

AIR HANDLING UNIT

› 1000 CFM to 50000 CFM

Introduction

A decorative graphic consisting of three overlapping, rounded rectangular shapes in white, red, and black, arranged diagonally.

Mecatech Industries introduces the modular Mecair Air Handling Unit, suitable for various applications: from small offices to large industrial settings, both hygienic and standard. Designed for high efficiency, these units are ideal for environments requiring clean air, such as hospitals and laboratories.

They feature high-quality imported components, including aluminum anodized profiling and AMCA-certified fans and coils that comply with AHRI-410 standards. With plug-and-play control systems for easy installation and our custom selection software for accurate performance data, Mecair Air Handling Units ensure optimal design and energy efficiency.



Facts about MECAIR AHU

- All Mecair AHU models come with AMCA performance certified fans. 100% Imported.
- AHU made with chilled water and DX Coil with matching air-cooled condensing units.
- AHU are made with 25mm, 50mm as standard and customized casing insulations.
- Mecair AHU have injected casing insulation having 42 kg/m³ density to make sure best sound as well as thermal insulation values in the market.
- Available in 15 different models.
- All AHU models come with Thermal Break Profiles standard.
- Mecair AHU casing are designed with 100% imported profiling and hardware. Handles air flows of 1000 - 50000 CFM or customized options are available (Optional).

Unmatched Features

- SS Inside skin for hygiene application
 - All types of Humidification
 - Wide Range of Plug Fans and VFD
 - Flat Pack option for site assembly
 - Heat recovery system
 - Wide selection of accessories
 - Double deck/ single deck
 - Steam/Heating Coils
 - Wide Range of Filtration arrangement
 - On site Installation
- 

MECAIR AIR HANDLING UNIT

Mecair Air Handling Units are designed to high engineering efficiency standards and are ideal where the requirement for clean, hygienic air is mandatory, such as in hospitals pharmaceuticals, laboratories, the food industry, electronic facilities, and clean room applications.

The AHU is constructed from high-strength extruded aluminum to a rigid frame. Its new thermal barrier feature includes three-leg fiber plastic corner pieces and 25 or 50 mm polyurethane (PU) insulation panels to prevent condensation. The new thermal break profile offers superior insulation and energy savings compared to the basic profile.

AHU, to optimize the best arrangement and performance for either chilled water system or DX system applications. Standard components can be selected and placed according to customer requirements.

Once the unit is defined, optional items and accessories can be selected, Mecair can produce high quality units which can provide excellent thermal efficiencies and to be airtight.

Besides, air handling unit is produced with flexible features to meet the indoor air quality, operating efficiency, sound level and insulation requirement for today's extensive commercial and demanding markets. A comfortable environment can enhance a human's quality of life. AHUs are available in all capacities to deliver from 1000 CFM to 50000 CFM (nominal air flow rate) against total static pressure up to 8.0 MG (2000Pa).







MECAIR AHU Selection Software

Mecair Pharma / Hospital Grade Packaged Air Conditioning Units are specially designed for the classified areas: e.g.

Pharmaceuticals, Operation Theaters, Hospitals & All Kind of Clean Room applications.

These units have 2 segments:

- Evaporator Side- Air Handling Unit
- Condensing Unit

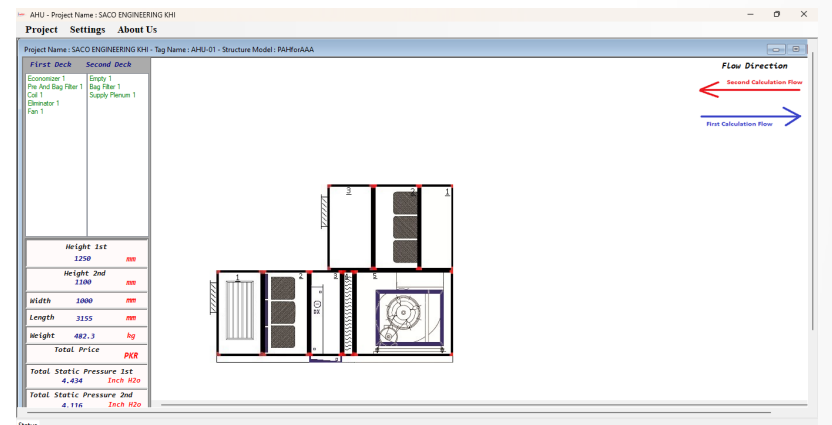
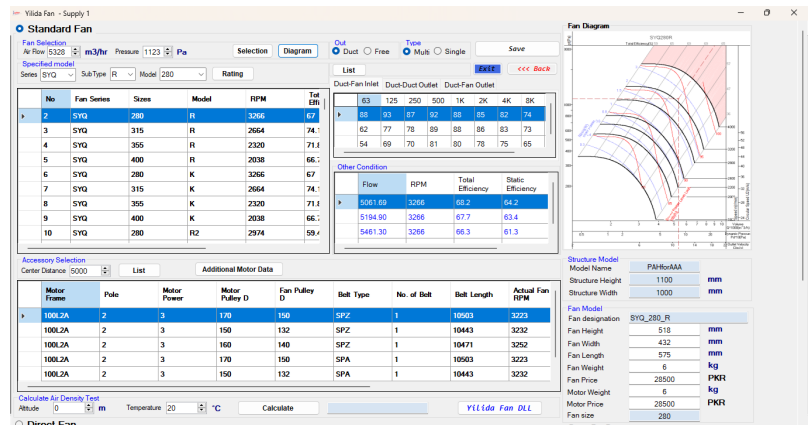
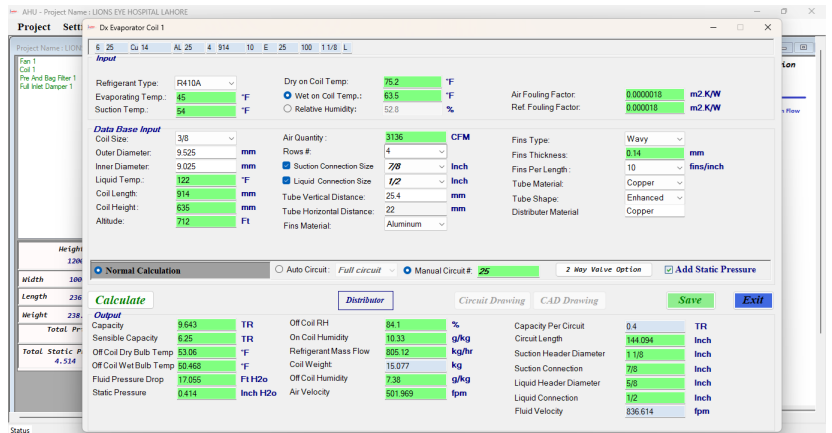
UNIQUE DESIGN & EFFICIENT WORKING

The design and efficiency of AHUs are critical to their performance in various applications such as commercial buildings, hospitals, and industrial facilities. AHUs are engineered to provide high air quality, temperature control, and energy efficiency. Modern AHUs are constructed with high-strength materials like extruded aluminum for a rigid frame (25mm & 50mm) and feature advanced thermal barrier technologies, such as polyurethane (PU) insulation panels, to prevent condensation and enhance insulation. The efficiency of AHUs is also maximized through precise airflow management, optimized fan and motor performance, and the capability to accommodate various filtration configurations, ensuring clean and hygienic delivery in specialized environments.

FEATURES THAT MAKES DIFFERENCE

Air Handling Unit cabinet design simulation/ performance calculation is done with AHU Designing Software in accordance with AHRI/ ASHRAE/EUROVENT Standards.





Cooling coils (DX/Chilled Water) are designed using state-of-the-art software. This advanced software allows designers to calculate performance accurately and select the best-performing coil for any specific parameters.

MECAIR Software Report

 WHERE EFFICIENCY MEETS COMFORT		TECHNICAL SPECIFICATION SHEET	
Project Date: 20/08/2024		Project No: 72	
Project: SAMI PHARMA (20-8)		Altitude: 0 Ft	
Ref: P-NO-011-06-2024		Tag Name: AHU-04-C	
		Application Type: Cooling	
		Revision Model: MA-C-4000-1	
Tag Name		Units Specifications	
Fan Qty: 1		AHU Deck: Double Deck (1 L R-2 R L)	
Air Flow: 2550 CFM		Construction: Horizontal	
External Static Pressure: 4.25 Inch H2O		Accessories: In Door	
Max. Allowable Coil Face Velocity: 500 fpm		U-Channel Common Base: Floor Base Frame	
Unit Quantity: 1		Frame Material: Al. Frame (Thermal Break)	
Currency: United States Dollar (USD)		Model: MA-C-4000-1	
Floor, Side and Top Panels Construction: 50		Mounted: Flat Mounted	
Insulation Type: Polyurethane - 40 kg/m3		Access: Door	
Panels Type: Double Skin		Door Type: Hinged	
		AHU Type: Standard	
		Door Location (F.R.A.): Right	
Inner Skin Material: Stainless Steel Sheet 1 mm thickness		Break out sound power (db)	
Panels Paint Type: Not Painted		A 125 Hz 250 Hz 350 Hz 1 kHz 2 kHz 4 kHz 8 kHz	
Panels Paint Color: White		0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	
Outer Skin Material: Galvanized Steel Sheet 1 mm thickness		Model Box Mechanical Characteristics (EN1886)	
Panels Paint Type: Electrostatic Paint		Coiling Strength: Coiling Air Leakage: Thermal Bridging: Thermal Resistance (W/m2K):	
Panels Paint Color: White			
Screws, Nuts And Bolts: Stainless Steel 316L			
Vibration Isolators: Rubber			
Base Material: Galvanized Steel		Notes:	
Base Weight: 120 kg			
Base Height: 150 mm			
Total Height: 960 / 800 mm			
Total Width: 1200 mm			
Total Length: 3630 mm			
Total Weight: 798.4 kg			
Total St. Pressure: 5.967 / 5.618 Inch H2O			
Total Price:			
First Air Flow Data			

Version: 2.3.0.0 2024

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Project: SAMI PHARMA (20-8)		Altitude: 0 Ft	
Ref: P-NO-011-06-2024		Tag Name: AHU-04-C	
		Application Type: Cooling	
		Revision Model: MA-C-4000-1	
Mixing Box Advance (Selection)			
Return			
Flow Rate			
1130 CFM			
Outside			
Flow Rate			
1420 CFM			
Exhaust Flow Rate			
0 CFM			
Mixed Dry Temp. Mixed Wet Temp. Mixed Air Flow Rate Mixed Air RH			
91.5 °F 81.9 °F 2550 CFM 66.7 %			
Fresh Air DamperSpeed Return Air DamperSpeed Exhaust DamperSpeed			
716.535 fpm 1013.78 fpm - fpm			
Pre And Bag Filter			
Pre Filter (First Size) Second Size			
Number of Stages			
Brand			
Model			
Flat Filter Size			
Second Quantity			
Pre Filter Size			
Air Velocity			
Quantity			
First Stage Filter			
Filter Thickness			
Filter Media			
Filter Media Type			
Filter Frame			
Filter Class			
Bag Filter			
Filter Frame			
Filter Class			
Filter Efficiency %			
First Size			
Brand			
Model			
Bag Filter Size			
Quantity			
Pre-Bag Filter Length			
Pre-Bag Filter Weight			
Air Velocity			
594 x 594 x 300			
458 mm 10 kg 289.685 fpm			
Second Size			
Brand			
Model			
Bag Filter Size			
Second Quantity			
Standard			
Standard			
289 x 594 x 300			
1			

Version: 2.3.0.0 2024

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Project Date: 20/08/2024		Project No: 72	
Project: SAMI PHARMA (20-8)		Altitude: 0 Ft	
Ref: P-NO-011-06-2024		Tag Name: AHU-04-C	
		Application Type: Cooling	
		Revision Model: MA-C-4000-1	
Supply Fan			
Fan Quantity			
Fan Application			
Fan Type			
1 Supply Plug			
Fan Blade			
Fan Outlet			
Fan Antivibration			
Fan Section Length			
Airfoil Free Rubber 712 mm			
Fan Section (AMCA CERTIFIED)			
Fan Data:			
Input Flow Rate			
Input Static Pressure			
Duct			
Out			
Type			
Fan Model			
Fan Width			
Fan Length			
Fan Weight			
Fan Series			
Fan Sizes			
Fan RPM			
Total Efficiency			
Static Efficiency			
Shaft Power			
Shaft Quantity			
Sound Data Duct - Fan Inlet			
Level 63			
Level 125			
Level 250			
Level 500			
Level 1000			
Level 2000			
Level 4000			
Level 8000			
Other Condition			
Flow			
RPM			
Total Efficiency			
Static Efficiency			
Shaft Power			

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Ref: P-NO-011-06-2024		Tag Name: AHU-04-C	
		Application Type: Cooling	
		Revision Model: MA-C-4000-1	
Chilled Water			
Input			
Fluid Type			
Tube Size			
Outer Diameter			
Inner Diameter			
On Coil Dry Bulb Temp.			
On Coil Wet Bulb Temp.			
Water in Temp.			
Water out Temp.			
Altitude			
Air Flow Rate			
Manual Circuit #			
Row #			
Output			
Capacity			
Sensible Capacity			
Off Coil Dry Bulb Temp			
Off Coil Wet Bulb Temp			
Water Pressure Drop			
Static Pressure			
Off Coil Relative Humidity			
On Coil Humidity			
Off Coil Humidity			
Difference Dehumidification			
Air Flow Rate			
Coil Weight			
Coil Length			
Coil Height			
Tube Vertical Distance			
Tube Horizontal Distance			
Tube Material			
Fins Type			
Fins Thickness			
Fins Per Length			
Tube Material			
Tube Shape			
Rifled Tube Affect Percentage			
Change Connection Size			
Water Out Temp.			
Water Flow Rate			
Circuit Length			
Water Volume Across Coil			
Coil Header			
Coil Connection			
Header Direction			
Fluid Velocity			
Air Velocity			
Capacity Per Circuit			
8 30 Cu 15 AL 18 6 965 10 CW 12 108 2 1/8 L			
Eliminator			
Type			
Length			
Weight			
PSG 10 150 mm 15 kg			
Coil			
Coil Type			
Coil Frame			
Coil Casing			
Coil Tube and Fins			
Hot Water			
Galvanized			
Galvanized			
Copper Tube - Aluminum Fins			
Coil Drain And Connection Side (F.R.A)			
Drain Pan Material			
Coil Section Length			
Left			
400 mm			

Version: 2.3.0.0 2024

AIR HANDLING UNIT

(1000 CFM – 50000CFM)



FIN PRESS MACHINE





COPPER COIL PROCESSING MACHINE



PROFILE TYPE
50 mm / T82 / T2

FILTER SECTION

FILTER SECTION

CHILLED WATER
AIR HANDLING UNIT
MECAIR
MADE IN PAKISTAN

ACCESS DOOR

MECAIR
MADE IN PAKISTAN

FAN SECTION

COIL SECTION

FILTER SECTION

Fresh Air Damper

MECAIR
MADE IN PAKISTAN

ACCESS DOOR

Chilled Water OUT

Chilled Water IN

Drain Connection

Components & Features

Imported Aluminum Profile Framed structure with Thermal Break

Lowest Body Thermal Conductivity Co-efficient in Market

Coils design, Manufactured & Tested as per AHRI 410 Standard

Casing/ Body Mechanical Strength as per EN-1886 Standard

100% Imported AMCA Certified Fans Forward/ Backward Plug Type

Lowest Casing Leakage

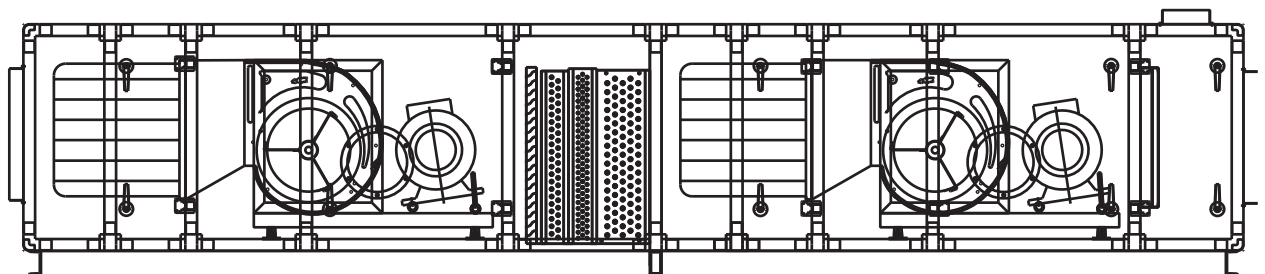
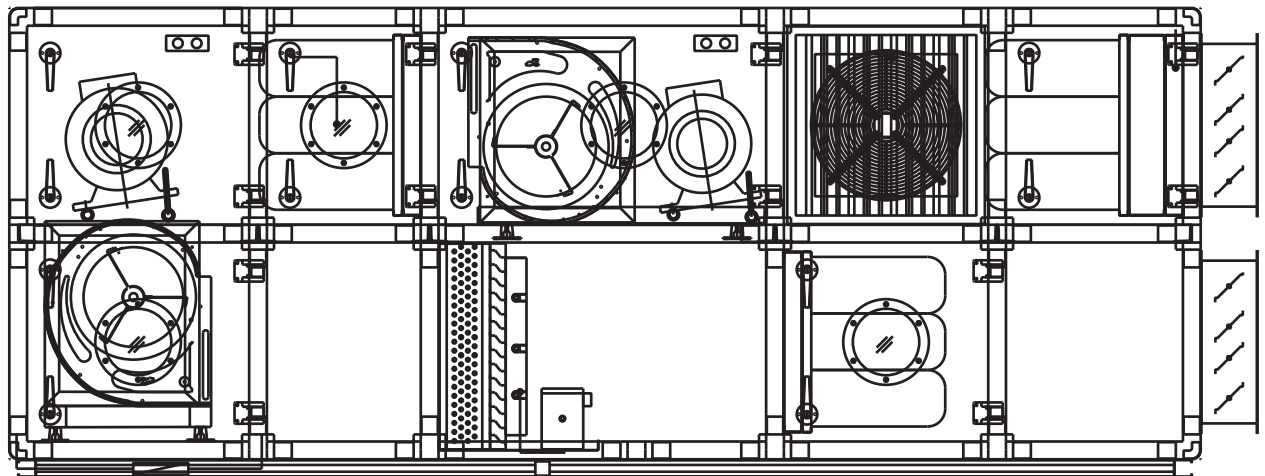
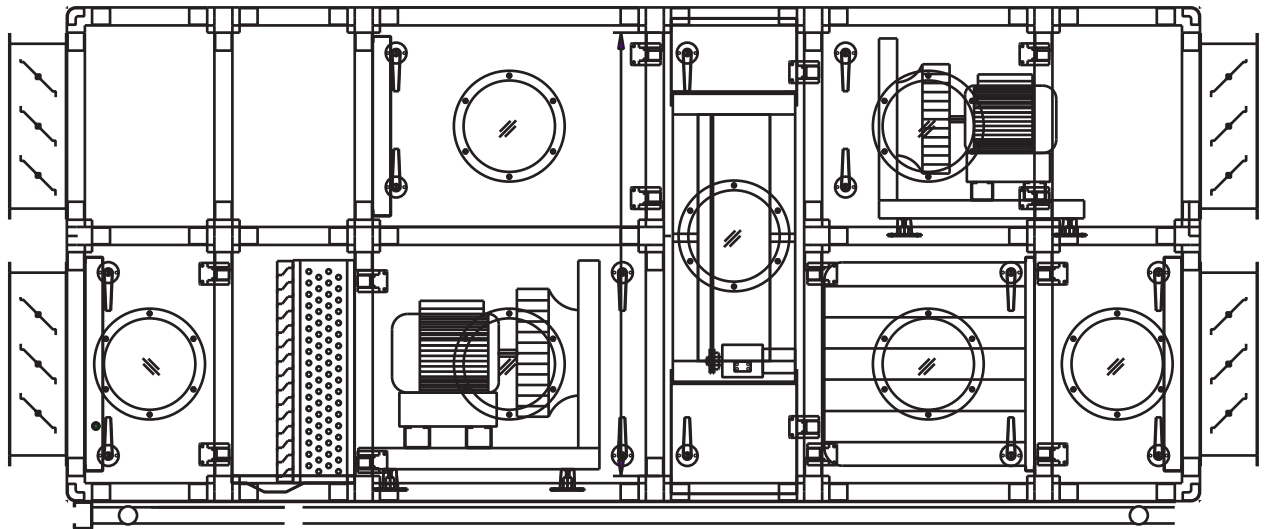
High Quality B2 Class Fire Resistant PU Insulation

Rain Protection Low Noise Low Vibrations

Modular Design for Site Installation

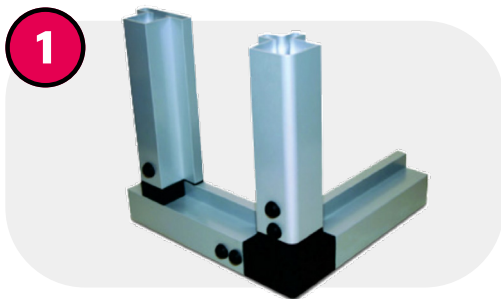
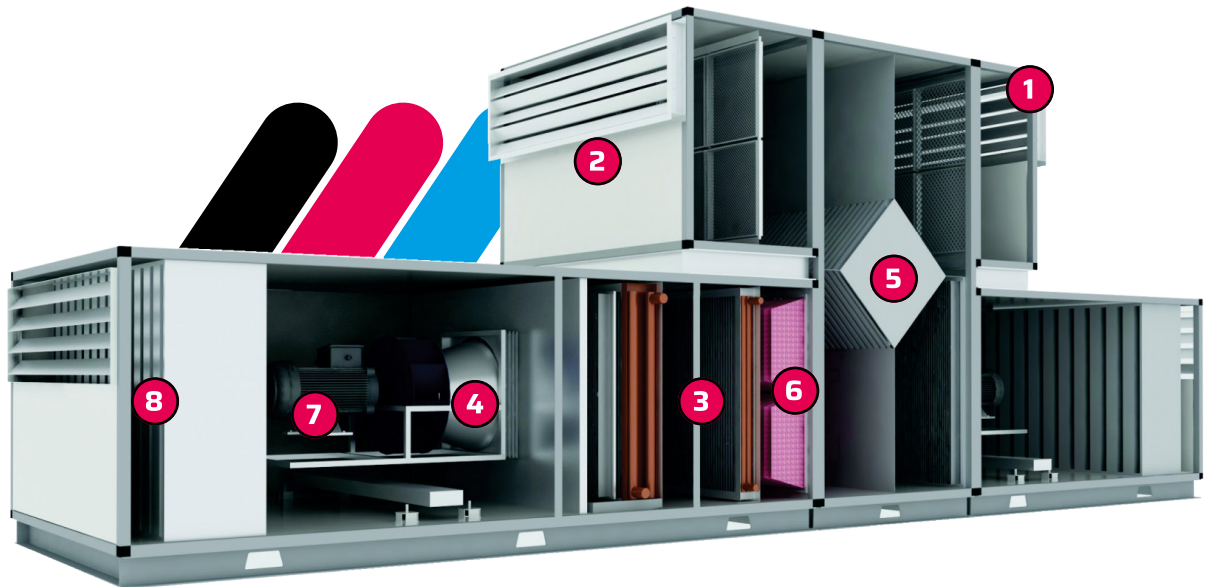


Different Configurations

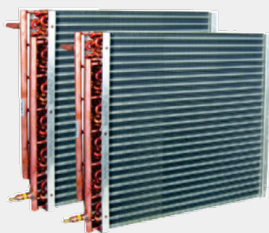


Structural Features & Components

AHUs have a closed profile and airtight structure and are manufactured from galvanized sheet (GI) material or stainless steel (SS) material (standard for hygienic) with 140 gr/m² zinc coating, available in different thicknesses up to 1.5 mm. The units are manufactured in accordance with EN 10346 and EN 10143 standards against hard atmospheric conditions with alternative options for indoor and outdoor operation environments. Depending on demand, 80 micron powder coating or 130 micron PVC coating options provide a unique UV protection.



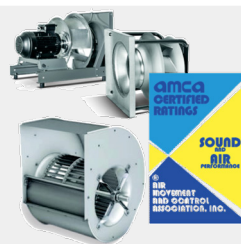
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Heating & Cooling Coils

As per Eurovent and AHRI Standards, our in-house manufactured coils offer diverse tube-fin combinations and coatings. The fin press and copper processing machines ensure precision and superior quality in each coil.

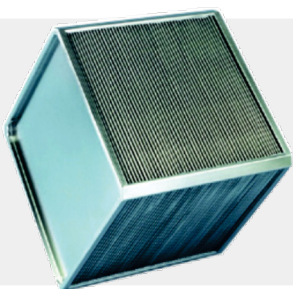
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Fans (AMCA Certified)

High efficient fans are compliant in accordance with AMCA performance and AMCA sound ratings. With a wide set of options, the fans can be belt driven, plug or EC motor fan. The motors are self-cooled TEFC type.

5



Heat Recovery

High-efficiency heat recovery systems with low pressure drops, compliant with Eco Design directives. Includes air-to-air and water-to-air systems for air handling units.

6



Filters

Coarse (G class), fine (M and F class), EPA, HEPA, and ULPA filters are available per EN and ISO standards, based on project requirements.

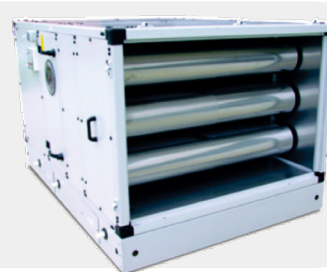
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Motors

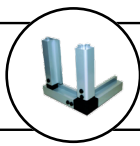
High efficient IE-2 or IE-3 motors according to performance criteria mentioned in IEC. IP 55 protection, class F insulation and class B temperature rise fan motors.

8



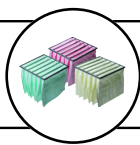
Sound Attenuator

Our in-house manufactured double-skin attenuator features high-density glass wool or mineral wool-filled splitters. The aerodynamic structure, with its special design, offers maximum sound absorption values with minimal pressure losses.



Panel / Profile / Frame

Air handling units provide superior thermal and mechanical properties with panel options suitable for all climatic conditions. High UV protected PVC coated (optional) sheet is resistant to tough and corrosive conditions. Polyurethane, mineral wool, rock wool and glass wool Insulations are available. Depending on the application, from 52 up to 100 m³/ kg (rock wool) options is available, providing energy savings with a low heat transfer coefficient according to DIN 4108 and A1 class according to EN 13501 norms



Air Filters

Depending on the application and in accordance with the standard EN 779:2012 and the new standard ISO 16890 coarse filters (Class G-2/3/4 synthetic or metal) and fine filters (bag or Mini pleated Class M-5 /M-6 and Class F-7/8/9) are available. For more precise filtering, EPA, HEPA and ULPA filters are available upon request. These filters are manufactured in accordance to EN 1822:2009 standards requirements.



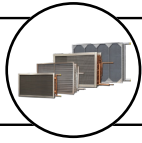
Fans

A wide range of fan options is available, including plug fans and belt driven forward or backward fans. The fans are statically and dynamically balanced according to ISO 1940 standards, are in accordance with performance criteria AMCA 210 and sound criteria mentioned in AMCA 301 standards. The pulleys used conform to DIN 2211 norms. The belts providing power transmission between the motor and the fan pulleys are in accordance with DIN 7753/1. Optional adjustable belt pulley options are available.



Motors

380-415 Volts /3 pH /50 Hz grid voltage motors that are protected internally against overheating. The motors are mounted on rubber or spring vibration isolators and adjustable rails to reduce vibration to the minimum. Necessary space for easy maintenance and intervention is automatically included. A stand-by motor option (manual switching) is possible.



Heating & Cooling Coils

Our in-house manufactured copper tube aluminum finned heat transfer coils are meticulously designed, arranged, and fixed to deliver maximum performance for Chilled Water and DX (Refrigerant) cooling media. Utilizing a state-of-the-art fin press machine and copper coil manufacturing setup, we ensure unmatched precision and quality. These coils are designed and selected using advanced computer programs to ensure precise capacity and parameter alignment.

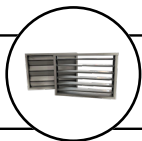
All coils are tested and manufactured in compliance with AHRI Standard 410. Testing is conducted at 300 PSI with nitrogen pressure under water to ensure reliability. Coils are crafted using seamless copper tubes with diameters of 3/8", 1/2", and 5/8". Pre-coated, weather-protected aluminum fins with a thickness of 0.14 mm to 0.2 mm are used, offering durability and efficiency.

The coils are available with 10 to 14 Fins Per Inch (FPI), suitable for applications such as cooling, heating, and dehumidification. For convenience, the coils are designed for easy cleaning and removable replacements. Customized coil options are available to meet specific parameter requirements. High-static AHUs are equipped with moisture eliminators, while SS drain pans or standard sloped drain trays are available as options.



Inspection Door

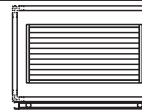
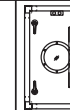
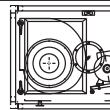
Inspection doors of adequate size are provided in each section, equipped with high-quality, ergonomically designed handles for ease of use. The framework features an airtight, elegant, and sturdy design, constructed from extruded aluminum hollow profiles with a polyamide thermal break. The corners and spacers are made of glass-filled nylon, ensuring



Volume Control Dampers(VCDs)

All AHU models come standard with low leakage, opposite blade gear operated aluminum dampers. The VCD profile, imported for precision purposes, features an embedded gasket. The damper sizes are optimized using software to ensure optimum pressure drop. Additionally, the rust-free gear mechanism is designed to be operable manually or with an actuated motor.

Section Length / Dimensions (mm)

AHU Models	Common Length			HEPA	Fan	Coil	FF	F-6 / F-9	Plenums			Mixing	
													
	W	H	Base	L	L	L	L	L	L1	L2	L3	L	
MA-2000	1016	940	101	440	1124	450	343	685	508	610	762	440	
MA-3000	1321	940	101									553	813
MA-4000	1371	1016	101										
MA-5000	1473	1118	101										
MA-6000	1676	1143	153										
MA-7000	1880	1270	153										
MA-8000	1880	1270	153										
MA-9000	2134	1321	153										
MA-10000	2134	1473	153										
MA-11000	2286	1473	153										
MA-12000	2387	1473	153										
MA-14000	2693	1600	153										
MA-16000					686								
MA-18000	2693	1727	153										
MA-20000													
MA-22000													
MA-24000	3302	1981	153			2108						553	
MA-26000													
MA-28000													
MA-30000	3302	2134	153			2235							
MA-32000													
MA-34000													
MA-36000	3658	2134	153		2388	813							
MA-38000	3658	2261	153		2591								
MA-40000	3658	2388	203		2921								
MA-42000	3912	2388	203										
MA-44000													
MA-46000													
MA-48000	4013	2388	203		3048	915							
MA-50000	4166	2388	203										
MA-50000	4318	2591	203										

- The length of each separate section is provided.
- For units SKDs AND CBUs frames with more than one section, please contact our factory.
- Dimensions are subject to change without notice for future improvements.



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