Project: VZT
Unit name: AHU2 - Integrovaný DX - Design data

Date: 31/10/2021
24 / 1.0.20211027.1204652
Unit ID: AD-10001019402

GOLD F RX
Manufactured by Swegon, Kvänum, Sweden

Dimensioning data	AHU2 - Integrovaný DX		
Unit size		035	
Air density		1.200	kg/m³
Supply air flow		10,000	m³/h
Static pressure drop	Outdoor air duct	50	Pa
	Supply air duct	350	Pa
Extract air flow		10,000	m³/h
Static pressure drop	Extract air duct	350	Pa
	Exhaust air duct	50	Pa
Climate data		Bratislava,	Slovakia
Weather station, reference		BRATISLAVA-STEFANIK,	Slovakia
Design outdoor temperature, summer		32.0	°C
Design outdoor humidity, summer		40	%
Design outdoor temperature, winter		-16.0	°C
Design outdoor humidity, winter		90	%
Supply air temperature, summer		17.9	°C
Supply air temperature, winter		24.0	°C
Annual operating period		8760	h

Key Performance Data			
Specific fan power SFPv	Purging flow including leakage, clean filters	2.17	kW/(m³/s)
Dry-bulb temperature efficiency of supply air, winter		82.1	%
Eurovent Energy Efficiency Class	Summer: A ↻ 2020	Winter: A	2016
Eurovent; Fs_Pref:	Summer: 0.97	Winter:	0.88
ErP Commission Regulation (EU) No 1253/2014		Compliant	2018

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Casing	
Construction	Frameless, double skinned panels with mineral wool insulation
Panels	56mm thick with 1mm thick steel sheet inside and out. Outer sheet with grey painted finish
Thermal insulation class	T2
Thermal bridging class	TB2
Casing leakage class	L1(M) / L2(R) according to EN 1886:2007 at -400 Pa and +700 Pa
Casing strength	D1(M)
Hygiene	Compliant with the requirements of VDI 6022

Electrical connections	
GOLD F	3-phase, 5-wire, 400 V-10/+15%, 50 Hz, 20 A
Cooling machine, DX	3-phase, 4-wire, 400 V±10%, 50Hz, 50A
Heating coil, electrical, in casing	3*400V+N+PE, 40A

Functional sections viewed in the direction of air flow	Velocity m/s	Air Temperature in/out Winter °C	Air Temperature in/out Summer °C	Power kW	Design Pressure drop Pa	Noise Level dB(A)
Outdoor air duct					-50	71
Damper					-2	
End section					-8	
Cooling machine, DX	2.02		32.0/17.0		-46	
Filter	1.63				-106	
Rotary heat exchanger	2.25	-16.0/15.9	17.0/17.0		-136	
Fan				3.15	706	
Heating coil, electrical, in casing		16.8/24.0		24.18	-2	
End section					-7	
Supply air duct					-350	83
Extract air duct					-350	72
End section					-7	
Spacer section					-	
Filter	1.52				-52	
Rotary heat exchanger	2.37	22.0/-9.9	26.0/26.0		-145	
Extra pressure drop					-0	
Fan				3.25	675	
Cooling machine, DX	2.08		26.9/50.1		-61	
End section					-8	
Damper					-2	
Exhaust air duct					-50	86

Sound power to duct, measured according to ISO 5136
Noise reduction for function section included to duct.
Sound power emitted to surroundings, measured according to ISO 3741

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Frequency band	63	125	250	500	1k	2k	4k	8k	All		
To supply air duct	82	77	78	80	77	75	73	73	dB	83	dB(A)
To outdoor air duct	78	77	77	66	58	55	51	54	dB	71	dB(A)
To extract air duct	79	78	79	67	59	57	56	59	dB	72	dB(A)
To exhaust air duct	84	79	81	83	80	79	77	77	dB	86	dB(A)
To surroundings	75	67	60	64	49	48	45	48	dB	63	dB(A)

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GOLD F RX
Manufactured by Swegon, Kvänum, Sweden

Dimensioning data	AHU2 - Integrovaný DX		
Unit size		035	
Air density		1.200	kg/m³
Supply air flow		10,000	m³/h
Static pressure drop	Outdoor air duct	50	Pa
	Supply air duct	350	Pa
Extract air flow		10,000	m³/h
Static pressure drop	Extract air duct	350	Pa
	Exhaust air duct	50	Pa
Climate data		Bratislava,	Slovakia
Weather station, reference		BRATISLAVA-STEFANIK,	Slovakia
Air velocity (V2)	Supply air	1.63	m/s
Air velocity (V1)	Exhaust air	1.52	m/s
Design outdoor temperature, summer		32.0	°C
Design outdoor humidity, summer		40	%
Design outdoor temperature, winter		-16.0	°C
Design outdoor humidity, winter		90	%
Supply air temperature, summer		17.9	°C
Supply air temperature, winter		24.0	°C
Annual operating period		8760	h

Key Performance Data			
Specific fan power SFPv	Purging flow including leakage, clean filters	2.17	kW/(m³/s)
Dry-bulb temperature efficiency of supply air, winter		82.1	%
Eurovent Energy Efficiency Class	Summer: A ↻ 2020	Winter: A	2016
Eurovent; Fs_Pref:	Summer: 0.97	Winter:	0.88
ErP Commission Regulation (EU) No 1253/2014		Compliant	2018
Energy efficiency class (RLT)			A+

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Casing	
Construction	Frameless, double skinned panels with mineral wool insulation
Panels	56mm thick with 1mm thick steel sheet inside and out. Outer sheet with grey painted finish
Thermal insulation class	T2
Thermal bridging class	TB2
Casing leakage class	L1(M) / L2(R) according to EN 1886:2007 at -400 Pa and +700 Pa
Casing strength	D1(M)
Hygiene	Compliant with the requirements of VDI 6022
Max. external air leakage rate	< 1%
Max. internal air leakage rate	< 1%

Electrical connections	
GOLD F	3-phase, 5-wire, 400 V-10/+15%, 50 Hz, 20 A
Cooling machine, DX	3-phase, 4-wire, 400 V±10%, 50Hz, 50A
Heating coil, electrical, in casing	3*400V+N+PE, 40A

Functional sections viewed in the direction of air flow	Velocity m/s	Air Temperature in/out Winter °C	Air Temperature in/out Summer °C	Power kW	Design Pressure drop Pa	Noise Level dB(A)
Outdoor air duct					-50	71
Damper					-2	
End section					-8	
Cooling machine, DX	2.02		32.0/17.0		-46	
Filter	1.63				-106	
Rotary heat exchanger	2.25	-16.0/15.9	17.0/17.0		-136	
Fan				3.15	706	
Heating coil, electrical, in casing		16.8/24.0		24.18	-2	
End section					-7	
Supply air duct					-350	83
Extract air duct					-350	72
End section					-7	
Spacer section					-	
Filter	1.52				-52	
Rotary heat exchanger	2.37	22.0/-9.9	26.0/26.0		-145	
Extra pressure drop					-0	
Fan				3.25	675	
Cooling machine, DX	2.08		26.9/50.1		-61	
End section					-8	
Damper					-2	
Exhaust air duct					-50	86

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Sound power to duct, measured according to ISO 5136
Noise reduction for function section included to duct.
Sound power emitted to surroundings, measured according to ISO 3741

Frequency band	63	125	250	500	1k	2k	4k	8k	All		
To supply air duct	82	77	78	80	77	75	73	73	dB	83	dB(A)
To outdoor air duct	78	77	77	66	58	55	51	54	dB	71	dB(A)
To extract air duct	79	78	79	67	59	57	56	59	dB	72	dB(A)
To exhaust air duct	84	79	81	83	80	79	77	77	dB	86	dB(A)
To surroundings	75	67	60	64	49	48	45	48	dB	63	dB(A)

GOLD-Unit with control system

Components are arranged according to airflow direction

Quantity	Supply air		
1	**Damper, TBSA-6-140-060-1-1**		
	Damper motor: With spring return		
	Damper blade: Uninsulated		
	Static pressure drop	2	Pa
1	**End section, outdoor air**		
	Static pressure drop	8	Pa
1	**Cooling machine, DX, COOLDX-40-G-3-2-1-1-1**		
	Capacity variant	3	
	Filter		
	Filter class ePM1 50% (F7)		
	3x(592x592x520-10), 3x(592x287x520-10)		
	Velocity in the filter section	1.63	m/s
	Recommended design pressure drop	106	Pa
	Initial pressure drop	56	Pa
	Final pressure drop	156	Pa
	Cooling coil		
	No.of tube rows	4	
	Fin spacing	2.5	mm
	Air side		
	Electrical power	19.09	kW
	Cooling power	65.80	kW
	Pressure drop, dry	41	Pa
	Pressure drop, wet	46	Pa
	Air velocity	2.02	m/s
	EER	3.45	
	Refrigerant type	R410A	

Refrigerant charge circuit 1	5.5	kg
Refrigerant charge circuit 2	4.5	kg
Supply air temp, compressor step 1	23.8	°C
Supply air temp, compressor step 2	22.1	°C
Supply air temp, compressor step 3	17.0	°C

Supply air side, summer	In	Out	
Air temperature	32.0	17.0	°C
Relative humidity	40	89	%

Extract air side, summer	In	Out	
Air temperature	26.9	50.1	°C
Relative humidity	43	12	%
Amount of drained water		0.246	l/min

Quantity	Product	Article name
1	Drain trap	TBXZ-1-40-3

1 Rotary heat exchanger, GOLD035FRXP01

Rotary heat exchanger of type RECOsorptic STE

Standard aluminium

Speed controlled

Pressure drop, supply air	136	Pa
Pressure drop, extract air	145	Pa
Extra pressure drop in extract air side (damper) to ensure the right flow direction	0	Pa
Purging flow including leakage	740	m³/h
Outdoor Air Correction Factor, OACF	1.07	
Exhaust Air Transfer Ratio, EATR	0.5	%
Dry-bulb temperature efficiency of supply air, winter (82.1% at the same airflow. Heat recovery class, H1 EN 13053)	82.1	%
Dry-bulb temperture efficiency of supply air, summer	82.1	%
Humidity efficiency, supply air, winter	52.5	%
Humidity efficiency, supply air, summer	0.0	%
Annual energy efficiency, dry conditions	96.5	%

Supply air side, winter	In	Out	
Air temperature	-16.0	15.9	°C
Relative humidity	90	40	%
Heating power		106.82	kW

Extract air side, winter	In	Out	
Air temperature	22.0	-9.9	°C
Relative humidity	45	100	%

Supply air side, summer	In	Out	
Air temperature	17.0	17.0	°C
Relative humidity	89	89	%
Cooling power			

Extract air side, summer	In	Out	
Air temperature	26.0	26.0	°C
Relative humidity	45	45	%

1 Fan

Fan of type GOLD Wing+	Fan size: 35	
Withdrawable fan with integrated airflow measurement		
Direct drive with speed controlled EC motor. Efficiency class corresponding to IE5		
Isolated with internal flexible connection and rubber anti-vibration mounting		
Standard connection, internal		
Supply air flow	10,000	m³/h
The fan system effect is included in the fan performances		
Design static pressure (wet conditions)	706	Pa
Static pressure rise in the SFPv calculation	652	Pa
Temperature rise caused by the fan	0.9	°C
Min speed	250	rpm
Speed in the SFPv calculation	1,413	rpm
Design speed	1,448	rpm
Max speed	1,635	rpm
Design electric power to motor(s)	3.15	kW
Electric power to motor(s) in the SFPv calculation	2.90	kW
Rated motor power/motor	4.00	kW
Motor option	1	
Motor code	DOMEL 749.3.392	
Number of fans/motors in the air stream	1	
Overall static efficiency drive	62.3	%
Maximum motor efficiency (incl. motor control 91.5%)	94.5	%
Efficiency grade; FMEG, plenum fan, incl. motor control	68.00	
Regulation(EU)No 327/2011 overall efficiency	65.2	%
Specific fan power efficiency	1.04	kW/(m³/s)
SFP class: SFP3		

1 Heating coil, electrical, in casing, TCLE040G02

3*400V+N+PE. 39.0A		
Capacity variant	27	
Static pressure drop	2	Pa
Air velocity	2.22	m/s

	In	Out	
Air temperature	16.8	24.0	°C
Relative humidity	37	24	%

Required coil capacity	24.18	kW
Rated output	27.00	kW
Electrical connections	400	

1 **End section, supply air**

Static pressure drop	7	Pa

Quantity — Extract air

1 **End section, extract air**

Static pressure drop	7	Pa

1 **Spacer section, TCGA040G01**

Length: 625 mm

1 **Filter**

Filter class ePM10 60% (M5)

3x(592x592x520-10), 3x(592x287x520-10)

Velocity in the filter section	1.52	m/s
Recommended design pressure drop	52	Pa
Initial pressure drop	26	Pa
Final pressure drop	78	Pa

1 **Rotary heat exchanger, GOLD035FRXP01**

Accessories and technical data, see supply air

1 **Fan**

Fan of type GOLD Wing+	Fan size: 35	
Withdrawable fan with integrated airflow measurement		
Direct drive with speed controlled EC motor. Efficiency class corresponding to IE5		
Isolated with internal flexible connection and rubber anti-vibration mounting		
Standard connection, internal		
Extract air flow	10,000	m³/h
The fan system effect is included in the fan performances		
Design static pressure (wet conditions)	675	Pa
Static pressure rise in the SFPv calculation	649	Pa
Temperature rise caused by the fan	0.9	°C

Min speed	250	rpm
Speed in the SFPv calculation	1,457	rpm
Design speed	1,472	rpm
Max speed	1,635	rpm
Design electric power to motor(s)	3.25	kW
Electric power to motor(s) in the SFPv calculation	3.13	kW
Rated motor power/motor	4.00	kW
Motor option	1	
Motor code	DOMEL 749.3.392	
Number of fans/motors in the air stream	1	
Overall static efficiency drive	62.0	%
Maximum motor efficiency (incl. motor control 91.5%)	94.5	%
Efficiency grade; FMEG, plenum fan, incl. motor control	68.00	
Regulation(EU)No 327/2011 overall efficiency	65.2	%
Specific fan power efficiency	1.05	kW/(m³/s)
SFP class: SFP3		

1 Cooling machine, DX, COOLDX-40-G-3-2-1-1-1

Capacity variant	3	
Condenser coil		
Accesssories and other technical data, see supply air		
No.of tube rows	4	
Fin spacing	1.8	mm
Pressure drop	61	Pa
Air velocity	2.08	m/s

Quantity	Product	Article name
1	Drain trap	TBXZ-1-40-3

1 End section, exhaust air

Static pressure drop	8	Pa

1 Damper, TBSA-6-140-060-1-1

Damper motor: With spring return		
Damper blade: Uninsulated		
Static pressure drop	2	Pa

Quantity	Accessories

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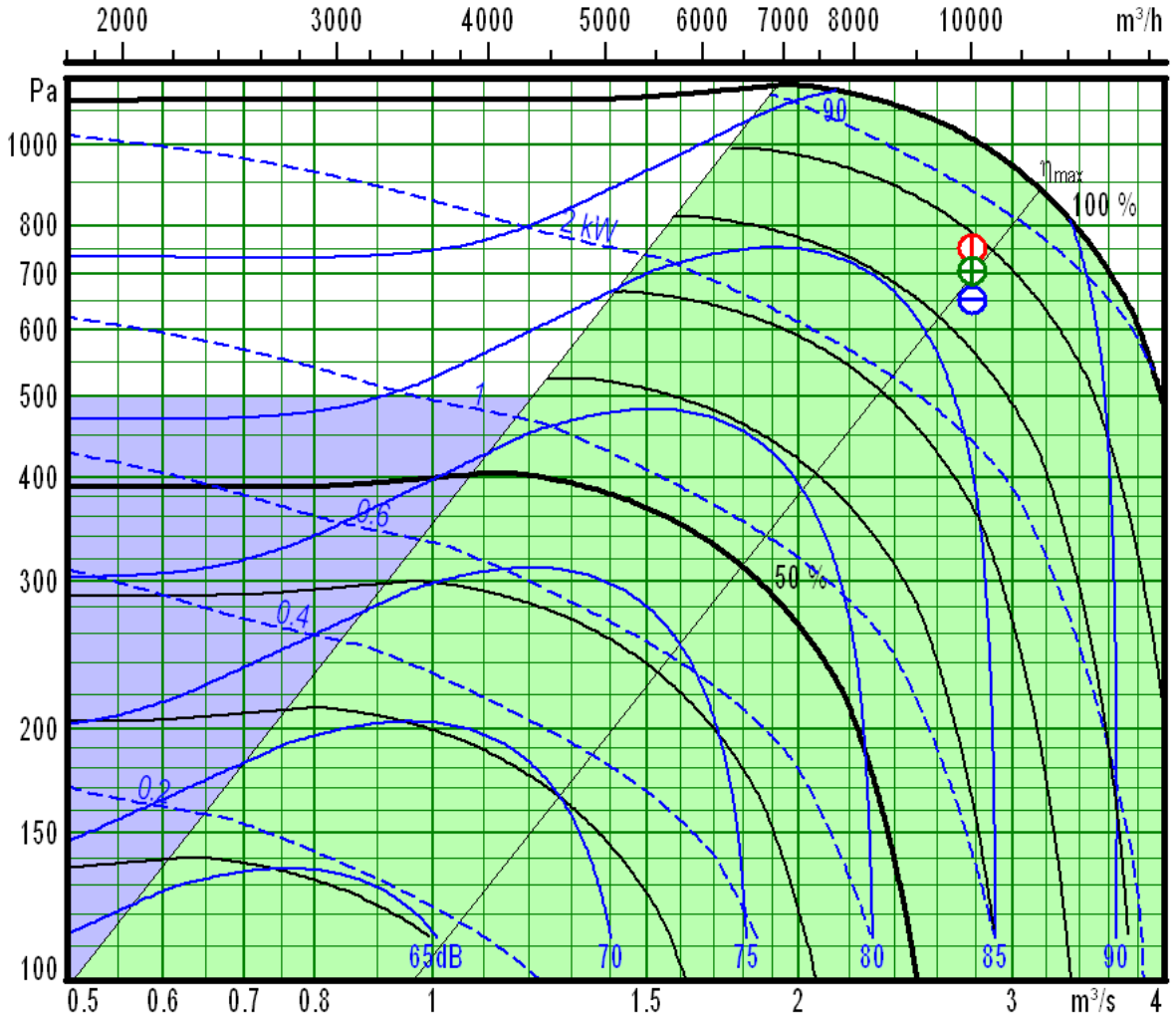
Design data, Supply air



The chart shows the static pressure rise of the fan in Pa relative air flow in m³/s and in m³/h at different relative speeds (minimum speed = 0% and maximum speed = 100 %). One can also read electrical power from mains in kW and sound power level at fan outlet in dB.

Green area: Recommended working range for sizing
Blue area: Permissible operating range for low airflow in demand controlled ventilation systems (VAV) with pressure control.

Red circle with a vertical line: max operating point
Green circle with a cross: design operating point
Blue circle with a horizontal line: clean operating point

Fan of type GOLD Wing+		Fan size: 35	
Direct drive with speed controlled EC motor. Efficiency class corresponding to IE5			
Speed	Min speed: 250	Max speed: 1635	rpm
Rated motor power/motor		4.00	kW

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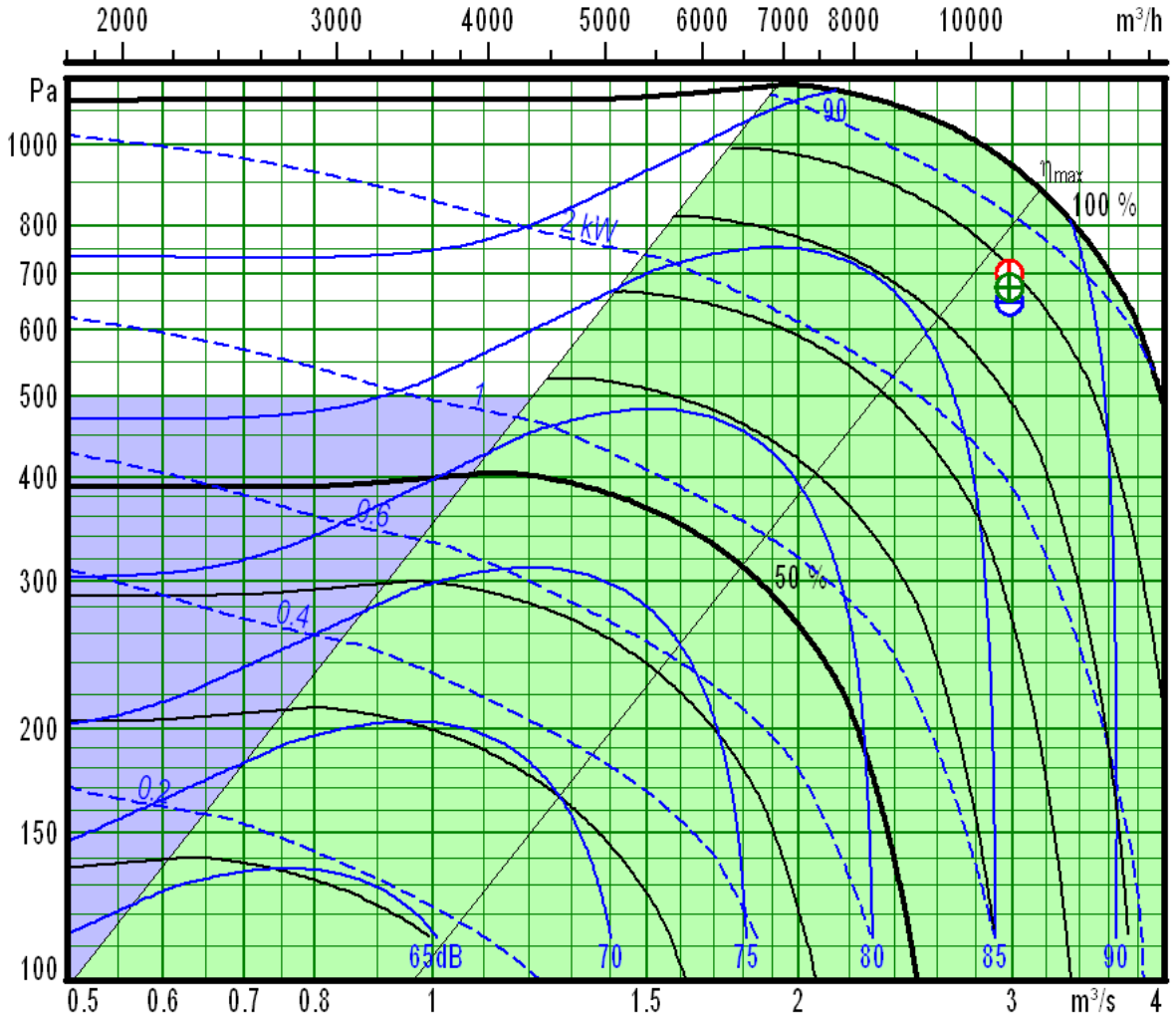
Design data, Extract air



The chart shows the static pressure rise of the fan in Pa relative air flow in m³/s and in m³/h at different relative speeds (minimum speed = 0% and maximum speed = 100 %). One can also read electrical power from mains in kW and sound power level at fan outlet in dB.

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Fan of type GOLD Wing+		Fan size: 35	
Direct drive with speed controlled EC motor. Efficiency class corresponding to IE5			
Speed	Min speed: 250	Max speed: 1635	rpm
Rated motor power/motor		4.00	kW

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GOLD F RX

Unit size	035	
Supply air flow	10,000	m³/h
Pressure drop, supply air	400	Pa
Design electric power to motor(s), Supply air fan	3.15	kW
Extract air flow	10,000	m³/h
Pressure drop, extract air	400	Pa
Design electric power to motor(s), Extract air fan	3.25	kW

Non-residential ventilation unit (exception: multi dwelling residential buildings)
Unit type: bidirectional ventilation unit; NVRU, BVU
Other heat recovery (rotary heat exchanger)
Supply air dry temp. efficiency ratio (Requirement: 2018: 73 %): 82.1 %
Maximum internal leakage (tracer gas) 1 %

ErP Commission Regulation (EU) No 1253/2014
The air handling unit meets the requirements in 2018

Supply air		
Face velocity, filter section	1.63	m/s
Energy perf, 6000 h (filter class ePM1 50% (F7) or better)	2,840	kWh/year
Filter class (ePM1 50% (F7) or better)	F7	
Reference filter; ePM1 50% (F7)	56	Pa
HRS	136	Pa
Casing; inlet	8	Pa
Casing; outlet	7	Pa
Casing; fan system losses	0	Pa
(The fan system effect is included in the fan performances)		
Overall static fan efficiency at the current working point	62.3	%

Extract air		
Face velocity, filter section	1.52	m/s
Energy perf, 6000 h (filter class ePM10 60% (M5) or better)	1,410	kWh/year
Filter class (ePM10 60% (M5) or better)	M5	
Reference filter; ePM10 60% (M5)	26	Pa
HRS	145	Pa
Casing; inlet	7	Pa
Casing; outlet	8	Pa
Casing; fan system losses	0	Pa
(The fan system effect is included in the fan performances)		
Overall static fan efficiency at the current working point	62.0	%

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Efficiency bonus E 2018	274	W/(m³/s)
Filter correction F 2018	0	W/(m³/s)
Internal specific fan power, SFPint	633	W/(m³/s)
Internal specific fan power, required 2018, SFPint_limit	1,074	W/(m³/s)

Type of drive: Direct drive with speed controlled EC motor. Efficiency class corresponding to IE5		
Visual filter warning is available in the hand terminal provided		
Sound power emitted to surroundings, measured according to ISO 3741	63	dB(A)
Disassembly instructions: https://www.swegon.com/globalassets/_product-documents/air-handling-units/gold-version-f/general/_multi/recycling_instruction-air-handling-units.pdf		

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Static pressure drop	Outdoor air duct	50	Pa
	Supply air duct	350	Pa
Extract air flow		10,000	m³/h
Static pressure drop	Extract air duct	350	Pa
	Exhaust air duct	50	Pa
Climate data		Bratislava,	Slovakia
Weather station, reference		BRATISLAVA-STEFANIK,	Slovakia
Design outdoor temperature, summer		32.0	°C
Design outdoor humidity, summer		40	%
Design outdoor temperature, winter		-16.0	°C
Design outdoor humidity, winter		90	%
Supply air temperature, summer		17.9	°C
Supply air temperature, winter		24.0	°C
Annual operating period		8760	h

Temperature data, Energy	Design data	
Supply air temperature, summer	20.0	°C
Supply air temperature, winter	20.0	°C
Extract air temperature, summer	26.0	°C
Extract air temperature, winter	22.0	°C
Post heating, outdoor temperature limit	15.0	°C

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Operating data	Design data	
Supply air fan	After HEX	
Airflow	10,000	m³/h
Pressure increase	706	Pa
Electric power fan	3.15	kW
Temp. Inc. Fan	0.9	°C
Extract air fan	After HEX	
Airflow	10,000	m³/h
Pressure increase	675	Pa
Electric power fan	3.25	kW
Temp. Inc. Fan	0.9	°C
Heat exchanger	Rotary heat exchanger of type RECOsorptic STE	
Dry-bulb temperature efficiency of supply air	82.1	%
Cooling recovery	No	

Electrical energy	Design data	
Fan motors	56,000	kWh/year
Electric energy, comparison without energy recovery	43,100	kWh/year

Thermal energy	Design data	
With energy recovery	9,850	kWh/year
Without energy recovery	279,000	kWh/year

Cooling energy	Design data	
With energy recovery (total/sensible)	19,000 /17,300	kWh/year
Without energy recovery (total/sensible)	19,000 /17,300	kWh/year

Energy prices		
Energy price, Electrical	0.540	EUR/kWh
Energy price, Heat	0.480	EUR/kWh
Energy price, Cooling	0.540	EUR/kWh
Estimated annual price increase, Electrical	2	%
Estimated annual price increase, Heat	2	%
Estimated annual price increase, Cooling	2	%
Period in use	20	year
Calculated interest rate	6	%

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Costs		
Electric energy fans	30,300	EUR/year
Heat cost (post heating)	4,730	EUR/year
Cooling cost (post cooling)	10,300	EUR/year
Total cost of energy consumption	45,300	EUR/year

Cost comparison without energy recovery		
Electric energy fans	23,300	EUR/year
Heating Cost	134,000	EUR/year
Cooling cost	10,300	EUR/year
Total energy cost, without energy recovery	168,000	EUR/year

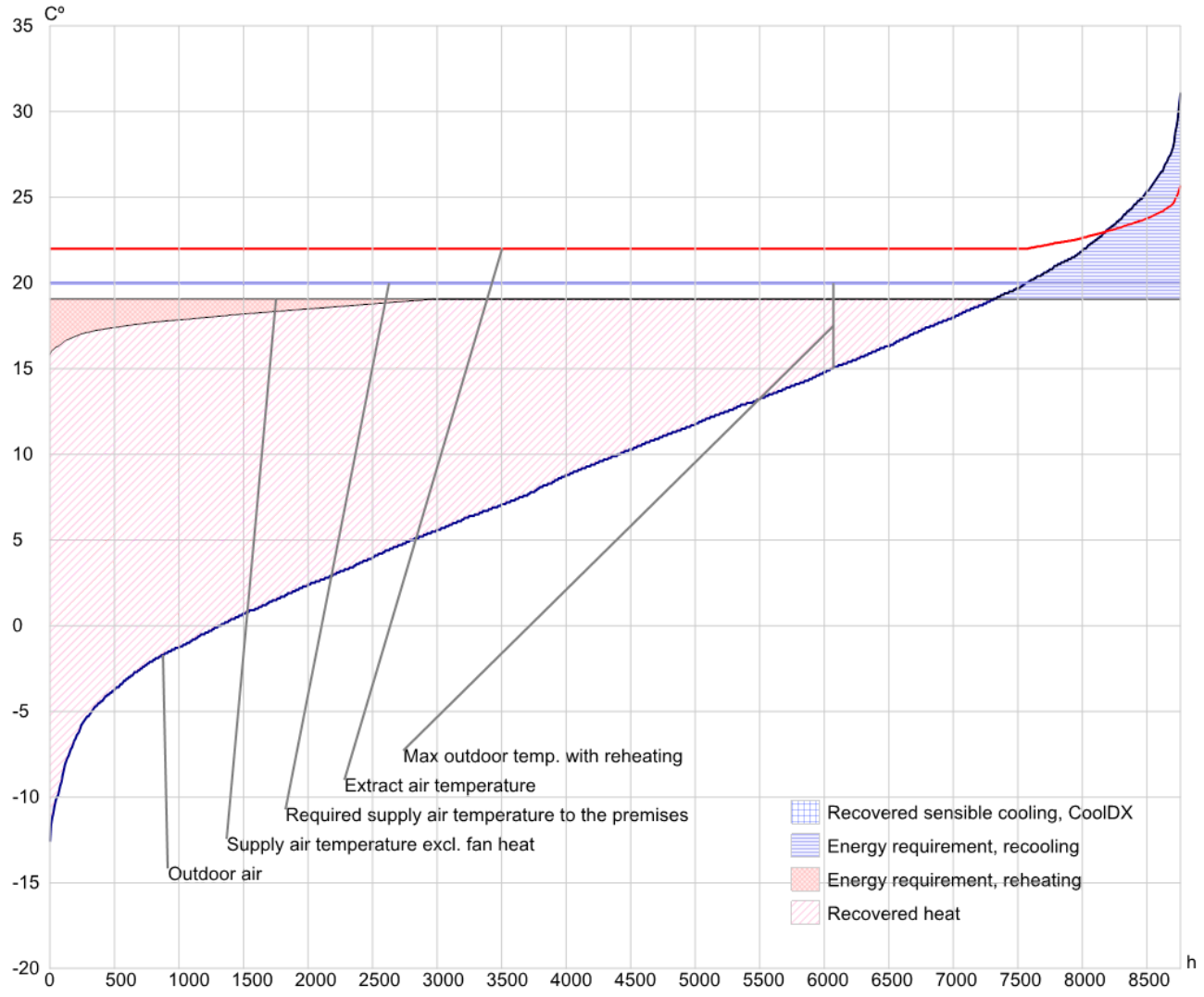
Life cycle energy cost		
Life cycle energy costs, electricity	411,000	EUR
Life cycle energy costs, heating	64,300	EUR
Life cycle energy costs, cooling	140,000	EUR
Total	615,000	EUR

Life cycle energy cost, without energy recovery		
Life cycle energy costs, electricity, without energy recovery	316,000	EUR
Life cycle energy costs, heating, without energy recovery	1,820,000	EUR
Life cycle energy costs, cooling, without energy recovery	140,000	EUR
Total	2,280,000	EUR

Project: VZT
Unit name: AHU2 - Integrovaný DX - Design data

Date: 31/10/2021
24 / 1.0.20211027.1204652
Unit ID: AD-10001019402

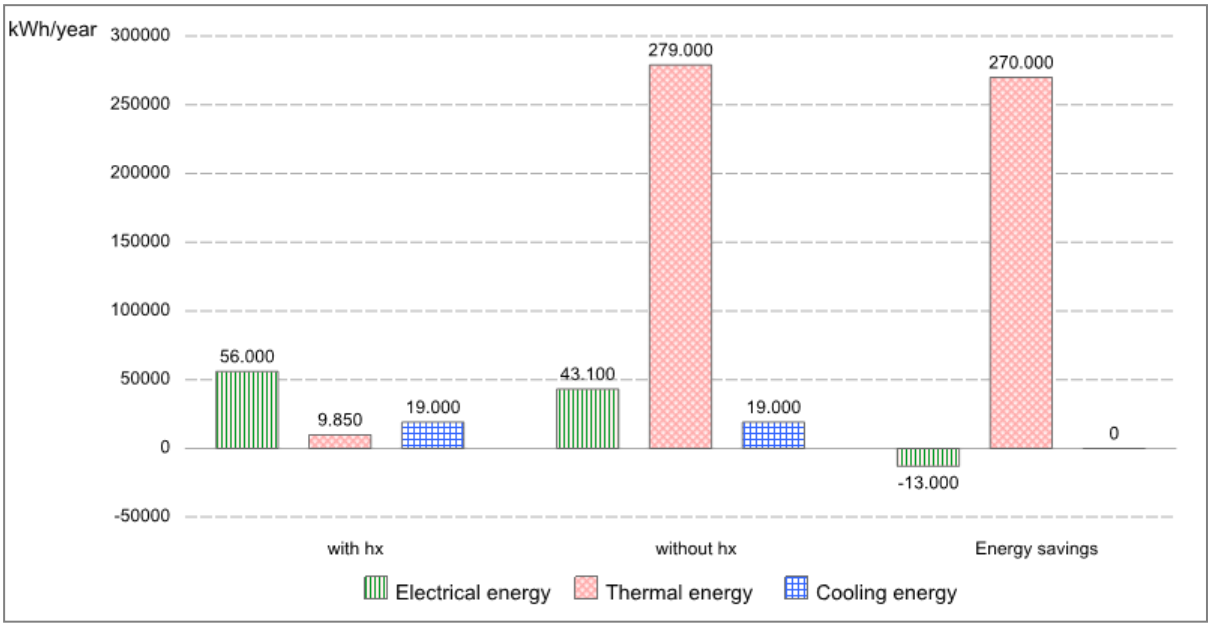
Design data



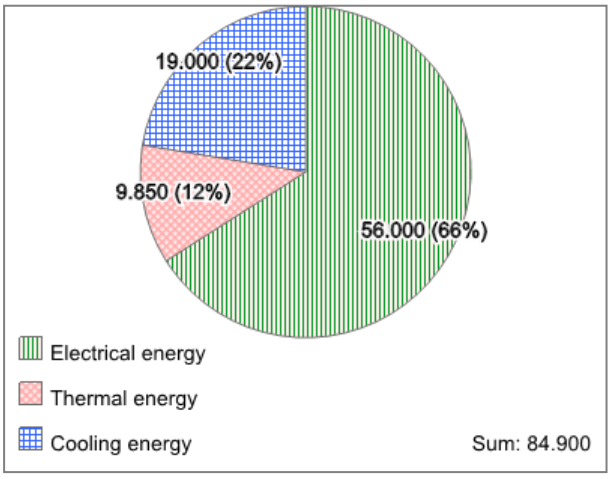
Project: VZT
Unit name: AHU2 - Integrovaný DX - Design data

Date: 31/10/2021
24 / 1.0.20211027.1204652
Unit ID: AD-10001019402

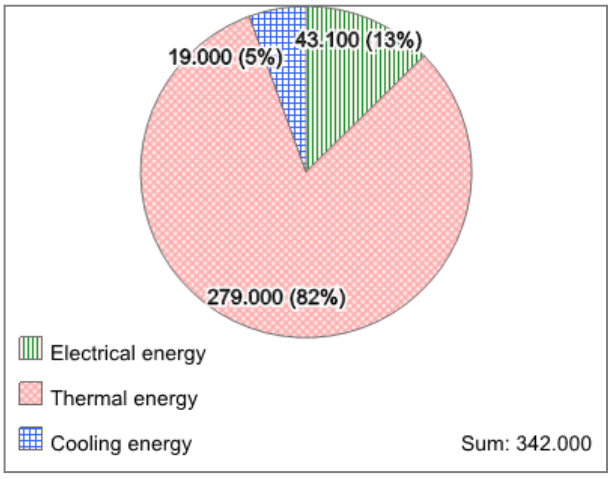
Power consumption



Power consumption with hx (kWh/year)



Power consumption without hx (kWh/year)



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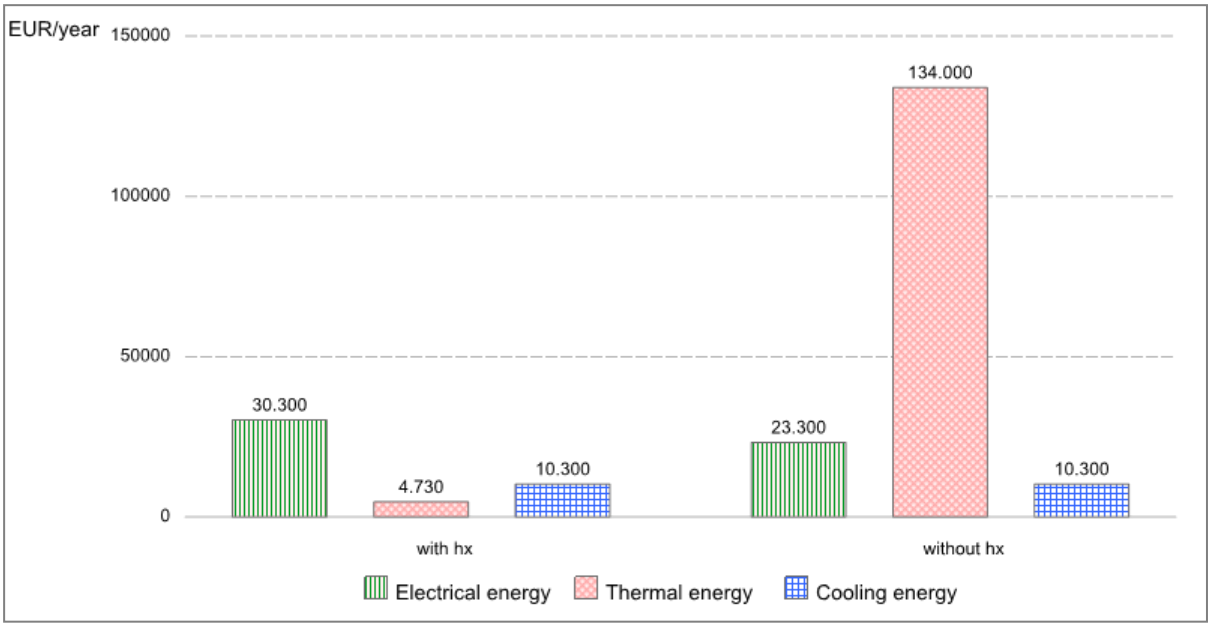
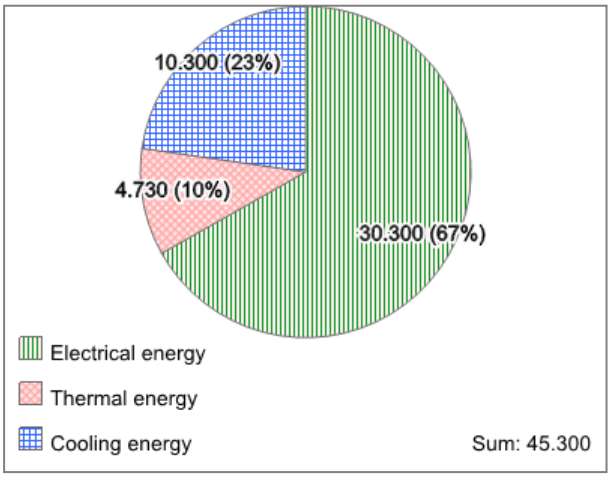
Project: VZT
Unit name: AHU2 - Integrovaný DX - Design data

Date: 31/10/2021
24 / 1.0.20211027.1204652
Unit ID: AD-10001019402

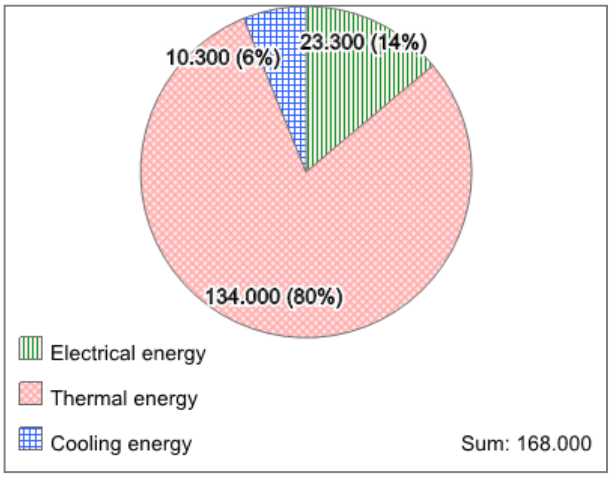
Energy



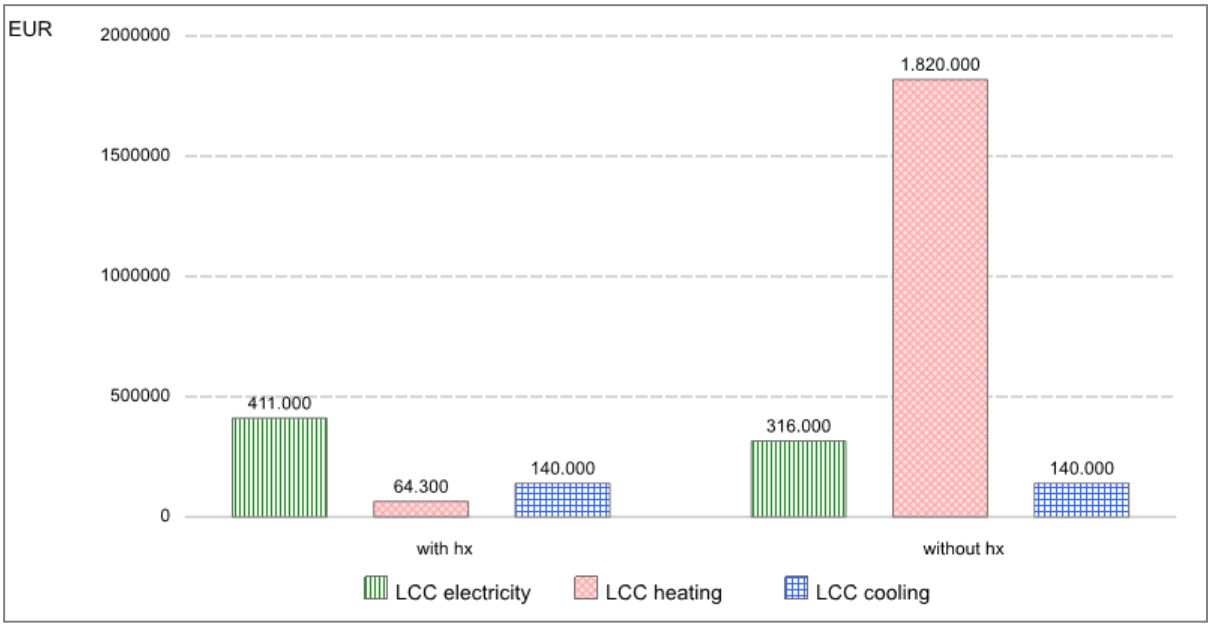
Energy with hx (EUR/year)



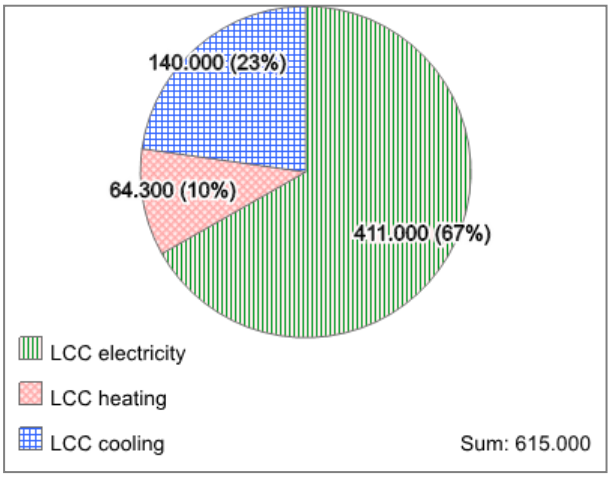
Energy without hx (EUR/year)



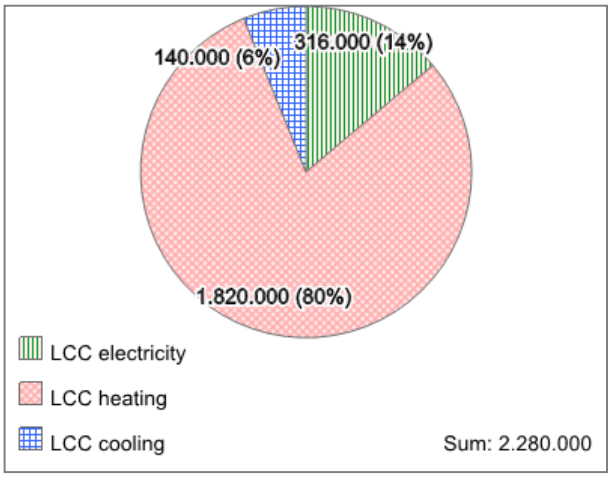
Life cycle energy cost



Life cycle energy cost with hx (EUR)



Life cycle energy cost without hx (EUR)



Project: VZT
Unit name: AHU2 - Integrovaný DX

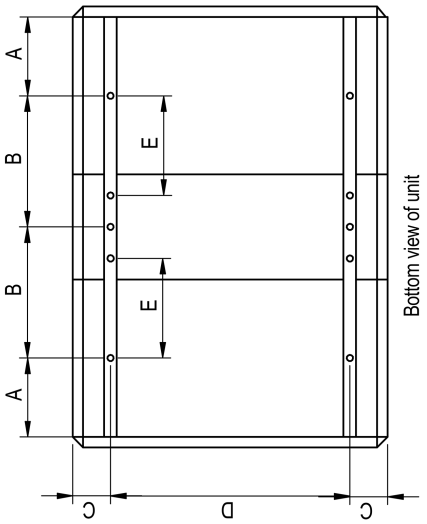
Date: 31/10/2021
24 / 1.0.20211027.1204652
Unit ID: AD-10001019402

GOLD	A (mm)	B (mm)	C (mm)	D (mm)	E (mm)	Number of supporting feet
05RX	118	580	100	624		6
05RX S	283	565	100	624		6
05PX	375	740	100	624		6
05PX S	283	933	100	624		6
08RX	123	625	100	794		6
08RX S	298	582	100	794		6
08PX	400	800	100	794		6
08 PX s	298	1057	100	794		6
12RX	298	580	100	998		6
12PX	298	1113	100	998		6
20RX	353	636	100	1199		6
20PX	353		100	1199	428	8
30RX	398	680	100	1399		6
30PX	398		100	1399	478	8

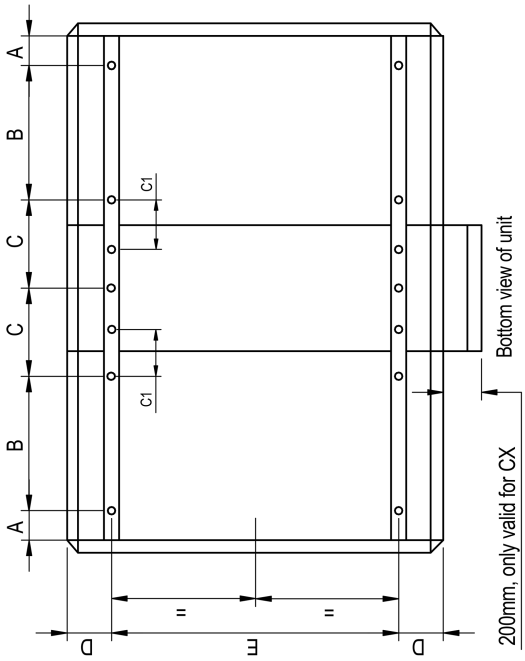
GOLD	A (mm)	B (mm)	C (mm)	C1 (mm)	D (mm)	E (mm)	Number of supporting feet
40RX	92	804	374		100	1789	10
40CX	92	804		182	100	1789	12
40PX	92	804		492	100	1789	12
60RX	92	804	374		100	2117	10
60CX	92	804		182	100	2117	12
80RX	256	710	539		98	2441	10
80CX	256	710		347	98	2441	12

Position and number of supporting feet.

GOLD 05-30



GOLD 40-80



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Project: VZT
Unit name: AHU2 - Integrovaný DX

Date: 31/10/2021
24 / 1.0.20211027.1204652
Unit ID: AD-10001019402

Accessories 05-120
Position and number of supporting feet

Bottom view of unit

TCSA									TCDA									TCGA								
	A (mm)	A1 (mm)	B (mm)	C (mm)	D (mm)	E (mm)	Number of supporting feet	number of supporting feet	A (mm)	A1 (mm)	B (mm)	C (mm)	D (mm)	E (mm)	Number of supporting feet	number of supporting feet	A (mm)	A1* (mm)	B (mm)	C (mm)	D (mm)	E (mm)	Number of supporting feet	number of supporting feet
04-08		200	100				2	2	114		100				4	2		55/283	100				4	2
12		200	100				2	2	114		100				4	2		55/283	100				4	2
14/20		200	100				2	2	114		100				4	2		55/283	100				4	2
25/30		200	100				2	2	114		100				4	2		55/283	100				4	2
35/40		200	100				2	2	114		100				4	2		55/283	100				4	2
50/60		200	100				2	2	114		100				4	2		55/283	100				4	2
70/80		200	98		1245	1196	2	2	114		98		1245	1196	4	2		55/283	98		1196	1245	4	2
120	48		99,5	1048			N/A	N/A	108		99,5	1048			N/A	N/A	108		99	1048			N/A	N/A

TCKA									TCKC									TCLA/TCLF								
	A (mm)	A1* (mm)	B (mm)	C (mm)	D (mm)	E (mm)	Number of supporting feet	Number of supporting feet	A (mm)	A1* (mm)	B (mm)	C (mm)	D (mm)	E (mm)	Number of supporting feet	Number of supporting feet	A (mm)	A1 (mm)	B (mm)	C (mm)	D (mm)	E (mm)	Number of supporting feet	Number of supporting feet
04-08	114		100				4	2	114		100				4	2		200	100				4	2
12	114		100				4	2	114		100				4	2		200	100				4	2
14/20	114		100				4	2	114		100				4	2		200	100				4	2
25/30	114		100				4	2	114		100				4	2		200	100				4	2
35/40	114		100				4	2	114		100				4	2		200	100				4	2
50/60		114/283	100				2	2		114/283	100				4	2		283	100				4	2
70/80		114/283	98		1245	1196	2	2		114/283	98		1245	1196	4	2		283	98		1245	1196	4	2
120	108		99,5	1048			N/A	N/A	108		99,5	1048			N/A	N/A	108		99,5	1048			N/A	N/A

TCLE									TCIA									TCFB								
	A (mm)	A1* (mm)	B (mm)	C (mm)	D (mm)	E (mm)	Number of supporting feet	Number of supporting feet	A (mm)	A1* (mm)	B (mm)	C (mm)	D (mm)	E (mm)	Number of supporting feet	Number of supporting feet	A (mm)	A1 (mm)	B (mm)	C (mm)	D (mm)	E (mm)	Number of supporting feet	Number of supporting feet
04-08	114		100				4	4	114		100				4	4		114	100				2	4
12	114		100				4	4	114		100				4	4		114	100				2	4
14/20	114		100				4	4	114		100				4	4		114	100				2	4
25/30		114/283	100				2	4		55/283	100				2	4		114	100				2	4
35/40		114/283	100				2	2		55/283	100				2	2		360	100				2	2
50/60	114		100				4	2		55/283	100				2	2		360	100				2	2
70/80	114		98		1245	1196	4	2		55/283	98		1245	1196	2	2		360	98		1245	1196	2	2
120	108		99,5	1048			N/A	N/A	48		99,5	1048			N/A	N/A	108		99	1048			N/A	N/A

* Accessories are available in two different lengths.

TCEK								TCLK								
A (mm)	A1 (mm)	B (mm)	C (mm)	D (mm)	E (mm)	Number of supporting feet		A* (mm)	A1 (mm)	B (mm)	C (mm)	D (mm)	E (mm)	Number of supporting feet	
114		100				10	8	114		100				8	
114		100				10	8	114		100				8	
114		100				10	8	55/114		100				8	
114		100				8	8	55/114		100				8	
114		100				8	8	55/114		100				8	
For dimensions see TCKA/KC, TCLE and TCIA							6	For dimensions see TCKA/KC, TCLA and TCIA							6
							N/A								N/A

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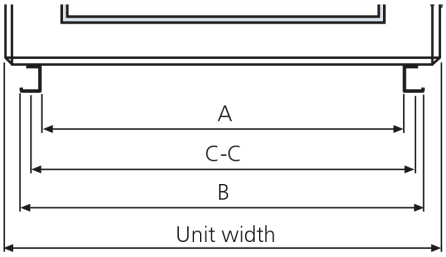
GOLD, version F

GOLD, sizes 004-060



GOLD RX/PX/CX

Size	C-C (mm)	A (mm)	B (mm)	Unit width (mm)	Unit length, incl. end walls (mm)				
					RX	RX Top	PX	PX Top	CX
004/005, common casing*	624	579	669	825	1499	1600	2333	–	–
004/005, split version	624	579	669	825	1799	–	2534	2534	–
007/008, common casing*	794	749	839	995	1619	1720	2503	–	–
007/008, split version	794	749	839	995	1860	–	2811	2811	–
011/012	998	953	1043	1199	1859	2219	2925	3285	–
014/020	1199	1154	1244	1400	2080	2643	3351	3914	–
025/030	1399	1354	1444	1600	2261	2643	3825	4208	–
035/040	1789	1744	1834	1990**	2642	–	4477	–	2977
050/060	2117	2072	2162	2318**	2642	–	–	–	2977

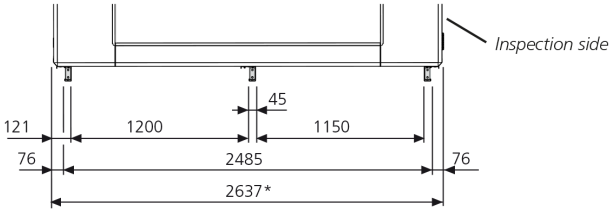
GOLD SD

Size	C-C (mm)	A (mm)	B (mm)	Unit width (mm)	Unit length, incl. end walls (mm)		
					Fan	Fan+filter	Fan+filter+coil
004/005, common casing***	624	579	669	825**	1120	1120	1955
004/005, split version	624	579	669	825**	809	1529	2364
007/008, common casing***	794	749	839	995**	1214	1214	2049
007/008, split version	794	749	839	995**	809	1529	2364
011/012, common casing	998	953	1043	1199**	1404	1404	2239
011/012, split version	998	953	1043	1199**	878	1598	2433
014/020	1199	1154	1244	1400**	1040	1875	2710
025/030	1399	1354	1444	1600**	1144	1978	2813
035/040	1789	1744	1834	1990**	1253	2088	2988
050/060	2117	2072	2162	2318**	1253	2088	2988

** Base beams are optional.*
*** Heat recovery coil section width = Unit width + 200 mm. (CX and SD only)*
**** Base beams are standard if the AHU features heat recovery coil. Base beams are optional if the AHU does not feature heat recovery coil.*

GOLD, version F

GOLD, size 070/080



** Heat recovery coil section width = Unit width + 200 mm. (CX and SD only)*

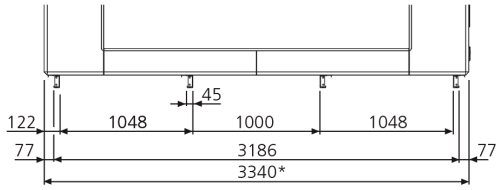
GOLD RX/CX

Size	Unit length, incl. end walls (mm)	
	RX	CX
070/080	3112	3447

GOLD SD

Size	Unit length, incl. end walls (mm)		
	Fan	Fan+filter	Fan+filter+coil
070/080	1325	2547	3447

GOLD, size 100/120



** Heat recovery coil section width = Unit width + 200 mm. (CX and SD only)*

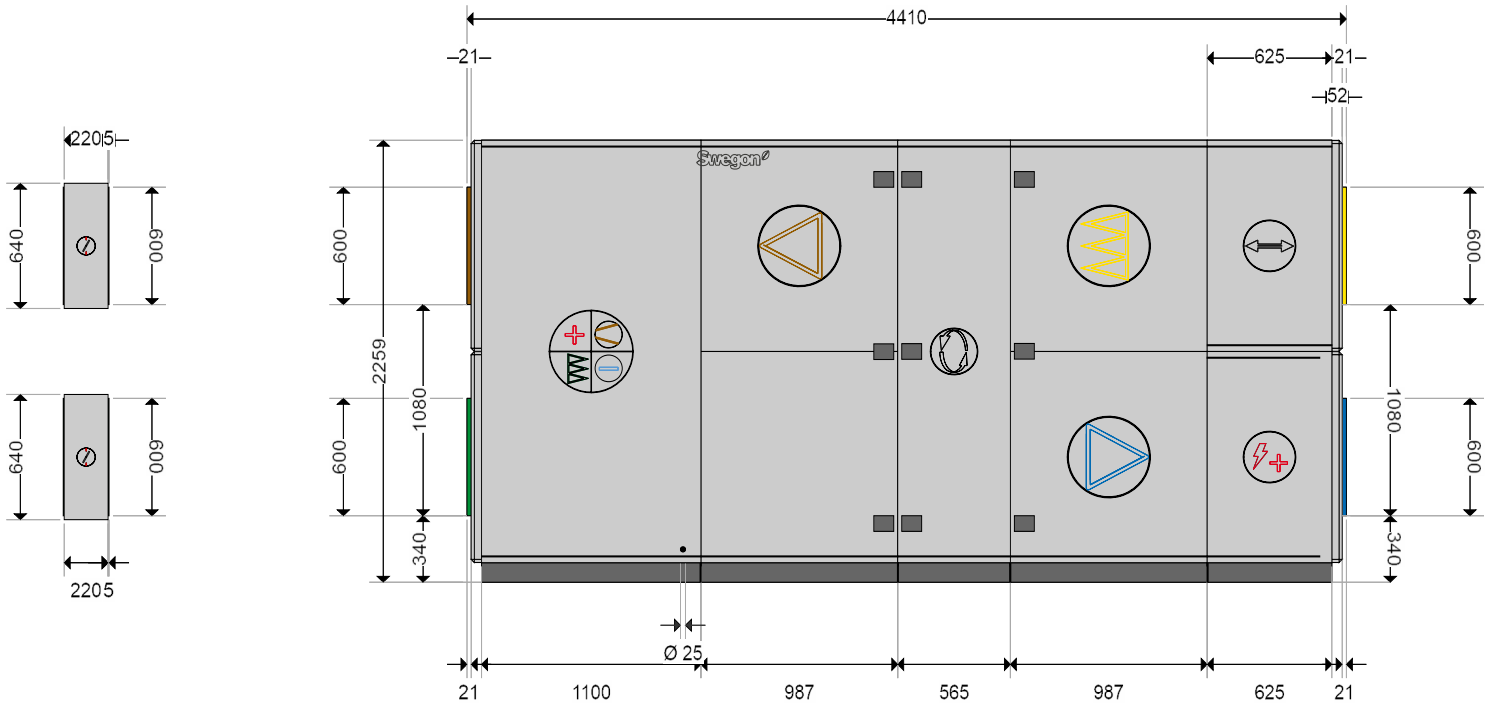
GOLD RX/CX

Size	Unit length, incl. end walls (mm)	
	RX	CX
100/120	3322	3322

GOLD SD

Size	Unit length, incl. end walls (mm)		
	Fan	Fan+filter	Fan+filter+coil
100/120	1681	2752	3322

AHU Design
Sketch: Inspection side



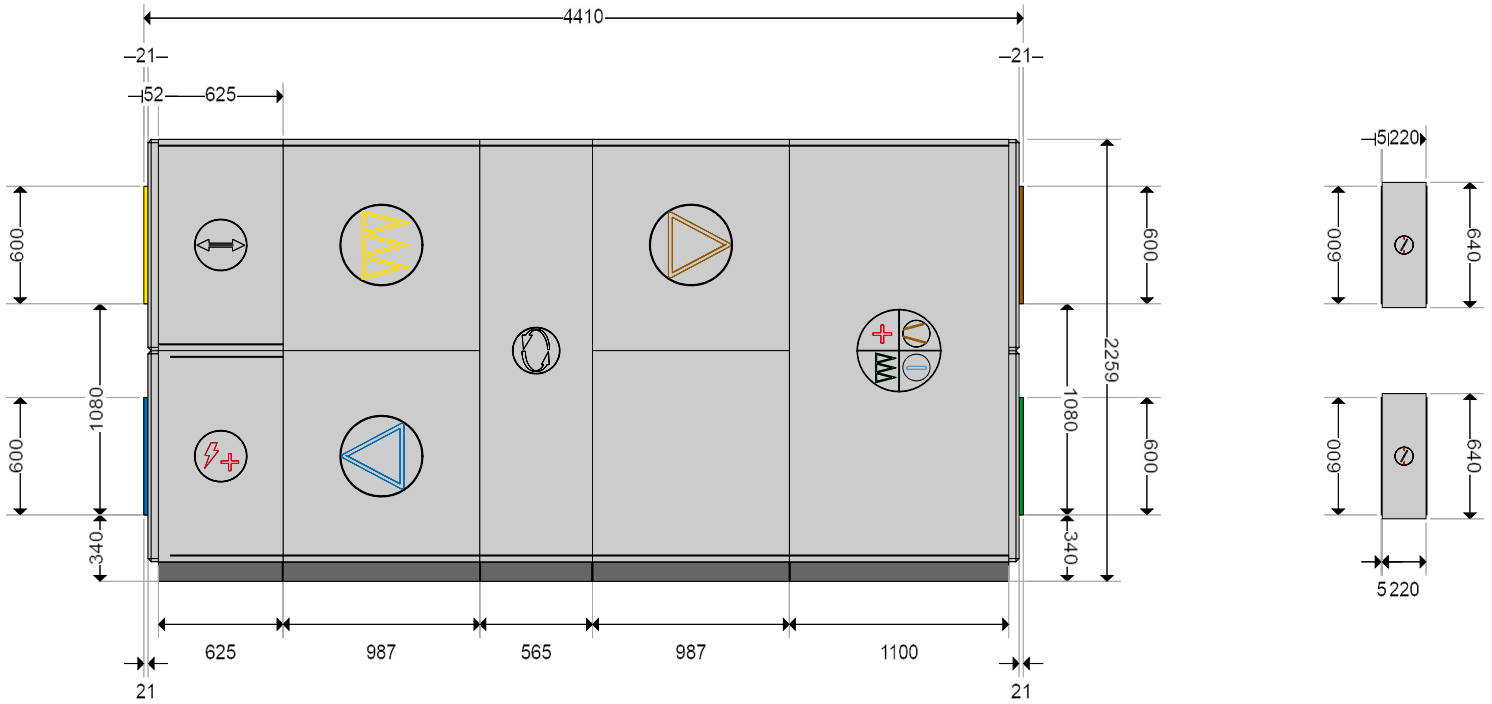
GOLD F RX		
Unit size	035	
Unit weight	2,005	kg
Duct Component Weight	64	kg
Length, max	4,410	mm
Height, max	2,259	mm
Width, max	2,015	mm

Connection size		
outdoor air	1,400 x 600	mm
supply air	1,400 x 600	mm
extract air	1,400 x 600	mm
exhaust air	1,400 x 600	mm

Project: VZT
Unit name: AHU2 - Integrovaný DX
Unit ID: AD-10001019402
24 / 1.0.20211027.1204652
Date: 31/10/2021

Outdoor air
Supply air
Extract air
Exhaust air

AHU Design
Sketch: Rear side



GOLD F RX		
Unit size	035	
Unit weight	2,005	kg
Duct Component Weight	64	kg
Length, max	4,410	mm
Height, max	2,259	mm
Width, max	2,015	mm

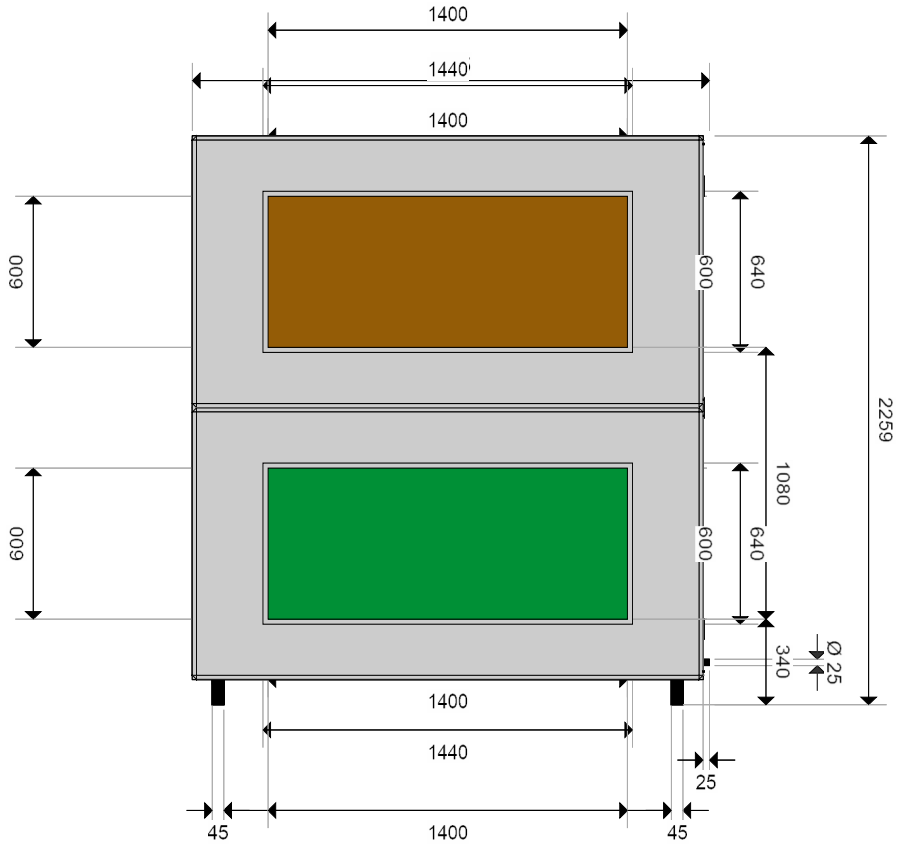
Connection size		
outdoor air	1,400 x 600	mm
supply air	1,400 x 600	mm
extract air	1,400 x 600	mm
exhaust air	1,400 x 600	mm

Project: VZT
Unit name: AHU2 - Integrovaný DX
Unit ID: AD-10001019402
24 / 1.0.20211027.1204652
Date: 31/10/2021

Outdoor air
Supply air
Extract air
Exhaust air

Swegon

AHU Design
Sketch: Left-hand



GOLD F RX		
Unit size	035	
Unit weight	2,005	kg
Duct Component Weight	64	kg
Length, max	4,410	mm
Height, max	2,259	mm
Width, max	2,015	mm

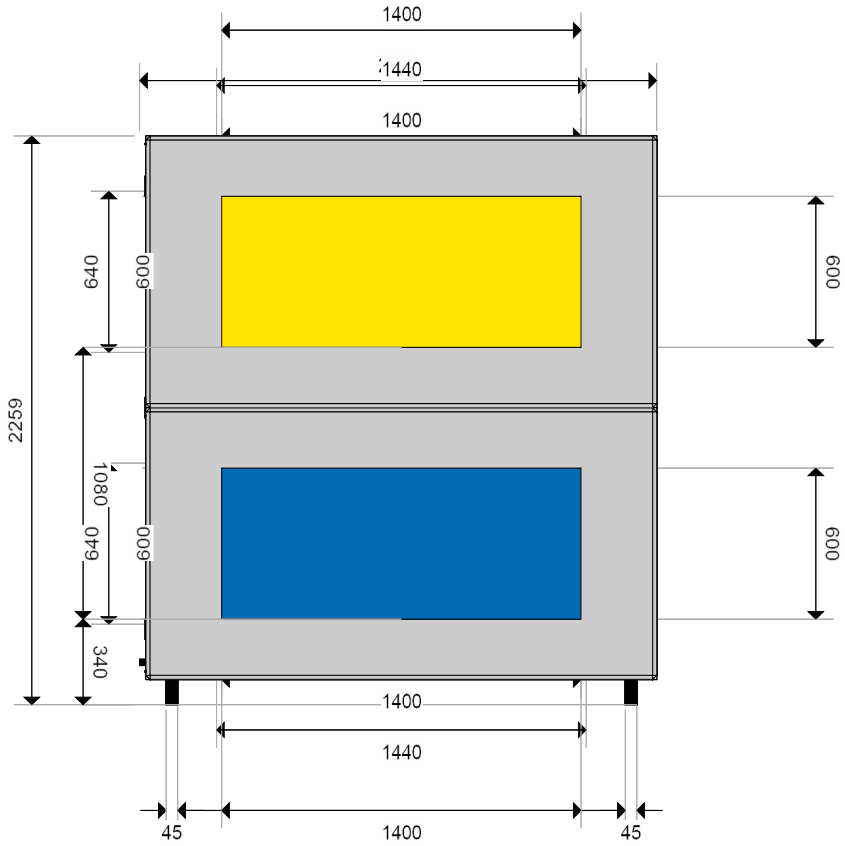
Connection size		
outdoor air	1,400 x 600	mm
supply air	1,400 x 600	mm
extract air	1,400 x 600	mm
exhaust air	1,400 x 600	mm

Project: VZT
Unit name: AHU2 - Integrovaný DX
Unit ID: AD-10001019402
24 / 1.0.20211027.1204652
Date: 31/10/2021

Outdoor air
Supply air
Extract air
Exhaust air

Swegon

AHU Design
Sketch: Right-hand



GOLD F RX		
Unit size	035	
Unit weight	2,005	kg
Duct Component Weight	64	kg
Length, max	4,410	mm
Height, max	2,259	mm
Width, max	2,015	mm

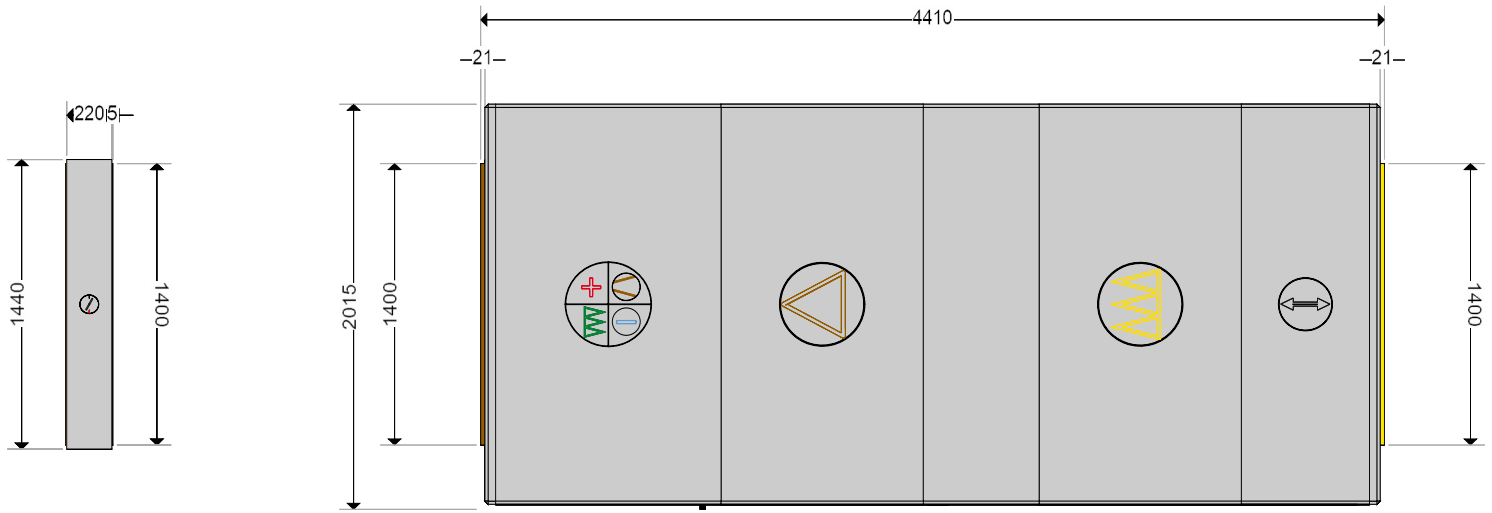
Connection size		
outdoor air	1,400 x 600	mm
supply air	1,400 x 600	mm
extract air	1,400 x 600	mm
exhaust air	1,400 x 600	mm

Project: VZT
Unit name: AHU2 - Integrovaný DX
Unit ID: AD-10001019402
24 / 1.0.20211027.1204652
Date: 31/10/2021

Outdoor air
Supply air
Extract air
Exhaust air

Swegon

AHU Design
Sketch: Above



GOLD F RX		
Unit size	035	
Unit weight	2,005	kg
Duct Component Weight	64	kg
Length, max	4,410	mm
Height, max	2,259	mm
Width, max	2,015	mm

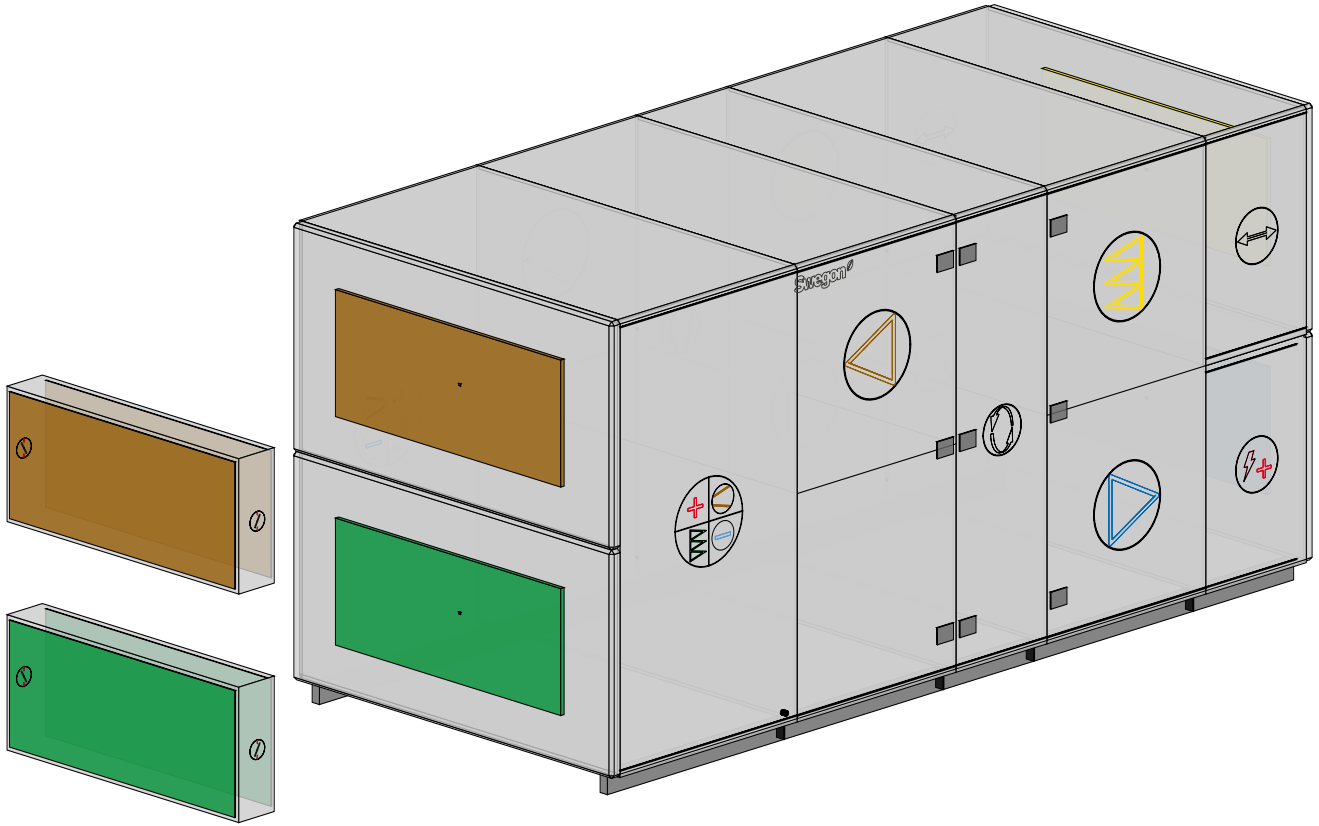
Connection size		
outdoor air	1,400 x 600	mm
supply air	1,400 x 600	mm
extract air	1,400 x 600	mm
exhaust air	1,400 x 600	mm

Project: VZT
Unit name: AHU2 - Integrovaný DX
Unit ID: AD-10001019402
24 / 1.0.20211027.1204652
Date: 31/10/2021

Outdoor air
Supply air
Extract air
Exhaust air

Swegon

AHU Design
Sketch: Above left



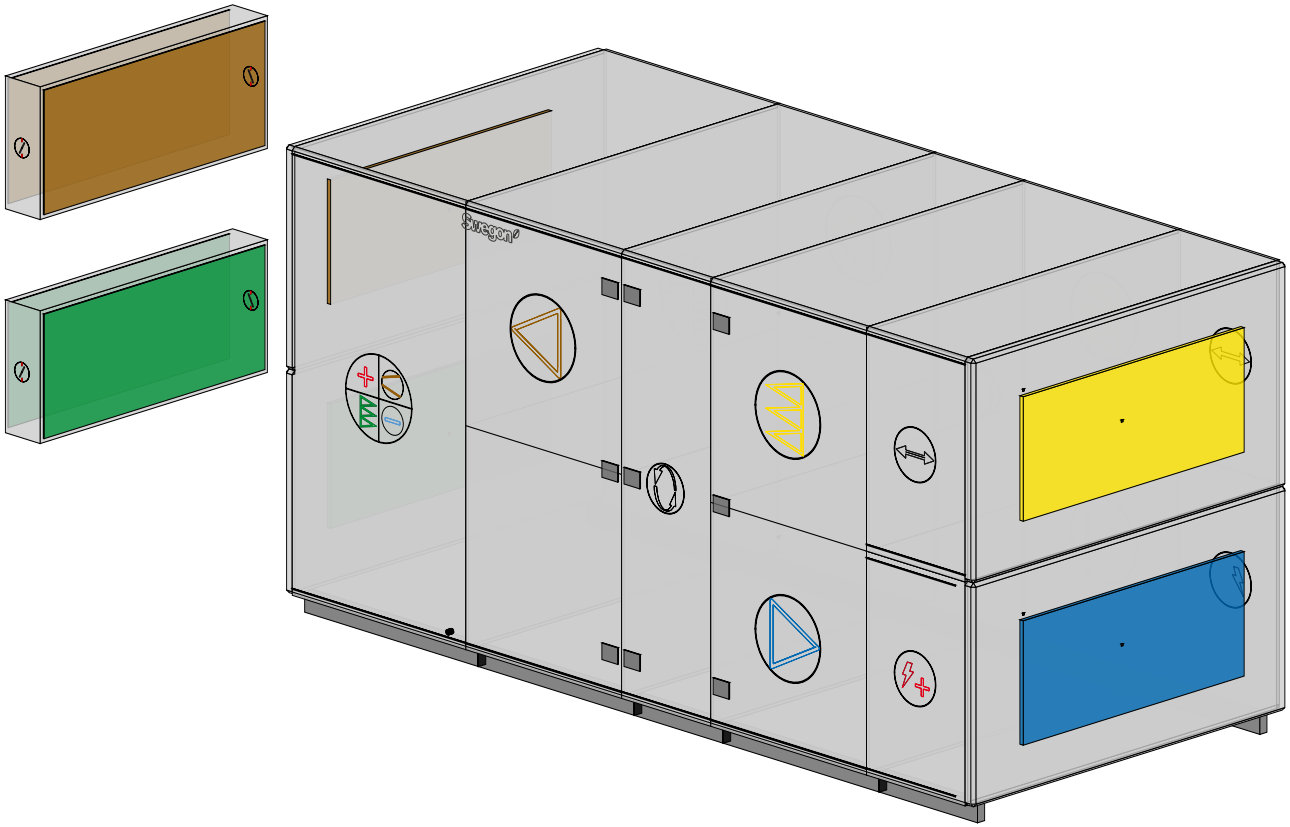
GOLD F RX		
Unit size	035	
Unit weight	2,005	kg
Duct Component Weight	64	kg
Length, max	4,410	mm
Height, max	2,259	mm
Width, max	2,015	mm

Connection size		
outdoor air	1,400 x 600	mm
supply air	1,400 x 600	mm
extract air	1,400 x 600	mm
exhaust air	1,400 x 600	mm

Project: VZT
Unit name: AHU2 - Integrovaný DX
Unit ID: AD-10001019402
24 / 1.0.20211027.1204652
Date: 31/10/2021

Outdoor air
Supply air
Extract air
Exhaust air

AHU Design
Sketch: Above right



GOLD F RX		
Unit size	035	
Unit weight	2,005	kg
Duct Component Weight	64	kg
Length, max	4,410	mm
Height, max	2,259	mm
Width, max	2,015	mm

Connection size		
outdoor air	1,400 x 600	mm
supply air	1,400 x 600	mm
extract air	1,400 x 600	mm
exhaust air	1,400 x 600	mm

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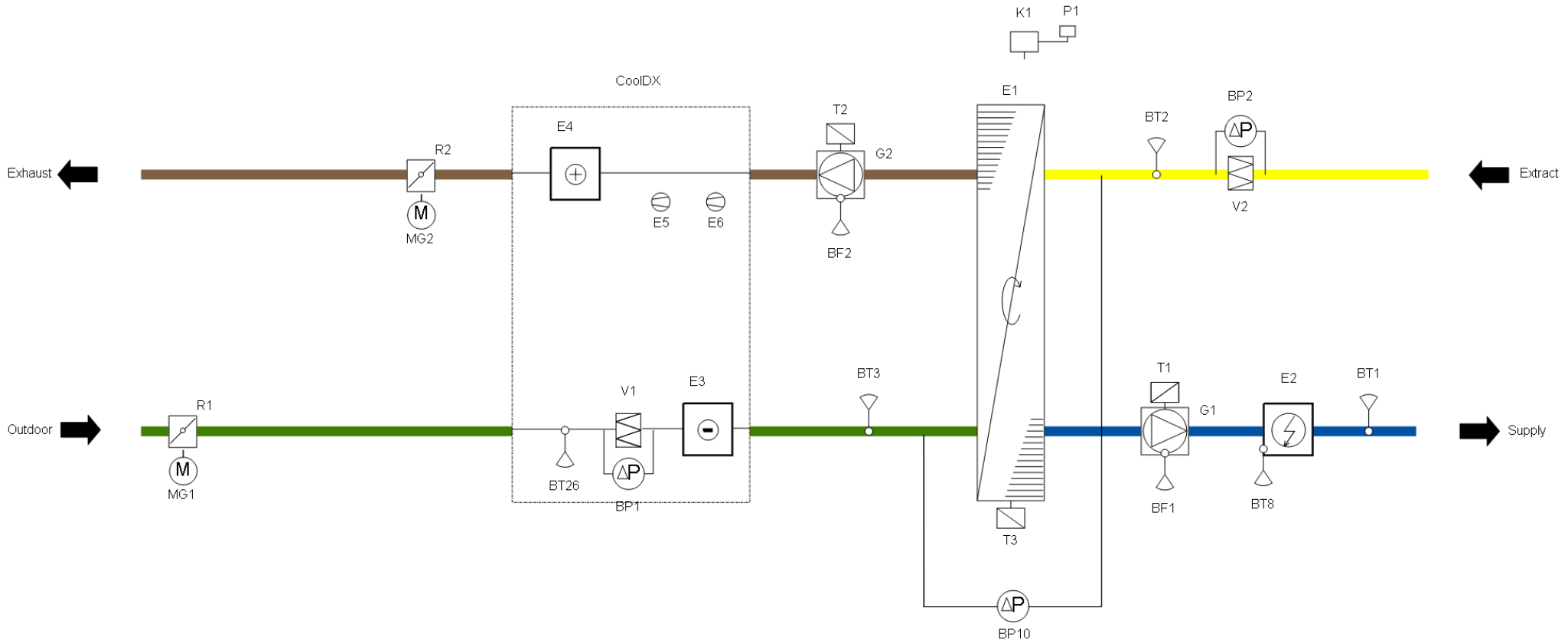
Flow chart



NO.	CHANGE	SIGN.	DATE

Swegon

Project: VZT
Unit name: AHU2 - Integrovaný DX
Unit ID: AD-10001019402
Wiring Instruction

ORDER NUMBER		DRAWING NUMBER	
DESIGNED BY Ing. Jozef Kascak		DRAW BY	PAGE 0
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BF1	Airflow pressure sensor
BF2	Airflow pressure sensor
BP1	Filter pressure sensor
BP10	Flow calibration sensor
BP2	Filter pressure sensor
BT1	Temperature sensor, duct
BT2	Temperature sensor Extract Air
BT26	Temperature sensor, duct
BT3	Temperature sensor, duct
BT8	Heat protection
E1	Rotary heat exchanger, RECOnomic
E2	Heating coil, electric
E3	Air cooler, direct expansion
E4	Condenser coil
E5	Compressor
E6	Compressor
G1	Supply fan, Wing+
G2	Extract fan, Wing+
K1	Control box IQlogic
MG1	Damper actuator
MG2	Damper actuator
P1	Hand terminal
R1	Outdoor air damper
R2	Exhaust air damper
T1	Motor control
T2	Motor control
T3	Heat exchanger control
V1	Supply air filter
V2	Extract air filter

Function summary

Air Handling System GOLD RX with rotory heat exchangerRECOnomic, Supply- and Extract Air fan Wing including completely inigrated control system IQlogic.

The desired settings can be entered in the hand-held micro terminal, where current in-service readings are also shown.

Controls

Sequential start-up
Damper with motor, outdoor air duct, spring return
Damper with motor, exhaust air duct,spring return

Constant air flow regulation, supply air

Constant air flow regulation, extract air

Density-corrected air flow

Supply air temp. regulation

Heating sequence

- Rotary heat exchanger
- Heating coil
Heating coil, electric
Overheating thermostat
Prolonged fan operation to cool the el. air heater

Functions

Cooling recovery, rotary heat exchanger
Air purging function
Carry-over control, rotary heat exchanger
Zero point calibration

Alarm monitoring

Filter monitoring
Rotation monitoring, rotary heat exchanger
Temperature monitoring
Service period

Energy monitoring

Other

Logging function
Wifi connection to WLAN

Controls

GOLD is controlled via Hand Terminal P1 which is a 7" touch screen with an intuitive user interface and information help texts.

Settings and readings for included components in GOLD are presented in a flow chart on the screen.
All settings and readings are expressed in real values, such as temperatures in °C; airflows optional in m3/s, m3/h or l/s and pressure in Pascal.

When starting the GOLD, extract fan G2 is started and heat exchanger E1 is forced to max. recovery
Then, as a preset delay, the supply fan G1 starts.
Supply fan G1 and extract fan G2 are inter locked
Damper actuator MG1 closes the outdoor air damper R1 when GOLD stops, and if power fails.
Damper actuator MG2 closes the exhaust air damper R2 when GOLD stops, and if power fails.

Constant air flow regulation, supply air

Flow pressure sensor BF1 keeps the constant supply air flow via motor controller T1.
Via the hand terminal P1 the required flow for low- and high speed for supply air is set.

Constant air flow regulation, extract air

Flow pressure sensor BF2 keeps the constant extract air flow via motor controller T2.
Required flow for low and high extract air fan operation mode is set via hand terminal P1.

Density-corrected air flow

The air flow is density corrected and compensated automatically for the airs increased density at low outdoor temperatures

Supply air temp. regulation

Temperature sensor BT1 keeps the supply air temperature constant according to the following control sequence.

Via hand terminal P1 the required temp set value is set.
Night compensation of temperature setpoint according to set temperature reduction. Via hand terminal P1, the desired setpoint setting and time channels for active night shift night and weekend are set.

Control sequence if heating is required:
- Heat exchanger E1 is started via heat exchanger controller T3, which on an increased heating load steplessly and linearly regulates the heat recovery efficiency of the heat exchanger to max.

- Electrical power is modulated out to heater coil E2.
Overheating thermostat BT8 disconnects the electric heater E2 and stops the GOLD.
When the GOLD stops the fans continue for 3 minutes to cool the air heater E2.
Control sequence if cooling is required:
- CoolDX cooling system starts for control of cooling energy to cooling coil E3.
Cooling compressors E5 and E6 control the cooling in three binary steps.
There is a settable neutral zone between the cooling and heating

Air purging function

Heat exchanger E1 starts at regular intervals for purging the rotor during longer periods of inactivity.

Confirmed airflow rate

Pressure sensor BP10 measures the leakage- and purging flow over the heat exchanger and corrects the Extract Air fan flow measurement for a correct flow description.

Rotation monitoring, rotary heat exchanger

The built-in rotation monitoring in heat exchanger control T3 continuously monitors heat exchanger E1. On an inadvertent stop, the heat exchanger initiates an alarm and stops the GOLD at low out door temp.

Zero point calibration

The zero point value is checked on all connected pressure sensors. If the value doesn't tally, a new calibration is made.

The function is automatically switched in each time the fans have been stopped for more than 75 seconds.

Alarm monitoring

The alarm can be seen in clear text on the hand terminal P1, where even re-setting of the alarm is done.

Alarm priority A or B can be chosen for all alarms. The alarm's function, if it is to stop the GOLD or not, is chosen individually for each alarm. Safety alarms always stop the GOLD.

Filter monitoring

Pressure sensor BP1 continually measures the pressure drop across filter V1.
Pressure sensor BP2 continually measures the pressure drop across filter V2.
The alarm limit is calculated continuously and is changed automatically dependent on the actual flow. When the set alarm value is reached the alarm is activated. The alarm limit for each filter is set in the hand terminal P1.

Temperature monitoring

The temp on temp sensor BT1 and BT2 is monitored continuously. Alarm is initiated if the temp drops below set limits. The required alarm limit is set in hand terminal P1.

The alarm is delayed 20 minutes.

Service period

When the set service time is reached an alarm is given. After the service the next service period is set via hand terminal P1.

Reading

Actual working value is shown in the hand terminal P1.
Temperatures
- Temperature readings on all connected temperature sensors.
- Set and actual set value.

Supply- and extract fan:
- Flow / pressure
- Set and actual set value.
- Working level
- Output
- Power.
- SFP-value.

Filter
- Current pressuredrop as well as calculated and set alarm limit.

Rotary heat exchanger:
- Calculated efficiency

Control sequence:
- All activated and connected control sequences.
- All connected valve actuators are equipped with valve response that indicates the valve position and gives an alarm at differing valve position.

Input and output connections:
- Current status.

Operating periods:
- Supply and extract air fans.
- Heat exchanger.

Alarms:
- Alarm history with date and time of activation and reset for the last 50 alarms
- Current alarm without time delay.

All other settings are also shown in the hand terminal.

Energy monitoring

Actual working value is shown in the hand terminal P1.
Fan power and energy consumption.
Air handling unit total energy consumption.

Manual test

Provision is available for testing and checking internal components in GOLD unit. Fans, heat exchanger, inputs and outputs and the connected accessories can be tested individually.

Logging function

Via control system multi-media card the parameter values are logged and saved for the systems log function. Parameter values can be forwarded or uploaded as an Excel file.

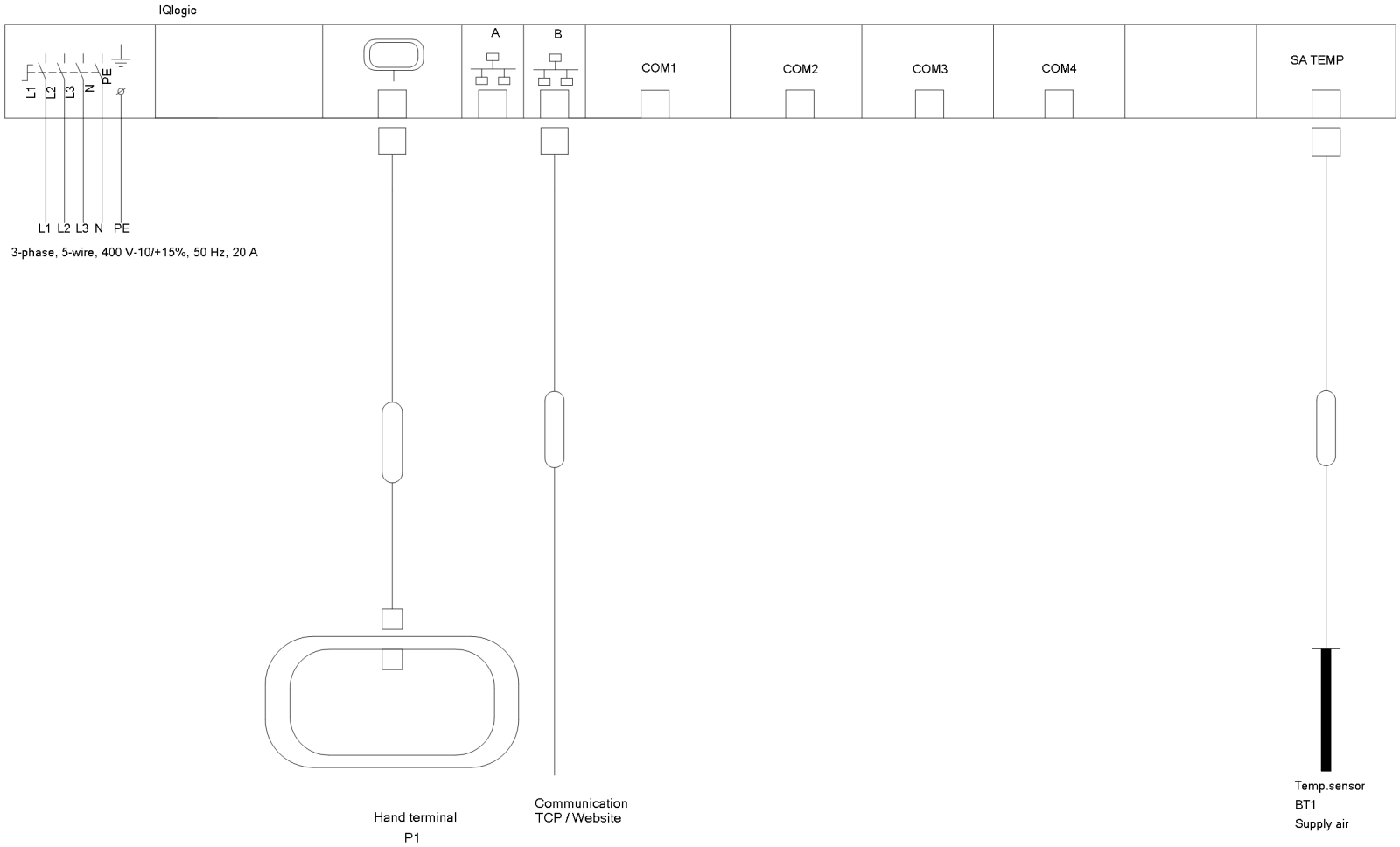
On a specific log page in the Hand Terminal one or several parameters can be chosen, to be read in a diagram with a time axis and a size axis. The parameters can be read in real time or as a loged value.

Communication

GOLD is controlled and monitored via standard web browser. Control system IQlogic contains a web server with a dynamic flow chart including operation and functions pages. Alarms are forwarded via built-in mail function.

WiFi

Control unit K1 is equipped with an antenna for connection to WLAN and direct connection to Portable Computers or Smart phone. Where the same functionality and visualization is given as in the Hand Terminal P1



NO.	CHANGE	SIGN.	DATE

Swegon

Project: VZT
Unit name: AHU2 - Integrovaný DX
Unit ID: AD-10001019402
Wiring Instruction

ORDER NUMBER		DRAWING NUMBER	
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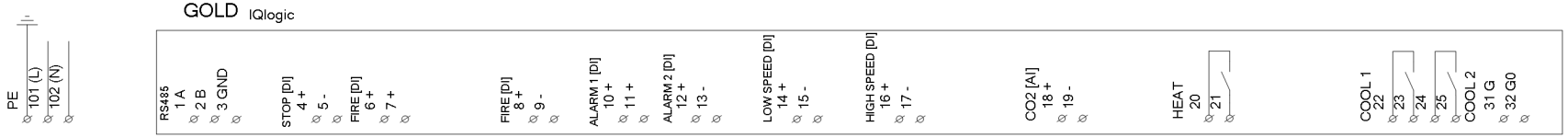
NOTE:
Terminal 20-25: Max 5A, 250V AC



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DESIGNED BY Ing. Jozef Kascak	DRAW BY	PAGE 2
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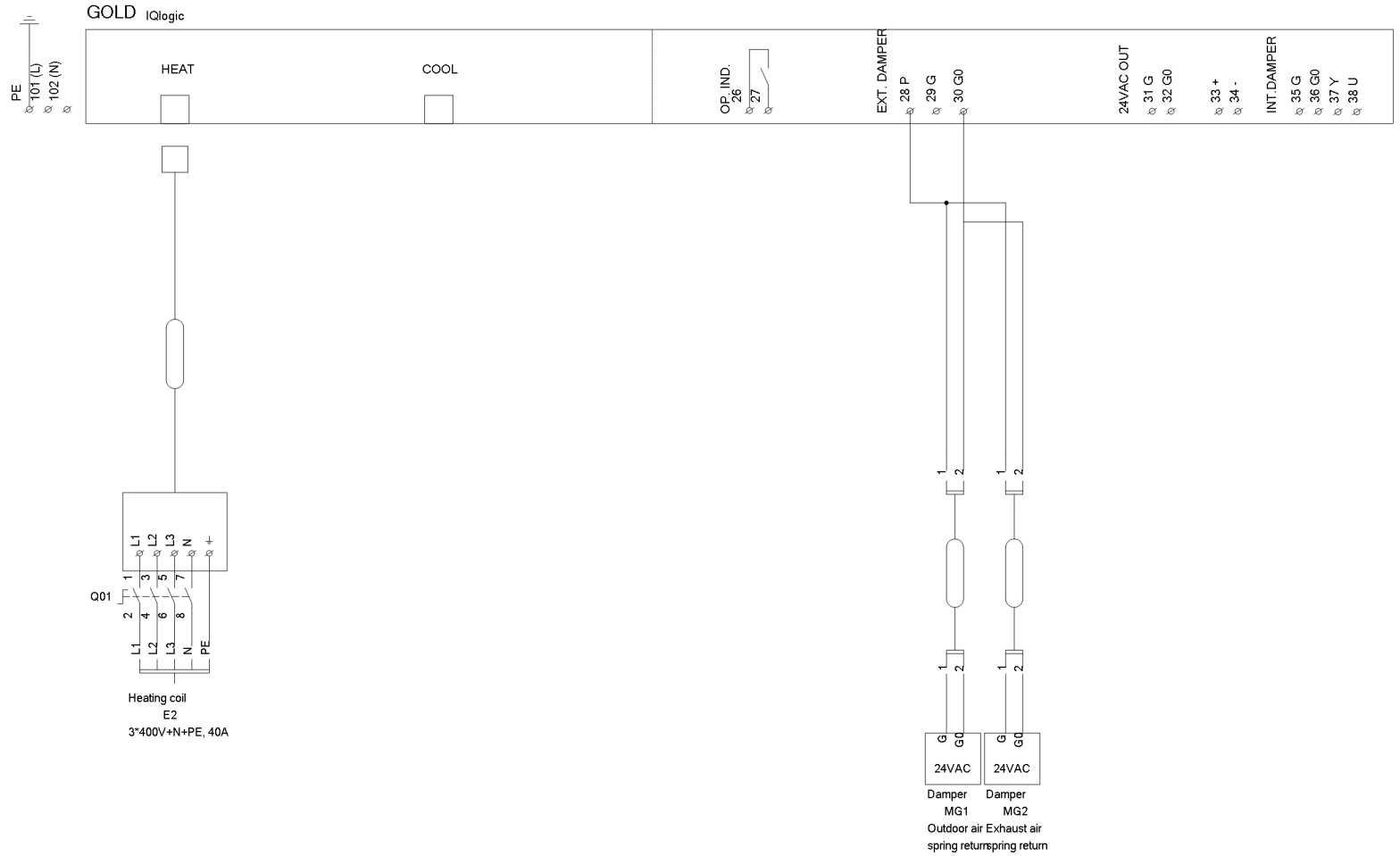

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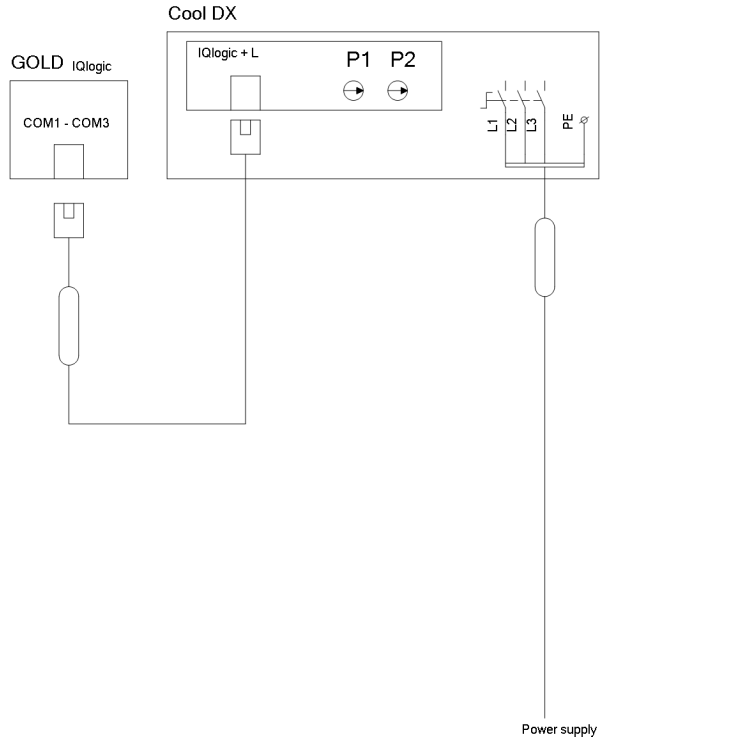
ORDER NUMBER		DRAWING NUMBER	
DESIGNED BY Ing. Jozef Kascak		DRAW BY	PAGE 3
DATE 31/10/2021		REV.	CONT. 4



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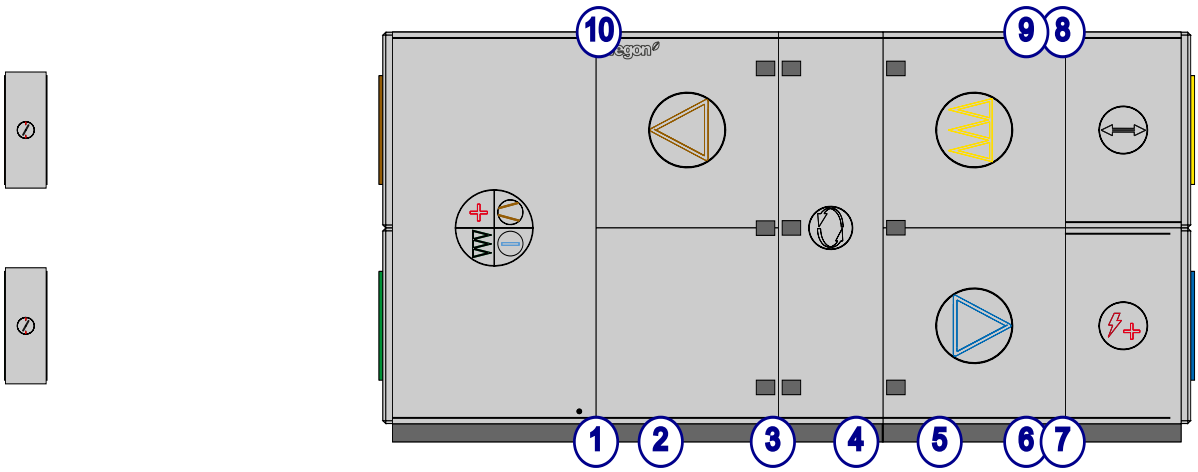

Components are arranged according to airflow direction
Dimensions are written as L * W * H

Outdoor air
Supply air
Extract air
Exhaust air

Number	Name	Dimensions	Volume	Internal weight	Total weight
1	End section	52*1990*1078 mm	0,11 m³	33 kg	**33 kg**
2	Cooling machine, DX	1100*1990*2259 mm	4,94 m³	545 kg	**545 kg**
3	Filter			5 kg	
	Fan	**987*1990*2259 mm**	4,44 m³	87 kg	**377 kg**
4	Rotary heat exchanger	565*1990*2259 mm	2,54 m³	138 kg	**344 kg**
5	Fan			87 kg	
	Filter	**987*1990*2259 mm**	4,44 m³	2 kg	**374 kg**
6	Heating coil, electrical, in casing	625*1990*1179,5 mm	1,47 m³	41 kg	**139 kg**
7	End section	52*1990*1078 mm	0,11 m³	33 kg	**33 kg**
8	End section	52*1990*1078 mm	0,11 m³	33 kg	**33 kg**
9	Spacer section	625*1990*1179,5 mm	1,47 m³	0 kg	**94 kg**
10	End section	52*1990*1078 mm	0,11 m³	33 kg	**33 kg**
					2,005 kg

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QAB Air Handling Unit

Supply and Extract

General

The Air Handling Unit shall be of type GOLD RX
The unit shall be delivered complete with direct-drive supply and / or exhaust air fans with PM / EC motors, energy class IE4, for continuous operation at temperatures up to 40 ° C. The fan, including motor and drive unit, shall be tested and approved for operation at a temperature of 70 ° C for at least one hour.

Energy recovery is to be achieved by a high efficiency rotary heat exchanger (RX) with speed control. The flow in the rotor shall be turbulent for optimum energy recovery.

The Manufacturer will be ISO9001 and ISO14001 Certified.
The control function of each unit shall be tested in the factory at the end of production.

Regulation, operation and visual presentation

The unit shall be supplied with complete, factory-mounted, integrated and digital control equipment. The control equipment is manually operated from an easy-to-understand wired, alternatively WLAN-enabled handheld terminal containing a capacitive 7-inch touchscreen.

The control function of each unit shall be tested in the factory at the end of production. The control functionality shall be standard, industrialised, tested and fully documented with comprehensive customer support.

The values in the handset shall be displayed dynamically in a flow image. The handset also displays help and function texts to facilitate operation and describe functionality.

The unit will be supplied with a built-in web server for monitoring and operation via TCP / IP connectivity. The web server shall mimic the handset's structure and dynamically display the values in a flow image. WLAN shall be used for connection to laptop, tablet or smartphone with the same functionality and interfaces given as in handheld and web server.

The unit shall be prepared to be controlled and monitored via cloud service connected to the Internet or mobile network. Mobile network connection is via subscription.

All settings and readings are made in real values, eg temperature in ° C and pressure in Pascal. Flow unit shall be selectable to m^3 / s, m^3 / h or l / s.

Unit data logging

The unit shall be delivered with integrated logging function with display in the hand terminal or web page, and with the ability to automatically transfer the values to another system for compilation. Data can be read in real time or as histrorical logged data.

Energy monitoring

The unit's energy consumption shall be readable in real terms, eg kW, kWh and current SFP figures. Recovered energy from rotary heat exchanger shall be given in kW and kWh. Ev. leakage and purge flows shall be readable in the hand terminal.

Functions

At startup of the unit, the exhaust air fan and heat exchanger shall be started first with energy recovery forced to maximum. Where a heating coil is installed, it is preheated in parallel with the heat exchanger. After a time delay, the supply air fan shall be started.

The unit controller shall be factory programmed with software that regulates temperatures, airflows and all other functionality. It shall be easy to activate or change standard functionality by means of the HMI.

Alarms shall be reported and reset in plain text in the HMI.
Alarm priority A or B can be selected for all alarms. The function of the alarm, if it is to stop the unit or not, is individually selected for the respective alarms. Safety alarm always stops the unit.

The unit shall be delivered with function for seasonally adjusted flow control. This function is used to reduce the operating cost of fans, post heating in the supply air and the building's regular heating system.

The unit shall be delivered with density-corrected airflow function so that the pressure balance in the building is automatically maintained at the correct level throughout the year.

To ensure optimal energy use, a continuous final pressure drop for the unit's filters shall be automatically calculated in relation to the current airflow. On reaching the final pressure drop, an alarm shall be issued to initiate a demand-controlled exchange of filters.

The zero point value is automatically calibrated on all connected pressure sensors each time the fans are started after a stop exceeded 75 seconds. If the value does not match, the process is repeated.

Rotor puging function Carry Over Control is included, ensuring proper blow-out of the rotor in relation to the airflow in the unit. Carry over Control calculates the maximum speed of the heat exchanger with respect to the airflow so that a proper blowout function is obtained even at low airflows. Pressure sensor measures the leakage and purge flow over the heat exchanger and corrects the exhaust air flow flow measurement for proper flow reporting.

The service period shall be adjustable. An alarm shall be issued if the set service period is exceeded. After a service, the service interval shall be automatically reset.

It shall be possible to test and check the individual components of the unit via manual setting in the hand terminal. Fans, heat exchanger, inputs and outputs and connected accessories shall be tested separately.

Accessories

All other unit component accessories such as damper, air heater, air cooler etc. mounted in the duct system and appropriatly connected to the unit controller using quick connectors.

The control functions necessary to control the accessories shall be included in the controller software as standard.

Certification

Air handling units shall be certified according to Eurovent, No. AHU-06-06-319, and comply with the Ecodesign Directive (EU) 1253/2014.

The unit shall be CE marked in the factory and comply with the Machine Directive as well as the EcoDesign, RED and PED Directives

The unit shall be Passive House certified for an airflow of up to 9000 m^3 / h.

Mechanical construction

The unit shall be made of self-supporting cover panels and inspection doors in sandwich construction with a minimum of 52mm thickness with 50mm of mineral wool insulation. Rigid foam shall not be used in the panels. The exterior sheet shall be galvanized steel with a grey metalic coating RAL 9007. The inner sheet shall be aluzink-treated sheet steel.

The unit shall meet corrosion class C4, inside and outside, according to SS-EN ISO 12944-2. The casing shall comply with the requirements for casing strength D1, tightness class L2, cold bridge TB2 and heat transmission T2 according to EN 1886: 2007.

Leakage class L2 shall be met also by the internal separation between air flows.
Inspection doors shall be hung on adjustable hinges and fitted with integrated and flush mounted handle that opens in 2 steps for personal safety and pressure equalization. The handles shall have locks with common keys.

The entire unit shall be designed for the temperature range -40°C and +40°C.
All cabling in the unit shall be PVC/halogen free.
The Unit will be of construction that will allow ease of access through the Building or have the facility to be flat-packed and rebuilt.

The fan impellor and it's motor shall be balanced together to grade G 6,3 enl ISO 1940-1 and shall be isolated from the unit casing by means of rubber anti vibration mounts and flexible connection. The fans shall be mounted on rails and shall be easily withdrawable. Fans shall be fitted with an airflow measuring device with readout of the airflow rate in the HMI with a tolerance of +/- 5%

Filters shall meet the requirements of EN ISO 16890:2016 and each filter shall be marked with the relevant classification.

Communication

The unit control shall have the facility to connect to a BMS system (SCADA system). The controller shall be ready for data communication with protocols BACnet IP and ModBus TCP / RTU and all necessary documenation shal be readily available.