
1	Filter
1	Air heater for hot water
1	Casing end wall
1	Casing end wall

**AIR HANDLING UNIT eQ**

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Unit	3 () / PN-1	2012-11-05
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BLOCK LIST

	Length (mm)	Width (mm)	Height (mm)	Volume (m³)	Weight (kg)
EQHB-023-265-11-1-1-2-1-1-1-1	2920	1850	2172	11,73	1165
Unit casing (frame, unit)					
Material: AlZn sheet steel					
Thermal insulation: T3					
Condensation insulation: TB3					
Leakage class: L2					
Casing strength: CEN D2					
End connection frame					
Filter					
Plenum fan Centriflow Plus					
REGOTERM rotary heat exchanger					
Plenum fan Centriflow Plus					
Filter					
Air heater for hot water					
End connection frame					
End connection frame					
				11,73	1165