AASTHA
CLEANROOMS

Air Handling Unit

www.aastha-india.com

Air Handling Solutions for the Ideal Manufacturing Environment

Manufacturing & Industrial facilities have Unique HVAC requirements that need Specialized solutions.

The air handling units are designed and manufactured with special design technology for the panels and profiles to ensure a high mechanical strength and thermal performance features. A wide range of options and accessories is available, with focus on environmental awareness and energy efficiency.

Exclusive Design, High Flexibility

Air handling units are especially designed by us, to minimize the introduction, generation and retention of particulate and microbial contaminations for any industries.

- Easy Installation & Maintenance
- Smart Control
- User Safety
- Reliable Components
- Seamless Integration
- ERP Ready
- Plug & Play
- Airflow
  From 1,000 m3/h to 150,000 m3/h
- High Energy Efficiency
- Thermal Bridging TB2
- Thermal Conductivity T2
- Durable and Tight Structure, L1, D1

Plug Fans

Belt Driven Fans

EC Fans

Quiet, Energy-Efficient Operation

Noise reduction design options combined with real cost-savings technology.

High-Quality Construction Options

Specialized materials reduce design time, lower installation labor and material costs, accelerate timeline construction and provide customizable configurations.

Innovative Technology

Inventive and unique designs contribute to systems that address humidity, energy efficiency, indoor air quality, acoustics, and special physical requirements.

Performance-Leading Flexibility

Design and construction features that adapt to any situation, requirement and environment.

Lower Cost of Ownership

Cost-effective, energy efficient custom-built systems that significantly reduce total cost of ownership.

AHU concepts specifically optimized to suit your application.

Specialized and highly customizable indoor / outdoor air handling units meet the demands of any application through unmatched design scalability, flexibly and versatility

Construction

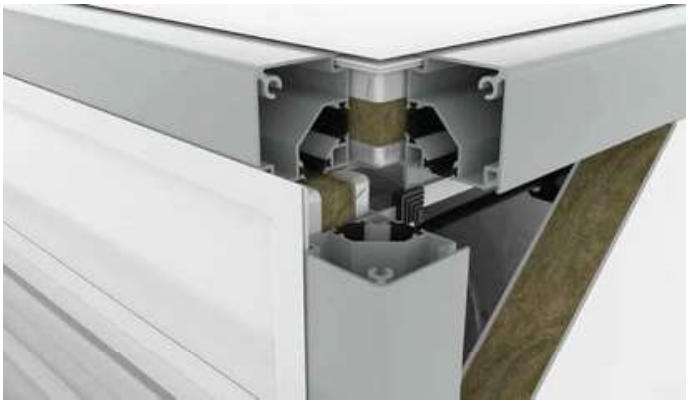
Our Air Handling Units are designed completely according to your project requirements. Among its distinguishing features; flexible design possibilities, high energy efficiency standards and low noise levels stand out. Our Air Handling Units also have the lowest air leakage (L1) and the highest mechanical strength (D1)

Our Air Handling Units have a long-lasting and durable structure with specially designed aluminum profiles. One of the significant characteristic of our Air Handling Unit is to have a special panel-profile connection structure with snap seals which makes service and maintenance processes very easy. This feature also helps the unit to survive any disassembly process during maintenance without any damage. Thus, the unit continues to maintain its integrity in the same way after disassembly-assembly processes.

Special material / painting applications other than galvanized steel can be applied not only for panels, but also for components such as filters, heat exchangers, coil frames, fan frames or condensation pans inside the Air Handling Unit.

The internal panels of Aastha's Air Handling Units made of 0.6 mm/ 0.8 mm galvanized steel and the external panels of 0.6 mm / 0.8 mm powder coated galvanized steel. Depending on the project requirements, there are stainless steel or corrosion resistant special coated panel options.

Screwless panel attachment with gaskets



Structural Features and Components

Frames & Panels

The corner and omega joints are made from heat resistant glass reinforced polyamide material. EPDM gaskets are used in between panels and profiles in order to provide the complete airtightness.

Damper

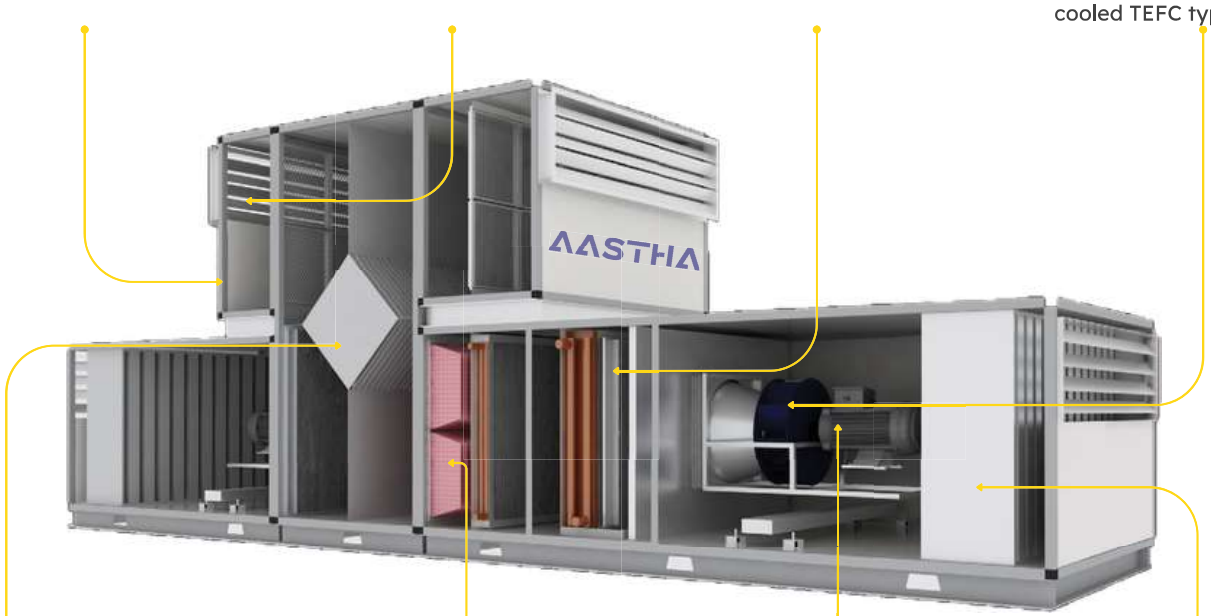
Dampers are made of high quality 6063 aluminum. Gears are made of heat-resistant hardened PVC. The tightness capability is enhanced with special airtight EPDM gaskets.

Heating and Cooling Coils

Wide range of coils are available as the tubes fins combinations and, coating materials.

Fans

High efficient fans are compliant in accordance with AMCA 210 performance and AMCA 301 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



Heat Recovery

High efficient heat recovery systems ensuring low pressure drops and in accordance with Eco Design directives. Air-to-air heat recovery systems such as plates, heat wheel or heat pipe as well as watertoair heat recovery (run around) can be included in the air handling units.

Filters

Coarse filters (G class) and fine filters (M and F classes) in accordance with EN 779:2012 (and new standard ISO 16890), are provided depending on the project requirements. EPA, HEPA and ULPA filters in accordance with EN 1822:2009 standard can also be provided when needed.

Motors

High efficient IE-2 or IE3 motors according to performance criteria mentioned in IEC60034 -2-1:2014. IP 55 protection, class F insulation and class B temperature rise fan motors.

Sound Attenuators

Double-skin attenuators with high density glass wool or mineral wool filled splitters. The aerodynamic structure with special design offers maximum sound absorption values with minimum pressure losses.

Treated Fresh Air Units

Treated fresh air (TFA) units are heating, ventilation, and air conditioning (HVAC) systems designed to improve indoor air quality by introducing filtered and conditioned outdoor air into a building. TFAUs help to reduce the amount of recirculated air, which can be a source of indoor air pollution, and increase the amount of fresh air brought in from outside.

Features:

- Energy-efficient technology to pre-cool fresh air being supplied to air-conditioned spaces or air handling units/fresh air handling units
- Energy-efficient alternative to energy recovery wheels, heat pipes, air-to-air heat exchangers, etc
- Improve indoor air quality through a higher outside air percentage while saving energy
- Retrofitting the existing air handling unit/fresh air handling unit/treated fresh air units

The purpose of a fresh air unit is to maintain the indoor air quality inside any commercial building. This purpose is achieved by bringing in treated fresh air inside the building. Fresh air can either be directly delivered into the building or fed into the existing air handling unit. The air handling unit then delivers the mixture of fresh air and recirculated air into the building.

Vertical AHU / Tower AHU

Where space is at a premium, a vertical AHU may provide the ideal solution as the principal part of a low-noise air heating and cooling ventilation system.

Units can be configured to operate in a recirculating air capacity, or to provide fresh air into a building. Components can comprise all levels of filtration, and also cooling and or heating as required, from either electric, LPHW (Low Pressure Hot Water), or indirect gas fired heat source, or chilled water or direct expansion cooling source.

Features:

VERSATILE PERFORMANCE:
Delivers 800 to 4000 CFM airflow with nominal cooling capacities ranging from 2 to 5 tons, ideal for classrooms and other sensitive environments.

FLEXIBLE CONFIGURATIONS:
Offers chilled water or DX cooling coils and hot water or steam heating coils, with versatile return and supply options.

ROBUST CONSTRUCTION:
Standard double-wall construction and powder-coated finish provide durability and reliability, with a 500-hour salt spray rating.

CUSTOMIZABLE FEATURES:
Multiple blower speed control options, optional return air plenum, and adaptable vertical or rear horizontal discharge for easy installation.

Forced Draft Ventilation Unit

The main difference between supply and exhaust ventilation is the direction of airflow: supply ventilation brings fresh air into a space, while exhaust ventilation removes stale air from a space.

With a Panel Thickness can be of 25 mm or 45 mm inside the sheet metal panels, they reduce the sound to the outside considerably. In addition, the panels are accessible, which makes them easy to maintain. The flow rate of the unit is 100% variable and, on request, it can be installed with a pre-filter in suction inside the box.

Fan Filter Unit (FFU)

A fan filter unit (FFU) is a type of motorized air filtering equipment. It is used to supply purified air to cleanrooms, laboratories, medical facilities or microenvironments by removing harmful airborne particles from recirculating air.

A fan filter unit (FFU) is installed on the grid ceiling system

FFU size: 1200 x 600 x 600 mm and 600 x 600 x 600 mm (L x W x D)

Application : Semi Conductor, Solar Cells, Solar Panels, etc.

Heat Recovery Systems

Energy consumed by HVAC systems constitutes an important part in the total energy consumption of buildings. For this reason, especially for systems operating with 100% outdoor air, energy savings can be done through the heat transfer between exhaust air and fresh air. The objective here is while maximizing the use of the heat and energy of the exhaust air, taking into account the return on investment analysis to choose the heat recovery system that does not allow unwanted air mixtures.

For an efficient heat recovery, the fresh air conditions must be suitable for heat recovery in terms of temperature and humidity. Assessing the enthalpy heat transfer is also an important step for choosing the right heat recovery system.

Types of Heat Recovery

Depending on the type of heat recovery used, heat, energy and humidity can be recovered at the same time, sensible and latent heat transfer rates are calculated separately for dry and total efficiency according to indoor and outdoor conditions.

Heat Wheel Heat Recovery Units

Plate Type Heat Recovery Units

Around Heat Recovery Units

Pipe Heat Recovery Units

EC FAN – Electronically Commutated Fan

Aastha Air Handling Unit is able to be fitted with (EC Plug Fan). It boast better efficient, lower noise emission, compact yet robust. Now it is up for selection for model with total static pressure of 1500 Pa and below.

Basic AHU Information

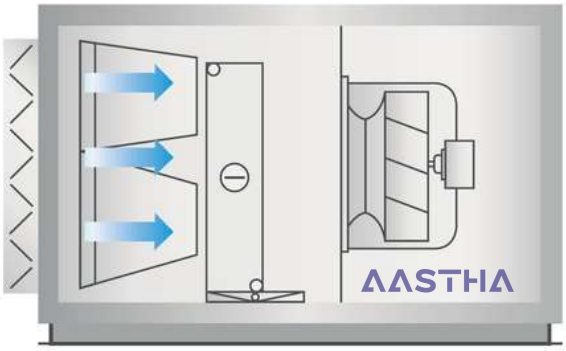
- AHU Modular Concept Design
- Standard Model Range : 1 to 150,000m3/s
- Air Volume Range : 1 to 150,000m3/s
- Total Static Pressure Up to 1500 Pa

Technology Features

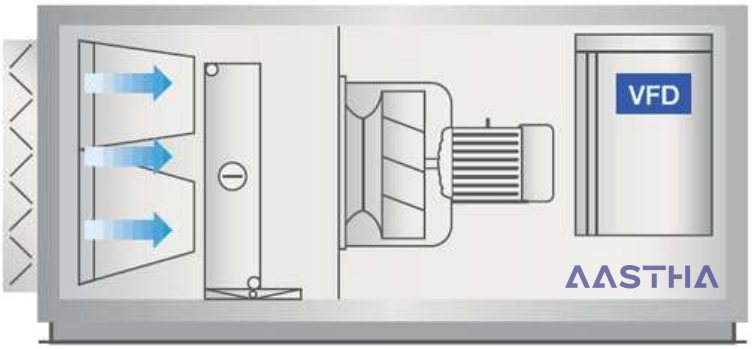
- Unrivalled Compactness
- High Efficiency
- Robust Design
- Economical Operation
- Low Noise Emissions
- Low Vibration Level
- Long Service Life
- Reliable Operation

Solutions To Your Fan Woes

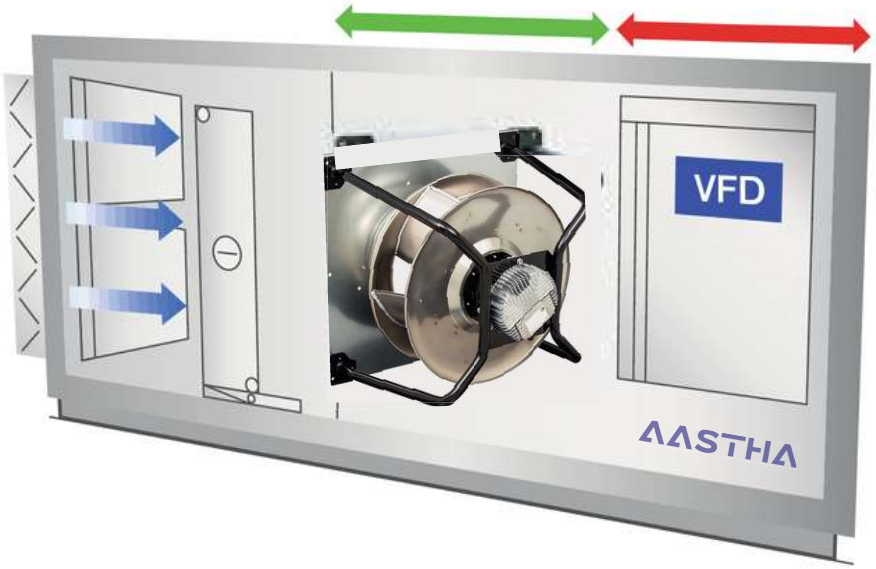
EC Fan (Our Solution)



Fan + Motor + VFD
(Conventional Fan Solution



Why EC Fan??



- No Inverter
- No Sine Filter
- No Premium Motor
- No Shielded Cable
- No Motor Protection

- Save on Installation Cost
- Save on Space
- Save on Components

Benefits of Using EC Fan Solution

01. Universal Usage

02. Better Lead Time compared to ordinary Plug Fan

03. Premium Efficiency IE4 Motor

04. Modbus Integrated

05. Great Cost Savings

06. AHU Section Length Savings

07. High End Technology

08. Fan Array Capability

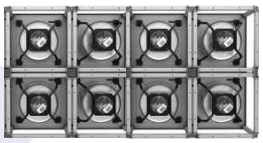
09. Simple Installation & Commissioning

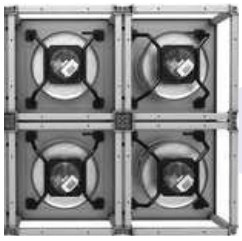
10. Speed Control

Fan Array

2-Fan Array Arrangement

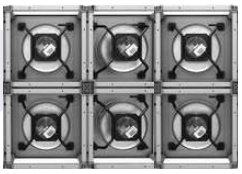
8-Fan Array Arrangement





4-Fan Array Arrangement

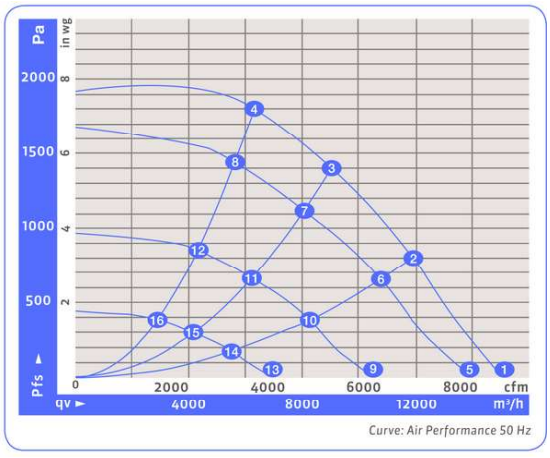
6-Fan Array Arrangement



Fan Array Air Flow Range

	Air Flow Range (m3/s)
Single EC Fan	0.93 - 2.85
2-Fan Array	1.86 - 5.70
4-Fan Array	3.72 - 11.40
6-Fan Array	5.58 - 17.10
8-Fan Array	7.44 - 22.80

Selected EC Fans



Smart AHU

Transforming Spaces with Expert HVAC Solutions

With Advanced Technology and Intelligent Features our Smart AHU ensures Optimal Air Circulation, Purification and Filtration

The Smart Air Handling Unit or the Next-Gen Air Handling Unit is equipped with an integrated control system to overcome the need of Building Management Systems (BMS).

With the advanced feature, we can monitor and control all AHU parameters including temperature, humidity, air flow, filters etc. thus saving a handsome quantum of thermal and electrical energy as well as operations and maintenance costs.

- Up to 60% extra savings in energy
- Up to 30% less space required
- In-built EC fan - permanent magnet motors
- Customized Dimensions
- Cooling capacity : 30 kW - 800 kW

- Integrated units ensure less dependency on site fabrication and make the unit work in harmony providing improved air efficiency ratio and reliability
- Multiple options like UV Lamp, Heat Recovery Wheel, Air Filters, etc

i-Smart AHU

Refined HVAC Solutions Tailored to Perfection

Our cutting-edge AHUs are designed & crafted with precision to deliver the highest standard of performance and efficiency in all Industries.

- Highly efficient operation with substantial power savings
- Low life cycle costs due to low energy and low maintenance requirements
- Robust and compact design allows flexibility in selection of installation location
- Advanced filtration systems to maintain a low PM 2.5 air index
- Available with plug type or EC fans or DIDW blower
- Wireless compatibility for smart control and real-time monitoring through IoT
- Specially designed thermo-acoustic panel for optimum thermal properties and lower noise levels
- Capacities ranging from 700 CFM to 100,000 CFM

i-Smart AHU

Refined HVAC Solutions Tailored to Perfection

The Game-Changing Benefits of a Smart AHU Controller

Revolutionizing HVAC efficiency, the Smart AHU Controller is a groundbreaking innovation transforming the way commercial and industrial environments manage air handling units (AHUs). This sophisticated technology not only enhances the operational efficiency of HVAC systems but also drives significant cost savings, environmental benefits, and improved indoor air quality.

Key features of smart AHUs

Advanced control systems:
Integrated control panels use intelligent algorithms and sensors to precisely monitor and optimize various parameters, such as temperature, humidity, airflow, and CO2 levels.

Predictive maintenance:
By leveraging advanced analytics, the system can predict potential maintenance issues based on performance data, allowing for proactive repairs that minimize downtime and save costs.

IoT integration:
Built-in connectivity, often through protocols like BACnet or Modbus, allows the unit to communicate with a building management system (BMS). Some systems also feature web access via smartphones and tablets.

Energy efficiency:
Smart AHUs are equipped with variable speed drives (VSDs) and intelligent control algorithms that adjust fan and motor speeds based on demand, leading to significant power savings. Some models include energy-saving features like heat recovery.

Remote monitoring and control:
Facility managers can monitor and control the AHU remotely through a user-friendly interface, enabling real-time adjustments from anywhere.

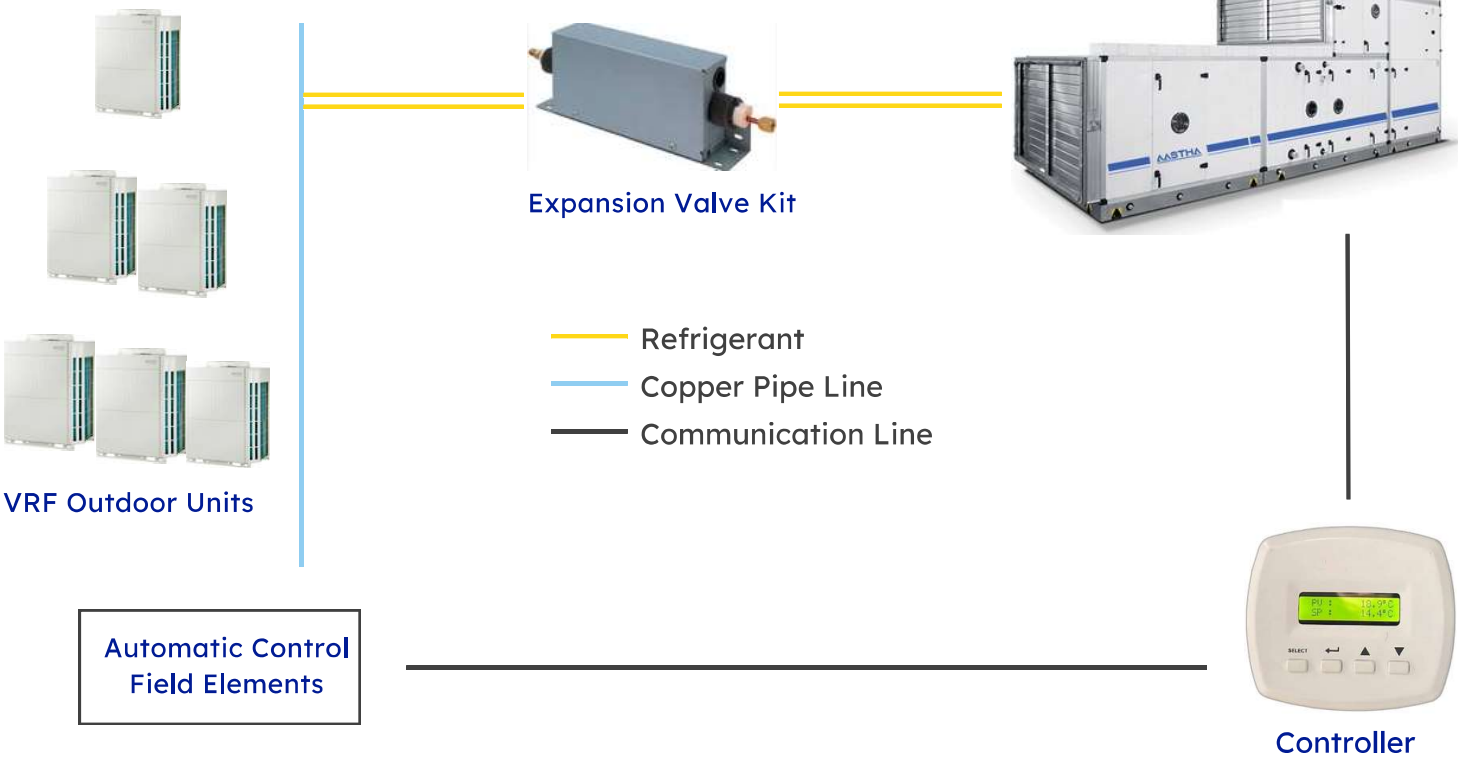
Enhanced indoor air quality (IAQ):
Advanced filtration technology and real-time monitoring of air contaminants like CO2 and VOCs ensure that the air circulated is clean and healthy.

Dx Air Handling Units – Integration with VRF Outdoor Units

More Energy Saving!

Our DX joins full-inverter technology with a combination of air handling units and VRF outdoor units. Modular structures and two perfectly matched systems provide greater design and installation flexibility and minimize initial investment and commissioning costs.

They are easily installed in small and medium sized buildings and easier to adapt to the existing system. Since water is not used in the system, it completely eliminates the risks of freezing and reduces maintenance costs of equipment such as pumps, valves etc.

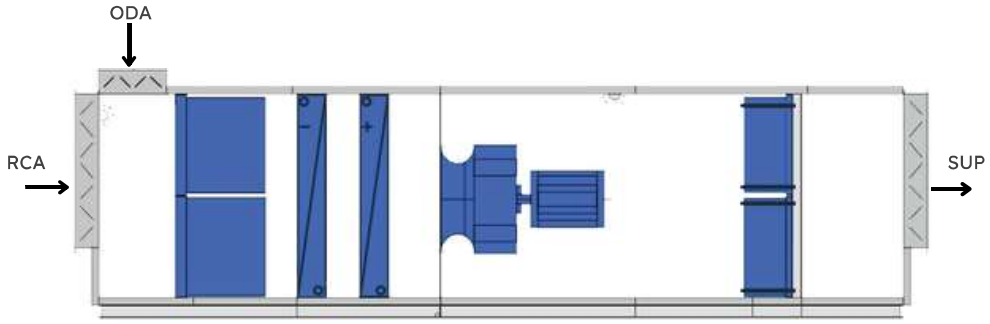
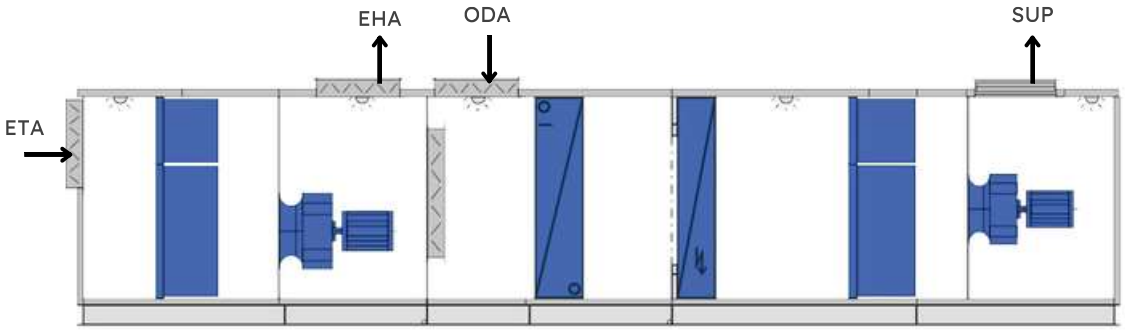
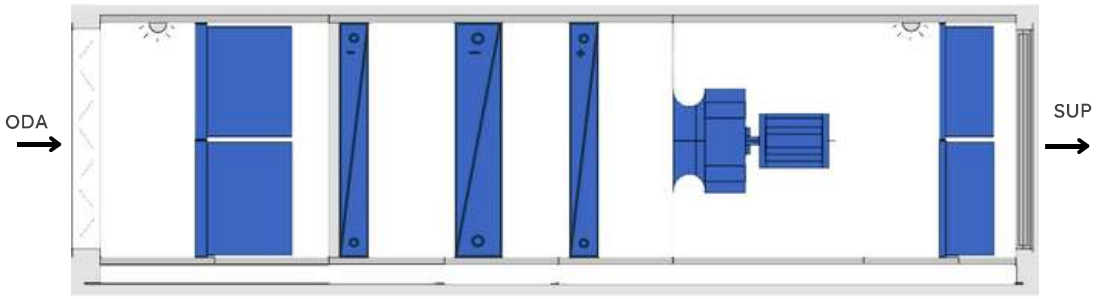
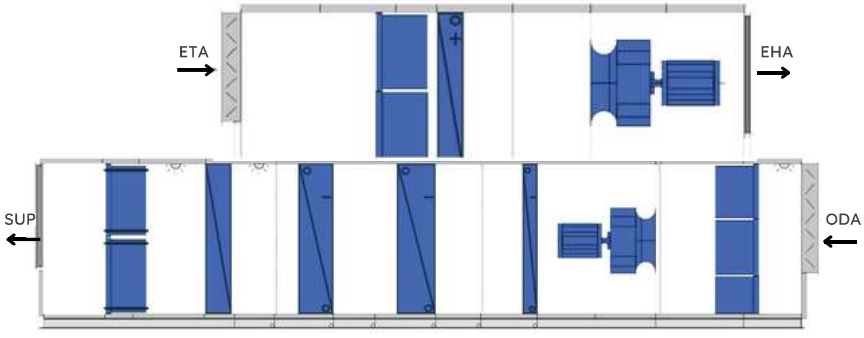


Benefits and Features

- Provides higher EER and COP values thanks to full-inverter technology.
- Provides lower investment and maintenance costs due to less fluid use.
- Occupies less space and provides flexibility in design.
- Both heating and cooling can be done with a single outdoor unit and the boiler, pump, etc. systems are not needed.
- Faster reaction to instant load changes by faster cooling and heating.
- Lower start-up currents reduces energy installation costs.
- More control options thanks to wider range of control equipment.
- Provides simpler BMS control.

Sample AHU configuration specially for Pharmaceutical & Healthcare Applications

Aastha offers AHU concepts specifically optimized for pharmaceutical applications

Sample AHU Configuration 1	 Recirculation Unit
Sample AHU Configuration 2	 Unit with Return and Supply Air Fan
Sample AHU Configuration 3	 Pre Cool unit with Free reheating and pre cool
Sample AHU Configuration 4	 Pre-Cool unit with heat recovery from exhaust air

CLIENTEL

ASSEMBLY & SERVICES

With our vast experience of cleanroom installation around the world, we are able to offer a comprehensive solution, not just a product or system.

We not only offer our customer the know - how for product development, manufacturing and installation, but also a complete range of cleanroom service to ensure quality, function and on-time delivery.

AASTHA CLEANROOMS

Manufacturing Unit :
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Location (MH) INDIA Mahad, Raigad	Corporate Office Mumbai, INDIA	Area Sq.Mt 13900		Employee Strength 225+	Experience Years 20+	Projects Completed 750+

Our Global Foot Prints							
Algeria	Bangladesh	Bolivia	Egypt	Ghana	Iran	Oman	Kenya
Nepal	Philippine	Qatar	Sri Lanka	Vietnam	UAE	UK	USA