AHU

Non-residential Ventilation Unit for high air flow rates

Product	AHU
Application	Industrial and commercial applications

STRUCTURAL CHARACTERISTICS

The modular air handling units of the AHU series are available for variable flow rates from 1,000 to 100,000 m3/h. These units have been designed to facilitate the work of those who will subsequently carry out installation and maintenance.

All units are equipped with multiple openings that facilitate inspectability. The structure rests on appropriate support feet and is composed of an aluminum profile frame and infill panels made of galvanized sheet metal on both the external and internal sides. For special applications, panels in different materials are available, such as pre-painted, plastic-coated, aluminum, stainless steel and perforated sheet metal in all possible combinations. The special sandwich structure and the high density of the polyurethane foam or rock wool used minimize vibration and resonance phenomena, as well as preventing heat transmission to the outside.

AHU MODULES

FAN MODULE

The fans are selected based on the required application and the system characteristics in terms of required flow rates and pressure, with forward or backward curved blades, belt-driven with AC motor or directly coupled Plug Fan type with high-efficiency EC Brushless motor.

FILTER MODULES

Use of high-efficiency filters. Their combination within the filter section is essential to ensure optimal hygienic comfort conditions indoors. HEPA filters, electrostatic filters and activated carbon deodorizing filters are available.

HEAT EXCHANGE MODULES

Use of coils consisting of copper tubes and continuous pack aluminum fins. The geometry may differ depending on whether the operation is with low-pressure hot water, chilled water, or direct expansion refrigerant.

HUMIDIFICATION MODULE

Cellulose pack humidification, impregnated with phenolic resins. Steam humidification with stainless steel distributor pipe with orifices. Single and double bank nozzle humidification with once-through water or external circulation pump. Atomized humidification with water jet fragmentation down to 5-8 microns.

SILENCER MODULE

Significantly reduces noise emissions produced by air handling units. The baffles are made of mineral wool complete with an anti-erosion black fiberglass veil coating.

HEAT RECOVERY MODULE

Static cross-flow heat recovery units, made of aluminium with very high efficiency (exceeding 80%).

MACHINE SELECTION

Project setting

Before proceeding with the selection of the unit, it is advisable to define in detail the composition of the AHU based on the treatments to which the air to be introduced into the environment is to be subjected. The data required for sizing the machine are as follows: the air flow rate and the useful static pressure. These data essentially determine the type of fans to be used. The treatments to which the air must be subjected, with consequent definition of the characteristics of the heating, cooling and possibly post-heating coils, as well as the type of humidification and filtration necessary to give the air the required characteristics. To better visualize the design, it may be convenient to both plot the air transformations on a psychrometric chart and draw the unit in detail with its sections.

Size selection

The selection of the unit size is made based on the air flow rate required by the system and its velocity through the air handling unit. Regarding this latter parameter, it should be noted that as velocity increases, the size of the selectable unit decreases, with a corresponding inevitable increase in the sound pressure level produced by the machine itself. It is therefore necessary to define the right compromise between technical and economic factors, while keeping in mind the type of application being considered. In general, we recommend considering air velocity values between 2.2 and 2.8 m/s.

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CONFIGURATION EXAMPLES

FIGURE 1

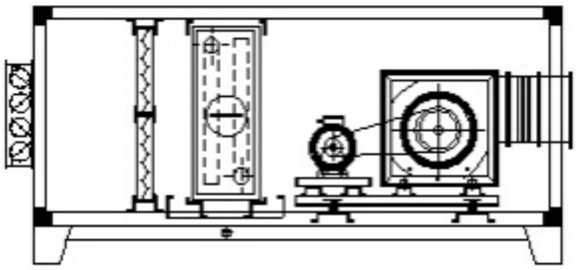

FIGURE 1
- External air intake
- Pleated filter
- Cooling coil
- Fan head

FIGURE 2

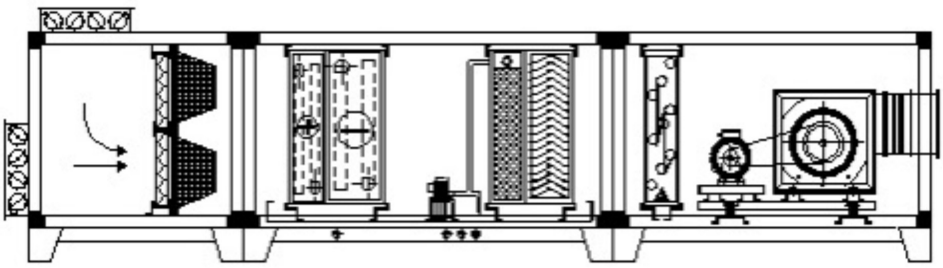

FIGURE 2
- Mixing chamber with 2 dampers
- Pleated filter
- Rigid bag filter
- Pre-heating coil
- Cooling coil
- Recirculating pump pack humidification
- Droplet separator
- Electric post-heating coil
- Fan head

FIGURE 3

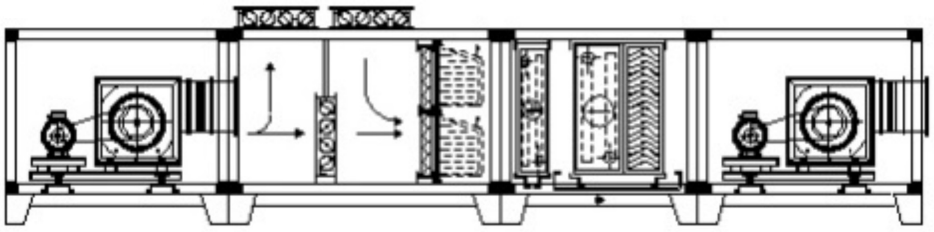

FIGURE 3
- Fan head
- Mixing chamber with 3 dampers
- Pleated filter
- Flexible bag filter
- Pre-heating coil
- Cooling coil
- Droplet separator
- Fan head

FIGURE 4

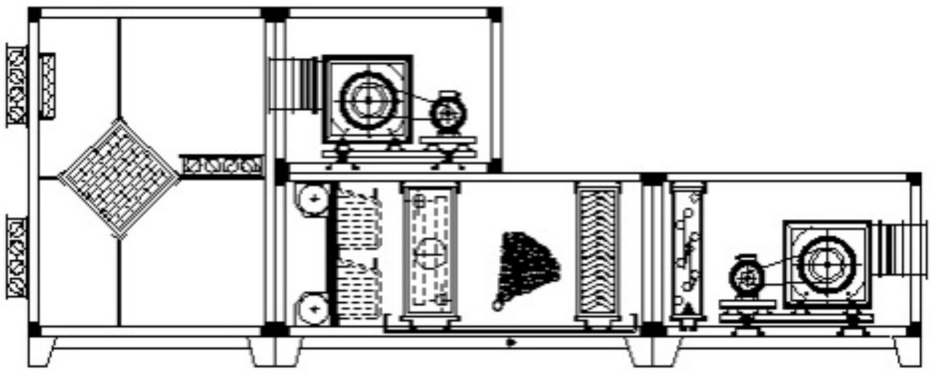

FIGURE 4
- Fan head
- Static cross-flow heat recovery unit with exhaust intake and air recirculation dampers
- Roll filter
- Flexible bag filter
- Cooling coil
- Steam distribution section
- Droplet separator
- Electric post-heating coil
- Fan head

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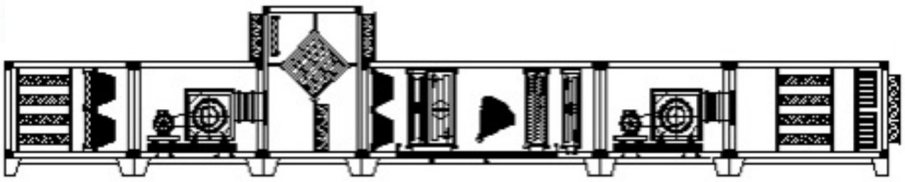
FIGURE 5



FIGURE

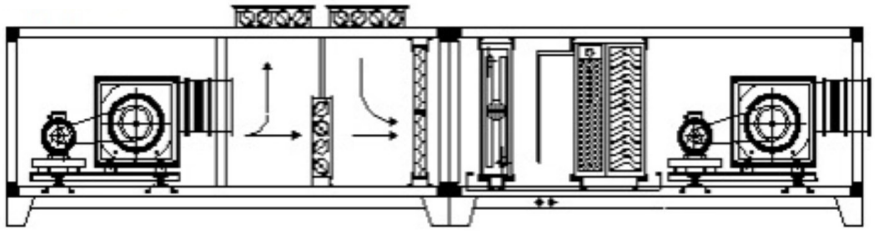


FIGURE 7

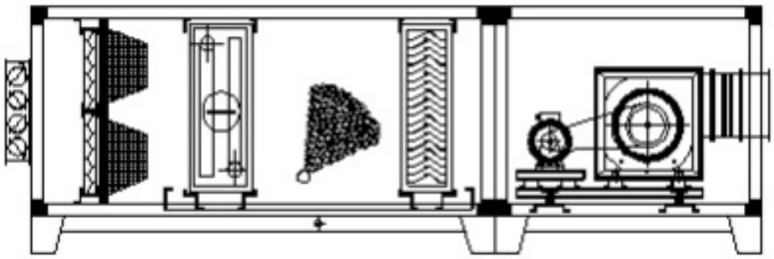


FIGURE 8

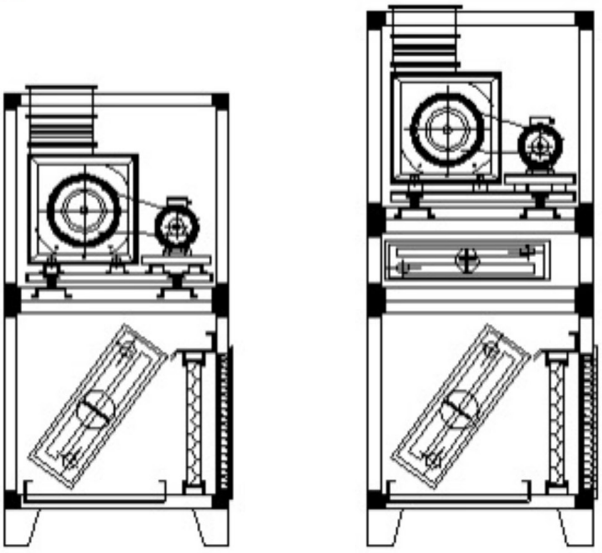


FIGURE 5
- Baffle silencer
- Pleated filter
- Rigid bag filter
- Fan head
- Cross-flow heat recovery unit with exhaust outlet and air recirculation
- Bag filter
- Pre-heating coil
- Cooling coil
- Steam distribution section
- Droplet separator
- Post-heating coil
- Fan head
- Silencer
- Absolute filter
- Damper

FIGURE 6
- Fan head
- Mixing chamber with 3 dampers
- Pleated filter
- Pre-heating coil
- Once-through pack humidification
- Droplet separator
- Fan head

FIGURE 7
- External air intake with damper
- Pleated filter
- Rigid bag filter
- Cooling coil
- Steam distribution section
- Droplet separator
- Fan head

FIGURE 8
- Grille with mesh
- Pleated filter
- Cooling coil
- Heating coil (*)
- Fan head

(*) optional