CLEANROOM

CLEANROOM BROCHURE

KAIZEN AIRTECH SOLUTIONS

Office No. B-3, Jayguru Niwas, Khedekar Nagar, Near Navale Hospital, Narhe, Pune-411041, Maharashtra, India

Email: info@kaizenairtech.com

Welcome To Kaizen Airtech Solutions

Kaizen Airtech Solutions started as a company specializing in industrial air treatment. Since then we have evolved and grown. Today we develop solutions in design, engineering and implementation of turnkey projects for cleanroom environments and process lines, focusing on the life science industries, pharmaceutical, biotechnology, food processing, electronics industries.

We have experience in customized modular cleanroom solutions, an in depth understanding, expertise of executing turnkey HVAC, cleanroom, modular OT projects. Kaizen Airtech solutions provides project consulting, engineering, design and supply whole setup of cleanroom biotechnology lab and modular OT equipment.

We are manufacturer, supplier, exporter of modular, softwall, insulated, hardwall. Biosafe, and portable cleanrooms for healthcare, life science, medical device manufacturing, pharmaceutical, food processing, Nano-technologies, nuclear energy, Atomic energy, Defence, Aerospace, oil and deep sea exploration.

HARD WALL CLEANROOM

SOFT WALL CLEANROOM

MODULAR OT

INSULATED WALL CLEANROOM

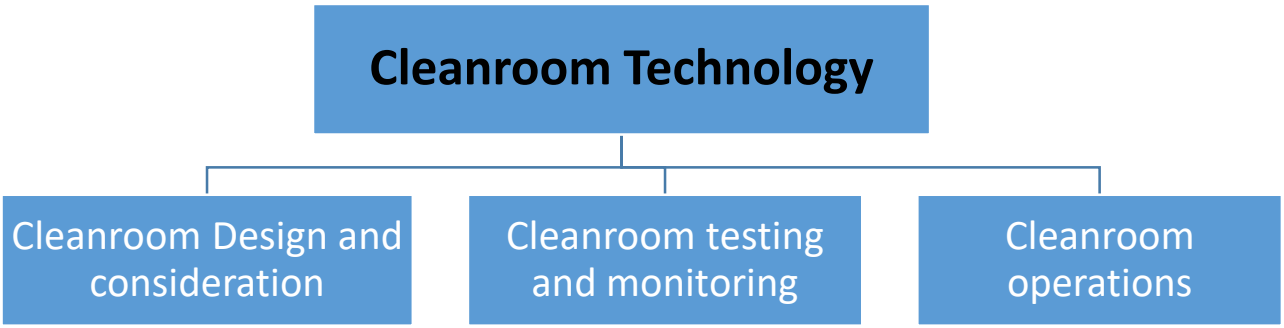
A cleanroom or clean room is a facility ordinarily utilized as a part of specialized industrial production or scientific research, including the manufacture of pharmaceutical items, integrated circuits, CRT, LCD, OLED and micro LED displays. Cleanrooms are designed to maintain extremely low levels of particulates, such as dust, airborne organisms, or vaporized particles. Cleanrooms typically have a cleanliness level quantified by the number of particles per cubic meter at a predetermined molecule measure. The ambient outdoor air in a typical urban area contains 35,000,000 particles for each cubic meter in the size range 0.5 µm and bigger in measurement, equivalent to an ISO 9 cleanroom, while by comparison an ISO 1 cleanroom permits no particles in that size range and just 12 particles for each cubic meter of 0.3 µm and smaller.

Cleanroom Types:

- Modular cleanroom
- Hard wall cleanroom
- Soft wall cleanroom
- Insulated wall cleanroom
- Portable cleanroom
- Biosafe cleanroom
- Modular OT

Cleanroom Equipment:

- AHU
- FFU
- Air shower
- HEPA filter
- HVAC system
- Cleanroom Accessories
- Door
- Window

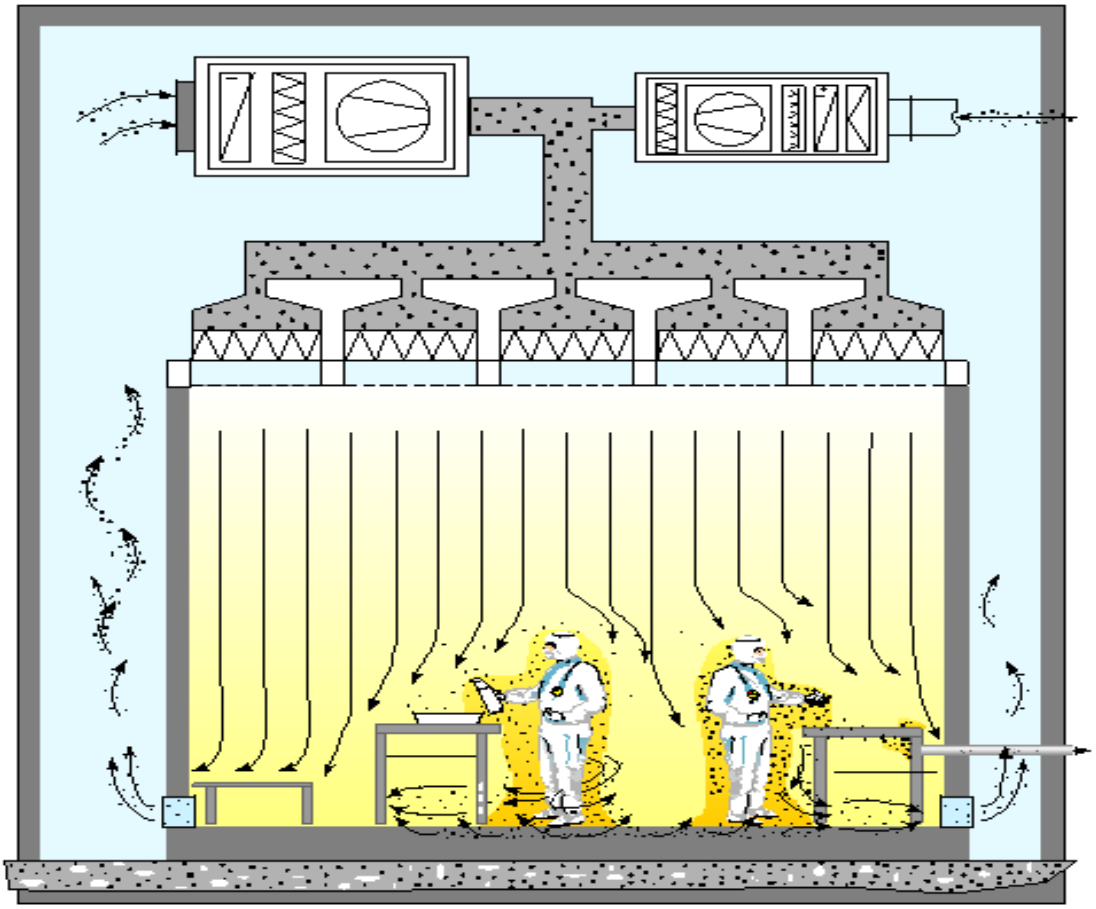


Cleanroom applications range from small laboratories to gigantic cleanrooms in the automotive or aerospace industry.

Applications include:

- Environmental Test Facilities
- Microelectronics and Nano-Technology Manufacturing
- Pharmaceutical and Nutraceutical Packaging
- Metrology Labs/CMM Room
- Manufacturing Companies
- Research Facilities
- Pharmaceutical Companies
- Medical Laboratories
- Electronic Part Production
- Aerospace Industry
- Nanotechnology production
- Optics and Lens Manufacturing
- Military Applications

Cleanroom General Process:



Cleanroom Classifications:

Class	Maximum particles/m³ [a]						FED STD 209E equivalent
	≥0.1 µm	≥0.2 µm	≥0.3 µm	≥0.5 µm	≥1 µm	≥5 µm	
ISO 1	10[b]	[d]	[d]	[d]	[d]	[e]	
ISO 2	100	24[b]	10[b]	[d]	[d]	[e]	
ISO 3	1,000	237	102	35[b]	[d]	[e]	Class 1
ISO 4	10,000	2,370	1,020	352	83[b]	[e]	Class 10
ISO 5	100,000	23,700	10,200	3,520	832	[d,e,f]	Class 100
ISO 6	1,000,000	237,000	102,000	35,200	8,320	293	Class 1,000
ISO 7	[c]	[c]	[c]	352,000	83,200	2,930	Class 10,000
ISO 8	[c]	[c]	[c]	3,520,000	832,000	29,300	Class 100,000
ISO 9	[c]	[c]	[c]	35,200,000	8,320,000	293,000	Room air

[a] All concentrations in the table are cumulative, e.g. for ISO Class 5, the 10 200 particles shown at 0,3 µm include all particles equal to and greater than this size.

[b] These concentrations will lead to large air sample volumes for classification. Sequential sampling procedure may be applied; see Annex D.
[c] Concentration limits are not applicable in this region of the table due to very high particle concentration.
[d] Sampling and statistical limitations for particles in low concentrations make classification inappropriate.
[e] Sample collection limitations for both particles in low concentrations and sizes greater than 1 µm make classification at this particle size inappropriate, due to potential particle losses in the sampling system.
[f] In order to specify this particle size in association with ISO Class 5, the macro particle descriptor M may be adapted and used in conjunction with at least one other particle size

❖ HARD WALL CLEANROOM:

Modular Hard wall Cleanrooms are designed to clean and controlled environment maintain temperature, ventilation and humidity. All components are prefabricated, pre-engineered and designed to meet a full range of cleanroom requirements found in industries ranging from Micro-Electronics, Aerospace, food processing, Medical equipment and packaging. Modular Hard wall Cleanrooms are also an excellent product for the Compounding Pharmacy market.

Modular Cleanroom system feature easy to assemble self-contained modular section that are designed to allow for future expansion. Remove and reconfigure section for a process change or completely disassemble and relocate to another facility if desired. Prefabricated Modular Hard wall Cleanrooms by design can be used as a totally freestanding self-contained room or used in combination with existing walls and require only a solid, level floor for their support.

This Modular Cleanroom packages can also include Heating and A/C and modular wiring system that, when installed, gives you a single point power option, which can be utilized for all electrical wiring including Outlets. HEPA filters ensure even airflow which greatly reduces the air turbulence. This provides a uniform laminar airflow through the work zone.

Hard wall Cleanrooms use free-standing steel frames with cleanroom-grade panels which includes transparent and non- transparent panels; versatile design to meets any ISO 5 to ISO 8 requirement. This cleanrooms uses HVAC system as it gives temperature control, cleanliness, humidity control, positive pressure to fulfil requirements.

Features:

- End to end customized solution
- Versatile modular design
- Modular Wall Panel
- Industry compliant equipment
- Scope for expansion, relocation, re-configuration in a different shape or small rooms through partitions.
- Compliance with ISO standard, ASHRAE Standard 62.1-2016, and 62.2-2016.
- Portable
- Expandable
- Built-In Air Handling & Filtration
- Quick Turnaround.

❖ **Technical specifications:**

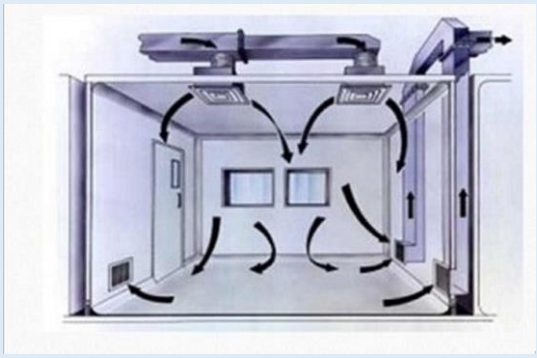
Variables	Specifications
Frame Material	Powder coated steel/Aluminium
Internal height	2438.4mm
Overall height	3048mm
Ceiling	50.8 HD T-bar with anodized aluminium
Ceiling panel	Sealed edges
Partition panels	Acrylic/Static-dissipative PVC/Polycarbonate/Polypropylene/Tempered Glass/SS304
Panel dimensions (mm)	1219.2x2133.6
HEPA filter	99.995% efficient @ 0.3micron

Enclosure:

Hard wall cleanrooms enclosure consist of hard partition such as ESD panels, PVC or plastic sheets, steel sheets of standard sizes. Also sizes can vary as per customer's requirements. Enclosure is fully packed with partition panels and positive pressure is created.

Filtration:

Hard wall cleanroom system contains HVAC system to achieve cleanroom environment. Fresh air taken by outside, it is filtered by Air handling unit and then distributed through diffuser inside cleanroom. Then return air taken through return air riser to AHU and recirculated



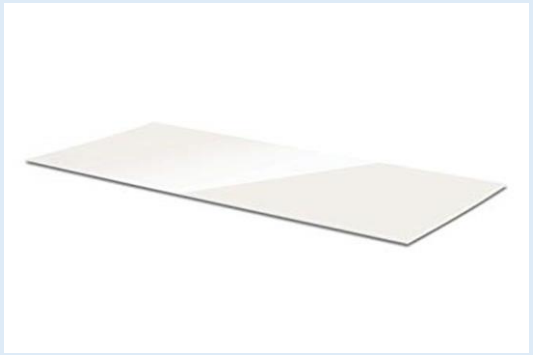
Support structure:

Hard wall cleanrooms required support structure made in SS or MS powder coated material to support wall panels, ceiling panels, HVAC system and load of other equipment. These flexible support structure is designed in a way that you can assemble and disassemble easily. Design of structure made to easy transport and movable.

Partition Panel:

1. FRP Panel:

FRP Panels which are non-transparent are used as partition panel for hard wall cleanroom. Fiberglass Reinforced Plastic (FRP) Wall Panels are ideal for any cleanroom that will be exposed to a great deal of moisture or require extensive cleaning with harsh chemicals. Typical applications include laboratories, pharmaceutical cleanrooms, and environments subject to FDA regulations



2. ESD panels:

For cleanroom environments where electrostatic charge is a process risk, static dissipative clear panels are recommended. Panels should feature a conductive static dissipative surface coating on both sides.

It is also called anti-static PVC sheet, the base material is polyvinyl chloride, abbreviated PVC.

It has: resistance to chemical solvents and shock resistance, surface resistance value is 106~108Ω, excellent anti-static function, high surface hardness, scratch resistance, excellent appearance, light transmission rate of over 80%,fire retardant rating of UL-94:V-0, and fireproof is excellent. Because of all these properties used as a partition for hard wall cleanroom.

❖ SOFT WALL CLEANROOM:

Kaizen's soft wall cleanroom solutions are cost-effective, highly flexible, and easy to install. The portable cleanrooms or soft walls expand rooms to maintain positive pressure inside. We have designed soft wall cleanroom by considering flexibility benefits of construction. Such a portable room has versatile applications with free-standing structure and suspended ceiling.

Soft wall Modular Cleanrooms use free-standing steel frames or ceiling hanging steel frames with cleanroom-grade vinyl panels such as PVC curtains; versatile design meets any ISO 5 to ISO 8 requirement. This cleanroom contains Fan filter units to give cleanliness.

Technical specifications:

Variables	Specifications
Frame Material	MS Powder coated/steel/Aluminium
Internal height	2438.4mm
Overall height	3048mm
Ceiling	50.8 HD T-bar with anodized aluminium
Ceiling panel	Sealed edges
Partition panels	PVC strips, PVC curtains
Panel dimensions (mm)	200\300 width, 2/3/4 mm thick
HEPA filter	99.995% efficient @ 0.3micron

Features:

- ❖ Easy to assemble
- ❖ End to end customization
- ❖ Combined HEPA filters, Light, and Blank Panels
- ❖ Designed to fit various applications
- ❖ Mobile Contamination Control
- ❖ Built to specific requirements
- ❖ Easy to move, modify or upgrade (Can be manufactured with casters for mobility)
- ❖ Easy installation
- ❖ Affordable

Enclosure:

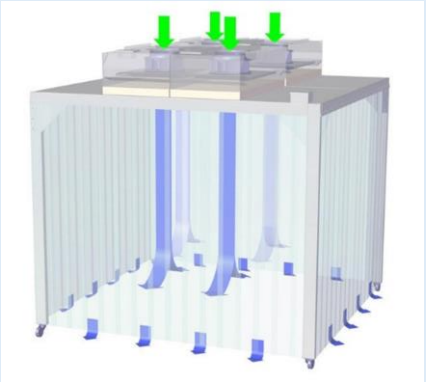
These modular, vertical flow soft wall cleanrooms are a cost-effective method of providing a quality particulate control enclosure. Soft wall cleanroom enclosure made up of steel or MS powder coated frame and PVC curtains are used for partition purpose. No need of door as PVC curtains are flexible. These curtains are used as a strip or a whole single curtains of room size. This enclosure is fully packed by PVC curtains so that outside air cannot enter inside enclosure.

Frame:

Soft wall cleanroom support structure is of SS or MS powder coated material. Steel Frame units are made of tubular steel components. The components are cut, formed, welded and powder coated. The frames are bolted together to create the room. Castor wheels are provided as per requirement and need. This soft wall cleanroom system consists of a Tubular Steel Frame Structure that supports the Ceiling Grid.

Filtration:

Soft wall cleanroom system contains Fan Filter Unit system to achieve cleanroom environment. Fresh air taken by outside, it is filtered by Fan filtration unit and then distributed throughout inside cleanroom. Then return air goes out of cleanroom by lower side of PVC curtains.



Cleanroom Partitions:

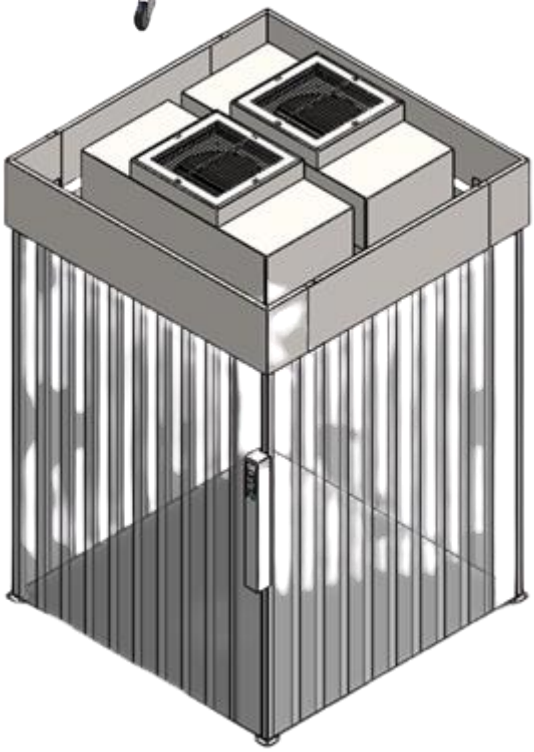
PVC Curtains/strips:

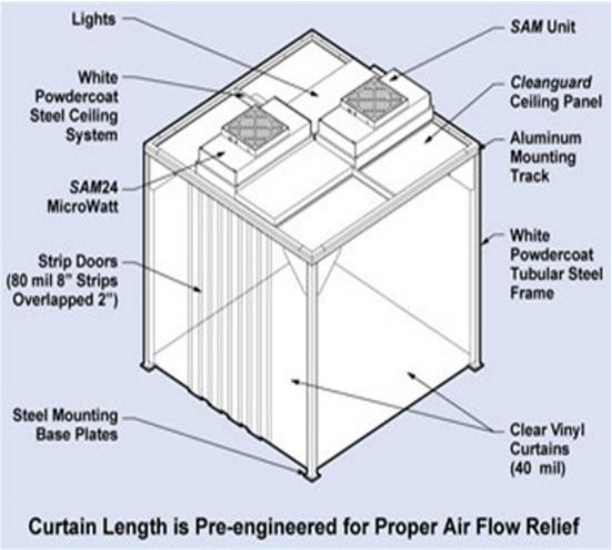
The PVC panels overlap to ensure the walls of the soft wall cleanroom are effective barriers when in position. The positive airflow pushes air down through the cleanroom, allowing particles to be flushed out through the low level exhaust vent.

PVC curtains for cleanrooms is an economical solution to area containment in industry. We use either standard grade PVC or high-grade anti-static PVC (various widths and thicknesses) for cleanroom application to meet your containment requirements.

Castor Wheel:

Designed to provide vibration dampening in controlled environments. Nickel horn, resilient tread wheel, dust cover, and Celcon bearing. Offers superior roll ability and manoeuvrability and resists virtually all common cleaners, solvents, oils and acids.





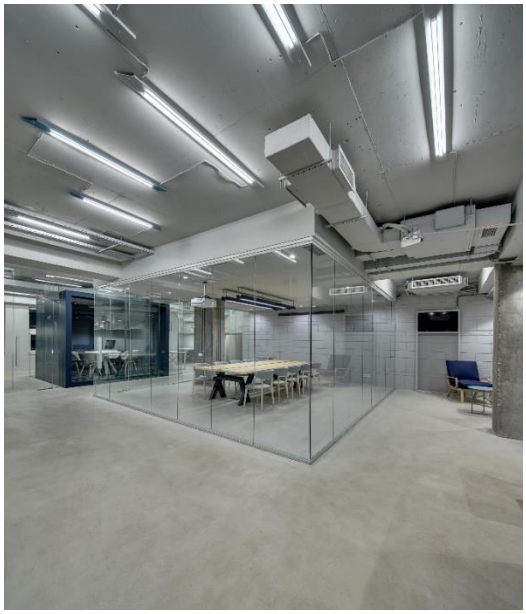
❖ Biosafety cleanrooms:

Bio-Safe Cleanroom is a rigid, self-supporting structure without a separate frame or external bracing. Kaizen's Biosafe cleanroom enhances thermal stability and lowers energy consumption. We provide comprehensive and quality cleanrooms for critical bio/pharmaceutical operations. We have all sizes of cleanrooms that are easy to clean and sterilize and capable of generating ISO 5-8 standard cleanliness. Kaizen delivers highly controlled clean environments by taking the support of UL-certified materials and the state of art technology.

BioSafe modular clean rooms meet biopharmaceutical requirements for an ISO 5-6 compliant, sterile processing environment. Designs for single-pass, recirculating, or negative-pressure containment airflow. These cleanrooms contains Fan filter units to give cleanliness. Uses transparent, non-transparent panels and these cleanrooms are indoor units as placed inside controlled environment.

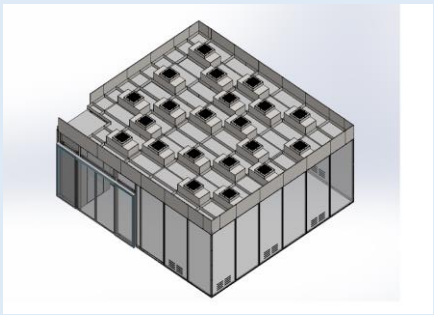
Features:

- Double wall panel with smooth interior surfaces
- Installation space for the electrical system, gas and vacuum service lines
- Raised, sloped flooring drains to disinfectant reclamation reservoir
- Maintain constant temperature between 60°F and 140°F by the HVAC system
- Compliance with Class 100 cleanliness conditions
- Adjustable high-volume air handlers
- Polystyrene insulation
- Wall-mount utilities
- Easy sterilization and easy to assemble.



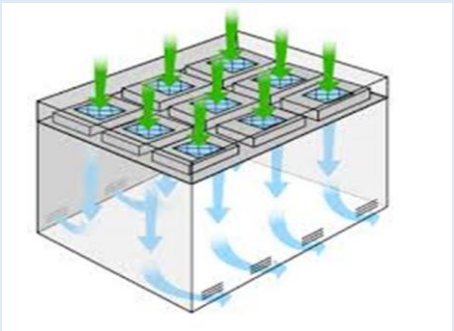
Enclosure:

Hard wall cleanrooms enclosure consist of hard partition such as ESD panels, PVC or plastic sheets, steel sheets of standard sizes. Also sizes can vary as per customer's requirements. Enclosure is fully packed with partition panels and positive pressure is created.



Filtration:

Hard wall cleanroom system contains HVAC system to achieve cleanroom environment. Fresh air taken by outside, it is filtered by Air handling unit and then distributed through diffuser inside cleanroom. Then return air taken through return air riser to AHU and recirculated again.



Support Structure:

Hard wall cleanrooms required support structure made in SS or MS powder coated material to support wall panels, ceiling panels, HVAC system and load of other equipment. These flexible support structure is designed in a way that you can assemble and disassemble easily. Design of structure made to easy transport and movable.

Partition panels:

FRP Panels:

FRP Panels which are non-transparent are used as partition panel for hard wall cleanroom. Fiberglass Reinforced Plastic (FRP) Wall Panels are ideal for any cleanroom that will be exposed to a great deal of moisture or require extensive cleaning with harsh chemicals. Typical applications include laboratories, pharmaceutical cleanrooms, and environments subject to FDA regulations.

ESD panels:

For cleanroom environments where electrostatic charge is a process risk, static dissipative clear panels are recommended. Panels should feature a conductive static dissipative surface coating on both sides.

It is also called anti-static PVC sheet, the base material is polyvinyl chloride, abbreviated PVC.

❖ Insulated Wall Cleanroom

Insulated Cleanrooms use free-standing steel frames if required with cleanroom-grade panels such as Puff panel, Rockwool panels which are used as insulations against heat transfer due to sandwiched foam and versatile Design meets any ISO 5 to ISO 8 requirement. These cleanrooms uses HVAC system to fulfil requirements such as positive pressure, temperature control, humidity control, cleanliness. Insulated cleanrooms use puff panel or Rockwool panels to avoid heat transfer to outside environment. To achieve cleanliness from ISO 5 – ISO 8 we use HVAC system with AHU and ducting. In insulated cleanroom as it is non transparent Glass view panels are provided if required.

Technical specifications:

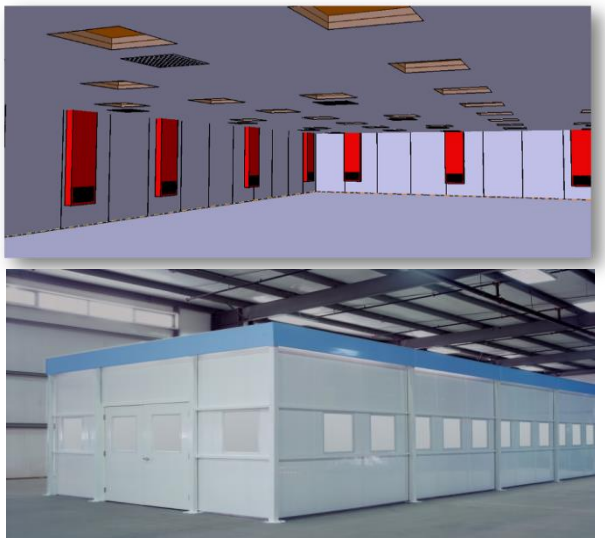
Variable	Specifications
Noise	70 dB
Brand	Kaizen
Door Finishing	Powder Coated
Material	PVC, Stainless Steel
Height	5000 mm
Usage/Application	Pharmaceutical Industry
Panel Thickness	50,60,80,100mm
Air Changes	50 to 280 ACH

Features:

- High velocity shower jets in excess of 20 m/s ensure efficient scrubbing action to remove particulate matter.
- Operating modes can be programmed in the field.
- Microprocessor controller supervises all functions.
- Mini-pleated HEPA filtration achieves > 99.99% typical efficiency at 0.3 micron particles.
- A disposable pre-filter with 85% arrestance extends the life of the main filter.
- An emergency stop button is mounted on both sides of the shower.
- Indicator lights mounted on both sides of the air shower exterior regulate traffic flow in and out of the cleanroom.
- Permanently lubricated direct drive centrifugal blowers are used in conjunction with stainless steel air nozzles.

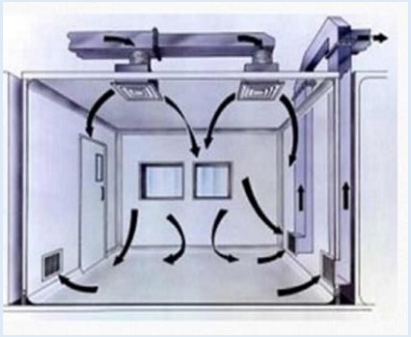
Enclosure:

Insulated wall cleanrooms enclosure consist of insulated partition such as Puff panels, Rockwool panels of standard sizes. Also sizes can vary as per customer's requirements. Enclosure is fully packed with partition panels and positive pressure is created. Enclosure Maintains temperature, relative humidity and differential pressure conditions. Controls air leakage.



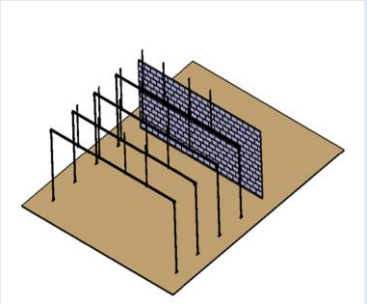
Filtration:

Insulated wall cleanroom system contains HVAC system to achieve cleanroom environment. Fresh air taken by outside, it is filtered by Air handling unit and then distributed through diffuser inside cleanroom. Then return air taken through return air riser to AHU and recirculated again.



Support structure:

Insulated wall cleanrooms required support structure made in SS or MS powder coated material to support wall panels, ceiling panels, HVAC system and load of other equipment. These flexible support structure is designed in a way that you can assemble and disassemble easily. Design of structure made to easy transport and movable.



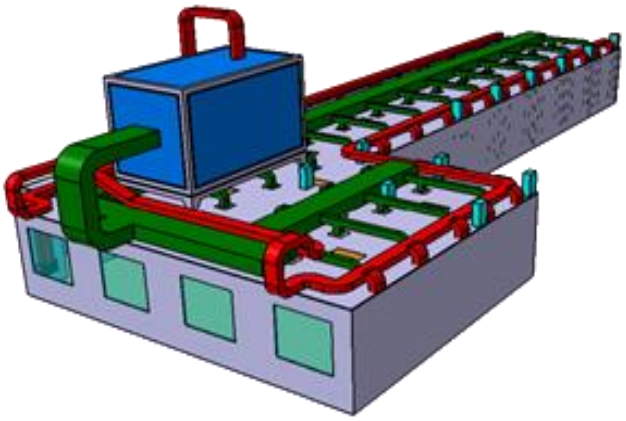
Partition panel:

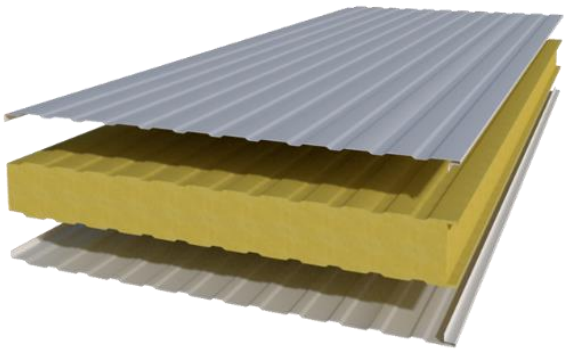
Puff Panels:

Puff panel Suitable for diverse applications, PUF panels consist of a rigid core or rigid slab of foam sandwiched between GI sheet metal structural boards.

- PUF insulated sandwich panels integrate joists and studs, insulation, vapour and air barriers.
- Improved thermal and acoustic insulation
- Offered in endless dimensional requirements
- Lifetime durability and high load bearing capacity
- Polyurethane foam insulation panels are 100% environment friendly
- Resistant to corrosion, termites, physical impact and fungus
- Lifetime weatherproof guarantee
- Supreme flame retardation with self-extinguishing property
- Standard width : 1200 mm
- Height : 3000 mm
- Thickness used : 80 mm
- Density : 40 ± 2
- Thermal conductivity at 10 ° C mean temp (W/m°k) : 0.023

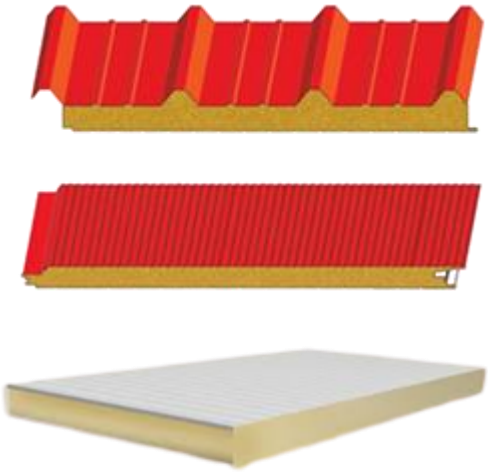
Typical applications include laboratories, pharmaceutical cleanrooms, and environments subject to FDA regulations.

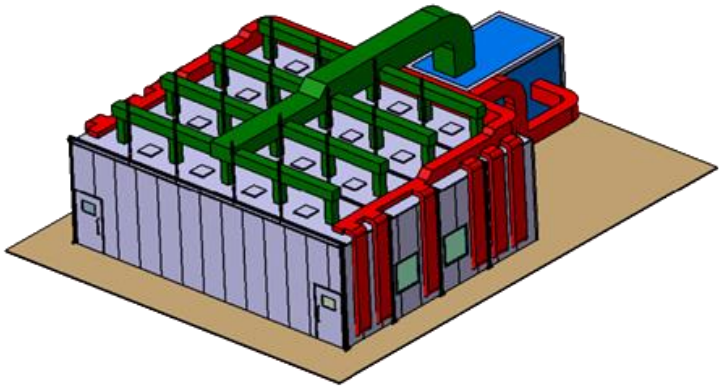




Rockwool panels:

The top and bottom of Rockwool sandwich panel is galvanized pre-painted steel. Core material is rock wool with density at 100kg/m3, the rock wool is upright against the surfaces. There are high strength vesicant between rock wools and surfaces. This product is featured with full anti-firing, more heating and sound insulation. It is widely used as the wall or roof for cold storage, industrial workshop, public building etc. These panels re of standard size and also having customized range of sizes.

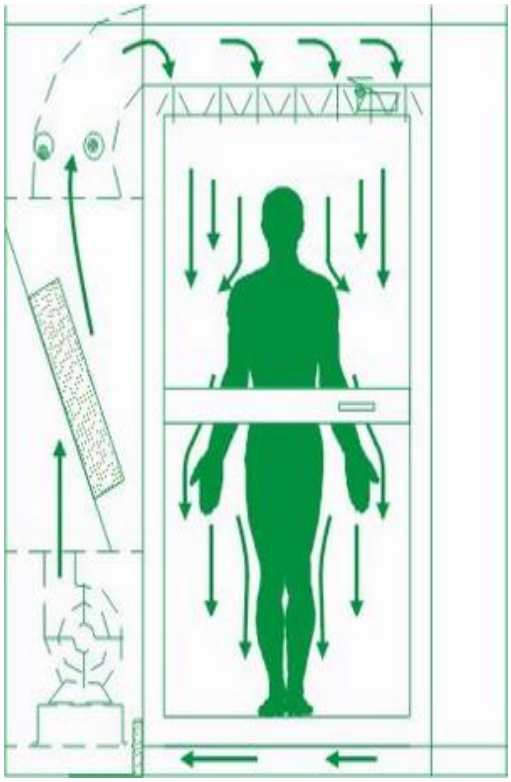




Cleanroom Equipment:

Air Shower:

Air showers are specialized enclosed antechambers which are incorporated as entryways of cleanrooms and other controlled environments to reduce particle contamination. Air showers utilize high-pressure, HEPA- or ULPA-filtered air to remove dust, fibrous lint and other contaminants from personnel or object surfaces. The forceful "cleansing" of surfaces prior to entering clean environments reduces the number of airborne particulates introduced. When properly incorporated into cleanroom design, air showers provide an ISO-classified transition vestibule to ensure the cleanliness of the classified cleanroom. Air showers are typically placed between a gowning area and cleanroom; after workers don appropriate garb and personal protective equipment, they enter the shower so that the pressurized air nozzles remove any residual particles from coveralls. Once the program cycle is complete, users exit out through a second door, into the cleanroom. Air showers (or air tunnels) may also be placed between cleanrooms of different ISO ratings.



Specifications:

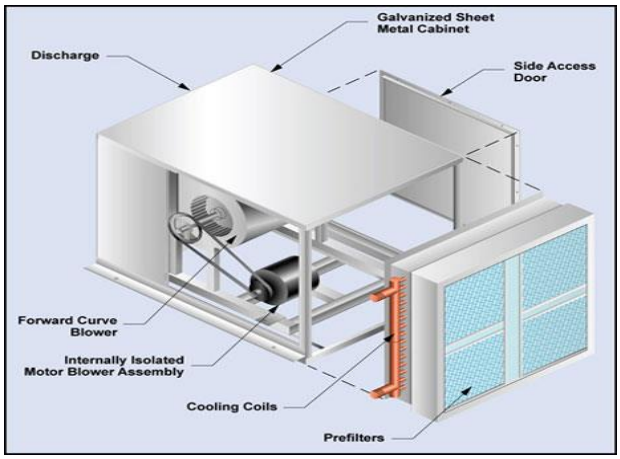
Material	MS powder coated or SS
Corrosion Resistance	Yes
Frequency	50 Hz
Model	KAS-H6
External Dimensions	2265 x 3000 x 2050 mm
Internal Dimensions	1830 x 2920 x 2000 mm
Air Shower Velocity	20 - 22(m/s) /3.937 - 4.330(fpm)
Voltage	220-240 VAC

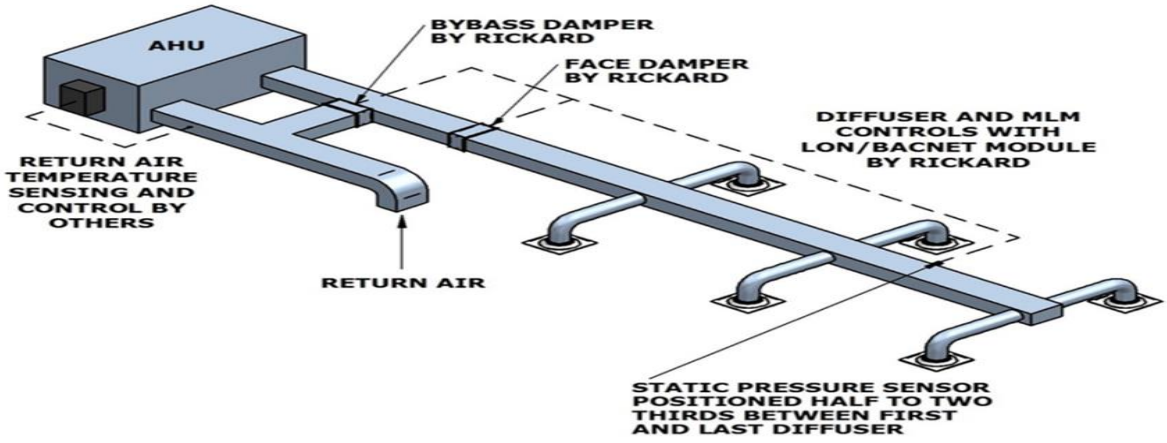
AHU:

An air handler, or air handling unit (often abbreviated to AHU), is a device used to regulate and circulate air as part of a heating, ventilating, and air-conditioning (HVAC) system. An air handler is usually a large metal box containing a blower, heating or cooling elements, filter racks or chambers, sound attenuators, and dampers. Air handlers usually connect to a ductwork ventilation system that distributes the conditioned air through the building and returns it to the AHU. Sometimes AHUs discharge (supply) and admit (return) air directly to and from the space served without ductwork.

Air handling units' condition and distribute air within a building. They take fresh ambient air from outside, clean it, heat it or cool it, maybe humidify it and then force it through some ductwork around to the designed areas within a building.

Most units will have an additional duct run to then pull the used dirty air out of the rooms, back to the AHU, where a fan will discharge it back to atmosphere. Some of this return air might be recirculated back into the fresh air supply to save energy.





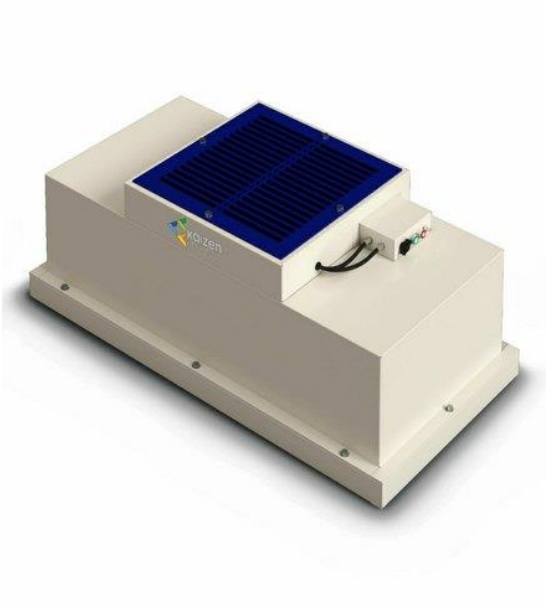
Fan Filter Unit:

Fan Filter Units direct a vertical laminar flow of filtered air downward through the enclosed cleanroom area.

Each includes a 1200 CFM impeller blower (rated at 90 FPM with filter load) mounted in an MS housing with a plenum design that ensures ample air velocity across the entire face of the filter. A HEPA (high efficiency particulate air) filter installed inside the housing is rated 99.99% efficient at 0.3um particles. The filtration medium consists of micro porous polyurethane mini-pleats held in place by strong, rigid plastic separators that keep the medium from nesting. This design channels airflow with optimal efficiency to reduce resistance. The filter is sealed into the sturdy powder-coated steel frame with a fire-retardant, non-outgassing adhesive. Power to the Fan Filter Units is controlled by a master ON/OFF switch located on the cleanroom control panel. All 120VAC units and 220VAC, 60Hz units are UL listed. CE-marked models are available for 220VAC, 50Hz operations.

Specifications:

Material	SS 304,MS powder coated
Frequency	50 / 60 HZ
Surface Finishing	matt finish, Mirror Finish, Glossy Finish, Powder Coated
Brand	Kaizen
Size	4 x 2 or 2 x 2 ft
Velocity	0.45 m/s
Airflow Speed	800 cfm
Efficiency	99%

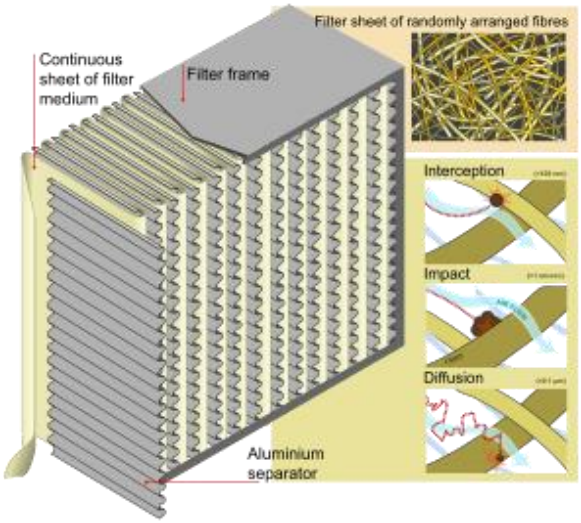


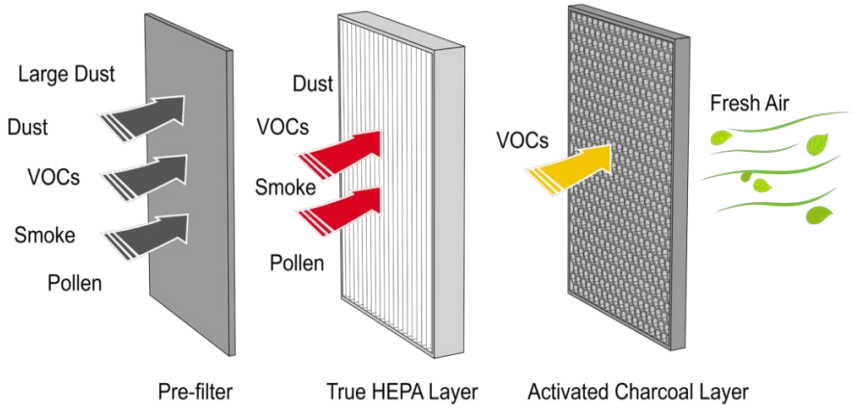
Applications:

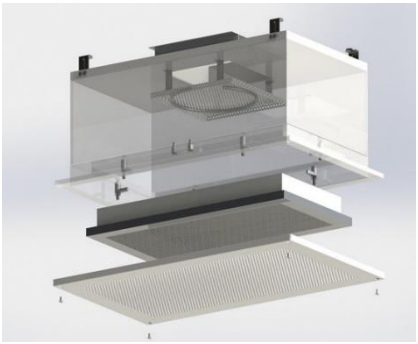
1. Hospital Pharmacies
2. Microelectronics manufacturing
3. ISO classified clean rooms
4. Food processing industry
5. Bio-safety laboratories.
6. Operating Theatres
7. Research Laboratories

HEPA filter with HEPA terminal box:

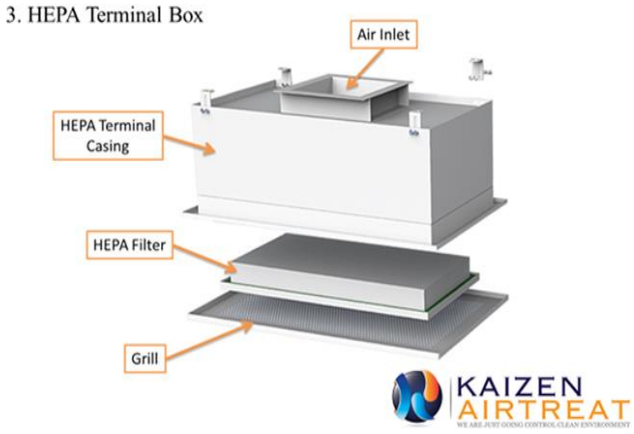
HEPA is a common term for High-efficiency particulate air. It is very important for any air purifier to work at its best. The HEPA filter is very powerful. It has the ability to kill 99.9% of harmful air particles. These particles are usually 0.3 microns or less. These microns are very small and are often can't be seen through naked eyes.







HVAC



HEPA stands for high-efficiency particulate air. A HEPA filter is a type of mechanical air filter; it works by forcing air through a fine mesh that traps harmful particles such as pollen, pet dander, dust mites, and tobacco smoke. You can find HEPA filters in most air purifiers.

The difference between a HEPA filter and other filters is that HEPA filters are made of thin fibres of glass, and contain some level of activated carbon-based material.

Pressure gauge:

Pressure gauge is used to show positive pressure inside cleanroom.

Control panel:

An on/off switch controls the lights and key-switches control the fan/filter units. Both controls are located on the control panel adjacent to the front access door.

Light:

LED cleanroom lighting fixtures are ideal for cleanrooms, pharmaceutical and biomedical labs, food processing centres, hospitals and high moisture areas. The totally sealed housing of the fixture maintains ceiling integrity and protects against infiltration of particles and airborne bacteria.

Cleanroom Doors:

Swing door:

Cleanroom swing doors consists of single and double doors. The construction foresees a visible frame in tubular aluminium coupled with a panel, blind or glazed, normally realized with the same materials of the walls in which they are inserted. All assembly points or surfaces are sealed with silicone to simplify cleaning operations and, above all, to guarantee a real air tightness.

Doors are used with standard sizes and sometimes also customised sizes are provided as per requirement. Material used for doors are of puff, SS, Glass with Al extrusion frame having cleanliness properties, fire rated which will according to customer's requirement.

Cleanroom swing doors includes different type of material that's suits cleanroom properties. Such as glass/transparent doors, doors with view panel or without view panel, double swing single swing etc.

Sliding Doors:

Cleanrooms are highly versatile environments and for this reason, it is important for them to have entryways that can live up to the demands of this particular area. Thankfully, there are now cleanroom automatic sliding doors that can meet and even exceed the expectations of the users.

With the help of these automatic sliding doors, the ease and speed of transferring various materials in and out of the cleanrooms will help a lot in increasing and improving production.

Sliding doors have high functional features of its own and if these doors come with improved customization, their features gain additional value. One of the prominent sliding doors is glass sliding doors. We use these doors of standard size and also customized if required. Doors are designed for tough everyday operation, extremely sturdy, resistant to impact and effectively corrosion-protected. Sliding doors having variety of manually slide doors, automatic slide doors accordingly.

Sliding door can be manual sliding door or automatically sliding door. Depends on cleanroom type and customer requirement door can be choose. Sliding door are in standard size or customised if required.

Transparent sliding doors are commonly used in biosafety, hard wall cleanrooms and non-transparent are used in insulated wall cleanrooms.

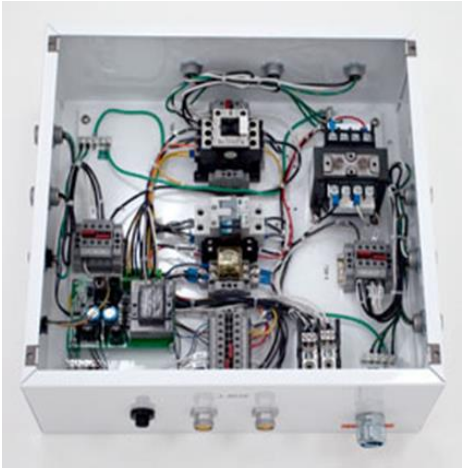
Shutter/Rollup Door:

Insulated cleanroom doors are of swing doors, sliding doors and shutter doors. We used shutter doors for large sized opening.

Motorized Rolling Shutters are typical, are perfect for circumstances where side room is less and security is required. Rolling Shutters need very less headroom above the structural opening. They combine strength with elegance along with toughness and are designed for both external and internal applications. Automatic Rolling Shutters are made-up of interlocked Galvalume, Galvanized Insulated and Non Insulated, Stainless Steel, Patented Aluminium profiles and patented Bright Steel Bar Rolling Grills. Automatic Rolling Shutters are strongly built to endorse trouble-free process and long life. The Motorized Rolling Shutters can also be planned as per customer's conditions or conforming to IS6248. Clean Room Doors are best suited for pharma industries where you need to have controlled environment. The opening and closing of door is fast enough to separate two areas.

Power distribution module:

PDMs house electrical components in an easy-access housing that makes it easy to add fan/filter units or lights if requirements change. Power Distribution Modules (PDMs) dramatically simplify connection of fan/filter modules (FFUs) and ceiling lights, while providing low-voltage power for one or more Control Panels.



Cleanroom windows:

Windows play an important role in ensuring the cleanliness of any cleanroom. It's of great importance that all outlets, entryways and openings in the cleanroom are always secure.

Total Clean Air offers a range of cleanroom windows, from semi-flush round corner windows to fully flush rectangular shape windows. Some of the cleanroom windows we offer can be hermetically sealed and coated. Our standard window units will naturally blend in with cleanroom design.

Cleanroom Validation:

Validation is an important process for any cleanroom. It serves to ensure that the cleanroom is properly installed and designed for its intended ISO classification and that all of the components (facility, environment, equipment) meet regulatory requirements and other defined standards. Cleanroom is consistent with implementing, designing, and testing to specific requirements.

Cleanrooms are validated to a required class of cleanliness that is driven by user requirements as defined in ISO 1464-1.

Methods for evaluation and measurements for Certification are specified in ISO 14644-3. It calls for the following ten tests:

- Airborne particle count test
- Airflow test
- Air pressure differential test
- Filter leakage test
- Flow visualization test
- Airflow direction test
- Temperature test
- Humidity test
- Recovery test
- Containment leak test

All these tests are done after installation of cleanroom.

These are some equipment used for cleanroom validation process:

Air Capture Hood

Digital humidity, temperature,and air flow meter

Humidity, temperature

Lux probe for measuring ligh

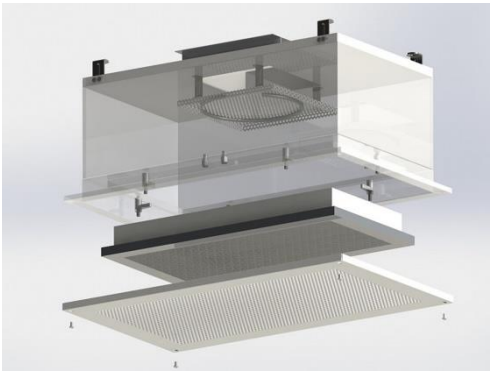
Thermal flow velocity probe

Vane measurement

Tachometer

InfraRed Thermometers

Components used for cleanroom:



HEPA terminal box with HEPA filter

Pass box

Pressure gauge

Ceiling grid

Air riser

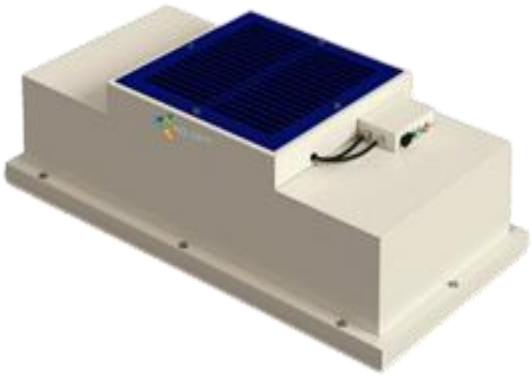
Cleanroom lights

HEPA filter

GI Ducting

Automatic sliding Door

Air Damper



Fan Filter Unit

Air shower

Reach us:

Address:

Office No. B-3, Jayguru Niwas,
Khedekar Nagar Narhe,
Pune - 411041, Maharashtra, India.

Email: info@kaizenairtech.com

Website: www.kaizenairtech.com

Mobile: 9922991491