



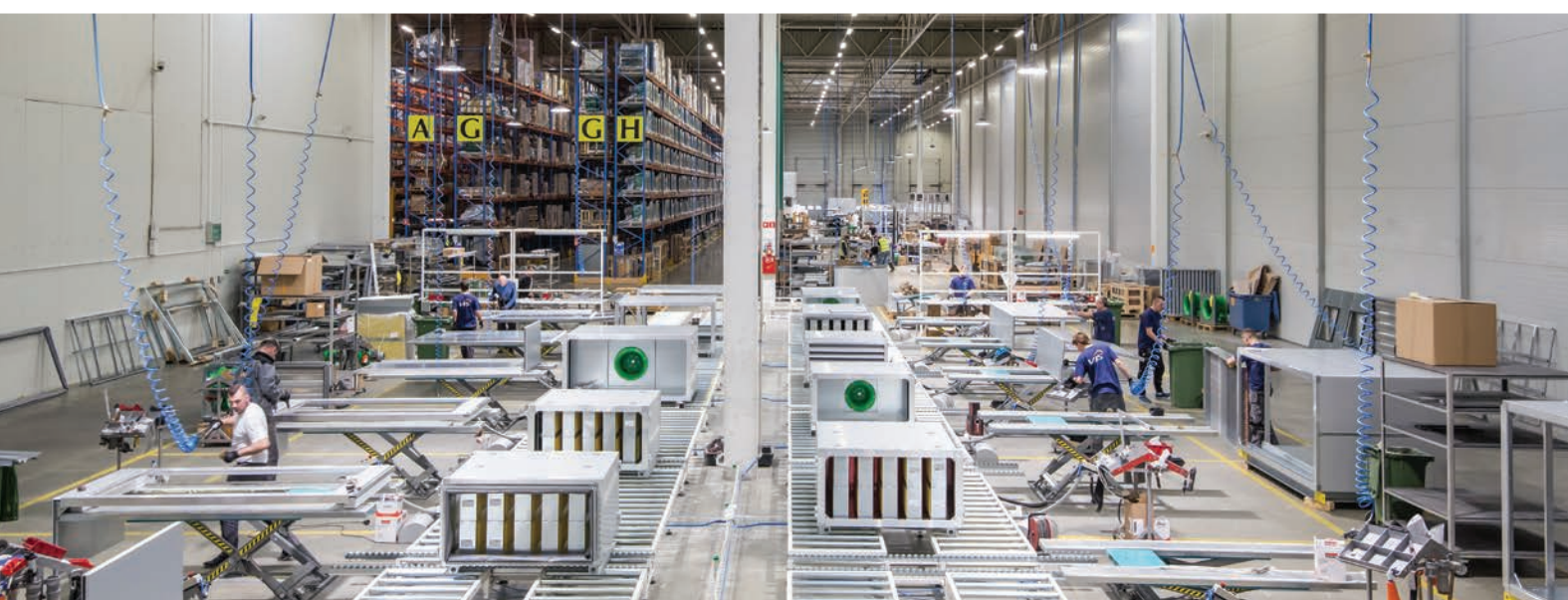
VENTUS

VVS/S-type





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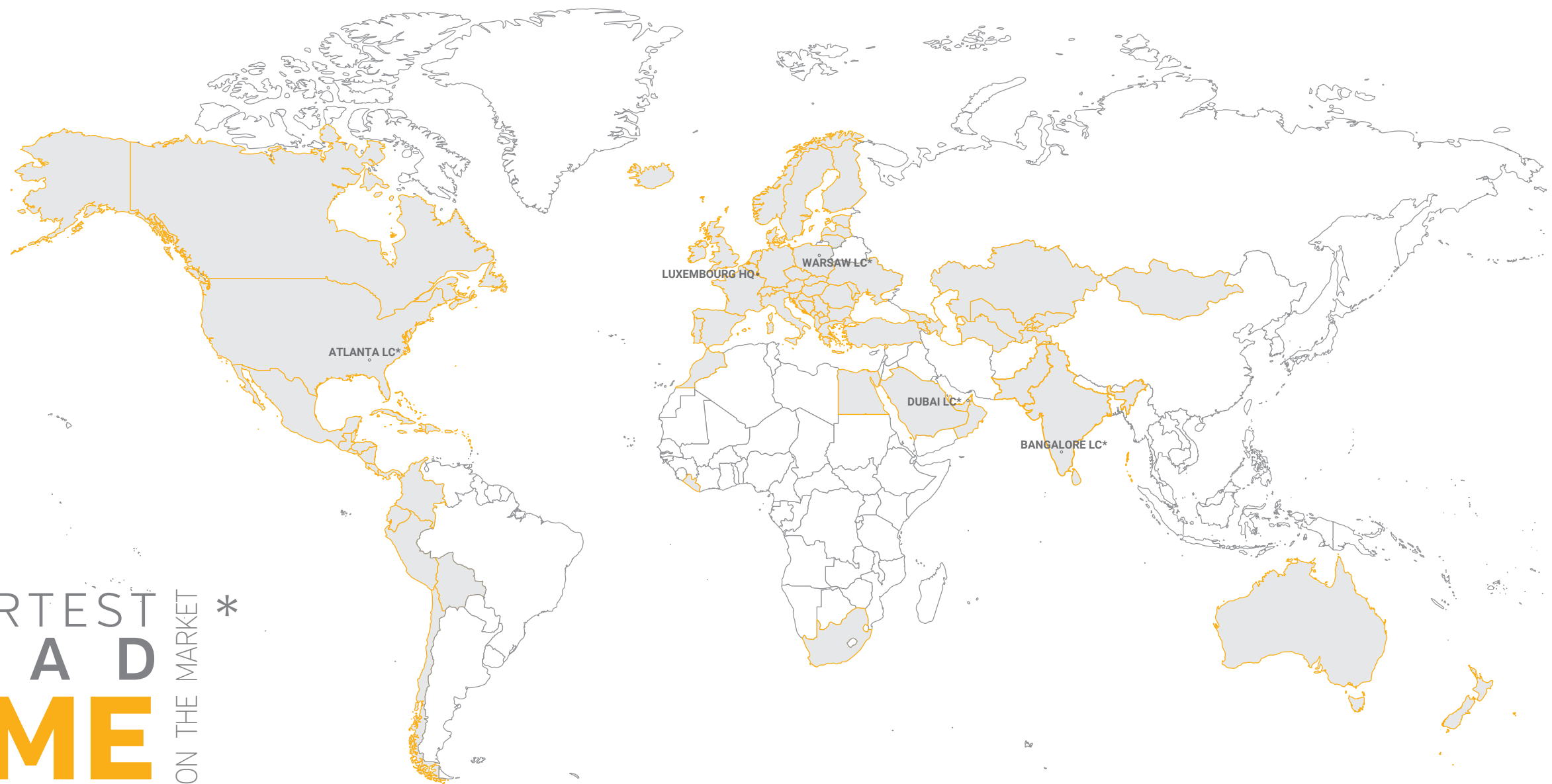




VTS GROUP – is a manufacturer of technically advanced HVAC equipment, combining innovative technologies in the field of research&development, production and logistics.

OUR MISSION

AHU#1



SHORTEST
LEAD
TIME ON THE MARKET *

* Logistics center





3 PILLARS OF SUCCESS

Constantly highest quality of products. Best prices on the market. Shortest lead time. These 3 pillars of marketing policy allows VTS to be always one step head, wherever in the world.

Following the best practices of the branch, VTS has created a network of 4 efficiently running production and logistic centers (**Atlanta, Dubai, Warsaw, Bangalore**), enable to ensure the shortest lead time on the market, wherever in the world.

SHORTEST
LEAD
TIME ON THE MARKET



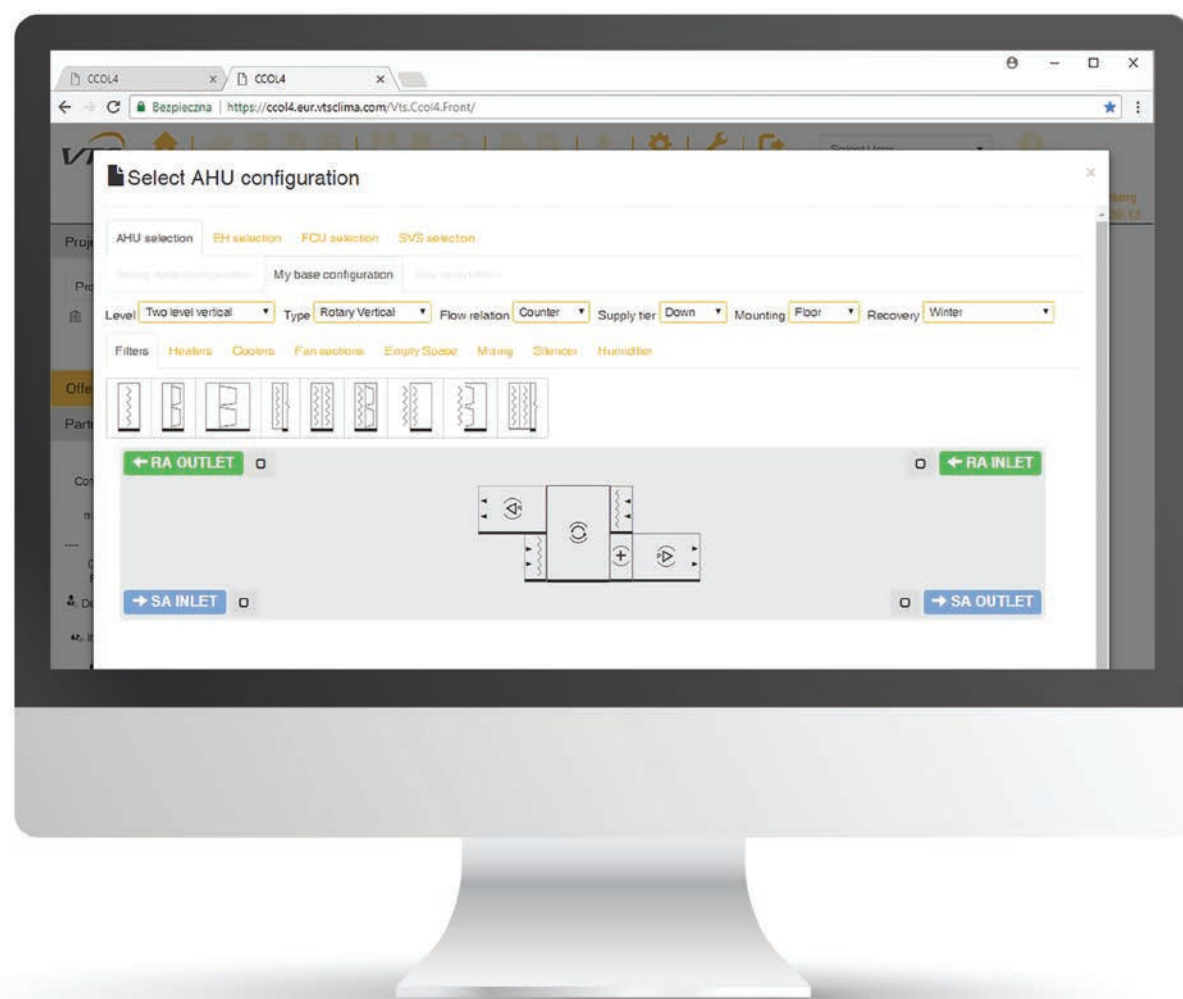
\$ COMPETITIVE
PRICE

150 000
UNITS
SOLD ANNUALLY

BEST
QUALITY

UP TO **1** YEAR **WARRANTY**
FOR EACH
UNIT





02

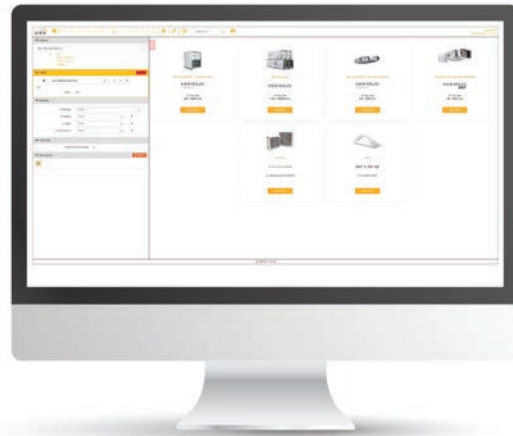
Support
for designers



CLIMACAD ONLINE 4 (CCOL 4)

Infinite number of configurations

Friendly user interface



Simple and easy selection

Integration with CRM, ERP & WMA systems

CCOL4 OPTIMIZED FOR

» any web-browser



» any operating system



» any device



DATA EXPORT TO



CCOL 4 utilises latest technologies and software platforms. The tool has been developed in SaaS model (Software as a Service). It's best advantage is, that service is accessible wherever in the world. Any device equipped with web-browser and internet access is all you need to experience the power of our CCOL 4.

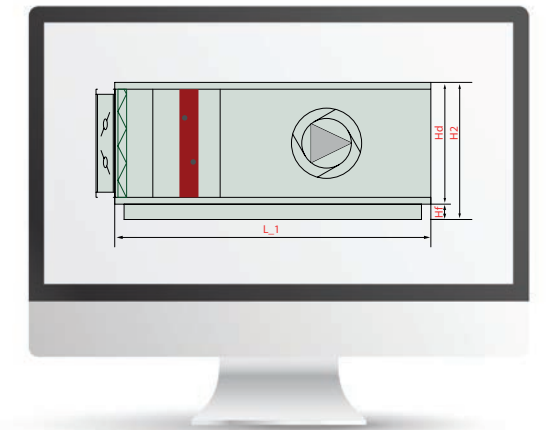
DESIGN VERSATILITY

- » Infinite units configurations.
- » Detecting of configurations errors.



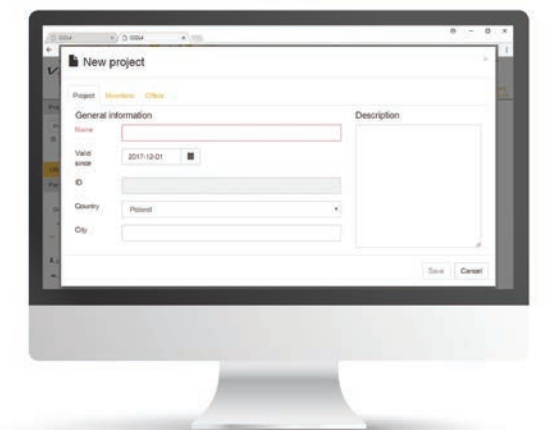
DYNAMIC AHU LENGTH DEFINITION

- » CCOL4 applies dynamic optimizing of AHU length based on automatic air treatment functions. placements with regard to minimum gaps between them in order to secure their proper performance.



MANAGING OF YOUR DATA BASE

- » Self-creating and development by designer of own projects and AHU selections data base.
- » Sharing of self-made AHU selections with VTS engineers for pricing.





03

Units
- VENTUS VVS

ventus

VVS



Airflow
from **1 100** m³/h
from **100 000** m³/h



Up to **87%**
of energy recovery
efficiency



14
sizes



DURABLE
AND TIGHT
STRUCTURE



RELIABLE
COMPONENTS



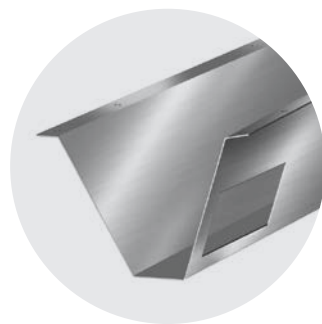
SMART
CONTROLS



USER
SAFETY



STRUCTURE



V PROFILE
VS 21-180



C PROFILE
VS 230-650

GALVANIZED STEEL SUPPORT
AS **STANDARD** FOR ALL TYPES
OF UNITS

FRAME

- » easier transport
- » greater profile resistance to deflection



FAN SECTION CAGE

- » increased longitudinal stiffness of the structure
- » easier sections assembly



ALUMINIUM COLUMNS
AS **STANDARD**
FOR ALL TYPES
OF UNITS

STRUCTURAL COLUMNS

- » thermal breaks on the mullion as standard
- » high resistance to weather conditions and UV rays



TIGHTNESS



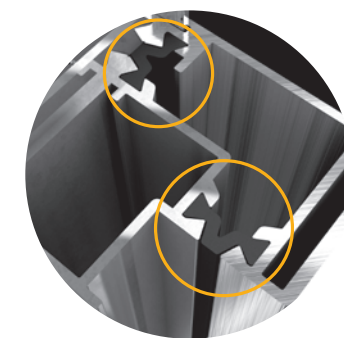
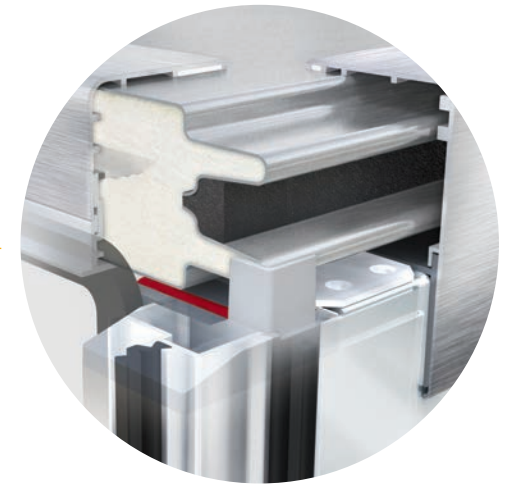
CANOPY

- » The canopy is made of 0,5 mm steel sheet, double side coated with 185 um of zinc (DX51D AZ185).
- » Canopy is assembled of modules equipped with self-latching grooves securing perfect tightness of the joints. Modular structure of the canopy ensures its easy and safe assembly.

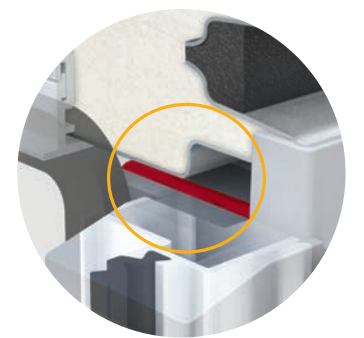


ERGONOMIC INSPECTION PANEL LOCK

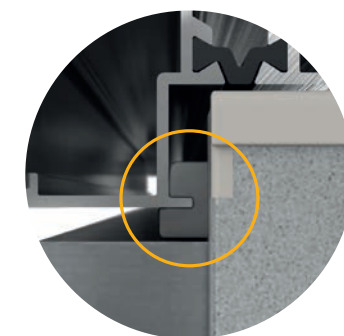
- » Highly aesthetic and ergonomic handles securing perfect tightness of inspection panels.



THERMAL BREAK



LABIRYNTH TIGHTENING



ADDITIONAL POST SEALING



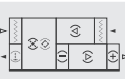
ADDITIONAL SEALING BLADE

ALUMINUM STRUCTURAL POSTS WITH ADDITIONAL SEALING BLADE AND THERMAL BREAK

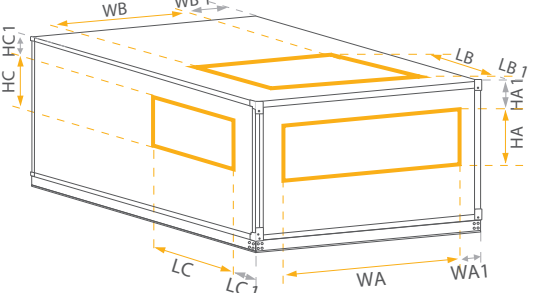
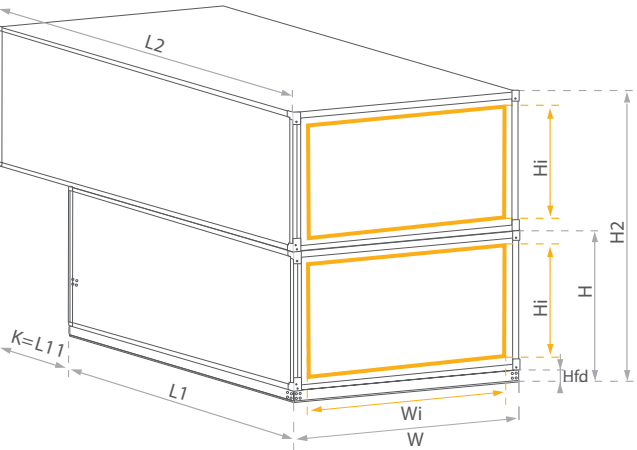
- » Broken thermal bridge as standard – eliminates humidity condensation on units structural elements.
- » Blade along the inspection window ensures labyrinth tightening between panel and AHU body – currently the most effective solution on the market, mainly applied to laboratory equipment.
- » Symmetrical groove in the vertical post's mounting feet secures its 100% tightness with the AHU casing structure.



VVS 021-120 – RECUPERATOR
- CROSS-FLOW PLATE EXCHANGERS

Nominal parameters				Recommended airflow range																		
Unit size		VVS021			VVS030			VVS040			VVS055			VVS075			VVS100			VVS120		
18 000	[m³/h]																					
12 000																						
6 000																						
0																						
		⊕	⊗	⊖	⊕	⊗	⊖	⊕	⊗	⊖	⊕	⊗	⊖	⊕	⊗	⊖	⊕	⊗	⊖	⊕	⊗	⊖
Min airflow		806	806	806	1 180	1 180	1 180	1 958	1 958	1 958	2 878	2 878	2 878	3 805	3 805	3 805	4 863	4 863	4 863	5 815	5 815	5 815
Max airflow		2 730	2 184	2 163	3 900	3 120	3 090	5 200	4 160	4 120	7 150	5 720	5 665	9 750	7 800	7 725	13 000	10 400	10 300	15 600	12 480	12 360
H _{fd}		90			90			90			90			90			90			90		
H _{fu}		-			-			-			-			-			-			-		
H		538			670			670			805			925			1 025			1 062		
W		961			961			1 168			1 339			1 480			1 660			1 891		
H _i		368			500			500			635			755			855			892		
W _i		881			881			1 088			1 259			1 400			1 580			1 811		
H ₂		986			1 250			1 250			1 520			1 760			1 960			2 034		
I		40			40			40			40			40			40			40		
Selected configurations Dimension																						
		Length of selected configurations																				
																						
	L2	2221			2221			2221			2953			2953			3318			3318		
	L1	2221			2221			2221			2953			2953			3318			3318		
	K	-			-			-			-			-			-			-		
	Lt	2221			2221			2221			2953			2953			3318			3318		
	L2	2221			2221			2221			2953			2953			3318			3318		
	L1	2221			2221			2221			2953			2953			3318			3318		
	K	-			-			-			-			-			-			-		
	Lt	2221			2221			2221			2953			2953			3318			3318		
	L2	2221			2221			2221			2953			2953			3318			3318		
	L1	2587			2587			2587			3318			3318			3684			3684		
	K	-			-			-			-			-			-			-		
	Lt	2587			2587			2587			3318			3318			3684			3684		
	L2	3318			3318			3318			4050			4050			4415			4415		
	L1	3318			3318			3318			4050			4050			4415			4415		
	K	-			-			-			-			-			-			-		
	Lt	3318			3318			3318			4050			4050			4415			4415		
	L2	3684			3684			3684			4415			4415			4781			4781		
	L1	3318			3318			3318			4050			4050			4415			4415		
	K	366			366			366			365			365			366			366		
	Lt	3684			3684			3684			4415			4415			4781			4781		

Entire range of configuration in ClimaCAD OnLine 4 selection tool - www.ccol4.com



DIMENSIONS - VVS021-VVS120 – RECUPERATOR
- CROSS-FLOW PLATE EXCHANGERS

Opening BIG - inlet-outlet END (FF)						
Size	WA	HA	WA1	HA1		
VVS021	500	210	230	119		
VVS030	700	210	130	185		
VVS040	600	310	284	135		
VVS055	850	310	244	202		
VVS075	900	400	290	217		
VVS100	1200	400	230	267		
VVS120	1400	400	245	286		

Opening SMALL - inlet-outlet END (FS)						
Size	WA	HA	WA1	HA1		
VVS021	150	112	405	168		
VVS030	200	112	380	234		
VVS040	250	112	459	234		
VVS055	350	112	494	301		
VVS075	500	112	490	361		
VVS100	350	210	655	362		
VVS120	400	210	745	381		

Opening BIG - inlet-outlet END (US)						
Size	WA	HA	WA1	HA1		
VVS021	500	210	230	120		
VVS030	700	210	130	120		
VVS040	600	310	284	120		
VVS055	850	310	244	120		
VVS075	900	400	290	120		
VVS100	1200	400	230	120		
VVS120	1400	400	245	120		

Opening SMALL - inlet-outlet END (US)						
Size	WA	HA	WA1	HA1		
VVS021	150	112	405	120		
VVS030	200	112	380	120		
VVS040	250	112	459	120		
VVS055	350	112	494	120		
VVS075	500	112	490	120		
VVS100	350	210	655	120		
VVS120	400	210	745	120		

Opening BIG - inlet-outlet END (BS)						
Size	WA	HA	WA1	HA1		
VVS021	112	150	120	149		
VVS030	112	200	120	190		
VVS040	112	250	120	165		
VVS055	112	350	120	182		
VVS075	112	500	120	167		
VVS100	210	350	120	292		
VVS120	210	400	120	286		

Opening SMALL - inlet-outlet END (FF)						
Size	WA	HA	WA1	HA1		
VVS021	821	313	70	70		
VVS030	821	440	70	70		
VVS040	1028	440	70	70		
VVS055	1199	575	70	70		
VVS075	1340	695	70	70		
VVS100	1520	795	70	70		
VVS120	1751	832	70	70		

FAN OUTLET OPENINGS

Plug Fan END (FS)					
Size	WA	HA	WA1	HA1	
VVS021	500	210	230	119	
VVS030	700	210	130	185	
VVS040	600	310	284	135	
VVS055	850	310	244	202	
VVS075	900	400	290	217	
VVS100	1200	400	230	267	
VVS120	1400	400	245	286	

DIDW END (FS)					
Size	WA	HA	WA1	HA1	
VVS021	206	206	377	84	
VVS030	256	256	352	142	
VVS040	288	288	441	92	
VVS055	408	408	340	84	
VVS075	452	452	420	94	
VVS100	510	510	480	112	
VVS120	572	572	480	88	

Plug Fan END (US)					
Size	WA	HA	WA1	HA1	
VVS021	500	210	230	119	
VVS030	700	210	130	185	
VVS040	600	310	284	135	
VVS055	850	310	244	202	
VVS075	900	400	290	217	
VVS100	1200	400	230	267	
VVS120	1400	400	245	286	

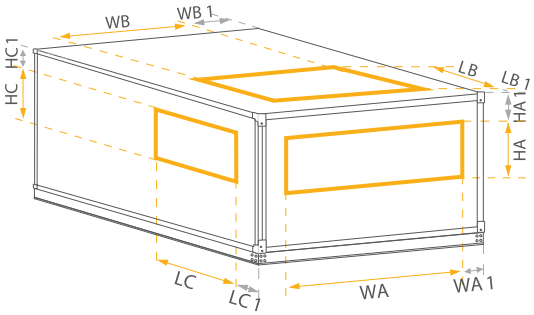
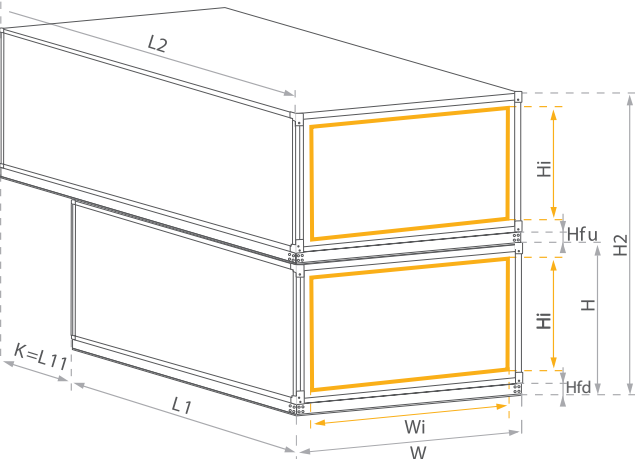
DIDW END (US)					
Size	WA	HA	WA1	HA1	
VVS021	206	206	377	307	
VVS030	256	256	352	322	
VVS040	288	288	441	336	
VVS055	408	408	340	390	
VVS075	452	452	420	390	
VVS100	510	510	480	420	
VVS120	572	572	480	480	



VVS 150-650 – RECUPERATOR - CROSS-FLOW PLATE EXCHANGERS

Nominal parameters		Recommended airflow range																				
Unit size		VVS150			VVS180			VVS230			VVS300			VVS400			VVS500			VVS650		
90 000 60 000 30 000 0	[m³/h]																					
		7 167 7 167 7 167			8 640 8 640 8 640			10 398 10 398 10 398			13 491 13 491 13 491			18 704 18 704 18 704			21 817 21 817 21 817			28 725 28 725 28 725		
		19 500 15 600 15 450			23 400 18 720 18 540			29 900 23 920 23 690			39 000 31 200 30 900			52 000 41 600 41 200			71 500 57 200 56 650			84 500 67 600 66 950		
Min airflow		7 167 7 167 7 167			8 640 8 640 8 640			10 398 10 398 10 398			13 491 13 491 13 491			18 704 18 704 18 704			21 817 21 817 21 817			28 725 28 725 28 725		
Max airflow		19 500 15 600 15 450			23 400 18 720 18 540			29 900 23 920 23 690			39 000 31 200 30 900			52 000 41 600 41 200			71 500 57 200 56 650			84 500 67 600 66 950		
H _{fd}	[mm]	90			120			120			120			120			120			120		
H _{fu}		0			80			80			80			80			80			80		
H		1 163			1 397			1 397			1 696			1 929			1 929			2 406		
W		2 085			2 085			2 493			2 585			3 085			3 585			3 697		
H _i		993			1 197			1 197			1 496			1 729			1 729			2 206		
W _i		2 005			2 005			2 413			2 505			3 005			3 505			3 617		
H ₂		2 236			2 754			2 754			3 352			3 818			3 818			4 772		
I		40			40			40			40			40			40			40		
Selected configurations		Length of selected configurations																				
	L2	3684			3684			3684			4781			4781			4781			5513		
	L1	3684			3684			3684			4781			4781			4781			5513		
	K	-			-			-			-			-			-			-		
	Lt	3684			3684			3684			4781			4781			4781			5513		
	L2	3684			3684			3684			4781			4781			4781			5513		
	L1	3684			3684			3684			4781			4781			4781			5513		
	K	-			-			-			-			-			-			-		
	Lt	3684			3684			3684			4781			4781			4781			5513		
	L2	3684			3684			3684			4781			4781			4781			5513		
	L1	4050			4050			4050			5147			5147			5147			5878		
	K	-			-			-			-			-			-			-		
	Lt	4050			4050			4050			5147			5147			5147			5878		
	L2	5147			5147			5147			6244			6244			6244			6975		
	L1	5147			5147			5147			6244			6244			6244			6975		
	K	-			-			-			-			-			-			-		
	Lt	5147			5147			5147			6244			6244			6244			6975		
	L2	5513			5513			5513			6610			6610			6610			7341		
	L1	5147			5147			5147			6244			6244			6244			6975		
	K	366			366			366			366			366			366			366		
	Lt	5513			5513			5513			6610			6610			6610			7341		

Entire range of configuration in ClimaCAD OnLine 4 selection tool - www.ccol4.com



DIMENSIONS - VVS150-VVS650 – RECUPERATOR - CROSS-FLOW PLATE EXCHANGERS

Opening BIG - inlet-outlet END (FF)						
Size	WA	HA	WA1	HA1		
VVS150	1400	500	342	286		
VVS180	1700	500	192	388		
VVS230	1800	600	346	338		
VVS300	2060	700	262	438		
VVS400	2760	700	162	554		
VVS500	3060	800	262	504		
VVS650	3360	900	168	693		

Opening SMALL - inlet-outlet END (FS)						
Size	WA	HA	WA1	HA1		
VVS150	500	210	792	431		
VVS180	600	210	742	533		
VVS230	550	310	971	483		
VVS300	700	310	942	633		
VVS400	900	310	1092	749		
VVS500	900	400	1342	704		
VVS650	1150	400	1273	943		

Opening BIG - inlet-outlet END (US)						
Size	WA	HA	WA1	HA1		
VVS150	1400	500	342	120		
VVS180	1700	500	192	120		
VVS230	1800	600	346	120		
VVS300	2060	700	262	120		
VVS400	2760	700	162	120		
VVS500	3060	800	262	120		
VVS650	3360	900	168	120		

Opening SMALL - inlet-outlet END (US)						
Size	WA	HA	WA1	HA1		
VVS150	500	210	792	120		
VVS180	600	210	742	120		
VVS230	550	310	971	120		
VVS300	700	310	942	120		
VVS400	900	310	1092	120		
VVS500	900	400	1342	120		
VVS650	1150	400	1273	120		

Opening BIG - inlet-outlet END (BS)						
Size	WA	HA	WA1	HA1		
VVS150	210	500	120	286		
VVS180	210	600	120	338		
VVS230	310	550	120	363		
VVS300	310	700	120	438		
VVS400	310	900	120	454		
VVS500	400	900	120	454		
VVS650	400	1150	120	568		

Opening SMALL - inlet-outlet END (FF)						
Size	WA	HA	WA1	HA1		
VVS150	1945	933	70	70		
VVS180	1945	1137	70	70		
VVS230	2353	1137	70	70		
VVS300	2445	1436	70	70		
VVS400	2945	1669	70	70		
VVS500	3445	1669	70	70		
VVS650	3557	2146	70	70		

Plug Fan END (FS)					
Size	WA	HA	WA1	HA1	
VVS150	500	210	230	119	
VVS180	700	210	130	185	
VVS230	600	310	284	135	
VVS300	850	310	244	202	
VVS400	900	400	290	217	
VVS500	1200	400	230	267	
VVS650	1400	400	245	286	

Plug Fan END (US)					
Size	WA	HA	WA1	HA1	
VVS150	1400	500	342	286	
VVS180	1700	500	192	388	
VVS230	1800	600	346	338	
VVS300	2060	700	262	438	
VVS400	2760	700	162	554	
VVS500	3060	800	262	504	
VVS650	3360	900	168	693	

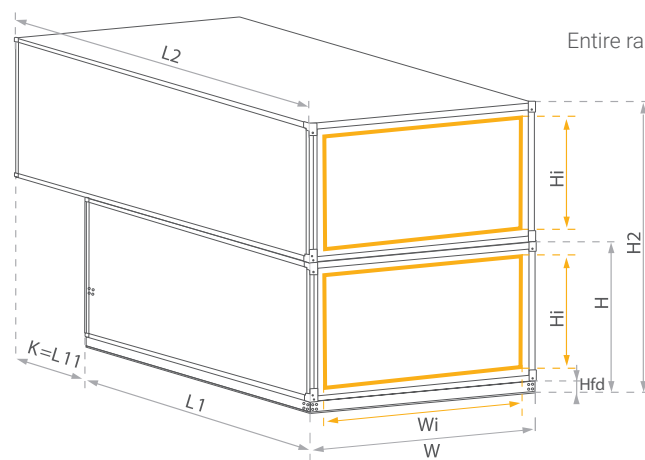
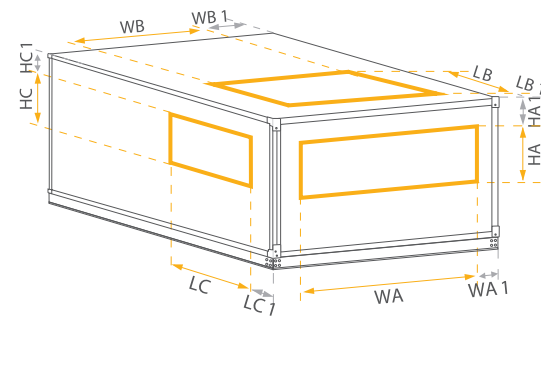
DIDW END (FS)					
Size	WA	HA	WA1	HA1	
VVS150	642	642	610	98	
VVS180	718	718	480	162	
VVS230	804	804	770	112	
VVS300	902	902	740	172	
VVS400	1010	1010	1040	470	
VVS500	1134	1134	1230	102	
VVS650	1270	1270	1215	180	

DIDW END (US)					
------------------	--	--	--	--	--



VVS 021-120 - ROTARY HEAT WHEEL

Nominal parameters				Recommended airflow range																			
Unit size		VVS021			VVS030			VVS040			VVS055			VVS075			VVS100			VVS120			
18 000 12 000 6 000 0	[m³/h]																						
		⊕ ⊖ ⊖			⊕ ⊖ ⊖			⊕ ⊖ ⊖			⊕ ⊖ ⊖			⊕ ⊖ ⊖			⊕ ⊖ ⊖						
		806 806 806			1 180 1 180 1 180			1 958 1 958 1 958			2 878 2 878 2 878			3 805 3 805 3 805			4 863 4 863 4 863			5 815 5 815 5 815			
		2 730 2 415 2 163			3 900 3 450 3 090			5 200 4 600 4 120			7 150 6 325 5 665			9 750 8 625 7 725			13 000 11 500 10 300			15 600 13 800 12 360			
		Min airflow																					
Max airflow																							
H _{fd}		90			90			90			90			90			90			90			
H _{fu}		0			0			0			0			0			0			0			
H		538			670			670			805			925			1 025			1 062			
W		961			961			1 168			1 339			1 480			1 660			1 891			
H _i		368			500			500			635			755			855			892			
W _i		881			881			1 088			1 259			1 400			1 580			1 811			
H ₂		986			1 250			1 250			1 520			1 760			1 960			2 034			
I		40			40			40			40			40			40			40			
Selected configurations				Length of selected configurations																			
	L2	1 830			1 830			1 830			2 196			2 196			2 562			2 562			
	L1	1 830			1 830			1 830			2 196			2 196			2 562			2 562			
	K	366			366			366			732			732			1 098			1 098			
	Lt	1 830			1 830			1 830			2 196			2 196			2 562			2 562			
	L2	2 562			2 562			2 562			2 928			2 928			3 294			3 294			
	L1	2 562			2 562			2 562			2 928			2 928			3 294			3 294			
	K	366			366			366			366			366			366			366			
	Lt	2 562			2 562			2 562			2 928			2 928			3 294			3 294			
	L2	1 830			1 830			1 830			2 196			2 196			2 562			2 562			
	L1	2 196			2 196			2 196			2 562			2 562			2 928			2 928			
	K	366			366			366			732			732			1 098			1 098			
	Lt	2 196			2 196			2 196			2 562			2 562			2 928			2 928			
	L2	2 562			2 562			2 562			2 928			2 928			3 294			3 294			
	L1	2 928			2 928			2 928			3 294			3 294			3 660			3 660			
	K	0			0			0			0			0			0			0			
	Lt	2 928			2 928			2 928			3 294			3 294			3 660			3 660			
	L2	1 830			1 830			1 830			2 196			2 196			2 562			2 562			
	L1	2 196			2 196			2 196			2 562			2 562			2 928			2 928			
	K	366			366			366			732			732			1 098			1 098			
	Lt	2 196			2 196			2 196			2 562			2 562			2 928			2 928			
	L2	2 562			2 562			2 562			2 928			2 928			3 294			3 294			
	L1	2 928			2 928			2 928			3 294			3 294			3 660			3 660			
	K	0			0			0			0			0			0			0			
	Lt	2 928			2 928			2 928			3 294			3 294			3 660			3 660			
	L2	3378			3378			3378			3744			3744			4110			4110			
	L1	4138			4138			4138			4504			4504			4870			4870			
	K	366			366			366			366			366			366			366			
	Lt	4138			4138			4138			4504			4504			5236			5236			

Entire range of configuration in ClimaCAD OnLine 4 selection tool - www.ccol4.comDIMENSIONS - VVS021-VVS120
- ROTARY HEAT WHEEL

Opening BIG - inlet-outlet END (FF)				
Size	WA	HA	WA1	HA1
VVS021	500	210	230	119
VVS030	700	210	130	185
VVS040	600	310	284	135
VVS055	850	310	244	202
VVS075	900	400	290	217
VVS100	1200	400	230	267
VVS120	1400	400	245	286

Opening BIG - inlet-outlet END (US)				
Size	WA	HA	WA1	HA1
VVS021	500	210	230	120
VVS030	700	210	130	120
VVS040	600	310	284	120
VVS055	850	310	244	120
VVS075	900	400	290	120
VVS100	1200	400	230	120
VVS120	1400	400	245	120

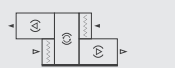
Opening BIG - inlet-outlet END (BS)				
Size	WA	HA	WA1	HA1
VVS021	112	150	120	149
VVS030	112	200	120	190
VVS040	112	250	120	165
VVS055	112	350	120	182
VVS075	112	500	120	167
VVS100	210	350	120	292
VVS120	210	400	120	286

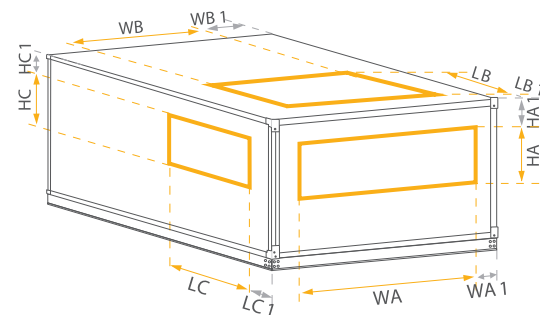
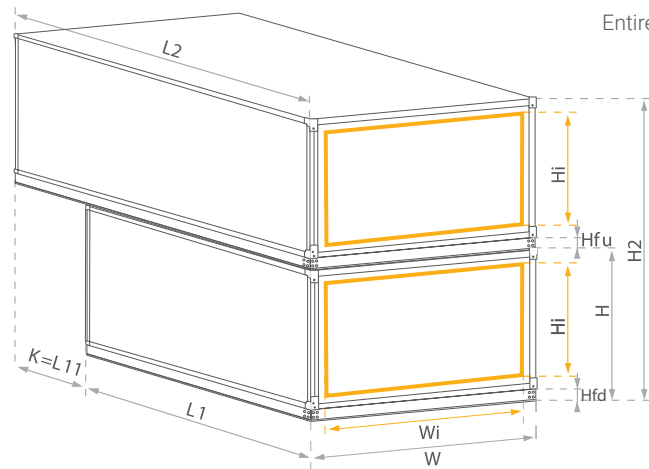
FAN OUTLET OPENINGS

Plug Fan END (FS)					
Size	WA	HA	WA1	HA1	
VVS021	500	210	230	119	
VVS030	700	210	130	185	
VVS040	600	310	284	135	
VVS055	850	310	244	202	
VVS075	900	400	290	217	
VVS100	1200	400	230	267	
VVS120	1400	400	245	286	



VVS 150-650- ROTARY HEAT WHEEL

Nominal parameters				Recommended airflow range																			
Unit size		VVS150			VVS180			VVS230			VVS300			VVS400			VVS500			VVS650			
90 000	[m³/h]																						
60 000																							
30 000																							
0																							
		⊕	⊖	⊖	⊕	⊖	⊖	⊕	⊖	⊖	⊕	⊖	⊖	⊕	⊖	⊖	⊕	⊖	⊖	⊕	⊖	⊖	
Min airflow		7 167	7 167	7 167	8 640	8 640	8 640	10 398	10 398	10 398	13 491	13 491	13 491	18 704	18 704	18 704	21 817	21 817	21 817	28 725	28 725	28 725	
Max airflow		19 500	16 350	15 450	23 400	19 620	18 540	29 900	25 070	23 690	39 000	32 700	30 900	52 000	43 600	41 200	71 500	59 950	56 650	84 500	70 850	66 950	
H _{fd}	[mm]	90			120			120			120			120			120			120			
H _{fu}		0			80			80			80			80			80						
H		1 163			1 397			1 397			1 696			1 929			2 406						
W		2 085			2 085			2 493			2 585			3 085			3 585						
H _i		993			1 197			1 197			1 496			1 729			2 206						
W _i		2 005			2 005			2 413			2 505			3 005			3 505						
H ₂		2 236			2 754			2 754			3 352			3 818			3 818						
I		40			40			40			40			40			40						
Selected configurations		Length of selected configurations																					
	L2	2 562			2 562			2 562			2 928			2 928			2 928			2 928			
	L1	2 562			2 562			2 562			2 928			2 928			2 928			2 928			
	K	1 098			1 098			1 098			1 464			1 464			1 464			1 464			
	Lt	2 562			2 562			2 562			2 928			2 928			2 928			2 928			
	L2	3 660			3 660			3 660			4 026			4 026			4 026			4 026			
	L1	3 660			3 660			3 660			4 026			4 026			4 026			4 026			
	K	0			0			0			0			0			0			0			
	Lt	3 660			3 660			3 660			4 026			4 026			4 026			4 026			
	L2	2 562			2 562			2 562			2 928			2 928			2 928			2 928			
	L1	2 928			2 928			2 928			3 294			3 294			3 294			3 294			
	K	1 098			1 098			1 098			1 464			1 464			1 464			1 464			
	Lt	2 928			2 928			2 928			3 294			3 294			3 294			3 294			
	L2	3 660			3 660			3 660			4 026			4 026			4 026			4 026			
	L1	4 026			4 026			4 026			4 392			4 392			4 392			4 392			
	K	0			0			0			0			0			0			0			
	Lt	4 026			4 026			4 026			4 392			4 392			4 392			4 392			
	L2	2 562			2 562			2 562			2 928			2 928			2 928			2 928			
	L1	2 928			2 928			2 928			3 294			3 294			3 294			3 294			
	K	1 098			1 098			1 098			1 464			1 464			1 464			1 464			
	Lt	2 928			2 928			2 928			3 294			3 294			3 294			3 294			
	L2	3 660			3 660			3 660			4 026			4 026			4 026			4 026			
	L1	4 026			4 026			4 026			4 392			4 392			4 392			4 392			
	K	0			0			0			0			0			0			0			
	Lt	4 026			4 026			4 026			4 392			4 392			4 392			4 392			
	L2	4 110			4 138			4 138			4 504			4 504			4 504			4 504			
	L1	4 870			4 898			4 898			5 264			5 264			5 264			5 264			
	K	366			366			366			366			366			366			366			
	Lt	5 236			5 264			5 264			5 630			5 630			5 630			5 630			

Entire range of configuration in ClimaCAD OnLine 4 selection tool - www.ccol4.comDIMENSIONS - VVS150-VVS650
- ROTARY HEAT WHEEL

Opening BIG - inlet-outlet END (FF)				
Size	WA	HA	WA1	HA1
VVS150	1400	500	342	286
VVS180	1700	500	192	388
VVS230	1800	600	346	338
VVS300	2060	700	262	438
VVS400	2760	700	162	554
VVS500	3060	800	262	504
VVS650	3360	900	168	693

Opening BIG - inlet-outlet END (US)				
Size	WA	HA	WA1	HA1
VVS150	1400	500	342	120
VVS180	1700	500	192	120
VVS230	1800	600	346	120
VVS300	2060	700	262	120
VVS400	2760	700	162	120
VVS500	3060	800	262	120
VVS650	3360	900	168	120

Opening BIG - inlet-outlet END (BS)				
Size	WA	HA	WA1	HA1
VVS150	210	500	120	286
VVS180	210	600	120	338
VVS230	310	550	120	363
VVS300	310	700	120	438
VVS400	310	900	120	454
VVS500	400	900	120	454
VVS650	400	1150	120	568

FAN OUTLET OPENINGS

Plug Fan END (FS)				
Size	WA	HA	WA1	HA1
VVS150	500	210	230	119
VVS180	700	210	130	185
VVS230	600	310	284	135
VVS300	850	310	244	202
VVS400	900	400	290	217
VVS500	1200	400	230	267
VVS650	1400	400	245	286

Plug Fan END (US)				
Size	WA	HA	WA1	HA1
VVS150	1400	500	342	286
VVS180	1700	500	192	388
VVS230	1800	600	346	338
VVS300	2060	700	262	438
VVS400	2760	700	162	554
VVS500	3060	800	262	504
VVS650	3360	900	168	693

Opening SMALL - inlet-outlet END (FS)				
Size	WA	HA	WA1	HA1
VVS150	500	210	792	431
VVS180	600	210	742	533
VVS230	550	310	971	483
VVS300	700	310	942	633
VVS400	900	310	1092	749
VVS500	900	400	1342	704
VVS650	1150	400	1273	943

Opening SMALL - inlet-outlet END (US)				
Size	WA	HA	WA1	HA1
VVS150	500	210	792	120
VVS180	600	210	742	120
VVS230	550	310	971	120
VVS300	700	310	942	120
VVS400	900	310	1092	120
VVS500	900	400	1342	120
VVS650	1150	400	1273	120

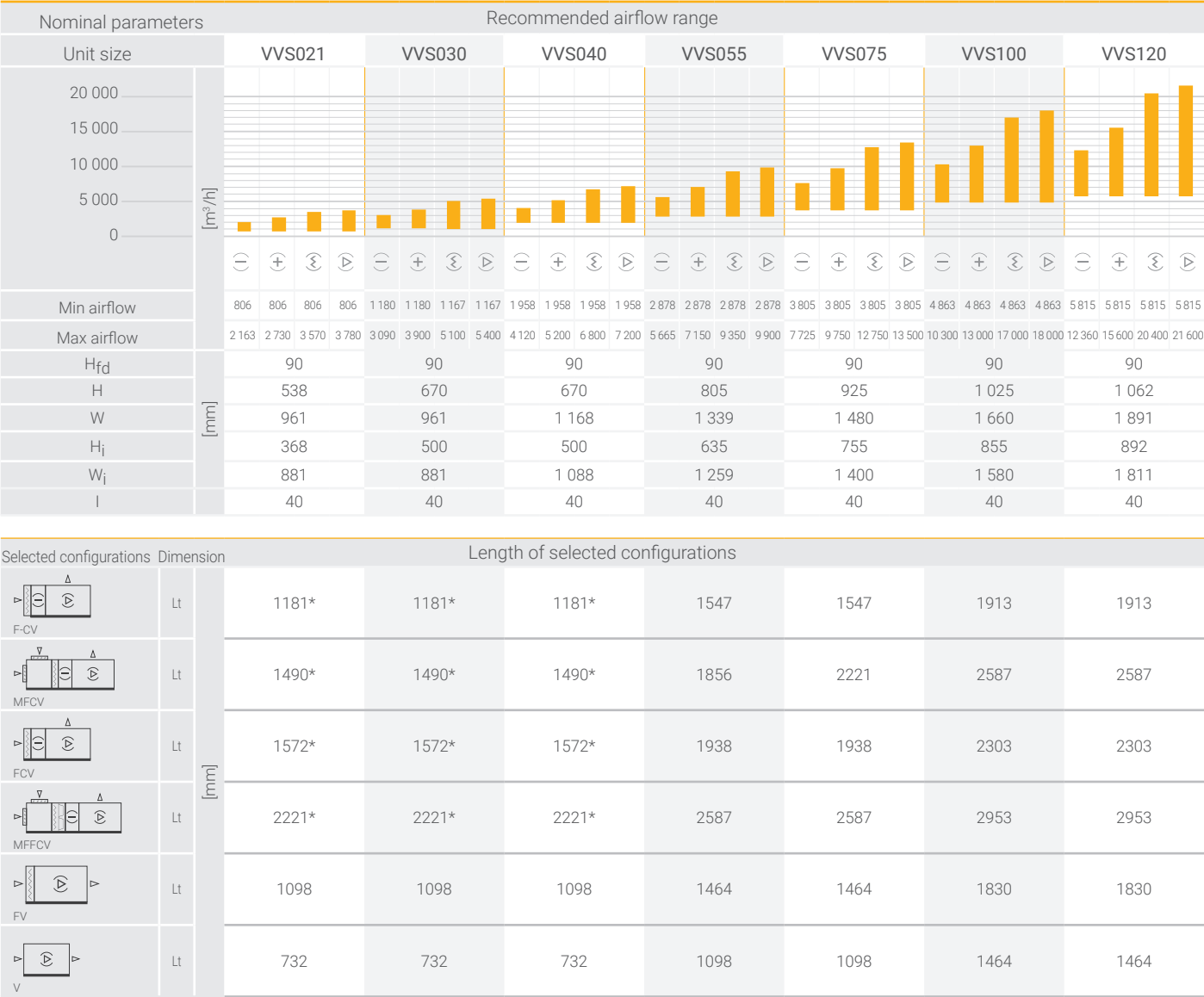
Opening SMALL - inlet-outlet END (FF)				
Size	WA	HA	WA1	HA1
VVS150	1945	933	70	70
VVS180	1945	1137	70	70
VVS230	2353	1137	70	70
VVS300	2445	1436	70	70
VVS400	2945	1669	70	70
VVS500	3445	1669	70	70
VVS650	3557	2146	70	70

DIDW END (FS)				
Size	WA	HA	WA1	HA1
VVS150	642	642	610	98
VVS180	718	718	480	162
VVS230	804	804	770	112
VVS300	902	902	740	172
VVS400	1010	1010	1040	470
VVS500	1134	1134	1230	102
VVS650	1270	1270	1215	180

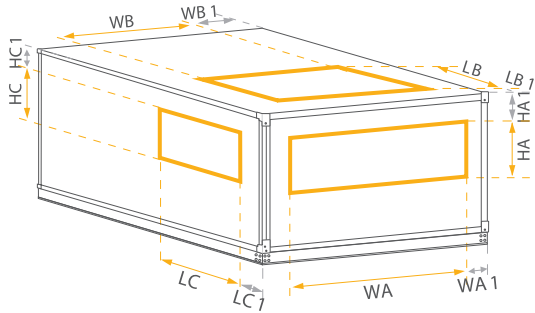
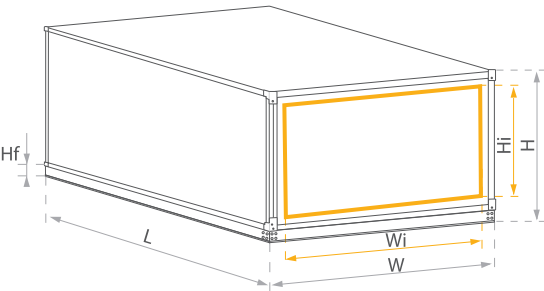
DIDW END (US)				
Size	WA	HA	WA1	HA1
VVS150	642	642	610	510
VVS180	718	718	480	520
VVS230	804	804	770	600
VVS300	902	902	740	600
VVS400	1010	1010	1040	640
VVS500	1134	1134	1230	700
VVS650	1270	1270	1215	720



VVS021-VVS150 - SUPPLY & EXHAUST



Entire range of configuration in ClimaCAD OnLine 4 selection tool - www.ccol4.com



General:
* If 8RD with eliminator, length will increase by 366mm
** If RA is required on top, length will increase by 366mm

DIMENSIONS - VVS021-VVS120 - SUPPLY & EXHAUST

Opening BIG - inlet-outlet END (FF)				
Size	WA	HA	WA1	HA1
VVS021	500	210	230	119
VVS030	700	210	130	185
VVS040	600	310	284	135
VVS055	850	310	244	202
VVS075	900	400	290	217
SSV100	1200	400	230	267
VVS120	1400	400	245	286

Opening BIG - inlet-outlet END (US)				
Size	WA	HA	WA1	HA1
VVS021	500	210	230	120
VVS030	700	210	130	120
VVS040	600	310	284	120
VVS055	850	310	244	120
VVS075	900	400	290	120
SSV100	1200	400	230	120
VVS120	1400	400	245	120

Opening BIG - inlet-outlet END (BS)				
Size	WA	HA	WA1	HA1
VVS021	112	150	120	149
VVS030	112	200	120	190
VVS040	112	250	120	165
VVS055	112	350	120	182
VVS075	112	500	120	167
SSV100	210	350	120	292
VVS120	210	400	120	286

FAN OUTLET OPENINGS

Plug Fan END (FS)				
Size	WA	HA	WA1	HA1
VVS021	500	210	230	119
VVS030	700	210	130	185
VVS040	600	310	284	135
VVS055	850	310	244	202
VVS075	900	400	290	217
SSV100	1200	400	230	267
VVS120	1400	400	245	286

Plug Fan END (US)				
Size	WA	HA	WA1	HA1
VVS021	500	210	230	119
VVS030	700	210	130	185
VVS040	600	310	284	135
VVS055	850	310	244	202
VVS075	900	400	290	217
SSV100	1200	400	230	267
VVS120	1400	400	245	286

Opening SMALL - inlet-outlet END (FS)				
Size	WA	HA	WA1	HA1
VVS021	150	112	405	168
VVS030	200	112	380	234
VVS040	250	112	459	234
VVS055	350	112	494	301
VVS075	500	112	490	361
SSV100	350	210	655	362
VVS120	400	210	745	381

Opening SMALL - inlet-outlet END (US)				
Size	WA	HA	WA1	HA1
VVS021	150	112	405	120
VVS030	200	112	380	120
VVS040	250	112	459	120
VVS055	350	112	494	120
VVS075	500	112	490	120
SSV100	350	210	655	120
VVS120	400	210	745	120

Opening SMALL - inlet-outlet END (FF)				
Size	WA	HA	WA1	HA1
VVS021	821	313	70	70
VVS030	821	440	70	70
VVS040	1028	440	70	70
VVS055	1199	575	70	70
VVS075	1340	695	70	70
SSV100	1520	795	70	70
VVS120	1751	832	70	70

DIDW END (FS)				
Size	WA	HA	WA1	HA1
VVS021	206	206	377	84
VVS030	256	256	352	142
VVS040	288	288	441	92
VVS055	408	408	340	84
VVS075	452	452	420	94
SSV100	510	510	480	112
VVS120	572	572	480	88

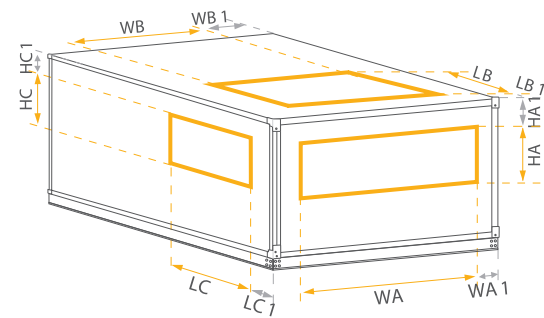
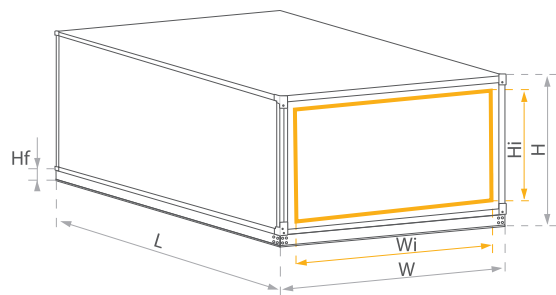
DIDW END (US)				
Size	WA	HA	WA1	HA1
VVS021	206	206	377	307
VVS030	256	256	352	322
VVS040	288	288	441	336
VVS055	408	408	340	390
VVS075	452	452	420	390
SSV100	510	510	480	420
VVS120	572	572	480	480



VVS 150-650 - SUPPLY & EXHAUST

Nominal parameters		Recommended airflow range																											
Unit size		VVS150				VVS180				VVS230				VVS300				VVS400				VVS500				VVS650			
120 000	[m³/h]																												
90 000																													
60 000																													
30 000																													
0																													
Min airflow		7 167	7 167	7 167	7 167	8 640	8 640	8 640	8 640	10 398	10 398	10 398	10 398	13 491	13 491	13 491	13 491	18 704	18 704	18 704	18 704	21 817	21 817	21 817	21 817	28 725	28 725	28 725	28 725
Max airflow		15 450	19 500	25 500	27 000	18 540	23 400	30 600	32 400	23 690	29 900	39 100	41 400	30 900	39 000	51 000	54 000	41 200	52 000	58 000	62 000	56 650	71 500	77 000	79 000	66 950	84 500	87 000	100 000
H _{fd}	[mm]	90				120				120				120				120				120				120			
H _{fu}		0				80				80				80				80				80				80			
H		1 163				1 397				1 397				1 696				1 929				1 929				2 406			
W		2 085				2 085				2 493				2 585				3 085				3 585				3 697			
H _i		993				1 197				1 197				1 496				1 729				1 729				2 206			
W _i		2 005				2 005				2 413				2 505				3 005				3 505				3 617			
H ₂		2 236				2 754				2 754				3 352				3 818				3 818				4 772			
I		40				40				40				40				40				40				40			

Selected configurations		Length of selected configurations																											
Dimension		VVS150				VVS180				VVS230				VVS300				VVS400				VVS500				VVS650			
F-CV	Lt	1913				1913				1913				2278				2278				2278				2278			
MFCV	Lt	2587				2587				2587				2953				2953				2953**				2953**			
FCV	Lt	2303				2303				2303				2669				2669				2669				2669			
MFFCV	Lt	2953				2953				2953				3318				3318				3318**				3318**			
FV	Lt	1830				1830				1830				2196				2196				2196				2196			
V	Lt	1464				1464				1464				1830				1830				1830				1830			

Entire range of configuration in ClimaCAD OnLine 4 selection tool - www.ccol4.com

General:
* If 8RD with eliminator, length will increase by 366mm
** If RA is required on top, length will increase by 366mm

DIMENSIONS - VVS021-VVS120 - SUPPLY & EXHAUST

Opening BIG - inlet-outlet END (FF)				
Size	WA	HA	WA1	HA1
VVS150	1400	500	342	286
VVS180	1700	500	192	388
VVS230	1800	600	346	338
VVS300	2060	700	262	438
VVS400	2760	700	162	554
VVS500	3060	800	262	504
VVS650	3360	900	168	693

Opening BIG - inlet-outlet END (US)				
Size	WA	HA	WA1	HA1
VVS150	1400	500	342	120
VVS180	1700	500	192	120
VVS230	1800	600	346	120
VVS300	2060	700	262	120
VVS400	2760	700	162	120
VVS500	3060	800	262	120
VVS650	3360	900	168	120

Opening BIG - inlet-outlet END (BS)				
Size	WA	HA	WA1	HA1
VVS150	210	500	120	286
VVS180	210	600	120	338
VVS230	310	550	120	363
VVS300	310	700	120	438
VVS400	310	900	120	454
VVS500	400	900	120	454
VVS650	400	1150	120	568

FAN OUTLET OPENINGS

Plug Fan END (FS)				
Size	WA	HA	WA1	HA1
VVS150	500	210	230	119
VVS180	700	210	130	185
VVS230	600	310	284	135
VVS300	850	310	244	202
VVS400	900	400	290	217
VVS500	1200	400	230	267
VVS650	1400	400	245	286

Plug Fan END (US)				
Size	WA	HA	WA1	HA1
VVS150	1400	500	342	286
VVS180	1700	500	192	388
VVS230	1800	600	346	338
VVS300	2060	700	262	438
VVS400	2760	700	162	554
VVS500	3060	800	262	504
VVS650	3360	900	168	693

Opening SMALL - inlet-outlet END (FS)				
Size	WA	HA	WA1	HA1
VVS150	500	210	792	431
VVS180	600	210	742	533
VVS230	550	310	971	483
VVS300	700	310	942	633
VVS400	900	310	1092	749
VVS500	900	400	1342	704
VVS650	1150	400	1273	943

Opening SMALL - inlet-outlet END (US)				
Size	WA	HA	WA1	HA1
VVS150	500	210	792	120
VVS180	600	210	742	120
VVS230	550	310	971	120
VVS300	700	310	942	120
VVS400	900	310	1092	120
VVS500	900	400	1342	120
VVS650	1150	400	1273	120

Opening SMALL - inlet-outlet END (FF)				
Size	WA	HA	WA1	HA1
VVS150	1945	933	70	70
VVS180	1945	1137	70	70
VVS230	2353	1137	70	70
VVS300	2445	1436	70	70
VVS400	2945	1669	70	70
VVS500	3445	1669	70	70
VVS650	3557	2146	70	70

DIDW END (FS)				
Size	WA	HA	WA1	HA1
VVS150	642	642	610	98
VVS180	718	718	480	162
VVS230	804	804	770	112
VVS300	902	902	740	172
VVS400	1010	1010	1040	470
VVS500	1134	1134	1230	102
VVS650	1270	1270	1215	180

DIDW END (US)				
Size	WA	HA	WA1	HA1
VVS150	642	642	610	510
VVS180	718	718	480	520
VVS230	804	804	770	600
VVS300	902	902	740	600
VVS400	1010	1010	1040	640
VVS500	1134	1134	1230	700
VVS650	1270	1270	1215	720



ADDITIONAL CONFIGURATION CUNCTIONS - VVS 021-650 - RECUPERATOR (HEX & PREMIUM PLUS), REGENERATOR (HEAT WHEEL), SUPPLY & EXHAUST

Dimension		Function version		Remaining configuration functions – typical lengths of function arrangement						
				VVS021	VVS030	VVS040	VVS055	VVS075	VVS100	VVS120
 F	L	[mm]	F7/F9	762	762	762	762	762	762	762
			EU4/F5	366	366	366	366	366	366	366
 H	L		H	366	366	366	366	366	366	366
 C	L		C	366	366	366	366	366	366	366
 S	L		S	1098	1098	1098	1098	1098	1098	1098
 E	L		E(e1)	366	366	366	366	366	366	366
		E(e2)	762	762	762	762	762	762	762	
		E(e3)	1098	1098	1098	1098	1098	1098	1098	
 M	L	M	762	762	762	762	762	762	762	
 W	L	W	1098	1098	1098	1098	1098	1098	1098	

Dimension		Function version		Remaining configuration functions – typical lengths of function arrangement						
				VVS150	VVS180	VVS230	VVS300	VVS400	VVS500	VVS650
	L	[mm]	F7/F9	762	762	762	762	762	762	762
F			EU4/F5	366	366	366	366	366	366	366
	L		H	366	366	366	366	366	366	366
H										
	L		C	366	366	366	366	366	366	366
C										
	L		S	1098	1098	1098	1098	1098	1098	1098
S										
	L		E(e1)	366	366	366	366	366	366	366
			E(e2)	762	762	762	762	762	762	762
		E(e3)	1098	1098	1098	1098	1098	1098	1098	
	L	M	1098	1098	1098	1098	1098	1098	1098	
M										
	L	W	1098	1098	1098	1098	1098	1098	1098	
W										





COMPONENTS

FAN SET

> DIRECT DRIVE PLUG FAN SET



Design and application

- » Single inlet, radial, backward curved, free running fan.
- » Impeller made of SAN (styrene/acrylonitrile) construction material with 20% glass fiber.
- » Direct drive – fan impeller installed directly on motor shaft.
- » Fan section consisting of single or multiple fans (fan array) in order to ensure optimum working parameters.

Specification

- » Low and medium pressure ventilation systems with fan static pressure not exceeding 2000 Pascals.
- » Maximum fan set working temperature: 60°C.

> AC MOTORS



- » Fan and motor mounted on common housing, separated from AHU casing by set of rubber vibration absorbing mounts.
- » Motors of TEFC type (Totally Enclosed, Fan-Cooled).
- » Motors fitted for IEC standard.
- » Variable Frequency Drive (VFD) – standard equipment of the fan-set.

- » Available Energy classes: IE3
- » Rated voltage: 3x230V AC, 3x400V AC.
- » Number of poles: 2 or 4.
- » Motor winding insulation class: F (fitted for VFD operations).
- » Bearings lifetime: L₁₀= 20000h / L₅₀ = 100000h.
- » Protection degree: IP55.
- » Maximum working ambient temperature: 60°C.

> EC MOTORS



PANEL FILTERS



Design and application

- » Box Type
- » Pleated filtration fabric shielded by steel net, installed in 50 mm thick frame.
- » Filtration fabric made of polyester fibres.
- » Applied as initial air filtration stage.

Specification

- » Working temperature: max (+70)°C, 100% RH.

Filtration classes available

- » ISO Coarse 75% (ISO 16890) - G4 (EN779).

BAG FILTERS



Design and application

- » Flange Type & Bag Type
- » Filtration fabric made of polyester fibres.
- » Bags fixed to to 25 mm thick frame.
- » Length: 300/600 mm.
- » Applied as initial, secondary of final air filtration stag

Specification

- » Working temperature: max (+70)°C, 100% RH.

Filtration classes available

- » ISO ePM10 50% (ISO 16890) - M5 (EN779).
- » ISO ePM2,5 65% (ISO 16890) - F7 (EN779).
- » ISO ePM1 70% (ISO 16890) - F9 (EN779).

HEPA FILTERS



Design and application

- » Flange Type & Box Type
- » Filter Media: Glass Fiber / Spun Bonded Polyester
- » Length 300/600 mm.
- » Applied as final air filtration stage
- » Frame Material: Aluminum (SS 304 / GI (Galvanized Steel))

Specification

- » Working temperature: max (+70)°C, 100% RH.

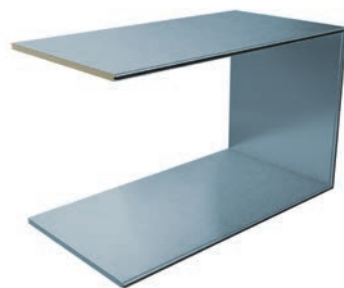
Filtration classes available

- » H13 (EN 1822).
- » Filtration Rating: 0.3 Micron & More
- » Filtration Efficiency: 90- 99.9 %

Shape	Classification		Length [mm]	Position	BracketType
Box	EU4	ISO Coarse 75% (ISO 16890)- G4 (EN779)	50	Ext / Int	Slide / Flange
	EU4	ISO Coarse 75% (ISO 16890)- G4 (EN779)	300	Int	Slide
Bag	EU5	ISO ePM10 50% (ISO 16890) - M5 (EN779)	300	Int	Slide / Flange
			300	Int	Slide / Flange
	EU7	ISO ePM2,5 65% (ISO 16890) - F7 (EN779)	300	Int	Slide / Flange
			600	Int	Slide
			300	Int	Slide / Flange
			600	Int	Slide
Box&Bag	EU4&EU5	ISO Coarse 75% (ISO 16890)- G4 (EN779) ISO ePM10 50% (ISO 16890) - M5 (EN779)	350	Ext&Int	Slide
				Int&Int	Slide
	EU4&EU7	ISO Coarse 75% (ISO 16890)- G4 (EN779), ISO ePM2,5 65% (ISO 16890) - F7 (EN779)	350	Ext&Int	Slide
				Int&Int	Slide
		ISO Coarse 75% (ISO 16890)- G4 (EN779) ISO ePM1 70% (ISO 16890) - F9 (EN779)	350	Ext&Int	Slide
				Int&Int	Slide
Box/Bag	H13		300	Int	Flange



CASING

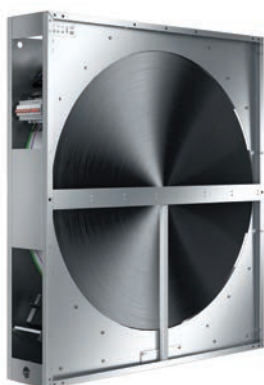
**Design and application**

- » Casing structure made of 'sandwich' type panels formed in 'C' shape and reinforced by system of internal frames.
- » "Sandwich" double skin panels made of rigid polyurethane foam.
- » Indoor and outdoor application.
- » Inspection panels mounted on AHU side.
- » Casing supported on steel base rails.

Specification

- » Working temperature: $(-40)^{\circ}\text{C} \div (+90)^{\circ}\text{C}$.
- » Panel thickness: 40mm.
- » Thermal conductivity PPU $\lambda = 0,022 \text{ W/mK}$.
- » Casing fire resistance: non-flammable, non fire spreading (NRO).
- » Moisture absorption: 0,04%.
- » PPU density: $\rho = 42 \text{ kg/m}^3$.
- » Mechanical strength of casing: $-1000 \text{ Pa} \div 1000 \text{ Pa} < 2 \text{ mm}$ (D_1 - PN EN 1886: 2008),
- » Casing tightness: (MB): $(-400) \text{ Pa} - 0,05 \text{ l/sm}^2$, $(+700) \text{ Pa} - 0,13 \text{ l/sm}^2$ (L_1 - PN EN 1886: 2008); (RU): $(+400) \text{ Pa} - 0,93 \text{ l/sm}^2$,
- » Casing heat transfer coefficient: $K = 0,6 \text{ W/m}^2\text{K}$ (T_2 - PN EN 1886: 2008),
- » Thermal bridges coefficient: $K_b = 0,52$ (TB_3 - PN EN 1886: 2008).

ROTARY HEAT WHEEL

**Design and application**

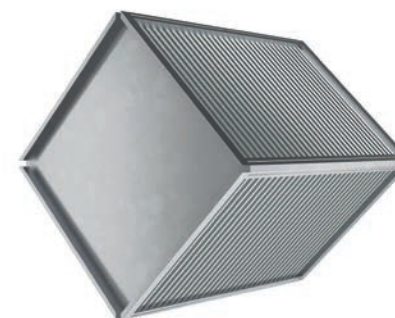
- » Rotor made of aluminum with shaft suspended on bearings, installed in steel housing.
- » Rotor filling – two layers of alternately winded aluminium foil – one flat, the other – corrugated – making small ducts for the air.
- » Rotor drive system with smooth revolutions control enabling to maintain highest recovery efficiency and to adjust degree of recovery performance.
- » Purge zone reducing the cross-contamination effect of contaminated exhaust air to supply to absolute minimum.
- » Set of gaskets installed both on the wheel outer edge and bar separating supply from exhaust air being an additional protection against cross-contamination.
- » Rotary heat wheel recovers sensible heat from return air to supply, which passes the unit in opposite direction. The process enables heat recovery in winter time, same as cool recovery in summer.
- » Humidity recovery from return to supply in case the rotor pad temperature is lower than dew point of return air – typically during winter season.

Specification

- » Up to 86% of energy recovery, depending on airflow rate and its velocity in the heat wheel window.



CROSSFLOW PLATE HEAT RECUPERATOR

**Design and application**

- » Recuperator made of crosswise stamped aluminum plates, between which supply and exhaust air passes alternately in counterflow arrangement.
- » As standard, the recuperator is equipped with by-pass damper, enabling its securing against frosting and heat recovery capacity regulation.
- » Optionally, the recuperator can be equipped with integrated mixing box.
- » The recuperator provides sensible heat recovery for warmer air to the colder one. For winter season – recovery of heat from return air to supply. For summer – recovery of chill from return air to supply.

Specification

- » Energy recovery at very high supply and exhaust air stream separation (reaching 99,9%)
- » Heat recovery reaching up to 80% depending on flow rate face velocity of the air passing the recuperator.

RUN-AROUND COIL

**Design and application**

- » Set of two water coils – one in supply, the other one in exhaust airstream.
- » The coil in return airstream recovers the heat (cooler) and passes it to the coil in the supply air (heater) by means of heat-transfer fluid (water-glycol mixture). In case of chill recovery, entire process is reversed.
- » System applied for supply and exhaust air handling units installed remotely to each other."

Specification

- » Indirect Energy recovery (sensible heat) at 100% supply and exhaust airstreams separation.
- » Max heat-transfer fluid operation pressure: $1,6 \text{ MPa} = 16 \text{ bar}$ (tested 21 bar).
- » Max glycol concentration: 50%.

MIXING SECTION

**Design and application**

- » Section equipped with two air inlets/outlets aided with dampers, enabling regulation of fresh and recirculation air share (recirculation).

Specification

- » Direct Energy recovery (sensible and latent heat) resulting from partial mixing of fresh air with return one.
- » Control of fresh air share in entire airflow supplied to handled spaces.
- » Working temperature range: $-40 \div +70^{\circ}\text{C}$.



WATER HEATER



Design and application

- » Block of copper pipes integrated with another block of aluminum fins, creating expanded heat exchange surface. Pipes are bonded to the collectors, equipped with headers (for connecting entire coil to the medium supply system).
- » Heating of the air supplied to the handled spaces.
- » Re-heating of the air as a part of air dehumidifying process.
- » The coil can be applied if heating medium is available (local boiler or district heating system).
- » Coil headers are equipped with medium damping valve and air vent.
- » Connecting the coil in parallel medium flow vs air, will result in its capacity reduction by over a dozen percent.

Specification

- » Max glycol concentration: 50%.
- » Max medium temperature: 150°C.
- » Max medium working pressure: 1,6MPa = 16bar (test: 21bar).
- » Heating capacity: parameter resulting from individual performance calculation of selected unit (CCOL).
- » Medium side pressure drop – parameter resulting from individual performance calculation of selected unit (CCOL).

ELECTRIC HEATER



Design and application

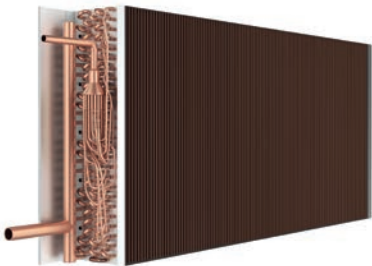
- » Set of resistive heating elements made of CR-Ni-Fe alloy, 6 kW/400V each.
- » Coils mounted on hot-dip galvanized steel frame.
- » Heater is equipped with power terminals and thermostat protecting against overheating.
- » In case of AHU with complete controls, heater is equipped with integrated capacity control module.
- » Heating capacity can be modified by means of smooth regulation module (HE module, set of Solid State Relays as optional parts of AHU controls) or by means of automatic engaging of next heating sections.

Specification

- » Max permissible ambient temperature around heating elements: 65°C.



DIRECT EXPANSION COIL AS CONDENSER IN HEAT PUMP CIRCUIT



Design and application

- » Block of copper pipes integrated with another block of aluminum fins, creating expanded heat exchange surface. Pipes are bonded to the collectors, equipped with headers (for connecting entire coil to the cooling system circuit).
- » Heating of the air supplied to the handled spaces.
- » Re-heating of the air as a part of air dehumidifying process.

Specification

- » Max medium temperature: 60°C.
- » Max medium working pressure: 3,84MPa = 38,4bar (test: 50bar).
- » Heating capacity: parameter resulting from individual performance calculation of selected unit (CCOL).

WATER COOLER



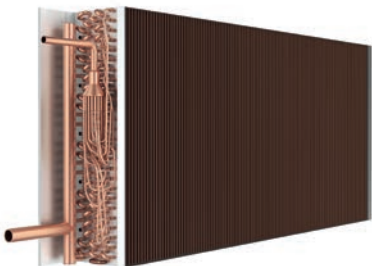
Design and application

- » Block of copper pipes integrated with another block of aluminum fins, creating expanded heat exchange surface. Pipes are bonded to the collectors, equipped with headers (for connecting entire coil to the medium supply system).
- » Cooling of the air supplied to handled spaces.
- » Cooling and dehumidifying of the air as a part of air complex dehumidifying process in summer season.
- » Coil can be applied in complex air conditioning systems consisting of few or over a dozen of units supplied from common chilling source (chiller) or in case of single unit of relatively high cooling capacity.

Specification

- » Max glycol concentration: 50%.
- » Min supplying medium temperature: +2°C.
- » max medium working pressure: 1,6MPa = 16bar (test: 21bar).
- » Cooling capacity: parameter resulting from individual parameters of selected unit (CCOL).
- » Medium pressure drop / flow rate: parameter resulting from individual performance calculation of selected unit (CCOL).
- » For reversed operation mode (heating) max medium working temperature: 140°C.

DX COOLING COIL



Design and application

- » Block of copper pipes integrated with another block of aluminum fins, creating expanded heat exchange surface. Pipes are bonded to the collectors, equipped with headers (for connecting entire coil to the cooling system circuit).
- » DX cooler is also available as heater execution (so called Condenser).
- » Cooling and dehumidifying of the air as a part of air complex dehumidifying process in summer season.
- » Coil usually applied for smaller cooling capacity systems vs water coolers or for individual air conditioning systems.

Specification

- » Min. Refrigerant evaporation temperature: +3°C.
- » Max refrigerant working pressure: 2,2MPa=22bar (test: 29 bar).
- » Cooling capacity - parameter resulting from individual performance calculation of selected unit (CCOL).



EVAPORATIVE HUMIDIFIER



Design and application

- » Humidifying process based on water adiabatic evaporation from the humidifier pad.
- » Humidifying pad made of CELDEK II material.
- » Humidifier housing made of stainless steel.
- » System of direct water dropping (VVS021-VVS055).
- » System of water recirculation aided by pump (VVS075-VVS650).
- » Droplet eliminator integrated with humidifier filling (VVS075-VVS650).
- » System is equipped with water drainage system preventing against high water level in the pan and floating valve controlling its refilling (VVS075-VVS 650).

Specification

- » Max air face velocity across the humidifier pad: 3,00 m/s (VS 21-VS 55); 4,00 m/s (VS 75-VS 650).
- » Water pressure range: 0,15 ÷ 0,75 MPa.
- » Requirements regarding water quality – standard tap water.

SOUND ATTENUATING SECTION



Design and application

- » Sound attenuator consists of noise attenuating bars installed in the AHU casing.
- » Attenuating bars of 140 mm width filled with sound-absorbing, inflammable mineral wool (density: 60 and 80 kg/m³).
- » Attenuating bar housing: frame made of hot-dip galvanized steel.
- » Bar outer surface: thin veil preventing against bar filling migration to the air.
- » Number of attenuating bars: 2÷13, depending on block size.

Specification

- » Max air face velocity: v=5m/s.
- » Working conditions: -40 ÷ +70°C.

INTERNAL LIGHT



Design and application

- » Energy saving lamp with securing shade.
- » Facilitation of AHU inspection actions: filter, fan and humidifier compartment.

Specification

- » Working conditions: -40 ÷ +70°C.



AIR DAMPER



Design and application

- » Blades made of aluminium with rubber gasket on the edges.
- » Aluminum frame.
- » Blades drive realized by means of gears made of composite material, installed on frame internal side.
- » Damper is equipped with square pivot, fitted for actuator (dampers of cross section greater than 4 m² have 2 linked pivots).

Specification

- » Air leakage at closed damper: 50 m³/h*m² - at 100 Pascals of pressure difference.
- » Workint temperature range: -40 ÷ +70°C.

FLEXIBLE CONNECTION



Design and application

- » Flexible connection made of 1 mm thick and 30 mm wide hot-dip galvanized steel profiles and polyester fabric coated with PVC.
- » Flame resistance: UL94 - HB [ISO 1210].
- » Flexible connection resistant to UV radiation.
- » Working temperature range: -30°C do +70°C.
- » Max connection length (fully spread position): 110 mm.
- » Flexible connection installed on each AHU/Duct joint eliminates transfer of possible AHU vibrations to the ventilation ductwork.

Specification

- » Max air face velocity: 5m/s.
- » Working conditions: -40 ÷ +70°C.

AIR INTAKE AND DISCHARGE LOUVERS



Design and application

- » Air intake louver made of aluminum profile, blades made of ABS material.
- » Air outlet louver made of aluminum profile, blades made of ABS material.
- » Protection of air handling unit installed outdoor against meteorological conditions (precipitation, sand).

Specification

- » Max air face velocity: 5m/s.
- » Working conditions: -40 ÷ +70°C.



04

Units
- VENTUS S-type



ventus

S-TYPE

TECHNICAL SPECIFICATIONS

CASING

- 50 mm "Sandwich" double skin panels made of rigid polyurethane foam
- Inspection panels mounted on AHU side
- High anticorrosive protection:
 - Galvanized zinc (Zn) coating: 180g/m²
 - External protection coating material thickness: polyester / 25µm
- Inspection panels on both sides

AIR FILTERS

- Pleated filtration fabric shielded by steel net, installed in 50 mm thick frame
- Filtration fabric made of polyester fibres
- Working max parameters: max temperature (+70)°C, max. RH100%
- ISO Coarse 75% (ISO 16890) - G4 (EN779)

COOLING COIL

- Hydronic coils - 4, 6 rows available
- DX - 6 rows, 2 sections available
- Max operating pressure - 1,6 MPa
- Testing pressure - 2,1 MPa
- Drain tray: stainless steel, water outlet 1"

UNIT CASING:

Monocoque technology - a self supporting shell structure used in Formula 1 car and aviation. This is exactly how we design our products, therefore our units feature low weight and optimal height, are easy for transportation and further installation. Moreover double skin "sandwich" panels with 50 mm rigid polyurethane foam ensure best thermal insulation.

- » Thermal conductivity: PPU $\lambda = 0,022$ W/mK
- » PPU density: $\rho = 42$ kg/m³.
- » Casing heat transfer coefficient: $K = 0.6$ W/m²K
- » Casing mechanical strength: +2500 Pa ÷ 2500 Pa < 2 mm
- » Casing tightness: -400 Pa - 0.05 l/sm² +700 Pa - 0.13 l/sm³
- » Anticorrosive protection:
 - Galvanized zinc (Zn) coating: 180g/m²
- » External protection coating material thickness: polyester 25µm
- » Inspection panels mounted on AHU side.

NO THERMAL BRIDGES

Our Monocoque casing is a framework free construction. This eliminates the problem of water condensation on the external AHU side - and therefore - no more of harmful water dripping from the ceiling.

DRAIN TRAY

They are fabricated from heavy stainless steel and are to prevent condensation.

COOLING COILS

Fabricated from copper tubes mechanically bonded with aluminum fins and are leak tested at 305 psig pressure.

Hydronic

- » Copper pipe: dimensions: ½"
- » Fin Type: corrugated fin
- » Row: 4 or 6 rows
- » Max operating pressure: 1,6 MPa
- » Testing pressure: 2,1 MPa
- » Equipped with air discharge valve and water outlet valve

> DX

- » Copper pipe: dimensions: ½"
- » Fin Type: corrugated fin
- » Row: 6 rows, 2 - sections
- » Max operating pressure: 1,6 MPa
- » Testing pressure: 2,1 MPa

DIRECT DRIVE PLUG FAN SET

Blower

- » Single inlet, radial, backward curved, free running fan.
- » Impeller made of SAN (styrene/ acrylonitrile) construction material with 20% glass fiber.
- » Direct drive - fan impeller installed directly on motor shaft.
- » Fan section consisting of single or twin fans.

AC Motors

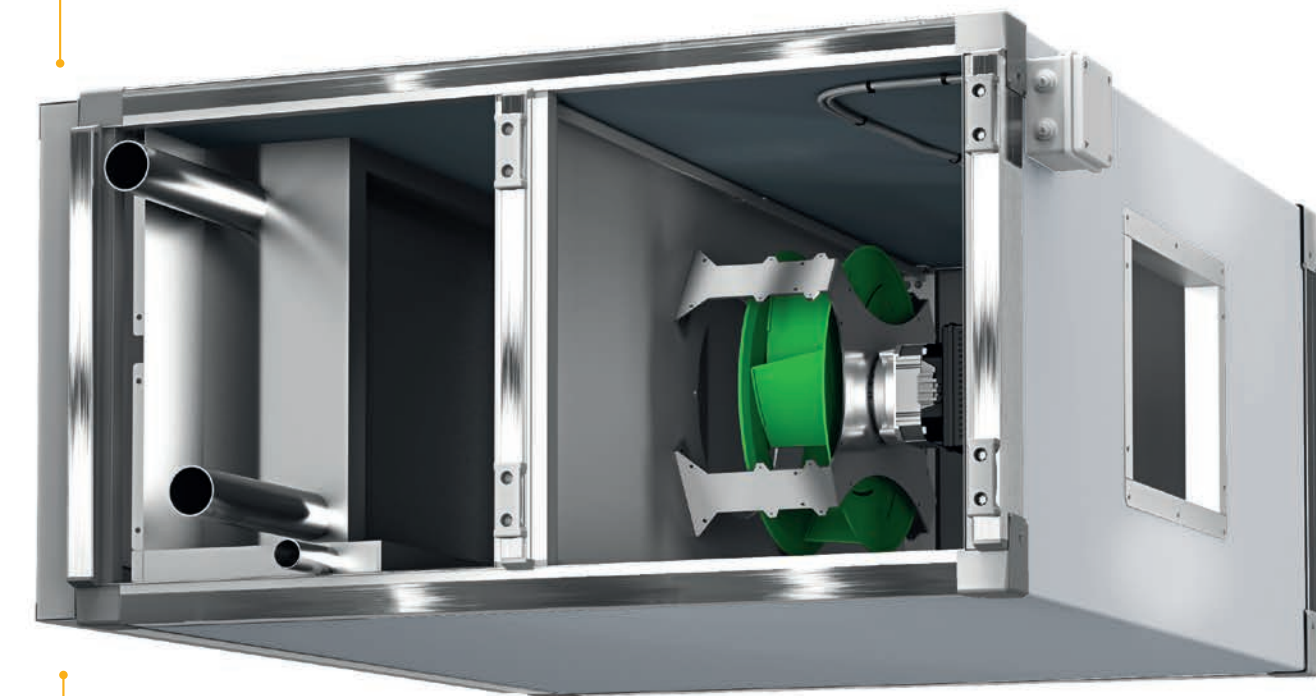
- » Fan and motor mounted on common housing, separated from AHU casing by set of rubber vibration absorbing mounts.
- » Motors of TEFS (Totally Enclosed, Fan-Cooled).
- » Motors fitted for IEC standard.
- » Variable Frequency Drive (VFD) - standard part of the fan-set.
- » Available Energy classes: IE2
- » Available voltage: 1x230V/50Hz, 3x380V/50Hz, 3x400V/50Hz, 3x400V/60Hz.
- » Number of poles: 2.
- » Motor winding insulation class: F (fitted for VFD operations).
- » Bearings lifetime: L10= 20000h / L50 = 100000h.
- » Protection degree: IP55.
- » Working conditions: 60°C.

EC Motors

- » Set of fan and motor mounted on common rail, fixed to the AHU fan diaphragm.
- » EC motors are Permanent Magnet motor, characterised by much higher efficiency vs traditional inductive AC motors.
- » EC motors (Electronically Commutated) - where mechanical commutator switching the windings has been replaced with electronic one.
- » Change of revolutions is done by means of changing the frequency rate of windings switching (rate or magnetic field rotating).
- » Highly inductive permanent magnets have applied in EC motors used by VTS, which enabled to achieve high torque at relatively small dimensions.
- » Rated voltage: EC motors of nominal capacity equal or less 0,75kW - 1x230V AC.
- » Motor winding insulation class: F.
- » Protection degree: IP54. » Maximum working ambient temperature: 55°C.
- » Lifespan: - 70 000 hours at load not exceeding 70% of nominal capacity at ambient temperature not exceeding 35°C, - 30 000 hours at 100% capacity load at ambient temperature not exceeding 55°C.

AIR FILTERS

- » All Units are provided with air filters.
- » Pleated filtration fabric shielded by steel net, installed in 50 mm thick frame.
- » Filtration fabric made of polyester fibres.
- » Working max parameters: max. temperature (+70)°C, max. RH100%.
- » ISO Coarse 75% (ISO 16890) - G4 (EN779).



DIRECT DRIVE PLUG FAN SET > BLOWER

- Single inlet, radial, backward curved, free running fan
- Direct drive - fan impeller installed directly on motor shaft
- Fan section consisting of single or twin fans
- Smooth regulation

DIRECT DRIVE PLUG FAN SET > AC MOTORS

- Fan and motor mounted on common housing, separated from AHU casing by set of rubber vibration absorbing mounts
- Motors of TEFS (Totally Enclosed, Fan-Cooled)
- Variable Frequency Drive (VFD) - standard part of the fan-set
- Available Energy classes: IE2
- Junction box on casing

DIRECT DRIVE PLUG FAN SET > EC MOTORS

- Set of fan and motor mounted on common rail, fixed to the AHU fan diaphragm.
- EC motors are Permanent Magnet motor, characterised by much higher efficiency vs traditional inductive AC motors.
- Required regulation with 0-10V regulator or ModBus signal
- Junction box on casing

TYPICAL APPLICATION



residential
buildings



industrial
buildings



small
businesses



sports
facilities



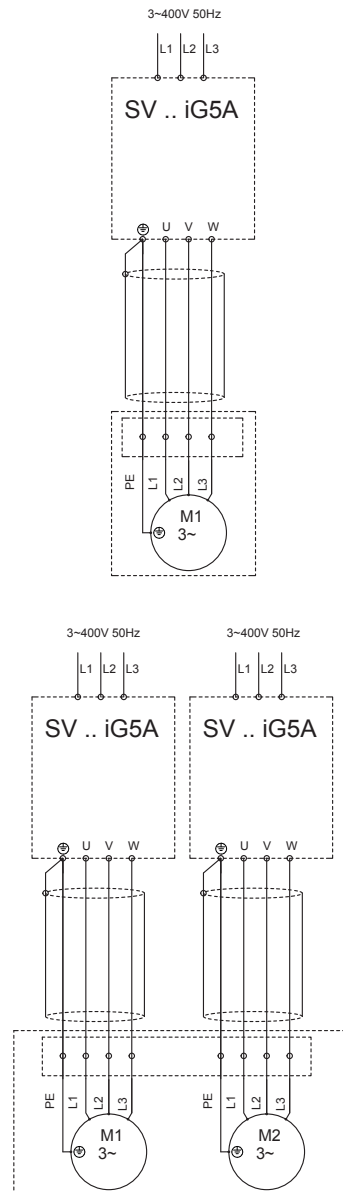
retail and
warehouses



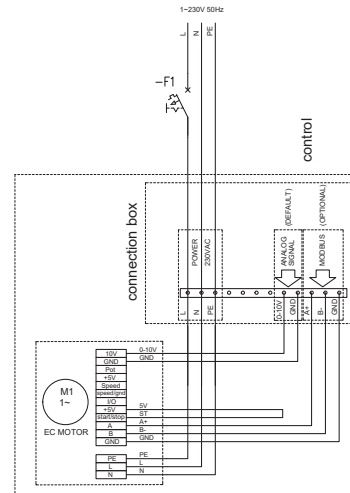
garages
and workshops

ELECTRICAL WIRING DIAGRAMS

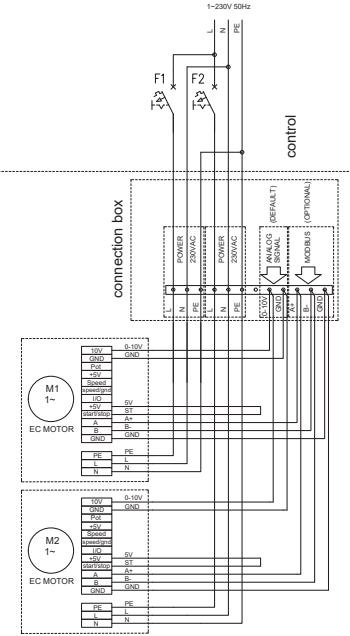
3 phase with VFD



1 phase - 1 EC MOTOR



1 phase - 2 EC MOTOR

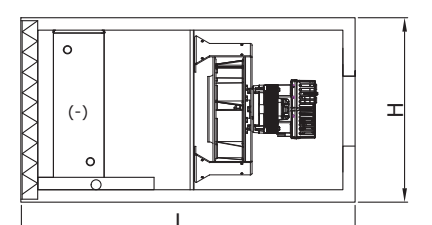
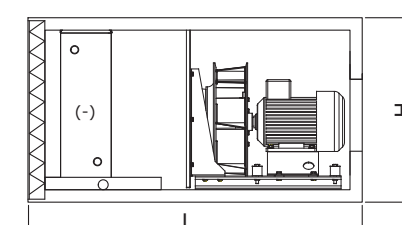
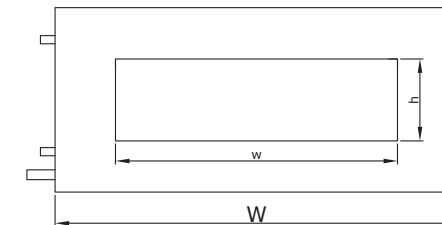


Unit size	Fan set with AC Motor									
	Model	Rated Output	Poles	Efficiency Class	Protection Grade	Rated Current at				
						415V/3ph/50Hz	230V/1ph/50Hz	380V/3ph/50Hz	400V/3ph/50Hz	400V/3ph/60Hz
	[-]	[kW]	[-]	[-]	[-]	[A]	[A]	[A]	[A]	[A]
SVS-35	VS 315	1,5	2	IE2	IP55 / F	3,1	5,54	3,36	3,1	3,19
SVS-50	VS 355	1,5	2	IE2	IP55 / F	3,1	5,54	3,36	3,1	3,19
SVS-70	VS 315 x 2	1,5 x 2	2	IE2	IP55 / F	6,2	11,08	6,72	6,2	6,38
SVS-85	VS 400 x 2	1,5 x 2	2	IE2	IP55 / F	6,2	11,08	6,72	6,2	6,38
SVS-100	VS 400 x 2	1,5 x 2	2	IE2	IP55 / F	6,2	11,08	6,72	6,2	6,38

Unit size	Fan set with EC Motor			
	Model	Rated Output	Protection Grade	Rated Current at 230V/1ph/50Hz
	[-]	[kW]	[-]	[A]
SVS-35	VS 315	0,75	IP54 / F	3,7
SVS-50	VS 315	0,75	IP54 / F	3,7
SVS-70	VS 315 x 2	0,75 x 2	IP54 / F	7,2
SVS-85	VS 315 x 2	0,75 x 2	IP54 / F	7,2
SVS-100	VS 315 x 2	0,75 x 2	IP54 / F	7,2



 **100%**
units
factory tested



Unit size	Dimensions			Duct Connection	FAN	Motor	Weight *
	H	W	L	h x w	Model	Rated Output	
	[mm]				[-]	[kW]	[kg]
SVS-35	550	1171	1068	210 x 700	VS 315	1,5	162
SVS-50	615	1325	1068	310x550	VS 355	1,5	220
SVS-70	550	2025	1068	310x1200	VS 315 x 2	1,5 x 2	266
SVS-85	675	2025	1068	410x1400	VS 400 x 2	1,5 x 2	249
SVS-100	675	2225	1068	410x1400	VS 400 x 2	1,5 x 2	322

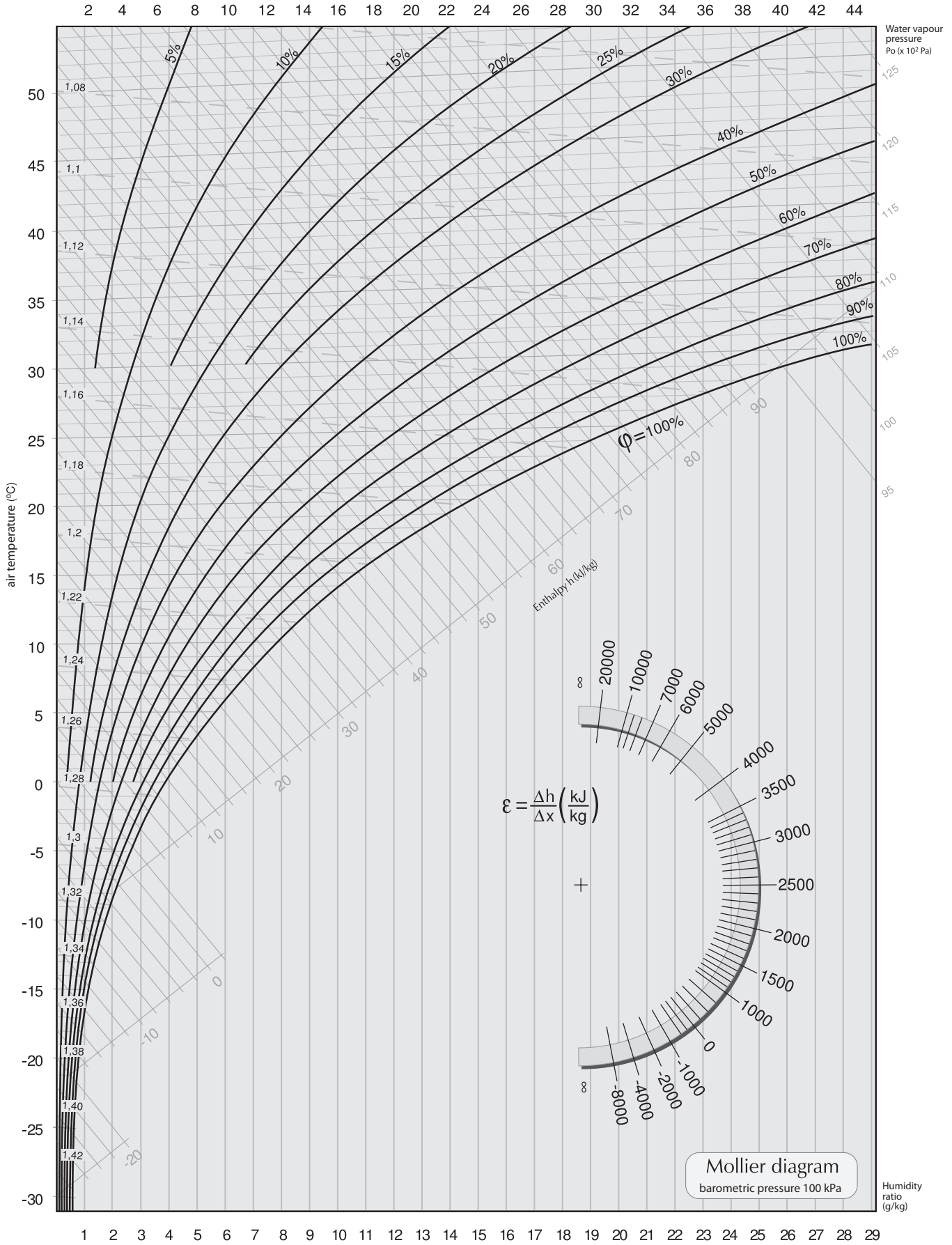
Unit size	Min Air Flow		Max Air Flow		Air Flow						
	CMH	CFM	CMH	CFM	CFM						
					0	1000	2000	3000	4000	5000	6000
SVS-35	1500	883	3500	2060							
SVS-50	2100	1236	4500	2660							
SVS-70	3000	1766	7000	4120							
SVS-85	3400	2001	8500	5003							
SVS-100	4200	2472	9500	5621							

Unit size	Coil Volume			Coil Connections			
	WCL4R	WCL6R	DX6R	WCL4R, WCL6R		DX6R	
	[Liters]			φD _{in}	φD _{out}	φD _{in}	φD _{out}
SVS-35	6,33	9,5	9,5	DN32	DN32	2x5/8"	2xØ28
SVS-50	8,24	12,36	12,36	DN50	DN50	2xØ22	2xØ35
SVS-70	12,08	18,13	18,13	DN50	DN50	2xØ22	2xØ35
SVS-85	15,44	23,16	23,16	DN50	DN50	2xØ22	2xØ35
SVS-100	17,23	25,84	25,84	DN50	DN50	2xØ22	2xØ42

* Weight present for units with integrated 6 rows water coil and fan section with AC motor



PSYCHROMETRIC CHART





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