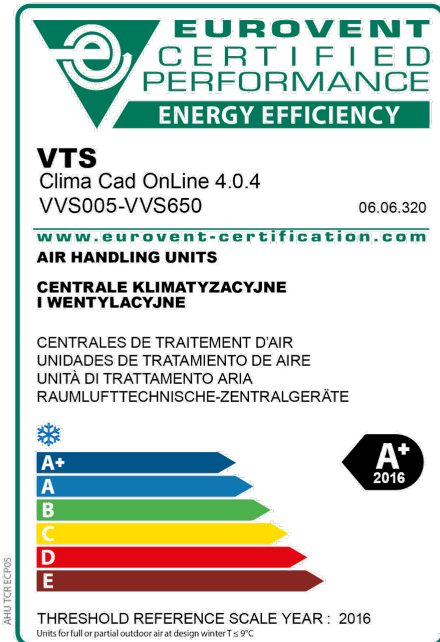
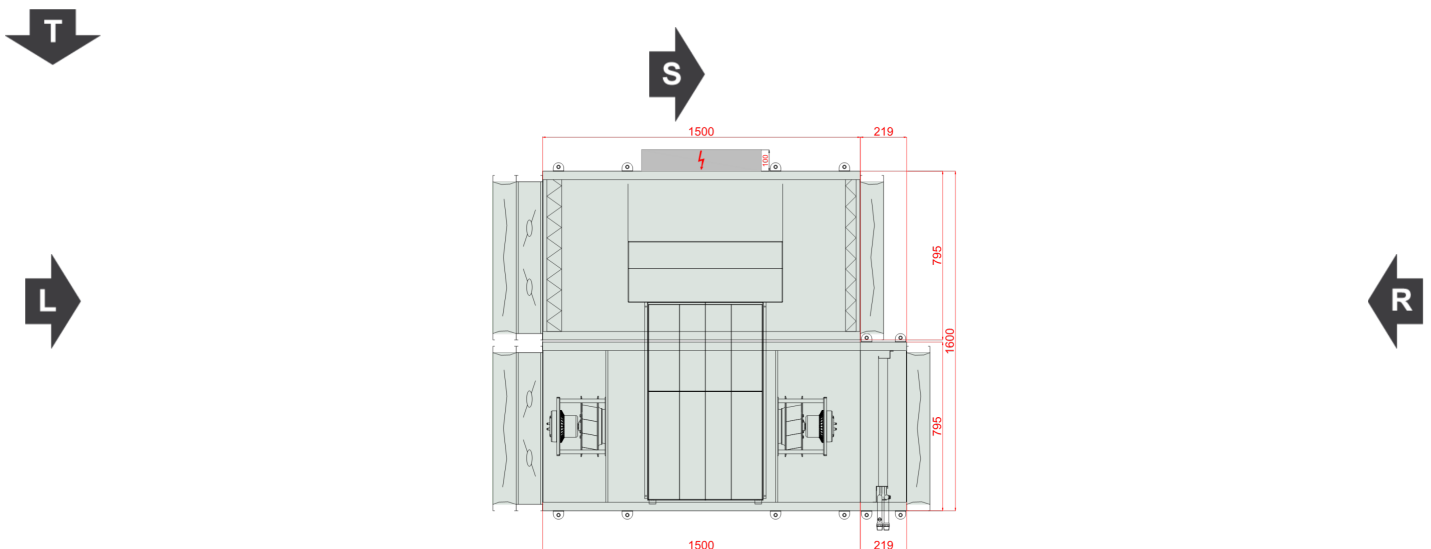


<b>Type</b>	RecoveryHexHorizontal
<b>Unit Type:</b>	Indoor
<b>Project Tag</b>	13577182
<b>Size</b>	VVS015s
<b>Set</b>	VVS015s-R-FPVH/VVS015s-L-FPV_cd
<b>Insulation thickness</b>	40 mm
<b>Insulation</b>	Mineral Wool
<b>Weight of the set (+/- 10%)*</b>	270 Kg
<b>Supply airflow 2</b>	1500.00 m³/h
<b>External pressure</b>	300 Pa
<b>Exhaust airflow 2</b>	1500.00 m³/h
<b>External pressure</b>	300 Pa
<b>SFP Winter</b>	1.56 kW/m³/s
<b>SFP Summer</b>	1.61 kW/m³/s
<b>Ecodesign</b>	Yes (2018 +)
<b>Eurovent Energy efficiency class (Winter 2016 / Summer 2020)</b>	A+ 2016



#### Top View

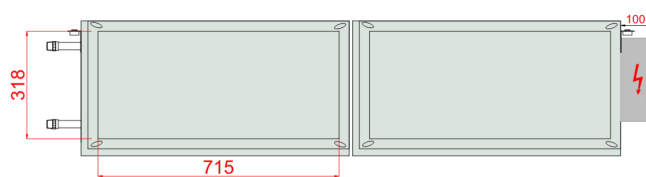
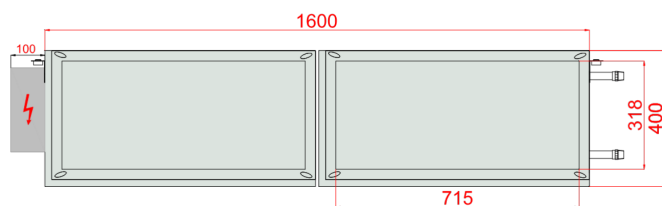


Comment 1:

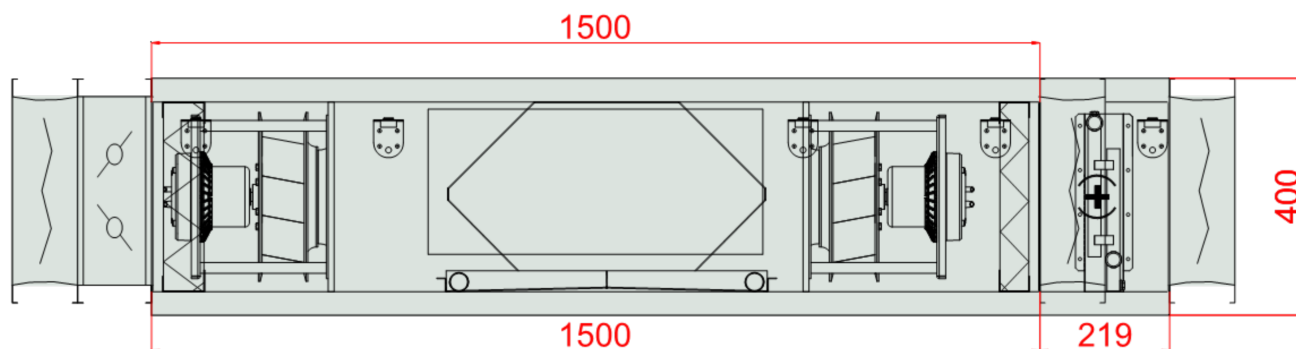
Front View (left)



Front View (right)



Inspection Panels



#### Sizes [mm]

Air intake Supply FF	715x318	Lt 1719	Hi 320	Wi 715
Air outlet Supply FF	715x318	LtA 2064	H 400	W 795
		L1 1719		W2 1600
Air inlet Exhaust FF	715x318	L2 1500		
Air outlet Exhaust FF	715x318	L22 219		

#### Unit design

Walls filled with MW 40mm, double skin made of steel, excluding silencer and electric heater sections  
 Down base unit inspection

Casing anti-corrosion protection: Aluzinc AZ 150.  
 Base unit with pre-configured EC motors drives  
 Energy recovery efficiency meet EC 1253/2014 requirements

### Temperature Conditions

Reference atmospheric pressure 101325 Pa				Winter outdoor reference temperature -20.0 °C		
	External air			Return air		
	DBT	RH	DA	DBT	RH	DA
Summer	32.0 °C	45 %	1.2000 kg/m³	20.0 °C	65 %	1.2000 kg/m³
Winter	-20.0 °C	100 %	1.2000 kg/m³	20.0 °C	40 %	1.2000 kg/m³

### Supply

#### Panel Filter

Type F7/50.EU7MPleat.Int.Sld

ePM2,5 65% (ISO16890) - EFF CLASS E Flat Mini-Pleat Filter[27.0]

Filter Energy Performance Class E

#### Winter operation

50% Dirty Air Pressure Drop	115 Pa
Initial Air Pressure Drop	81 Pa
100% Dirty Air Pressure Drop	150 Pa
Air velocity	1.89 m/s

#### Air Filter Sizes

P,FLT F7 713x320x48 (1-2-0301-0243) 1,000 x Pcs

#### Summer operation

50% Dirty Air Pressure Drop	115 Pa
Initial Air Pressure Drop	81 Pa
100% Dirty Air Pressure Drop	150 Pa
Air velocity	1.89 m/s

## Counter-Flow Recuperator (Hexagonal)

### Type PCR VVS015s Hex

HIPS or AL 3.0 (SR)

#### Winter operation

##### Supply

Intake air DBT / RH	-20.0 °C / 100 %
Discharge air DBT / RH	11.3 °C / 8 %
Air velocity	2.47 m/s
Pressure drop Wet / Dry Wet	80 Pa
Air Pressure	101325 Pa
Air Density	1.2000 kg/m³
Air Volume Flow	1500.00 m³/h
Recovery capacity Sensible / Total Total	15.7 kW
Actual efficiency / at balanced flow Real / BalancedFlow	78 % / 78 %
Dry efficiency in winter	72 %

#### Winter operation

##### Exhaust

Intake air DBT / RH	20.0 °C / 40 %
Discharge air DBT / RH	-2.3 °C / 89 %
Air velocity	2.47 m/s
Pressure drop Wet / Dry Wet	105 Pa
Air Pressure	101325 Pa
Air Density	1.2000 kg/m³
Air Volume Flow	1500.00 m³/h
Recovery Bypass	Yes
Air Damper	No
Counter-Flow (Hex)	
Max Internal Leakage 0.25%	

#### Summer operation

##### Supply

Intake air DBT / RH	32.0 °C / 45 %
Discharge air DBT / RH	23.4 °C / 75 %
Air velocity	2.47 m/s
Pressure drop Wet / Dry Wet	113 Pa
Air Pressure	101325 Pa
Air Density	1.2000 kg/m³
Air Volume Flow	1500.00 m³/h
Recovery capacity Sensible / Total Total	-4.4 kW
Actual efficiency / at balanced flow Real	72 %

#### Summer operation

##### Exhaust

Intake air DBT / RH	20.0 °C / 65 %
Discharge air DBT / RH	27.6 °C / 42 %
Air velocity	2.47 m/s
Pressure drop Wet / Dry Wet	105 Pa
Air Pressure	101325 Pa
Air Density	1.2000 kg/m³
Air Volume Flow	1500.00 m³/h
Eco Design Class	Eco Design

### Recovery Additional Info

PlateExchangers



### Plug-Fan Set

#### Fan Section PLUG\_DD\_250\_0,38\_2.00

EC\_IE4\_F\_IMB14\_71\_2.00p\_T 771.3.550-4 250|0.38kW|2.00x1

Qty in section x 1

Fan Set Designed for wet operating conditions

The fan system effects is taken into account in the fan performances.

#### Fan PLUG\_VS\_250\_AF\_Px 1



Total Static Pressure	529 Pa	Impeller efficiency: Static / Total	71 %/76 %
Dynamic pressure	33 Pa	Shaft power	0.31 kW x 1
External pressure	300 Pa	Working revolutions	2825 1/min
Total Pressure	562 Pa		
<b>Winter operation</b>		<b>Summer operation</b>	
Air Volume Flow	1500.00 m³/h	Air Volume Flow	1500.00 m³/h

#### Motor EC\_IE4\_F\_71\_IMB14\_2.00p\_0.38\_50x 1

771.3.550-4	EC	50Hz	
FLA	2.1 A	MCA	2.7 A
MCB	6.0 A		
		Rated revolutions	3000 1/min
Operational Voltage	230 V/1 ph	Rated Power	0.38 kW x 1
Name plate RPM	230 V/1 ph/50 Hz		

#### EC Motor Controller

	_EC		_EC
Motor Drive FLA (Full-Load Amperes)	2.1 A	Motor Drive MCA (Min. Circuit Ampacity)	2.7 A
Motor Drive MCB (Max. Circuit Breaker)	6.0 A		
EC Controller Settings	47 Hz		

<b>Winter operation</b>		<b>Summer operation</b>	
EPC for mean contaminated filters	0.36 kW	EPC for mean contaminated filters	0.38 kW
EPC for clean filters	0.33 kW	EPC for clean filters	0.36 kW
SFP for clean filters	0.80 kW/m³/s	SFP for clean filters	0.85 kW/m³/s

#### Fan Section Power Supply Additional Info

C20/1

#### ⊕ Hot Water Coil

<b>Type</b> WCL VVS015s 2R DT SH.St.St.Std		<b>Number of rows</b> 2	<b>Connection Supply/Return:</b> 3/4"/22
Standard Circuits	1,27 [dm³]		
Medium	Water	Maximum working pressure	16 bar
Intake air DBT / RH	11.3 °C / 8 %	Discharge air DBT / RH	20.0 °C / 4 %
Air velocity	2.20 m/s	Pressure drop Wet / Dry Wet	33 Pa
Air Pressure	101325 Pa	Air Density	1.2000 kg/m³
Air Volume Flow	1500.00 m³/h		
Total heating capacity	4.4 kW	Medium temperature	70.0 °C/50.0 °C
Medium flow rate	0.19 m³/h	Medium pressure drop	1.11 kPa



### Acoustic data

Acoustic power level [dB(A)]	Frequency	125 [Hz]	250 [Hz]	500 [Hz]	1000 [Hz]	2000 [Hz]	4000 [Hz]	8000 [Hz]	Lw [dB(A)]
Inlet	[dB(A)]	50.2	56.4	54.2	49.1	45.7	49.2	46.3	60.2
Outlet	[dB(A)]	49.3	56.4	41.6	46.4	40.3	38.4	33.7	57.8
Environment	[dB(A)]	35.4	46.8	52.7	49.0	49.4	29.8	22.2	56.1

Acoustic pressure level at 1 meter distance [dB(A)]	Frequency	125 [Hz]	250 [Hz]	500 [Hz]	1000 [Hz]	2000 [Hz]	4000 [Hz]	8000 [Hz]	Lp [dB(A)]
	[dB(A)]	28.4	39.8	45.7	42.0	42.4	22.8	15.2	49.1

### Exhaust airflow 3

#### Panel Filter

Type M5/50.EU5MPleat.Int.Sld

ePM10 40% - ISO 16890 - EFF CLASS E Flat Mini-Pleat Filter[26.0]

Filter Energy Performance Class E

#### Winter operation

50% Dirty Air Pressure Drop 105 Pa  
Initial Air Pressure Drop 61 Pa  
100% Dirty Air Pressure Drop 150 Pa  
Air velocity 1.89 m/s

#### Summer operation

50% Dirty Air Pressure Drop 105 Pa  
Initial Air Pressure Drop 61 Pa  
100% Dirty Air Pressure Drop 150 Pa  
Air velocity 1.89 m/s

#### Air Filter Sizes

P,FLT M5 713x320x48 (1-2-0301-0245) 1,000 x Pcs

#### Plug-Fan Set

Fan Section PLUG\_DD\_250\_0,38\_2.00

EC\_IE4\_F\_IMB14\_71\_2.00p\_T 771.3.550-4 250|0.38kW|2.00x1

Qty in section x 1

Fan Set Designed for wet operating conditions

The fan system effects is taken into account in the fan performances.

Fan PLUG\_VS\_250\_AF\_Px 1

Total Static Pressure	511 Pa	Impeller efficiency: Static / Total	71 %/76 %
Dynamic pressure	33 Pa	Shaft power	0.30 kW x 1
External pressure	300 Pa	Working revolutions	2795 1/min
Total Pressure	543 Pa		

<b>Winter operation</b>		<b>Summer operation</b>	
Air Volume Flow	1500.00 m³/h	Air Volume Flow	1500.00 m³/h

Motor EC\_IE4\_F\_71\_IMB14\_2.00p\_0.38\_50x 1

771.3.550-4 EC 50Hz



FLA	2.1 A	MCA	2.7 A
MCB	6.0 A		
		Rated revolutions	3000 1/min
Operational Voltage	230 V/1 ph	Rated Power	0.38 kW x 1
Name plate RPM	230 V/1 ph/50 Hz		

#### EC Motor Controller

	_EC		_EC
Motor Drive FLA (Full-Load Amperes)	2.1 A	Motor Drive MCA (Min. Circuit Ampacity)	2.7 A
Motor Drive MCB (Max. Circuit Breaker)	6.0 A		
EC Controller Settings	47 Hz		

#### Winter operation

EPC for mean contaminated filters	0.34 kW
EPC for clean filters	0.32 kW
SFP for clean filters	0.76 kW/m³/s

#### Summer operation

EPC for mean contaminated filters	0.34 kW
EPC for clean filters	0.32 kW
SFP for clean filters	0.76 kW/m³/s

#### Fan Section Power Supply Additional Info

C20/1

#### Acoustic data

Acoustic power level [dB(A)]	Frequency	125 [Hz]	250 [Hz]	500 [Hz]	1000 [Hz]	2000 [Hz]	4000 [Hz]	8000 [Hz]	Lw [dB(A)]
Inlet	[dB(A)]	45.5	58.8	64.8	65.1	63.4	58.0	52.4	70.0
Outlet	[dB(A)]	48.2	61.5	67.5	67.8	66.1	61.6	56.0	72.8
Environment	[dB(A)]	35.2	46.5	52.5	48.8	49.1	29.6	22.0	55.8

Acoustic pressure level at 1 meter distance [dB(A)]	Frequency	125 [Hz]	250 [Hz]	500 [Hz]	1000 [Hz]	2000 [Hz]	4000 [Hz]	8000 [Hz]	Lp [dB(A)]
	[dB(A)]	28.2	39.5	45.5	41.8	42.1	22.6	15.0	48.8

#### AHU Discharge and Intake Opening Sizes & Unit Accessories

##### Supply

##### Exhaust

Controls Selection Mode: Functional set

AHU Discharge and Intake Opening Sizes	Supply	Exhaust
Air Inlet	Front 715x318	Front 715x318
Air Outlet	Front 715x318	Front 715x318
AirDamper	Supply	Exhaust
Air Inlet	Provided 685x288	Not Provided
Air Outlet	Not Provided	Provided 685x288
Flexible Connection	Supply	Exhaust
Air Inlet	Provided 685x288	Provided 685x288
Air Outlet	Provided 685x288	Provided 685x288

#### Control application



**Functional Code** AP11000000630000001

**APP Code** uPC3 (AP-161)

**Main Temp. Sensor** Duct Exhaust

#### Human Machine Interface

#### Options

BMS	Yes	Differential Pressure Transducer	CAV
HMI Advanced (Settings)	Yes		
HMI Basic (User)	Yes		
Control Box	Yes		

#### Air damper actuators

Name	Code	Set
Air Damper Actuator ON-OFF S 10Nm	ADMP.ACT.SET ON-OFF S 10Nm	1
Air Damper Actuator ON-OFF 10Nm	ADMP.ACT.SET ON-OFF 10Nm	1
Air Damper Actuator 0-10 2Nm	ADMP.ACT.SET 0-10 2Nm	1

#### Temperature sensor

Name	Code	Set
Strap-on temperature sensor NTC 10k	Temp. Sensor NTC10k (Strap-on)	1
Duct temperature sensor NTC 10k	Temp. Sensor NTC10k (Duct)	1
Resp_Controls_TempSensors_Temp. Sensor NTC10k (Outdoor)	Temp. Sensor NTC10k (Outdoor)	3

#### Hydronic Coils Controls

Name	Code	Set
3-way Valve	VLV.SET-3W-2,5	1

#### Transducers and Switches

Name	Code	Set
Frost Switch	FRST.SWITCH	1
Differential Pressure Transducer CAV	PRSS.TRDC_CAV	1

### DECLARATION OF PERFORMANCE - Product information - (EU) 1253/2014 annex V as referred to in art. 4(2)

No.	Parameter	Unit	Value
1	Manufacturer's name		VTS sp. z o.o.
2	Manufacturer's product code		VVS015s-F-P-V-H
3	Declared type		NRVU, BVU
4	Type of drive installed		VFD(AC) or Controller(EC)
5	Type of energy recovery		Other
6	Thermal efficiency of heat recovery	%	73.00
7	Nominal NRVU flow rate		0.42 / 0.42
8	Effective electric power input	kW	0.36 / 0.34
9	Internal Specific Fan Power (SFPint)	w/m³/s	260.47 / 268.25
10	Face velocity	m/s	1.98
11	Nominal external pressure	Pa	300.00 / 300.00
12	Internal Pressure Drop of ventilation components $\Delta p_{s,int}$	Pa	160.80 / 165.48
13	Internal pressure drop of non-ventilation components $\Delta p_{s,add}$	Pa	68.58 / 45.15
14	Maximum Leakage Rate	%	0.01 / 0.01
15	Energy performance of filters (declared information about the calculated annual energy consumption)		EU7MPleat / F7 / - / EU5MPleat / M5 / -
16	Description of visual filter warning for NRVUs		Supported by control application
17	Casing sound power level LWA	dBA	56





18	Internet address for disassembly instructions	<a href="http://www.vtsgroup.com">http://www.vtsgroup.com</a>
19	Ecodesign Compliance	Yes (2018 +)

#### Section splits

Transport Sections	Mass [Kg]	LENGTH [mm]	WIDTH [mm]	HEIGHT [mm]
1	240	1500	1600	400
2	24	219	795	400

Transport Sections Dims

