

FAN DRIVE

Summer and winter air conditioning system, with integrated active Controlled Mechanical Ventilation

Technical and construction characteristics

With the advent of cutting-edge building technologies, newly designed housing units are increasingly thermally insulated with a direct consequence of limited thermal loads necessary to achieve the desired comfort.

At the same time, thanks to the absence of dispersions, a constant exchange and renewal of the air is essential through an advanced controlled mechanical ventilation system to guarantee the appropriate quality of the air in the rooms.

FAN DRIVE is a flexible system that turns out to be a winning system choice and allows optimal management of environmental thermo-hygrometric comfort based on real needs, with extremely rapid response times, without unnecessary waste. FAN DRIVE is the ideal solution to satisfy all these needs in a professional and effective way, it is the newly conceived unit, which in just 225 mm of thickness contains a high efficiency air conditioning system capable of heating, cooling (with relative dehumidification), filter and renew the air with integrated recovery, also through the free-cooling and free-heating functions.

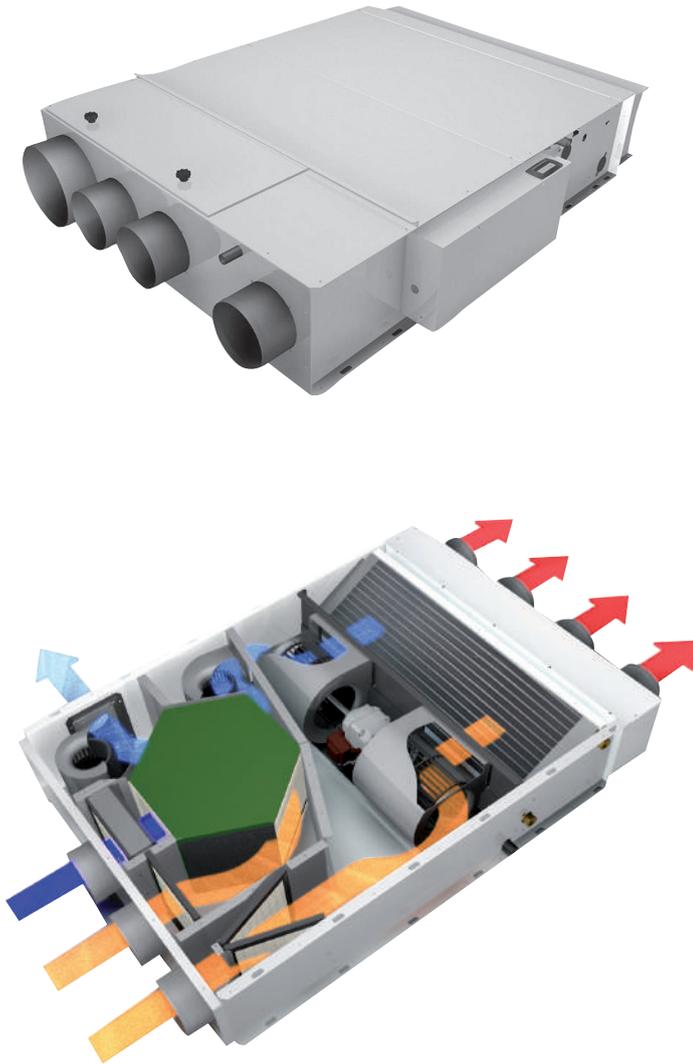
All this through a single, extremely compact unit, capable of completely replacing traditional systems in residential/commercial environments.

The range is made up of 2 models of 300 m³/h or 700 m³/h (system made of galvanized sheet metal or RAL 9010 painted sheet metal) with heating outputs from 2.2 to 4.6 kW and cooling outputs from 2.6 to 4.7 kW, each unit can be installed in both horizontal and vertical modes.

FAN DRIVE is equipped exclusively with latest generation brushless ECM motors, guaranteeing a perfect combination of high performance, excellent reduction in energy consumption of up to 75% and lower noise emissions in the environment. A fundamental plus of these innovative ventilation units is the ability to precisely and constantly modulate the air flow rates based on the actual workloads required for the benefit of a net reduction in consumption, thus guaranteeing maximum silence.

Plus FAN DRIVE

- Avoids unnecessary heat losses due to air changes, significantly reducing the cost of the energy bill;
- Heat recovery with efficiencies up to 95%;
- Reduction of electricity consumption by up to 75% thanks to the motors ECM brushless type;
- Extremely compact dimensions that guarantee installation flexibility;
- Simplification and reduction of system costs;
- A single air distribution network to guarantee the complete thermo-hygrometric comfort;
- Quick commissioning, with immediate adaptation to changes required thermal loads;
- Simple, intuitive and precise management, thanks to the kit dedicated regulation;
- No waste of living space; the unity and the system of distribution can be located on the false ceiling or below trace;
- Minimal maintenance for cleaning the filters only.



Model	Air flow climatisation m ³ /h	Air flow VMC m ³ /h	Code	€
FAN DRIVE 300 in galvanized sheet metal	300	120	75800701	5.500,00
FAN DRIVE 700 in galvanized sheet metal	700	150	75800702	6.860,00
FAN DRIVE 300 in painted sheet metal RAL 9010	300	120	75810701	5.900,00
FAN DRIVE 700 in painted sheet metal RAL 9010	700	150	75820702	7.260,00

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Accessories FAN DRIVE

			Code	€
	Supplement for 4-row heat exchange coil	mod. 300 mod. 700	75800774 75800775	116,00 186,00
	Delivery plenum for circular pipes	mod. 300 - 4 connections Ø 125 mod. 700 - 4 connections Ø 200	75800760 75800761	324,00 372,00
	Condensate evacuation pump for vertically installed units	mod. 300 mod. 700	75800776 75800777	620,00 620,00
	Condensate evacuation pump for units installed horizontally	mod. 300 mod. 700	75800778 75800779	600,00 600,00
	3-way ON - OFF valve kit for standard battery with valve and lockshield valve	mod. 300 mod. 700	75800770 75800771	200,00 268,00
	3-way ON - OFF valve kit for 4-row coil with valve and lockshield valve	mod. 300 mod. 700	75800772 75800773	268,00 314,00
	UV germicidal lamp for active sanitization	mod. 300 mod. 700	75800724 75800783	372,00 372,00
	Auxiliary condensate collection tray	mod. 300/700 vertical mod. 300/700 horizontal	75800781 75800780	8,00 8,00
	Replacement filter kit	mod. 300 mod. 700	42320007 42320005	268,00 268,00
	PLUS adjustment kit on board the machine	mod. 300 mod. 700	75800720 75800721	2.112,00 2.112,00
	Wall remote control for PLUS adjustment kit mod. 300/700		75800782	218,00
	CO2 duct probe kit installed on the unit for PLUS regulation kit	mod. 300 mod. 700	75800740 75800741	2.200,00 2.200,00
	Wall-mounted CO2 probe kit mod. 300/700 for PLUS adjustment kit		75800730	1.800,00
	Wall-mounted humidity probe kit mod. 300/700 for PLUS adjustment kit		75800743	500,00
	Voc air quality probe kit for duct mod. 300/700 for PLUS adjustment kit		75800742	900,00
	Wall-mounted VOC air quality probe kit mod. 300/700 for PLUS adjustment kit		75800744	800,00

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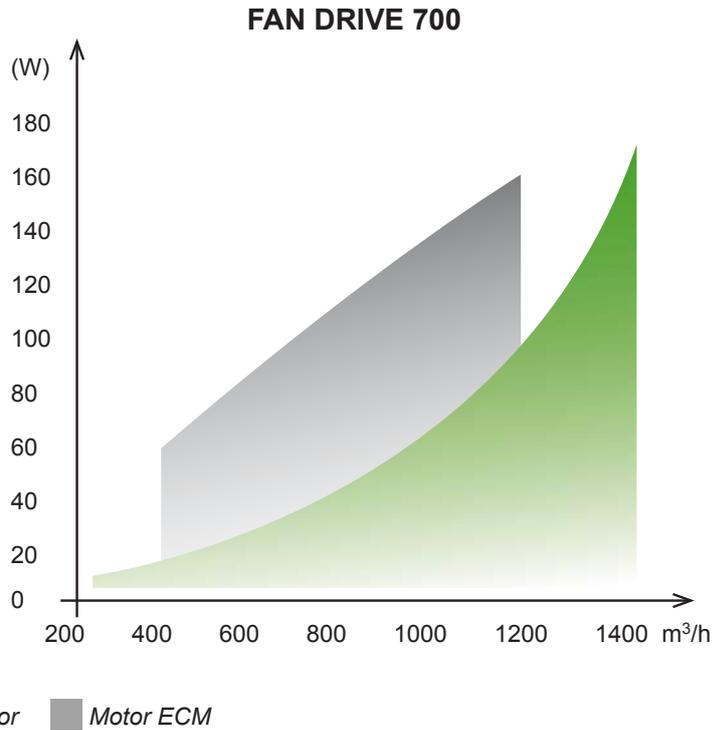
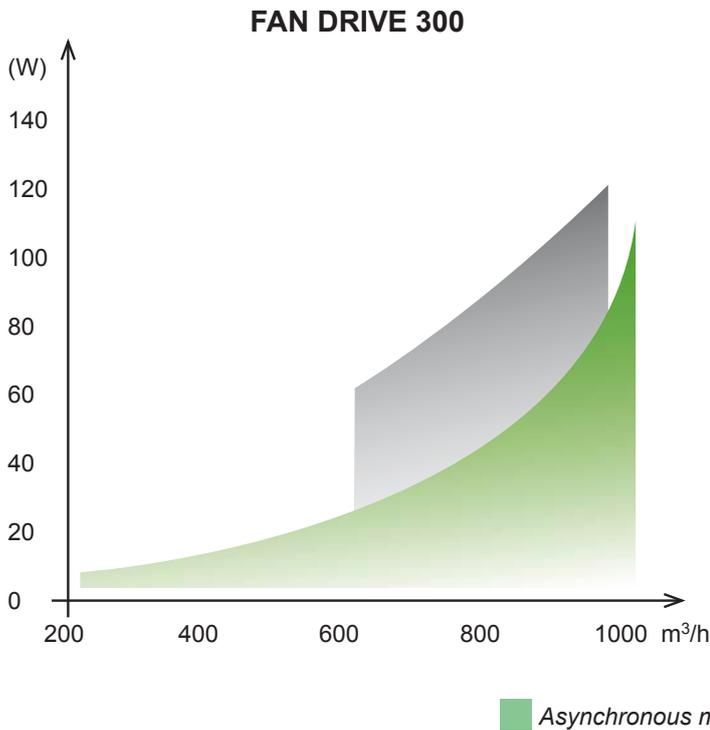
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Technical characteristics of brushless ECM motors

The FAN DRIVE system is equipped with latest generation brushless motors, guaranteeing a perfect combination of high performance, excellent reduction in energy consumption and lower noise emissions in the internal environment.

A fundamental plus of these innovative fan units is the ability to precisely and constantly modulate the air flow rates based on the actual workloads required for the benefit

of a net reduction in consumption, absence of unnecessary waste and greater psychophysical comfort in the environment guaranteed by greater management sensitivity and maximum silence thanks to intelligent management of air flows. The graphs below simulate the comparison between absorptions of an asynchronous centrifugal motor and the brushless centrifugal motor installed in the FAN DRIVE series.



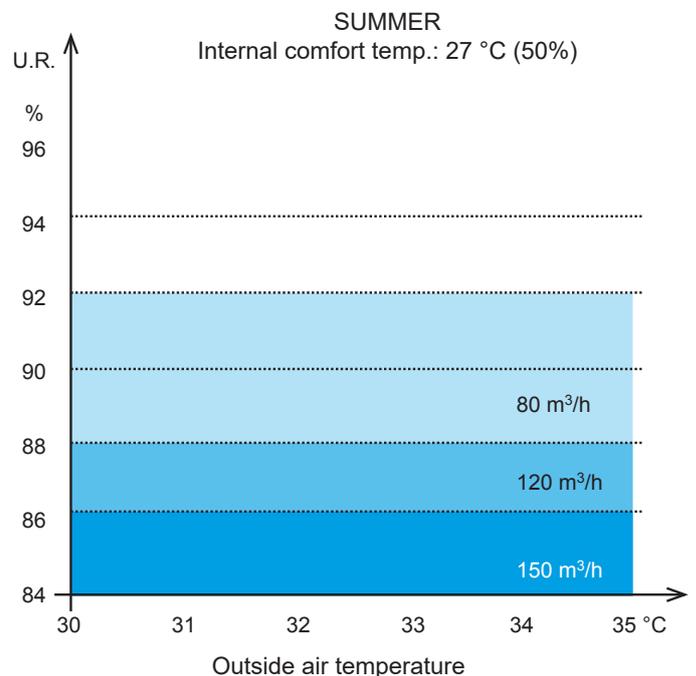
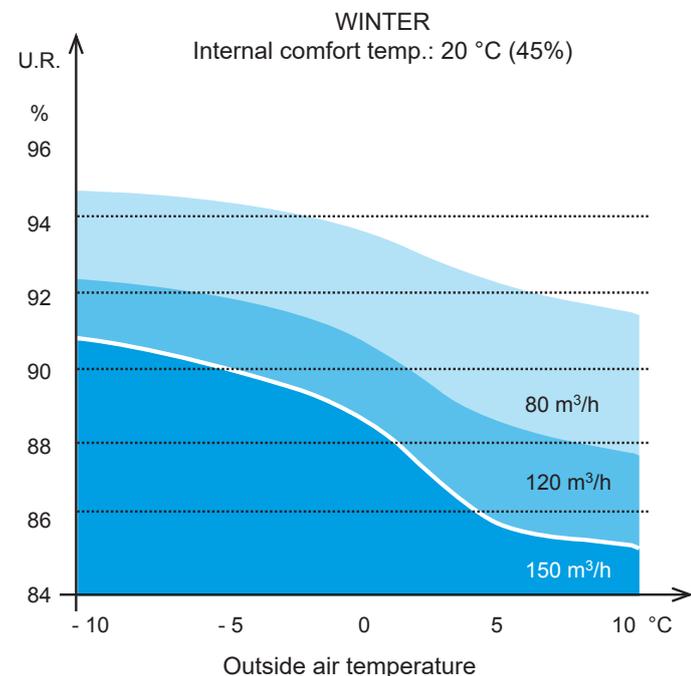
FAN DRIVE recovery efficiency

WINTER

Representation of the degree of efficiency of the cross-flow recuperator, with external temperatures between -10 °C and +10 °C; relative humidity 70%.

SUMMER

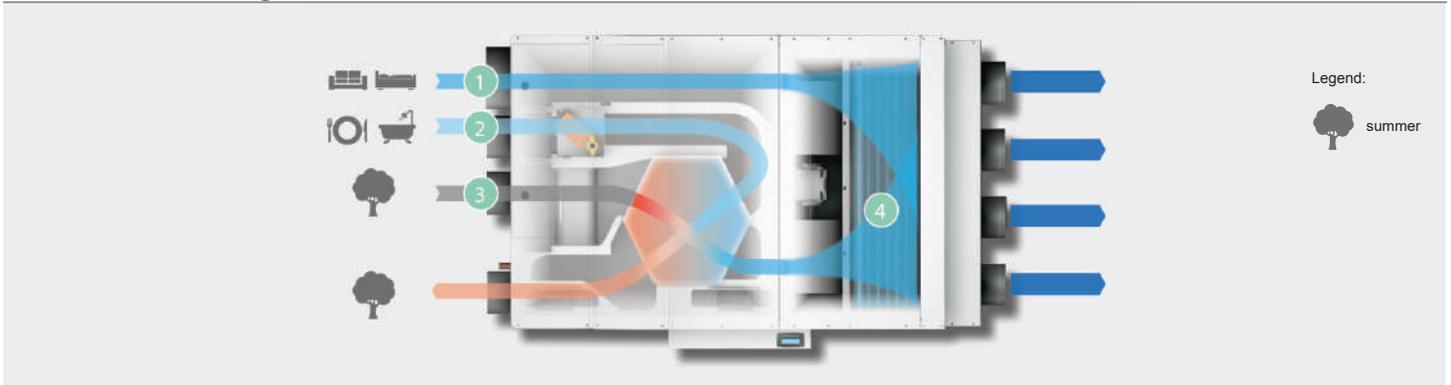
Representation of the degree of efficiency of the cross-flow recuperator, with external temperatures between 30 °C and 35 °C; relative humidity 50%.



FAN DRIVE

Summer and winter air conditioning system, with integrated active Controlled Mechanical Ventilation

FAN DRIVE cooling mode



1 INTERNAL RECIRCULATING AIR INLET

The air is taken from rooms less predisposed to generating stale air such as the living room, bedrooms and hallways, after appropriate filtration, it is made to flow towards the part used for treatment.

2 STAINLESS AIR INLET

The stale air, usually taken from kitchens, bathrooms and walk-in closets, is made to flow through the counter-current flow recuperator before being expelled in order to recover up to 92% of the thermal energy which would otherwise be uselessly wasted.

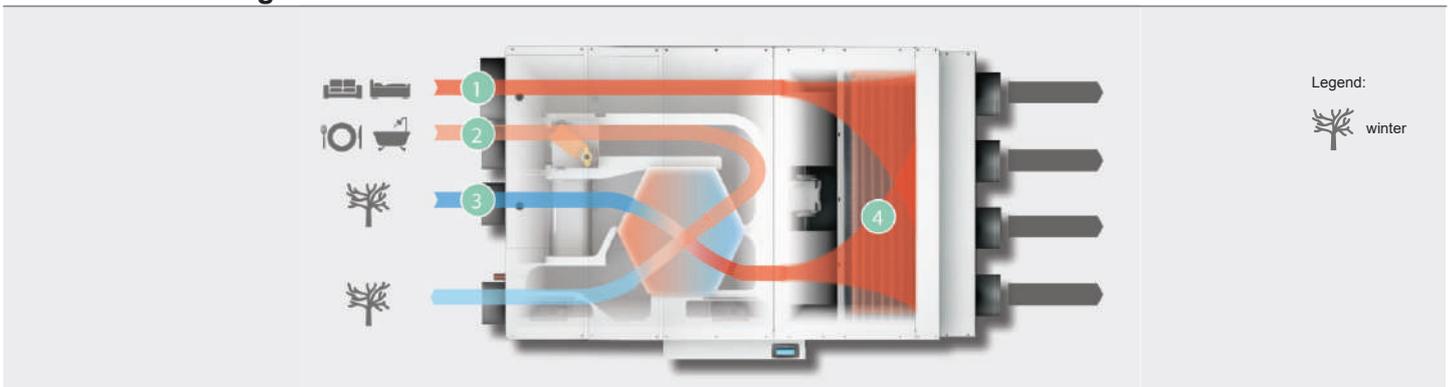
3 EXTERNAL FRESH AIR INLET

The hot, humid air taken from outside and used for renewal is introduced into the unit and after appropriate filtration in order to remove polluting agents, it is conveyed through the recuperator, assimilating up to 92% of the thermal energy released by the air spoiled at the exit, and then flows towards the part used for treatment. If the external conditions are in line with the required internal load, the primary air, thanks to the By-pass function which is activated automatically, will be introduced directly into the environment after appropriate filtration.

4 TREATMENT WITH HYDRONIC BATTERY

The air mix thus obtained, composed partly of recirculation air and partly of pre-treated renewal air, is now cooled and dehumidified by the part used for treatment based on the exact comfort needs selected by the user, before being reintroduced in environments via the dedicated ducted distribution network.

FAN DRIVE heating mode



1 INTERNAL RECIRCULATING AIR INLET

The air is taken from rooms less predisposed to generating stale air such as the living room and/or bedrooms and, after appropriate filtration, is made to flow towards the part used for treatment.

2 STAINLESS AIR INLET

The stale air, usually taken from kitchens and bathrooms, before being expelled is made to flow through the recuperator with counter-current flows in order to recover up to 94% of the thermal energy which would otherwise be uselessly wasted.

3 EXTERNAL FRESH AIR INLET

The cold air taken from outside and used for renewal is introduced into the unit and, after appropriate filtration in order to remove pollutants, is conveyed through the recuperator, assimilating up to 94% of the thermal energy released by the stale air outgoing, to then flow towards the part used for treatment. If the external conditions are in line with the required internal load, the primary air, thanks to the By-pass function which is activated automatically, will be introduced directly into the environment after appropriate filtration.

4 TREATMENT WITH HYDRONIC BATTERY

The air mix thus obtained, composed partly of recirculated air and partly of pre-treated renewal air, is now heated by the part used for treatment, based on the exact comfort needs selected by the user, before being reintroduced into the environments via the dedicated channeled distribution network.

FAN DRIVE

Summer and winter air conditioning system, with integrated active Controlled Mechanical Ventilation

FAN DRIVE mode free-cooling



1 INTERNAL RECIRCULATING AIR INLET

The air is taken from rooms less predisposed to generating stale air such as the living room and/or bedrooms and, after appropriate filtration, is made to flow towards the part used for treatment.

2 STAINLESS AIR INLET

The stale air, usually taken from kitchens and bathrooms, is expelled directly outside.

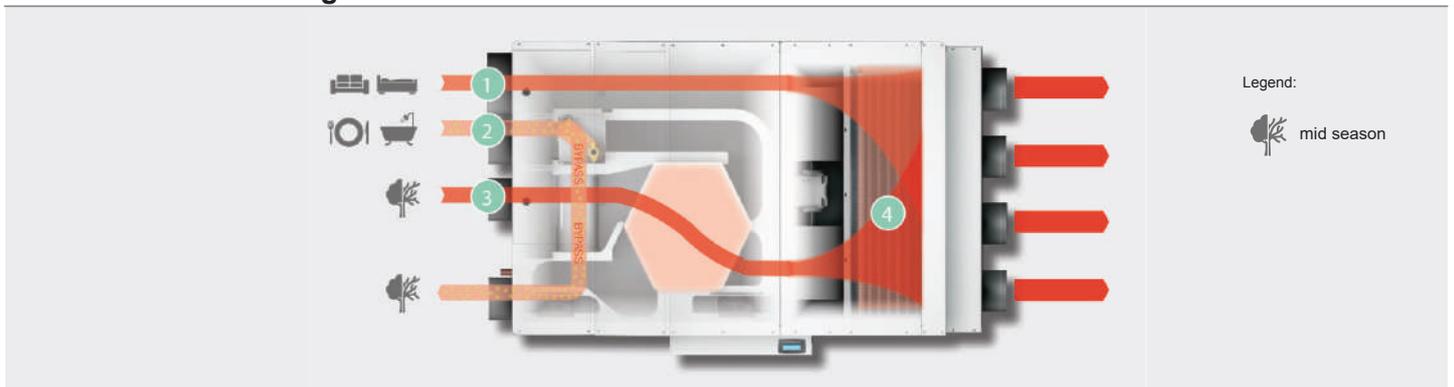
3 EXTERNAL FRESH AIR INLET

If the external temperature conditions are in line with the internal loads required, the primary air passes through the By-pass function which is automatically activated by the dedicated control, and sent directly into the room after appropriate filtration.

4 TREATMENT WITH HYDRONIC BATTERY (ONLY IF NECESSARY)

The air mix thus obtained, composed partly of recirculation air and partly of pre-treated renewal air, is now cooled and dehumidified by the part used for treatment based on the exact comfort needs selected by the user, before being reintroduced into the environments via the dedicated channeled distribution network.

FAN DRIVE free-heating



1 INTERNAL RECIRCULATING AIR INLET

The air is taken from rooms less predisposed to generating stale air such as the living room and/or bedrooms and, after appropriate filtration, is made to flow towards the part used for treatment.

2 STAINLESS AIR INLET

The stale air, usually taken from kitchens and bathrooms, is expelled directly outside.

3 EXTERNAL FRESH AIR INLET

If the external temperature conditions are in line with the internal loads required, the primary air passes through the By-pass function which is automatically activated by the dedicated control, and sent directly into the room after appropriate filtration.

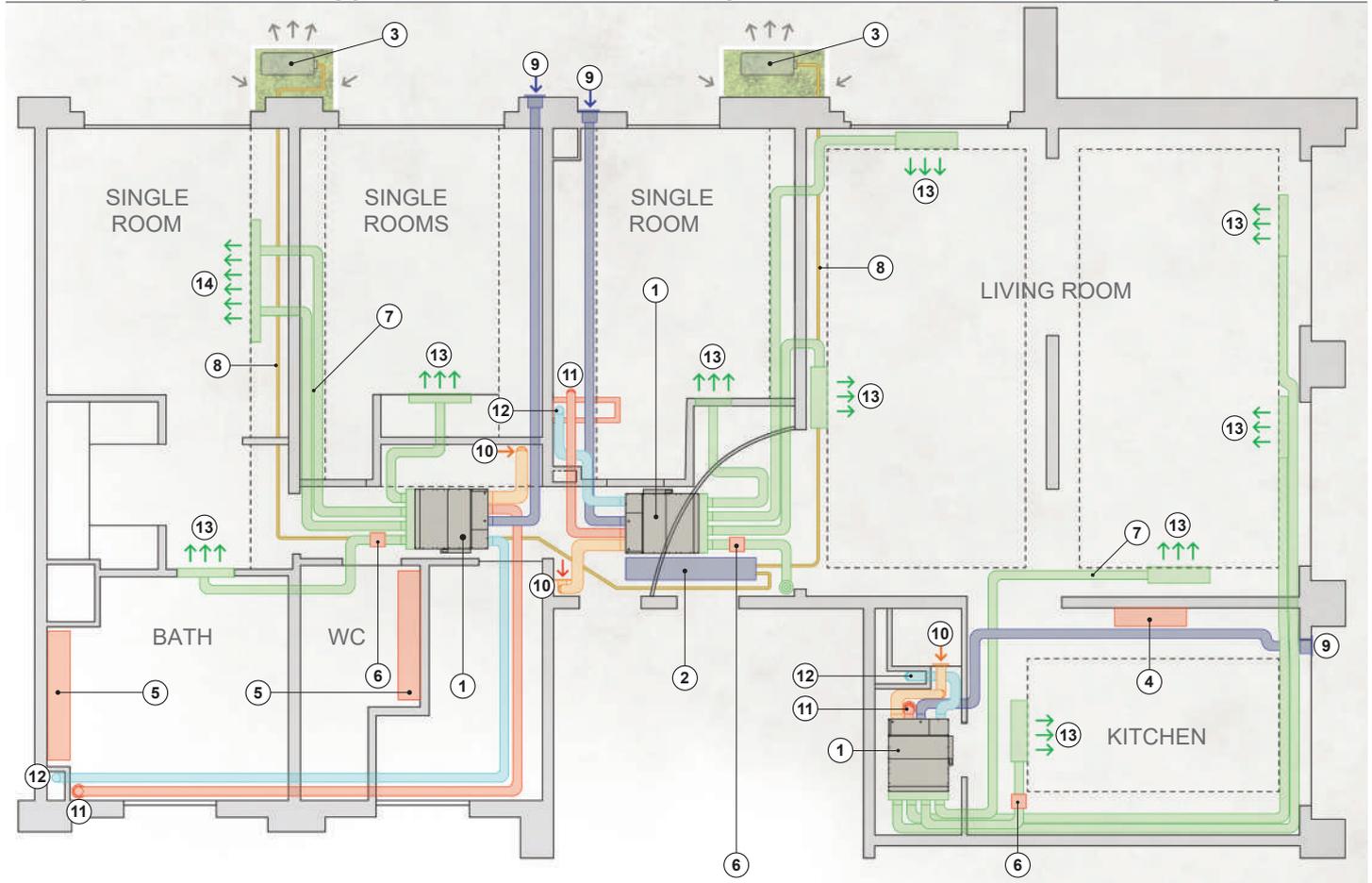
4 TREATMENT WITH HYDRONIC BATTERY (ONLY IF NECESSARY)

The air mix thus obtained, composed partly of recirculation air and partly of pre-treated renewal air, is now cooled and dehumidified by the part used for treatment based on the exact comfort needs selected by the user, before being reintroduced into the environments via the dedicated channeled distribution network.

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Example of FAN DRIVE application combined with the patented HUB RADIATOR POWER UNIT system



- 1 FAN DRIVE 300
- 2 POWER UNIT 105 LT
- 3 Booster HR 7.0 hot/cold
- 4 POWER UNIT 80 LT with DHW exchanger
- 5 POWER UNIT 130 LT with DHW exchanger
- 6 BIOX AIR active sanitization module
- 7 Double wall insulated air pipe Ø 125 mm

- 8 refrigeration pipes 1/4" - 5/8"
- 9 External fresh air inlet
- 10 Internal recirculation air intake
- 11 Extraction of stale air from inside the rooms
- 12 Expulsion of stale air outside the building
- 13 Single delivery vent (2 slots L. 1000 mm)
- 14 Double delivery vent (2 slots L. 2000 mm)

This application example demonstrates our ideological approach relating to the technological systems of residential buildings to be renovated and made more efficient from an energy point of view. In this case, the vision and style of the client was respected by pursuing the "mission" of the master Le Corbusier, that is, a house designed as "a machine for living" that guarantees total thermo-hygrometric comfort with maximum Energy Efficiency without interfering with the indoor design and outdoor thus maintaining the harmony of the architectural universe. Through the FAN DRIVE system, A2B Accorroni promotes the concept of the building-system system with the aim of always pursuing "Near Zero Energy Building" and total comfort.

In this system example there are three advanced system terminals model FAN DRIVE 300, each of which is composed of a single extremely compact built-in box which contains a super-silenced ductable air conditioning unit with integrated high-efficiency heat recovery unit counter-current flows, a 4-row hot/cold hydronic coil and three inverter fans which guarantee an air conditioning flow rate of 300 m³/h and an air renewal flow rate of 120 m³/h. This technology allows, with a single concealed solution inside the false ceilings, to air condition the rooms in the summer and winter seasons, dehumidify, filter the air, exchange the air in a controlled and efficient manner, recover

the heat from the stale air that is expelled, keep carbon dioxide under control and sanitize the air through an advanced and certified bipolar ionization system (BIOX AIR); all with a single aeraulic distribution system.

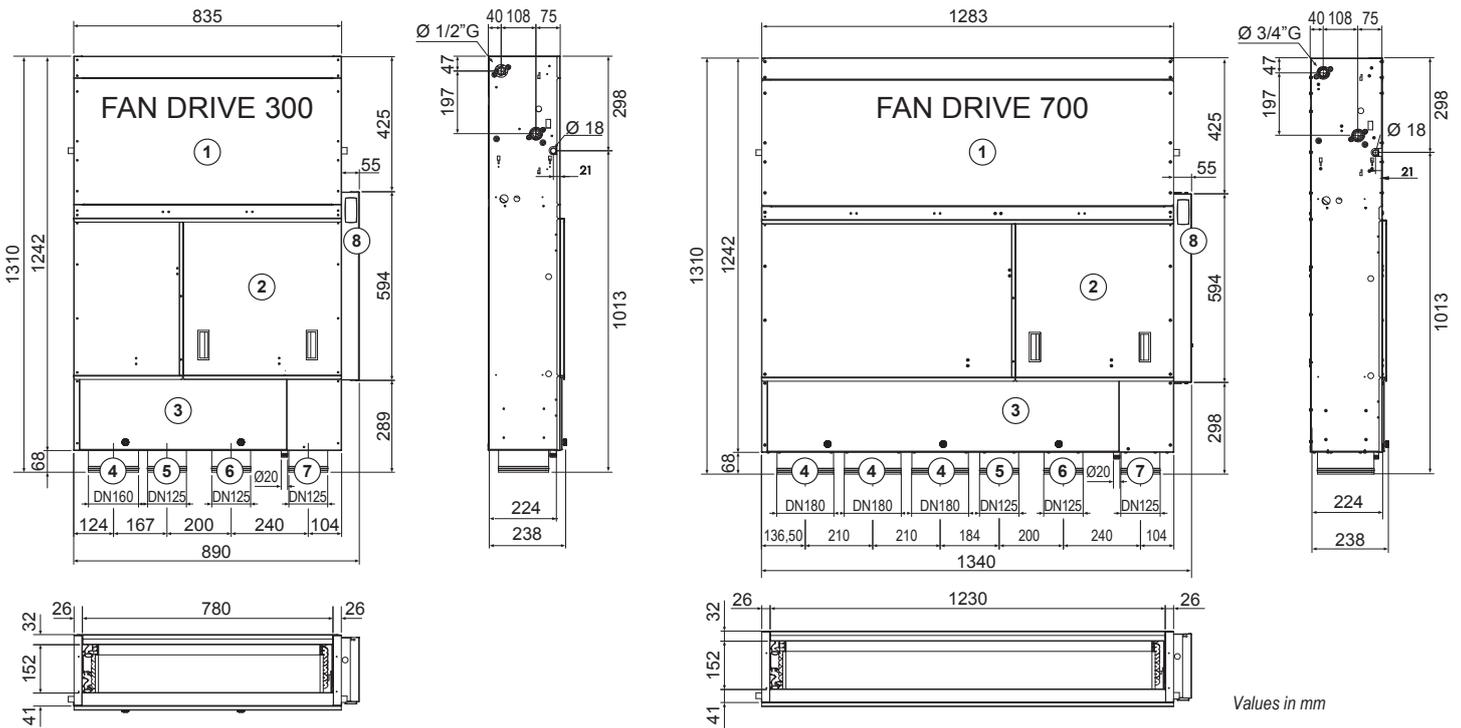
The FAN DRIVE 300 units are powered by the patented HUB RADIATOR POWER UNIT system, composed of two HR 7.0 model heat pump boosters that work in cascade with direct exchange load partialization steps on a closed tank horizontal accumulation of technical water from 105 liters and located inside the false ceiling at the entrance so as to completely eliminate the need to use a room inside the apartment as a technical room. The two external Boosters have been expertly integrated into removable planters positioned on the external balcony and have been specifically designed to guarantee the correct functioning of the thermodynamic system.

The domestic hot water is produced by three other HUB RADIATOR POWER UNIT storage tanks equipped with the finned domestic hot water exchanger (optional) with variable dimensions based on the specific needs of each individual user. Each POWER UNIT is located in the false ceiling of the room to be served so as to reduce heat losses from the distribution system and eliminate waiting times for domestic hot water service without the risk of legionella.

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Dimensions FAN DRIVE 300 - 700

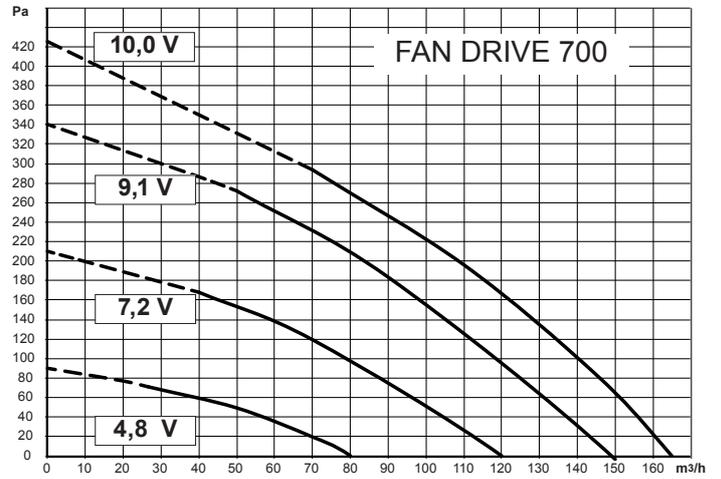
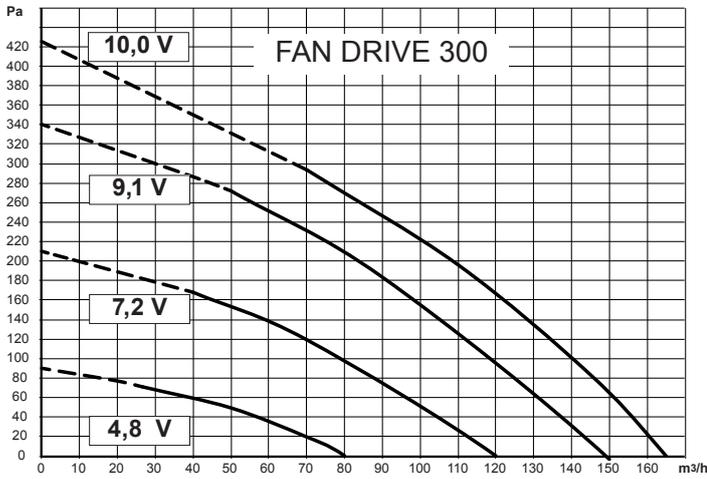


- 1 hydronic heat treatment battery
- 2 "Counter-current" recuperator
- 3 Filter inspection hatch
- 4 Internal air recirculation pipe connection sleeve

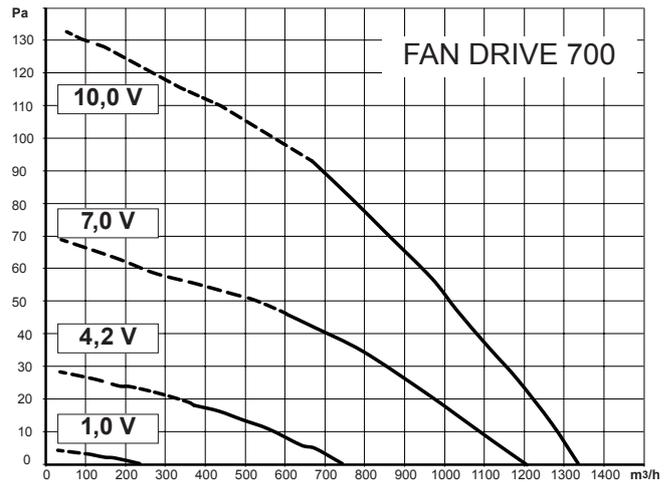
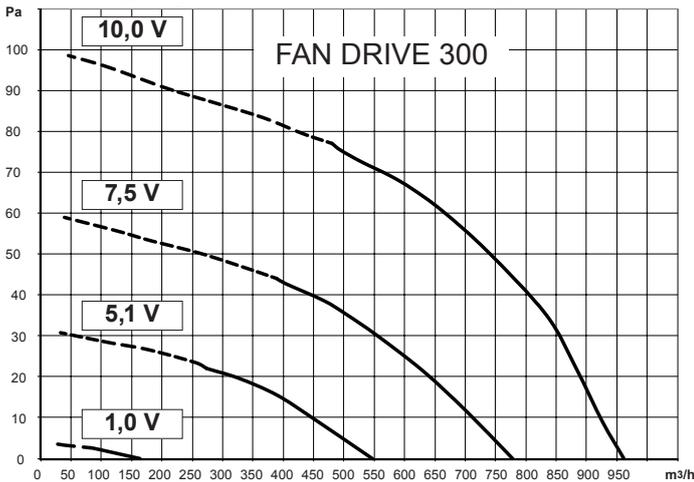
- 5 Stale air extraction pipe connection sleeve
- 6 External fresh air inlet pipe connection sleeve
- 7 Connection sleeve for the stale air expulsion pipe to the outside
- 8 Electrical connection compartment

Values in mm

Aeraulic performance recovery fans



Aeraulic performance of air handling fans



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Technical performance data table FAN DRIVE 300 with 3-row coil

Air flow m ³ /h		Summer mode*			Winter mode**	
Renewal	Unit	Ttl power W	Sensible power W	Supply air temp °C	Ttl power W	Supply air temp °C
80	200	1540	861	14,3	1693	44,3
	300	2480	1454	12,6	2675	45,9
	400	3150	1954	12,4	3824	47,9
	500	3645	2332	13,1	4571	46,7
	600	4283	2770	13,2	5407	46,4
	700	4672	3114	13,7	6091	45,5
120	200	1663	875	14,3	1735	44,2
	300	2618	1471	12,6	2719	45,8
	400	3323	1973	12,4	3871	47,9
	500	3838	2349	13,1	4616	46,7
	600	4408	2784	13,2	5452	46,4
	700	4806	3127	13,7	6134	45,5
150	200	1758	889	14,3	1774	44,1
	300	2704	1485	12,6	2760	45,8
	400	3423	1986	12,4	3915	47,9
	500	3952	2363	13,1	4660	46,7
	600	4538	2799	13,2	5494	46,3
	700	4941	3140	13,7	6175	45,4

*Water temperature 7/12 °C - air 33 °C / u.r. 50%

**Water temperature 50/45 °C - air -5 °C / u.r. 70%

Technical performance data table FAN DRIVE 700 with 3-row battery

Air flow m ³ /h		Summer mode*			Winter mode**	
Renewal	Unit	Ttl power W	Sensible power W	Supply air temp °C	Ttl power W	Supply air temp °C
80	200	1670	968	12,7	1928	47,8
	400	2923	1844	13,3	3515	45,6
	600	4105	2692	13,6	4882	43,8
	800	5167	3516	13,8	6394	43,4
	1000	6107	4269	14,2	7809	42,9
	1100	6392	4601	14,5	8406	42,4
120	200	1936	1047	11,7	1974	47,8
	400	3085	1864	13,2	3558	45,6
	600	4224	2707	13,6	4922	43,8
	800	5316	3533	13,8	6435	43,4
	1000	6140	4282	14,2	7847	42,9
	1100	6566	4615	14,5	8444	42,4
150	200	2047	1065	11,7	2019	47,7
	400	3179	1877	13,2	3599	45,5
	600	4349	2724	13,6	4960	43,7
	800	5344	3544	13,9	6473	43,4
	1000	6303	4296	14,2	7882	42,9
	1100	6741	4629	14,5	8482	42,4

*Water temperature 7/12 °C - air 33 °C / u.r. 50%

**Water temperature 50/45 °C - air -5 °C / u.r. 70%

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Technical data table FAN DRIVE

Model	U.M.	FAN DRIVE 300		FAN DRIVE 700	
Nom. air flow air conditioning fans	m ³ /h	300		700	
Useful delivery static pressure	Pa	5 - 98		5 - 132	

WINTER THERMAL RECOVERY (1)

Air flow	m ³ /h	80	120	150	80	120	150
Recovery efficiency	%	88,5	85,4	83,5	88,5	85,4	83,5
Thermal power recovery	W	628	922	1134	628	922	1134
Air outlet temperature	°C	18,23	17,73	17,38	18,23	17,73	17,38

SUMMER THERMAL RECOVERY (2)

Air flow	m ³ /h	80	120	150	80	120	150
Recovery efficiency	%	88,7	85,6	83,5	88,7	85,6	83,5
Thermal power recovery	W	141	204	249	141	204	249
Air outlet temperature	°C	27,68	27,86	27,99	27,68	27,86	27,99

FAN

Centrifugal fan with Brushless EC motor for air handling units

Radial type motor with Brushless EC motor for heat recovery units

WATER BATTERY

Number of ranks		3	3
Total thermal output (3)	W	2240	4608
Air outlet temperature	°C	41,2	38,9
Water side pressure drop	kPa	8,4	10,5
Nominal water flow rate	l/h	390	803
Total cooling capacity (4)	W	2618	4780
Sensitive cooling performance	W	1471	3083
Air outlet temperature	°C	12,6	14,0
Water side pressure drop	kPa	13,0	13,2
Nominal water flow rate	l/h	449	820

ELECTRICAL ABSORPTION

Power supply		230V/1/50Hz	
Max absorbed power	W	260	340
Max current consumption	A	1,15	1,48

Weight

Net weight	Kg	54	81
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(1) Fresh air temperature - 5 °C; Exhaust air temperature 20 °C

(2) Fresh air temperature 33 °C r.h. 50%; Exhaust air temperature 27 °C 50%

(3) Outdoor air - 5 °C; Water 45 - 40 °C; Referred to the nominal air flow (300 m³/h FAN DRIVE 300 - 700 m³/h FAN DRIVE 700)

(4) External air 33 °C 50%; Water 7 - 12 °C; Referred to the nominal air flow (300 m³/h FAN DRIVE 300 - 700 m³/h FAN DRIVE 700)

Evaporation temperature 7 °C; Superheat: 5°C; Condensation temperature: 50 °C

Operation limits FAN DRIVE

Model	U.M.	FAN DRIVE 300	FAN DRIVE 700
Outside air temperature	°C	min (- 5) - max (+ 45)	
External air humidity	%	min 10 - max 75	
Internal air temperature	°C	min 15 - max 30	
Indoor air humidity	%	min 10 - max 75	
Max water working pressure	bar	8	
Maximum water operating temperature	°C	70	