

MITSUBISHI ELECTRIC HYDRONICS & IT COOLING SYSTEMS S.p.A.

COMFORT

AIR HANDLING UNITS



HARMONY

Easy
configuration

Attention
to detail

Plug & Play
solutions

Customer
-made

climaveneta.com

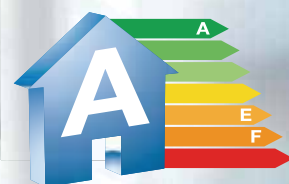
 **CLIMAVENETA**[®]
SUSTAINABLE COMFORT

Our biggest challenge is delivering the best solution for your building.

Both traditional and specific applications have particular comfort and technical features.

Climaveneta's greatest experience in air treatment solutions has led us to offer a precise response to each specific challenging requirement.

More challenging requirements



Product quality



Versatile and easier installation



Focus on Comfort



Traditional applications



High levels of comfort, together with efficient performance and energy efficiency are key features in Air handling units for traditional applications.

The main aim is to maintain a constant temperature and humidity levels, ensuring a reduction of operating costs.

The main objective is to ensure high levels of comfort over time.

Continuous upgrade of units' performance and the use of quality components can contribute in extending the life cycle of the plant.

Versatility and plug-and-play solutions are fundamental features in traditional applications.

The reduction of on-site operations contributes in making the assembly process easier, thus increasing cost savings.

It is widely recognized that high comfort levels are directly connected to low noise emissions.

It surely improves both comfort and quality levels increasing the value of the building and the investment.

Specific applications



Some applications are critical and the kind of plant must be evaluated from time to time, considering the requirements of the building.

Custom-made solutions and the use of further components are fundamental requirements of specific sectors.

The quality of the system is of utmost importance in this kind of application and it strongly depends on the attention to detail and the installation of high quality components.

Specific sectors, such as hospitals and chemical applications, require reliable units complying with the strictest regulations.

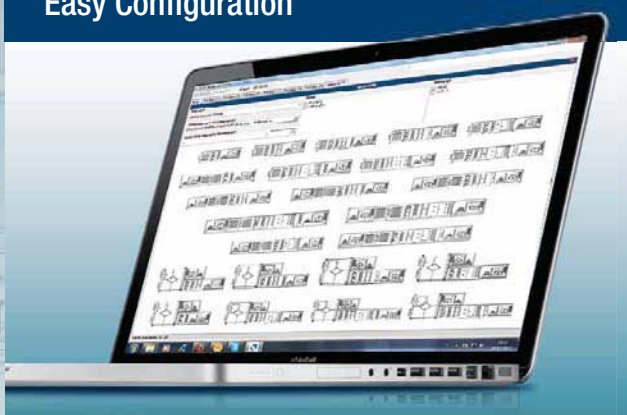
Solutions for specific sectors must be able to integrate a number of special components. The big challenge is designing complex units that can guarantee quick and easy installation.

In some specific applications, the noise emissions index is one of the most important performances. In hospitals, theatres and cinemas, this index is as important as the performance indicator. Hence, it is particularly important to choose a low noise unit.

The solutions

Each application, from traditional to specific sectors, is characterised by high comfort levels and strict plant requirements.

Easy Configuration



HARMONY is the ultimate solution in air handling technology. A single and compact unit responding to the different requirements. The correct configuration is ensured by 'Climaveneta AHU-Optimizer, a selection software that computes and presents all the necessary data for correct air handling unit selection.

The high range of materials, components and accessories selectable, together with the total freedom of composition, make the software unique and intuitive while satisfying

Attention to detail



Each unit is designed in such a way so as to fit in each application.

Exceptional quality is built into every component, ensuring not only high efficiency but also exceptional versatility and reliability.

This contributes to extending the life cycle of the unit whilst reducing the maintenance costs.

As far as specific sectors is concerned, the distinctive feature is the installation of the highest-quality components that can match special requirements.

solutions



The units have been designed in such a way that if there is not enough room for the sections to reach the installation area they can be built and assembled on-site either from modular sections or in CKD configuration. This is possible thanks to special connections that are used to join adjacent functional sections or unit blocks.

It's a completely versatile unit that is also characterised by a simplification of the system and a 'Plug & Play' concept to ensure easy installation and commissioning. When the unit is delivered on site, it can be installed easily, reducing maintenance and further installation costs.

Customer-made



No matter how different the application is, the unit can be special designed for each project by different series of component. Especially for industrial and hospital project, the cleanness need to be fully considered to ensure end-user's request. And for commercial and residential project, the operation cost and energy saving is the primary target.

At the same time, HARMONY units are fitted with dedicated components with world leading quality and insist on cooperating with worldwide well-know manufacturers to achieve the reliable and durable performance.

Technological choices

Smart control



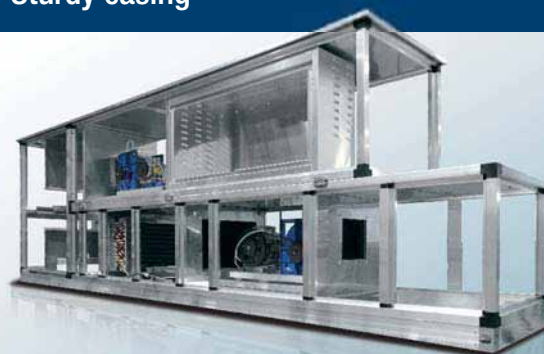
HARMONY is equipped with the best thermal components available on the market: temperature and humidity probes and high precision differential pressure switches.

The core system that manages all the components is the AHU3000 controller. This controller ensures the programming of different time bands, increasing the efficiency of the system and reducing the energy consumption when the system does not work at full load.

Key features of the control are:

- Remotable control (up to 500 m) thanks to a dedicated panel
- Regulation of the part-load operation according to the set-point and the ambient load
- Monitoring through the web server and BMS compatibility (Modbus, Rs485, Bacnet over-IP).

Sturdy casing



Climaveneta has developed a casing design with different kinds of profiles and panels that can be chosen depending on the purpose of the application.

The high quality level of the structure allows for units operating at pressures higher than 1000 Pa with minimized air leakages and high mechanical strength.

The panels are manufactured in a such a way so as provide effective thermal and acoustic insulation.

Installation is made easier through the design of modules with connectors that allow for easy cleaning of the unit.

Selection Software

The design of the AHU is completely configurable thanks to the Climaveneta selection software. This smart tool ensures quick and precise calculations of the units selection.

The selection software computes and presents all the necessary data for correct air handling unit selection.

All extra accessories can be precisely selected depending on the kind of application, either traditional or specific.

Data and calculations are easy and quick thanks to an user-friendly interface.



Efficiency, low noise level, reliable operation. Attention to detail and easy configuration.

These are the distinctive features of **HARMONY**.

Fans



A wide array of fan options provides optimal sound and efficiency choices depending on the kind of application.

The intrinsic efficiency of the fans contributes in improving the overall efficiency of the units, ensuring very low noise emissions.

Fans with variable speed reduce the noise level according to the partial load of the coils and the temperature of the treated air.

High level configuration



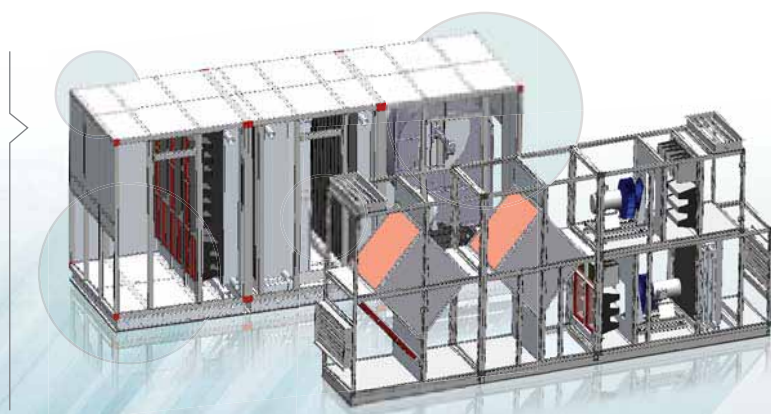
High level configuration can ensure the reliable and durable operation. So CLIMAVENETA insist on producing high quality products or cooperate with world famous manufacturers to offer the best configuration to customer for best performance.

From coil to attenuator, the product quality is strictly controlled by dedicated equipment or inspection on supplier and incoming materials.

Besides, strict AHU selection process is also required to make sure better performance, such as the coil face velocity, fan efficiency, water pressure drop and other key parameters.

Main Functions

- ▶ It generates files to be exchanged among the users and the company
- ▶ It creates Word/Pdfs with specifications of each single unit
- ▶ Always up-to-date data through the Internet connection
- ▶ Different languages can be selected



Temperature Control Tools

Temperature and humidity tools installed by Climaveneta are among the best components on the market. The unit is completely plug-and-play and all the components are directly installed within the company. The result is simple: better performance and a reduction in the installation times and operating costs.



Excellence on the global market



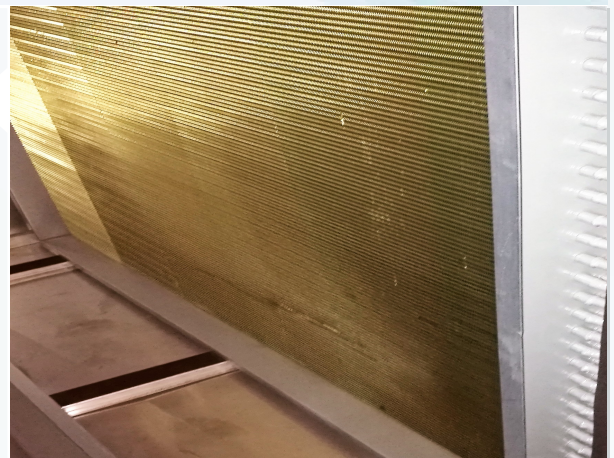
Framework and Panel

The framework consists of the internal frame, external frame and the PVC insulator. All frames are made of high gauge aluminum alloy with anodize treatment. The PVC insulator is extruded to the internal and external frame avoiding thermal bridge.

The insulation material -PU foam of up to 75mm thickness is injected between the double-wall panels. All bolts are external-connected type, resulting in easy dismantling and maintenance. The internal corner between panels is special designed of circular surface for easy cleaning.

Coil and Fin

The Coil is made of seamless copper tubes and hydrophilic aluminum fins, **Hydrophilic 'Gold' aluminum fins are optional for higher fin protection.** All tubes are mechanically expanded to aluminum fins tightly to minimize thermal resistance. The stainless steel and the copper tube collector are optional for high quality. Fins are sin-wave type and Standard coil configuration has 2/4/6/8/10-row as options. For customer's specification. The configuration of coils is optimized to meet actual conditions.



Fan and Motor

The adoption of well-known brand of DIDW, centrifugal fan and bearing ensures the static and dynamic balance level of G4.0 which greatly improves the life duration of bearing.

The fan section is mounted onto the vibration resistance frame with spring isolators or robber pads, connected to the casing with high fire resistance flexible connectors.

Standard V-shape belt driven with taper-lock, high driven efficiency. Well-know brand of motor with IP54/IP55 protection and class F insulation. Available at front-curved, back-curved, airfoil or plug fan depending on different request.



HARMONY range: one solution for any kind of application

HARMONY air handling units are specially designed to cater all installation need. Its variable air flow ranges from 2,000 to 200,000 m³/h.

A comprehensive range of products together with a wide array of components represent the best guarantee for both traditional and special applications.

Quick Selection

AHU Model	Standard Unit Dimensions		Airflow (m ³ /h)			
	Height (H)	Width (W)	Face Velocity (m/s)			
	mm	mm	2.00	2.25	2.50	2.75
20 x 30	610	915	1769	1991	2212	2433
20 x 35	610	1,068	2186	2460	2733	3006
20 x 40	610	1,220	2606	2932	3258	3583
25 x 30	763	915	2359	2654	2949	3244
25 x 35	763	1,068	2915	3279	3644	4008
25 x 40	763	1,220	3475	3909	4343	4778
30 x 30	915	915	3098	3485	3872	4259
30 x 35	915	1,068	3828	4306	4784	5263
30 x 40	915	1,220	4562	5133	5703	6273
30 x 45	915	1,373	5292	5954	6615	7277
30 x 50	915	1,525	6027	6780	7534	8287
40 x 30	1220	915	4570	5141	5712	6283
40 x 40	1,220	1,220	6731	7572	8413	9255
40 x 45	1220	1,373	7807	8783	9759	10735
40 x 50	1,220	1,525	8891	10003	11114	12226
40 x 60	1220	1,830	11052	12434	13815	15197
40 x 70	1,220	2,135	13213	14865	16516	18168
50 x 30	1525	915	5898	6635	7372	8110
50 x 40	1,525	1,220	8687	9773	10859	11944
50 x 50	1525	1,525	11476	12910	14345	15779
50 x 60	1,525	1,830	14265	16048	17831	19614
50 x 70	1525	2,135	17054	19185	21317	23449
50 x 80	1,525	2,440	19842	22323	24803	27283
50 x 90	1525	2,745	22631	25460	28289	31118
60 x 40	1,830	1,220	10657	11989	13321	14653
60 x 50	1830	1,525	14349	16143	17936	19730
60 x 60	1,830	1,830	17836	20066	22296	24525
60 x 70	1830	2,135	21324	23989	26655	29320

Remarks:

1. Profile: P1 - 25mm; P2 - 50mm; P3 - 75mm. Largest model of P1 is 75×120. Smallest model of P3 is 40×40.
2. The unit base of 100mm is not included in the height in above table.
3. P1 : Height = (H) + 34mm + 100mm; Width = (W) + 34mm
P2&P3 : Height = (H) + 111mm + 100mm; Width = (W) + 111mm

HARMONY range: one solution for any kind of application

HARMONY air handling units are specially designed to cater all installation need. Its variable air flow ranges from 2,000 to 200,000 m³/h.

A comprehensive range of products together with a wide array of components represent the best guarantee for both traditional and special applications.

Quick Selection

60 x 80	1,830	2,440	24811	27912	31014	34115
60 x 90	1830	2,745	28298	31835	35373	38910
60 x 100	1,830	3,050	31785	35759	39732	43705
60 x 110	1830	3,355	35273	39682	44091	48500
70 x 50	2,135	1,525	17214	19365	21517	23669
70 x 60	2135	1,830	21397	24072	26746	29421
70 x 70	2,135	2,135	25580	28778	31975	35173
70 x 80	2135	2,440	29764	33484	37205	40925
70 x 90	2,135	2,745	33947	38190	42434	46677
70 x 100	2135	3,050	38130	42897	47663	52429
70 x 110	2,135	3,355	42314	47603	52892	58182
70 x 120	2135	3,660	46497	52309	58122	63934
70 x 130	2,135	3,965	49600	55800	62000	68200
70 x 140	2135	4,270	53713	60427	67141	73856
70 x 150	2,135	4,575	57826	65055	72283	79511
80 x 80	2440	2,440	33964	38210	42455	46701
80 x 90	2,440	2,745	38775	43622	48469	53316
80 x 100	2440	3,050	43587	49035	54484	59932
80 x 110	2,440	3,355	48398	54448	60498	66548
80 x 120	2440	3,660	53210	59861	66512	73163
80 x 130	2,440	3,965	58021	65274	72526	79779
80 x 140	2440	4,270	62833	70687	78541	86395
80 x 150	2,440	4,575	67644	76100	84555	93011
80 x 160	2440	4,880	72455	81512	90569	99626
90 x 100	2,745	3,050	49276	55436	61596	67755
90 x 110	2745	3,355	54716	61555	68395	75234
90 x 120	2,745	3,660	60155	67675	75194	82714
90 x 130	2745	3,965	65595	73794	81994	90193
90 x 140	2,745	4,270	71034	79914	88793	97672
90 x 150	2745	4,575	76474	86033	95592	105152
90 x 160	2,745	4,880	81913	92153	102392	112631

Remarks:

1. Profile: P1 - 25mm; P2 - 50mm; P3 - 75mm. Largest model of P1 is 75x120. Smallest model of P3 is 40x40.
2. The unit base of 100mm is not included in the height in above table.
3. P1 : Height = (H) + 34mm + 100mm; Width = (W) + 34mm
P2&P3 : Height = (H) + 111mm + 100mm; Width = (W) + 111mm

Performance Data (Cooling, Return Air)

MODEL	Airflow (m ³ /h)	4-row		6-row		8-row	
		Total Cooling Capacity (kW)	Water Pressure Drop (kPa)	Total Cooling Capacity (kW)	Water Pressure Drop (kPa)	Total Cooling Capacity (kW)	Water Pressure Drop (kPa)
20 x 30	2000	9.2	3.0	13.8	9.0	16.7	17.0
30 x 30	4000	21.2	8.0	29.0	21.0	33.9	38.0
30 x 40	6000	32.8	12.0	43.1	20.0	51.3	52.0
30 x 50	8000	40.8	6.0	56.7	17.0	66.7	29.0
30 x 60	10000	54.6	13.0	73.3	31.0	85.3	54.0
40 x 50	12500	62.4	7.0	86.8	19.0	102.6	33.0
50 x 50	15000	76.4	7.0	106.7	18.0	124.9	30.0
50 x 60	18000	99.5	13.0	133.2	30.0	154.7	52.0
50 x 70	22000	125.5	21.0	165.6	52.0	186.1	40.0
50 x 80	25000	147.8	32.0	182.7	24.0	215.9	58.0
60 x 80	30000	179.7	32.0	221.4	22.0	260.7	54.0
60 x 90	35000	212.3	46.0	261.7	34.0	293.3	25.0
60 x 100	40000	245.0	66.0	302.3	48.0	338.5	34.0
60 x 110	45000	245.3	12.0	343.0	64.0	384.1	47.0
70 x 110	50000	277.7	11.0	386.7	59.0	431.9	44.0
80 x 110	60000	330.2	11.0	460.6	62.0	515.3	46.0
90 x 110	70000	382.6	11.0	534.3	64.0	598.5	48.0
90 x 120	80000	441.7	16.0	610.3	88.0	684.6	66.0
90 x 140	90000	522.8	25.0	706.9	133.0	789.5	99.0
90 x 160	100000	578.8	19.0	761.8	45.0	877.5	76.0

Performance Data (Cooling, Fresh Air)

MODEL	Airflow (m ³ /h)	4-row		6-row		8-row	
		Total Cooling Capacity (kW)	Water Pressure Drop (kPa)	Total Cooling Capacity (kW)	Water Pressure Drop (kPa)	Total Cooling Capacity (kW)	Water Pressure Drop (kPa)
20 x 30	2000	23.6	4.0	31.9	11.0	36.7	18.0
30 x 30	4000	45.8	5.0	62.4	12.0	72.3	21.0
30 x 40	6000	75.3	14.0	98.0	35.0	111.7	59.0
30 x 50	8000	104.7	32.0	127.9	22.0	148.4	56.0
30 x 60	10000	118.4	7.0	163.7	41.0	181.9	30.0
40 x 50	12500	134.4	4.0	196.1	24.0	219.2	18.0
50 x 50	15000	165.0	5.0	239.8	24.0	266.7	17.0
50 x 60	18000	215.8	7.0	297.7	41.0	329.7	28.0
50 x 70	22000	272.6	13.0	356.6	28.0	407.3	48.0
50 x 80	25000	321.5	18.0	414.7	42.0	469.8	71.0
60 x 80	30000	390.8	17.0	501.7	41.0	567.6	68.0
60 x 90	35000	462.0	26.0	563.0	19.0	645.1	32.0
60 x 100	40000	533.6	38.0	650.0	27.0	742.0	46.0
60 x 110	45000	605.5	52.0	737.2	37.0	839.0	62.0
70 x 110	50000	686.1	50.0	831.1	36.0	942.2	59.0
80 x 110	60000	815.4	53.0	990.5	40.0	1125.0	64.0
90 x 110	70000	944.6	56.0	1149.0	44.0	1307.0	70.0
90 x 120	80000	1016.0	27.0	1313.0	59.0	1460.0	49.0
90 x 140	90000	1253.0	115.0	1518.0	88.0	1679.0	71.0
90 x 160	100000	1415.0	159.0	1721.0	123.0	1897.0	97.0

1. Return Air Condition : 27.0°C DB / 19.5°C WB. Fresh Air Condition : 35.0°C DB / 28.0°C WB.

2. Water Inlet / Outlet Temp. : 7.0°C / 12°C.

3. Coil is copper tube aluminum fin type of 10FPI. 8~14FPI is optional.

4. For more information, please consult with CLIMAVENETA local office.

Nomenclature

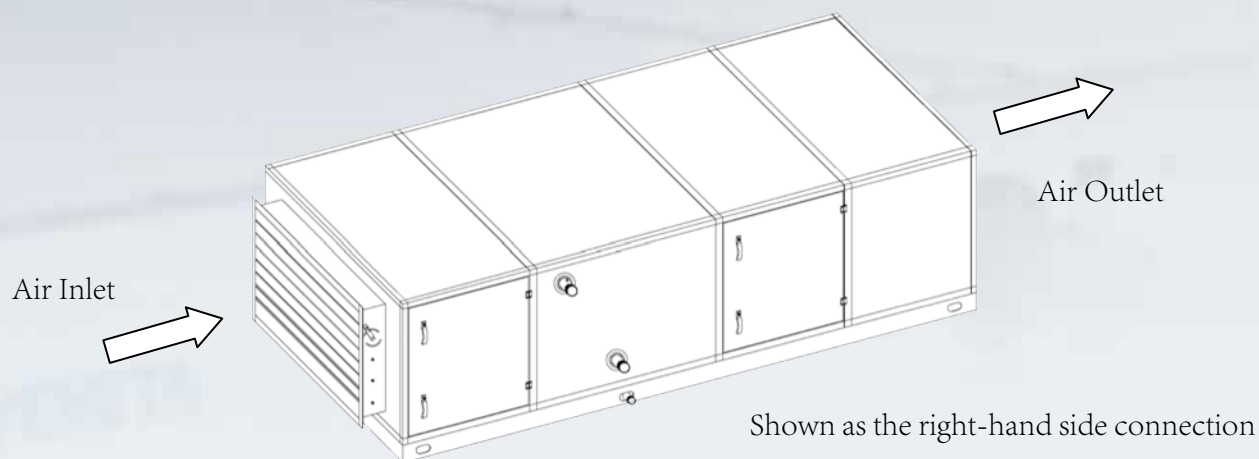
CADB 90×150

15 Module Width

9 Module Height

CAS : 25mm standard
CAD : 50mm standard
CADB : 50mm thermal-break
CATB : 75mm thermal-break

E.g. 75mm thermal-break profile with 7 Module Height and 11 Module Width.
Nomenclature : CATB70×110



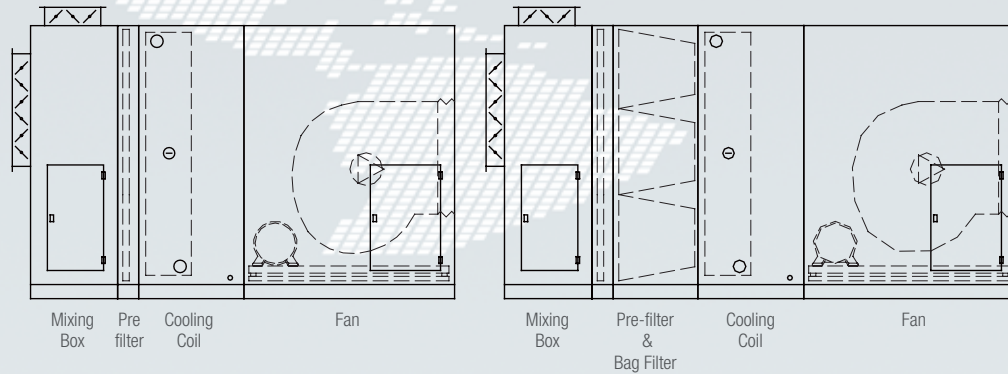
Connection type

The right-hand water connection is the cooling water coming from the right side while standing in front of the air-inlet side.
The left-hand water connection is water from the left side while standing in front of air-inlet side.

HARMONY Configuration

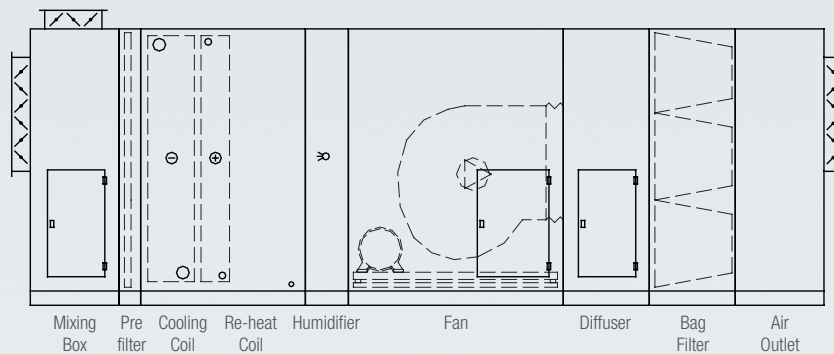
For commercial and residential application

The unit is equipped with pre-filter only or combine with bag filter together. Cooling coil's capacity is selected based on actual cooling load to deal with return air or fresh air. For this configuration, it can fulfill normal application which only control the air temperature.



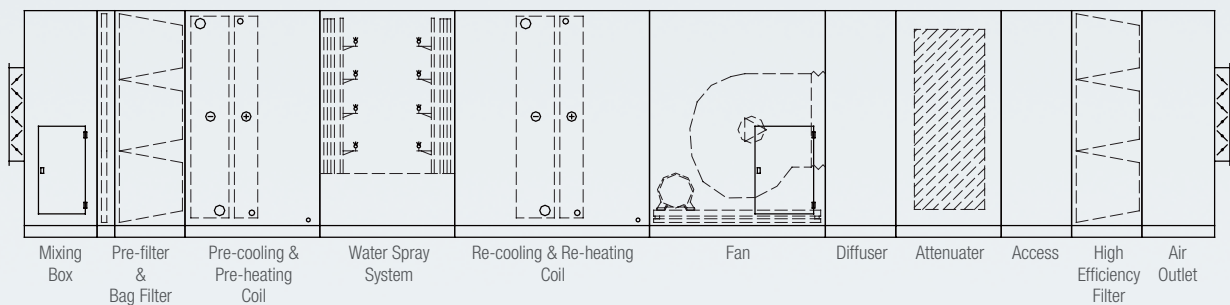
For normal cleanness level application

The pre-filter combined with bag filter, cooling coil, re-heat coil and humidifier are fixed in the HARMONY AHU, this application which need temperature and humidity control or cleanness control.



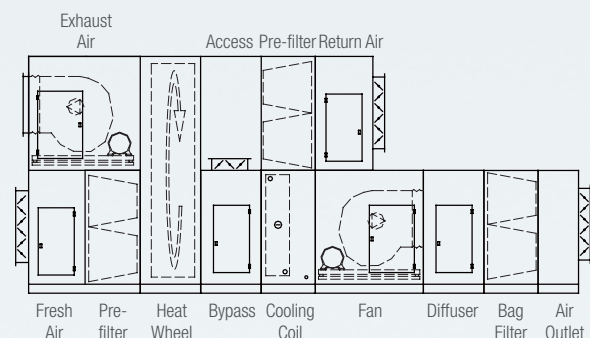
For high level cleanness control application

Installed with pre-filter, bag filter and high efficient filter, water spray system, multi coils as well as the attenuator; The water spray system can eliminate the chemical impurity(such as sulfur, nitride) and static electricity for electronic product in the fresh air, and it will decrease the cooling and humidification load in the subsequent air handling process for chiller; This configuration is special for high-level cleanness control or fresh air need to be totally treated application.



Energy saving application (with heat recovery kits)

The heat wheel or plate-type heat recovery equipment can recover the energy between fresh air and exhaust air to take use of the energy from the exhaust air for saving;



more than 1000 projects all over the world



BIG C SUPERMARKET

2011 Can Tho
(Viet Nam)

Cooling capacity:
1800 kW

Installed units:
2x FOCS, 16x HARMONY



International Hi-Tech Healthcare Park

2011, HCMC (Vietnam)

Cooling capacity:
8761kW;

Installed units:
4x CSRH, 37x HARMONY,
170x FCU



YKK Manufacture Factory

2012, Vietnam

Cooling capacity:
728 kW;

Installed units:
3x AQS, 1x CSRAT-Y, 4x HARMONY



VIRGIN

2012 Naples
(Italy)

Air flow:
64.000 m³/h

Installed units:
10 HARMONY



CAMERA DI COMMERCIO

MILANO
2013 Milan (Italy)

Application:
Office buildings

Installed units:
13 HARMONY units



ROSA BEACH HOTEL

2011 Monastir (Tunisia) Application:
Hotels and Resorts Cooling capacity:

600 kW

Thermal capacity:

700 kW

Installed units:

1x FOCS/B 2702, 4x HARMONY,

300x Fan Coil



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