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Air Handling Unit Hygienic

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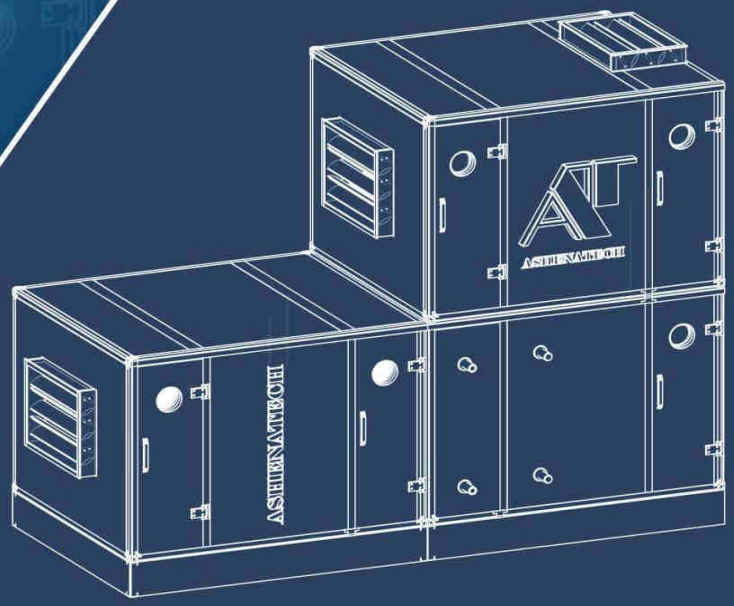

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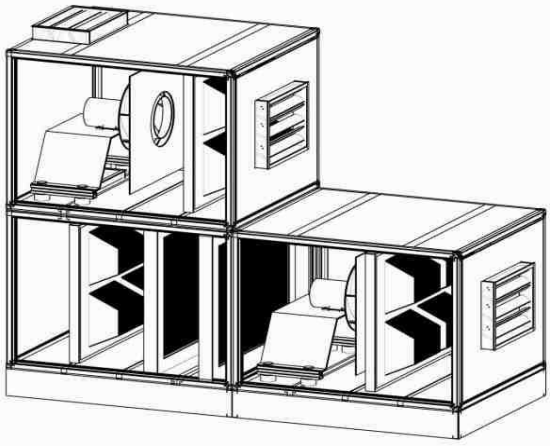
CLEAN ROOM EQUIPMENT Ltd.

Hygienic AHU

Air Handling Unit Hygienic

Technical Specifications



The hygienic Air Handling Unit (AHU) is highly similar to the ordinary Air Handler in terms of structure, but extremely different in terms of efficiency so that it has potential for cleaning of air up to ۹۹,۹۹٪ in terms of pollution type.
This type of AHUs are utilized in various industries e.g. nosocomial, laboratory and electronic etc. Different parts of this type of AHU are almost similar to ordinary Air Handlers by different from these types in that filtration is done in these AHUs at three phases.
Benefitting from several years of experiences in Clean Room Industry as well as by utilizing from the latest technology of manufacturing of these devices, ASHNATECH Company has designed and manufactured Hygienic Air Handling Units (AHUs).
Employing the updated world knowledge, ASHNATECH Company is ready to present types of hygienic AHUs proportional to requirements for any project in various designs, dimensions and capacities.

The chassis of AHUs is made of metallic foil (٥mm) coated with epoxy resin color (٦٠ microns). The main framework of AHUs is built using thermal break aluminum profiles which have many advantages in terms of weight and sealing versus other materials.

External structure

► The panels of AHU's body are made of double-laminar form with ٤٠mm diameter. The external wall is composed of galvanized sheet coated by furnace color (٥٠-٧٠ microns). All doors include checkup opening. The lock and latch used in these Air Handling Units (AHUs) are made of metallic type with high resistance to corrosion, impact and adverse climatic conditions.

Internal structure

► The stainless steel sheets (٣٠٤-٣١٦) have been utilized for internal wall. The internal surfaces are free of any outgrowth and hole in order to prevent from accumulation of contamination. The corners and edges also include curved beams. The fissures and seams inside have been totally sealed by antibacterial silicon materials.

Sealing

► The Depending on request of customer, AHUs' panels are sealed with mineral wool and or polyurethane injection foam. These materials possess anti-fire property and especially affect in sealing against sound (noise) and heat.

Engine & Fan

ASHNATECH Hygienic Air Handling Units (AHUs) utilize Siemens electromotor and plate fans. This type of fan has high precision with respect to efficiency and designing requirements and special design of this fan causes to be utilized more in HVAC industry. The general and acoustic efficiency of this device has been noticeably improved and geometric form of new blade with oblique edge has affected positively aerodynamic flow in this apparatus. Likewise, whereas the blades have been openly designed, the favorable pressure is easily supplied and the minimum turbulent flow is created in AHU. The ease of installation, maintenance and low-noise performance are assumed as other advantages of this type of fan.

Damper

Dampers utilized in ASHNATECH Hygienic Air Handling Units (AHUs) include two types i.e. manual and motorized. Damper engine is responsible for changing state of AHU damper. One of the main duties for which engine of dampers are responsible is the optimization of energy consumption and control of volume of air flow inside AHUs. For example, engine o dampers comprises of a return spring that is mounted on damper for input air flow so that the damper is closed as electric power is shut down and to prevent from entry of heat in summer and coldness in winter. The presence of engine of dampers is totally necessary in AHUs with potential for mixture of returned and fresh air and under various conditions with high precision and it regulates r\air mixing ratio. The inlet is totally closed if fire takes place in AHUs connected to central management network and the return-damper becomes open completely.

Hygienic AHU with cold-water coil

With respect to providing favorable air temperature and humidity and also given the type of use of device and geographical conditions of installation place for AHU device, heating and or cooling coil systems and or both systems will be prepared in Air Handling Unit.

Hygienic AHU with DX coil

Under the conditions we may be exposed to the limited space and there is no necessary space for HVAC system, we may use a condensing unit including an air compressor and condenser and it can be installed on space of roof and ore beside the building and inject directly cooling material into cooling AHU coil.
This type of AHU is so-called DX coil. This type of AHU may be followed by lower final costs to the system and cost-effectiveness for the buyer with respect to lack of need to mechanical housing and chiller system and circulator electro-pump as well as cooling tower system and other needed utilities dependent on the aforesaid systems.

FILTERATION

The filter is the prime section of Air Handling Unit (AHU) that always absorbs particles and dust and haze and prevents from entry of external objects into the AHU system so it causes clean and pure air to enter AHU.
G٤ standard filters are used for entry of air to the device and then F٧ standard filters are utilized. A HEPA filter platform is also installed after fan at air inlet. The standard hygienic AHUs may provide static pressure approximately up to ١٥٠٠Pa.

AHU Controlling System

Temperature Control System

The output temperature is measured by installation of a sensor at the air outlet and connection of it to a controller in AHU controlling systems and the controller opens or closes AHU valves at certain levels with respect to the determined air temperature. Likewise, the feedback of changes in input temperature to the air of room is visible by connecting room thermometer to the controller.

AHU Function Timetable System

The controlling indicator designated for AHU is programmable for turning off AHUs during vacation hours for operation of the system. During these hours, controllers close air damper as well as flow path toward AHU coils in order to prevent from entry of outside air into the system upon turn-off time and also it saves in energy consumption by closing of input water to the coil.

Valves Control System

Two-way or triple valves controls rate of input discharge to AUH coils depending on output temperature versus air. This process is analyzed inside controller.

Open Air Control System

In order to reduce energy consumption and or execution of designing requirements, the open air is mixed with returned air flow at certain ratio. This task is done by engine of dampers.

Anti-freeze Protection System

Siemens anti-freeze sensor is installed to prevent from freezing and breaking AHU coils and connected to controlling system. At the times when temperature of passing air flow over this coil reaches to this temperature (at temperature ٤-٦°C), controller is notified and turn off the AHU. After shutdown of engine, controller closes input dampers to AHU and opens controlling hot water circulation perfectly.



Pressure Difference Sensor

The operational lifetime of filter is measured with respect to pressure loss of air flow of the system in AHU system that is connected to a barometer and accessorial equipment to the controlling system and produces the necessary alarm and it indicates dirty filter through which air could not pass. The pressure difference sensors are utilized in order to control level of blocking AHU filters so that to announce the user upon blockage of filter to replace the filter.

Connection to Building Management Smart (BMS) Network

All systems introduced above, are connected to main controlling page of AHU and controlling processes are done in them. If there is Building Management Smart (BMS) network, AHU is connected to this network and enables user to control various building system by integrated process.

Repairs and Maintenance

Filter Replacement

With respect to main use of hygienic AHU that is for maximum air filtration, replacement of filter is considered as the most important issue in maintenance of AHU. Certain measures have been taken to standard and of course easy replacement of filters in AHUs manufactured by this company.
The designated outlets beside AHU enable the user to replace filters on various platforms.

Periodic Services

Similar to other needed devices, AHUs need to checkup and periodic services. This company has designated necessary efforts for this purpose. For example, elements of AHU have been installed in such a way that they are placed within suitable distance from each other and thereby it will be very easy to access it for performance of any service.

Easy Washing and STERILIZATION

All interior elements of AHU are washable because access doors have been designated for all sections and also all sections are equipped with discharge pallet.
Furthermore, interior structure of AHU has been built so that to prevent from leakage and accumulation of dirt and pollution.

The AHUs manufactured by this company have been designed in such a way that to be installed very easily. With respect to the project conditions, they have potential for being disassembled upon loading and being assembled on installation site. The user's guide of this system presents all necessary processes for installation, setup and final testing of equipment.

General Specification

Technical Specification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