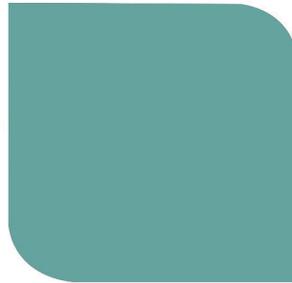




biomotion[®]
"Tailored Clean Room Excellence"

BIOMOTION MEDICAL TECHNOLOGY

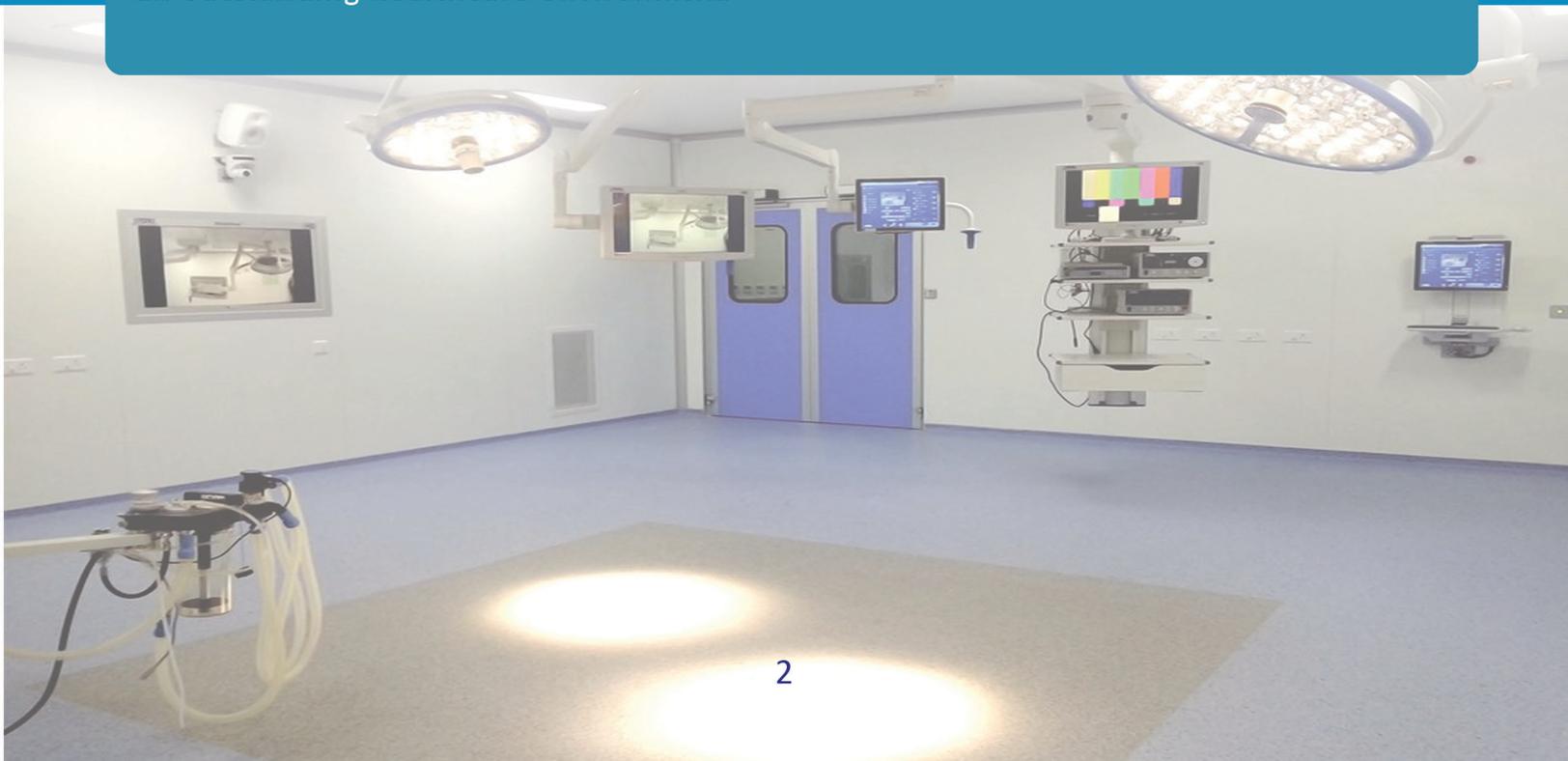
Revolutionizes Healthcare with Innovative Modular OT & Clean Rooms Equipped with HVAC Systems, Adhering to NABH & ASHRAE Guidelines.





At Biomotion Medical Technology, we are at the forefront of revolutionizing healthcare with our ground breaking modular operation theatres and advanced HVAC systems. Our unparalleled expertise in architecture, engineering and healthcare guarantees the highest standards of patient safety, surgeon comfort and operational efficiency. Adhering to NABH and ASHRAE guidelines, our state-of-the-art solutions excel in infection control and seamlessly integrate with advanced surgical technologies.

We offer both traditional AHU systems with laminar airflow, which are duct-type systems, and ductless AHU systems with laminar airflow. Designed to meet Class 100 standards, our solutions ensure the highest level of cleanliness. With flexibility and scalability in mind, we deliver bespoke installations that perfectly align with your unique requirements, ensuring an outstanding healthcare environment.



"Elevating Surgical Site Infection Prevention through State-of-the-Art Cleanroom Design."



Government of India / भारत सरकार
 Ministry of Commerce and Industry / विपणन और उद्योग विभाग
 Directorate General of Foreign Trade / विदेश व्यापार महानिदेशक

Office of the Additional Director General of Foreign Trade, Kolkata / अतिरिक्त निदेशक, विदेश व्यापार का कार्यालय, कोलकाता

4. Eplanade East, KOLKATA, WEST BENGAL, 700069 / 4. एप्लाडे ईस्ट, कोलकाता, पश्चिम बंगाल, 700069

Importer-Exporter Code

This is to certify that BIOMOTION MEDICAL TECHNOLOGY is issued an Importer-Exporter Code (IEC) ABABF7283R with details as follows -

IEC	ABABF7283R
आई एक्स इम्पोर्टर एक्सपोर्टर कोड (IEC)	ABABF7283R
फर्म का नाम/Firm Name	BIOMOTION MEDICAL TECHNOLOGY
प्रकार की प्रकृति/Nature of Concern	Partnership
व्यवस्थापक की तारीख/Date of Issue	06/02/2024
पंजीकृत/Registered Address	Ground Floor, C-1/53/1/A, New Koyal Para Lane, Ramdashati, Koyal Para, Garden Reach, Kolkata, KOLKATA, WEST BENGAL, 700024
सहस्र/सहस्र/Name of the Signatory	Avinash Kumar Singh
निदेशक/निदेशक/Details	Refer online at https://dgft.gov.in or scan the QR Code
शाखा/शाखा/Branch Details	Refer online at https://dgft.gov.in or scan the QR Code

Last Modified : 06/02/2024
 File Number : KOLIECPAPPLY00029705AM24

Note : This is a system-generated certificate. Authenticity / Updated details of the IEC can be checked at official DGFT website <https://dgft.gov.in> by entering the IEC and Firm Name under Services-> View Any IEC Details. You can also authenticate the certificate by scanning the QR code.

Government of India / भारत सरकार
 Form GST REG-06
 [See Rule 10(1)]

Registration Certificate

Registration Number : 19ABABF7283R1Z0

1. Legal Name	BIOMOTION MEDICAL TECHNOLOGY
2. Trade Name, if any	BIOMOTION MEDICAL TECHNOLOGY
3. Additional trade names, if any	null
4. Constitution of Business	Partnership
5. Address of Principal Place of Business	GROUND FLOOR, C-1/53/1/A, NEW KAYAL PARA LANE, RAMDASHATI, KAYAL PARA, GARDEN REACH, KOLKATA, WEST BENGAL, 700024
6. Date of Liability	
7. Period of Validity	From 21/02/2023 To Not Applicable
8. Type of Registration	Regular
9. Particulars of Approving Authority	West Bengal

Name: AMARENDRA NATH BISWAS
 Designation: Assistant Commissioner
 Jurisdictional Office: BUDGE BUDGE
 Date of issue of Certificate: 21/02/2023

Note: The registration certificate is required to be prominently displayed at all places of business in the State.

This is a system generated digitally signed Registration Certificate issued based on the approval of application granted on 21/02/2023 by the jurisdictional authority.

Government of India / भारत सरकार
 Form GST REG-06
 [See Rule 10(1)]

Registration Certificate

Registration Number : 19GCQPS1291K1Z0

1. Legal Name	Sunata Singh
2. Trade Name, if any	SWASTI LIFE FOUNDATION
3. Additional trade names, if any	
4. Constitution of Business	Proprietorship
5. Address of Principal Place of Business	Ground Floor, C-1/53/1/A, New Koyal Para, Ramdashati, Koyal Para, Garden Reach, Kolkata, Kolkata, West Bengal, 700024
6. Date of Liability	
7. Period of Validity	From 29/03/2023 To Not Applicable
8. Type of Registration	Regular
9. Particulars of Approving Authority	West Bengal

Name: SREETAMA ROY
 Designation: Assistant Commissioner
 Jurisdictional Office: BUDGE BUDGE
 Date of issue of Certificate: 29/03/2023

Note: The registration certificate is required to be prominently displayed at all places of business in the State.

This is a system generated digitally signed Registration Certificate issued based on the approval of application granted on 29/03/2023 by the jurisdictional authority.

Government of India / भारत सरकार
 Ministry of Micro, Small and Medium Enterprises

UDYAM REGISTRATION CERTIFICATE

UDYAM REGISTRATION NUMBER: UDYAM-WB-18-0036632

NAME OF ENTERPRISE: MS BIOMOTION MEDICAL TECHNOLOGY

TYPE OF ENTERPRISE: Micro

MAJOR ACTIVITY: TRADING

SOCIAL CATEGORY OF ENTREPRENEUR: SC

NAME OF UNIT(S): BIOMOTION MEDICAL TECHNOLOGY

OFFICIAL ADDRESS OF ENTERPRISE: NEW KAYAL PARA LANE, RAMDASHATI, KOLKATA, WEST BENGAL

DATE OF INCORPORATION / REGISTRATION OF ENTERPRISE: 01/02/2023

DATE OF COMMENCEMENT OF PRODUCTION/BUSINESS: 01/02/2023

NATIONAL INDUSTRY CLASSIFICATION CODE(S): 7110 - Architectural and engineering activities and related technical consultancy

DATE OF UDYAM REGISTRATION: 24/02/2023

* In case of graduation (upward/reverse) of status of an enterprise, the benefit of the Government Schemes will be availed as per the provisions of Notification No. S.O. 2119(E) dated 26.06.2019 issued by the MSME.

Disclaimer: This is computer generated statement, no signature required. Printed from <https://udyamregistration.gov.in> & Date of printing: 24/02/2023



Design considerations for Planning New Operation Theatres (OT) Construction as per NABH

- a) The AHU of each OT should be dedicated one and should not be linked to air conditioning of any other area for all OT constructed.
- b) Window & split A/c should not be used in any type of OT because they are pure re circulating units and have convenient pockets for microbial growth which cannot be sealed.
- c) Paint- antibacterial, anti-fungal.
- d) OT door – automatic/ Hermitically Sealed/Touch free (preferable).
- e) General Lights – Clean room lights.
- f) Provision of safety against static charge.
- g) Separate power circuit for equipment like Laser / C-ARM.
- h) The anti-static flooring, walls and ceiling should be non-porous, smooth, seamless without corners (coving) and should be easily cleanable repeatedly. The material should be chosen accordingly. Anti-static Flooring – seamless, including skirting, should not be of porous stone as it absorbs moisture and could be a source of bio-burden.





1. **Air Changes Per Hour:** **Changes Per Hour:**

- Minimum total air changes should be 20 based on international guidelines although the same will vary with biological load and the location.
- The fresh air component of the air change is required to be minimum 4 air changes out of total minimum 20 air changes.
- 100 % outdoor ventilation air systems are not mandatory. If HCO chooses to have 100% fresh air system than appropriate energy saving devices like heat recovery wheel, run around pipes etc. should be installed. The supply & return air ducts must be of non-corrosive material.

2. **Air Velocity:** The vertical down flow of air coming out of the diffusers should be able to carry bacteria carrying particle load away from the operating table. The airflow needs to be unidirectional and downwards on the OT table. The air face velocity of 25-35 FPM (feet per minute) from non-aspirating unidirectional laminar flow diffuser/ ceiling array is recommended.

3. **Positive Pressure:** There is a requirement to maintain positive pressure differential between OT and adjoining areas to prevent outside air entry into OT. Positive pressure will be maintained in OT at all times (operational & non-operational hours). Laminar flow boxes/diffusers should be installed in the OT for supplying majority air and also majority return air should be picked up 75-150 mm above floor level.

The minimum positive pressure recommended is 2.5 Pascal (0.01 inches of water)

4. **Outdoor Air intakes:** The location of outdoor air intake for an AHU must not be located near potential contaminated sources like DG exhaust hoods, lab exhaust vents, vehicle parking area.



5. Air handling in the OT including air Quality: Air is supplied through Terminal HEPA (High-efficiency particulate arrestance) filters in the ceiling. The HEPA can be at AHU level if it not feasible at terminal level inside OT. The minimum size of the filtration area should extend one feet (i.e. 304.8 millimetres) on each side of the OT table to cover the entire OT table and surgical team. The minimum supply air volume to the OT (in cubic feet per minutes CFM) should be compliant with the desired minimum air change.

6. Air Filtration: The AHU (i.e. air handling unit) must be an air purification unit and air filtration unit. There must be two sets of washable flange type filters of efficiency 90% down to 10 microns and 99% down to 5 microns with aluminium/ SS 304 frame within the AHU. The necessary service panels to be provided for servicing the filters, motors & blowers. HEPA filters of efficiency 99.97% down to 0.3 microns or higher efficiency are to be provided .

7. Temp & RH for Super-specialty OT: It should be maintained $21^{\circ}\text{C} \pm 3^{\circ}\text{C}$ (except for Ortho for Joints replacement as $18^{\circ}\text{C} \pm 2^{\circ}\text{C}$) with corresponding relative humidity between 20 to 60% though the ideal RH is considered to be 55%. Appropriate devices to monitor and display these conditions inside the OT may be installed.



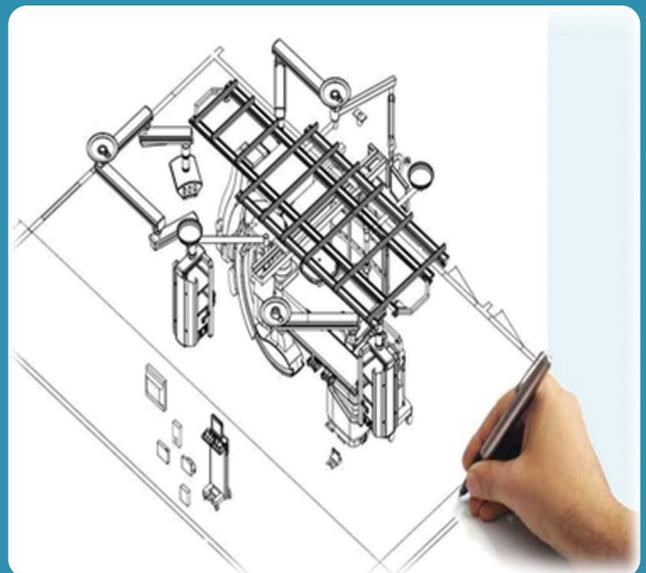


Auto CAD & 3D Design



In-house Design

Our team of expert professionals offers high-quality CAD design and engineering services, which meet the exact demands of our valued clients. We provide expertise, skill, and experience. We are able to offer fast, reliable and trustworthy service without compromising the quality of our work. The secret to our achievement is working together with our clients.





Biomotion OT at a glance

The Biomotion Modular Operating Room System is the core of our project business. This high-quality, hygienic solution consists of a substructure, wall and ceiling elements, doors, and the optional integration of built-in elements that offers you the flexibility to change and replace as needed. It is the flexible foundation for your hospital to grow and adapt to new technologies.



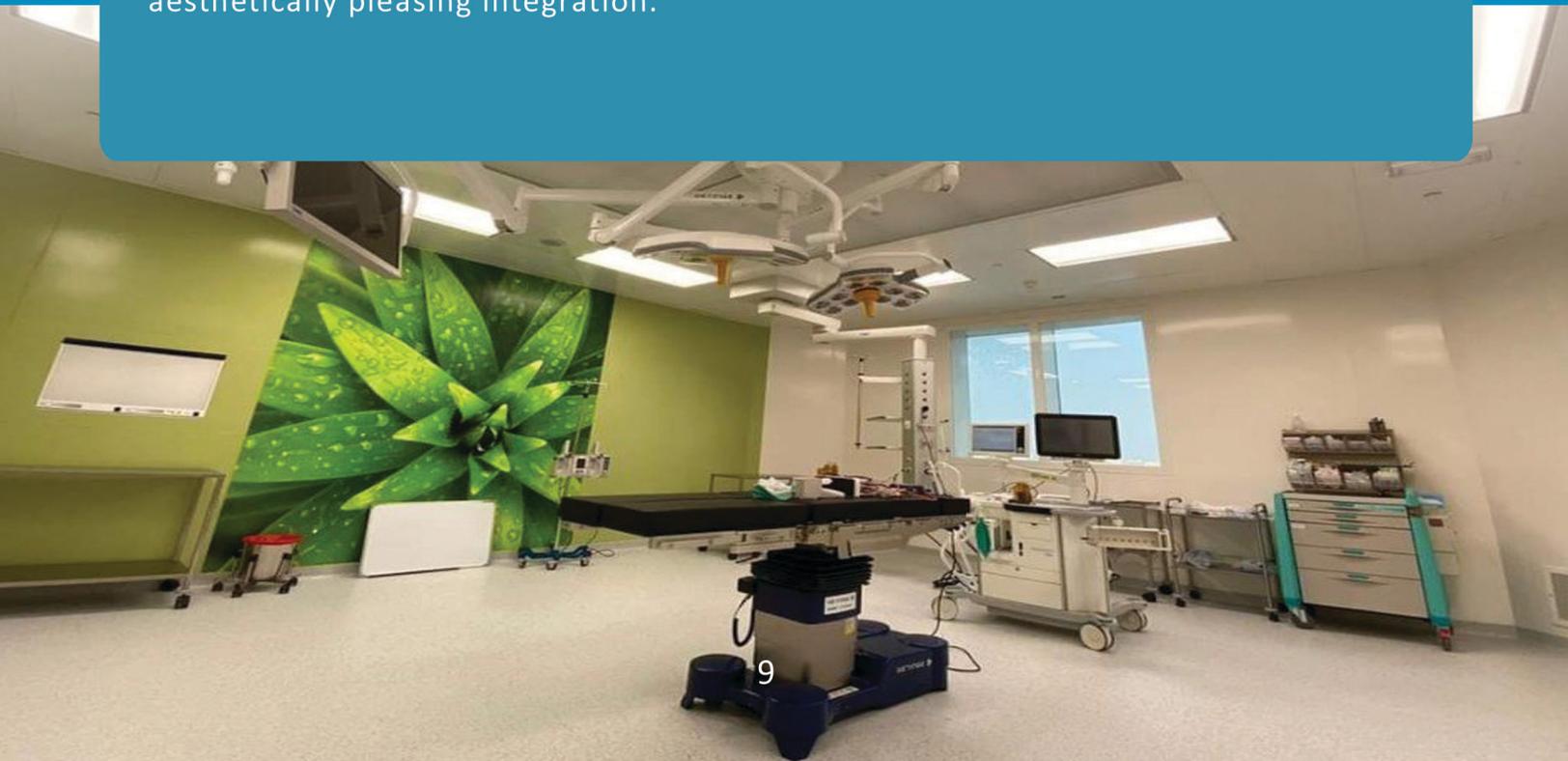
1. Substructure
2. Wall Elements
3. Cabinets
4. Modular Ceiling System
5. Glass Elements
6. Door System
7. Built-In Elements
8. 3-Parted System
9. Surgical, Endoscopy & Anaesthesia Pendants
10. HVAC



1. **Substructure:** The Biomotion elements are mounted to a solid galvanized steel substructure. Floor rails, ceiling rails and vertical mounts are used to mix-match and mount all types of panels, ensuring stability and flexibility.

2. **Wall elements:** High-quality wall components in different material options are designed to build a pleasant, safe and efficient work environment. Smooth and hygienic surfaces are easy to clean and meet the highest standards for cleanliness and safety.

3. **Cabinets:** Biomotion offers a variety of cabinets to keep items close and improve workflows. All cabinets are fully flush with the wall panels, can be outfitted with shelves and can be powder-coated to match the wall panels, ensuring a seamless and aesthetically pleasing integration.





Biomotion OT at a glance

4. Modular ceiling system: Room lighting and Laminar Airflow are integrated into the modular ceiling system. The available lighting options ensure accurate perception of tissues and colors. Biomotion LAF options are available in single-part or three-part systems, providing flexibility for various operational needs.

5. Glass elements: Thanks to windows between rooms, light can pass through to create an open atmosphere for a functional and safe working environment. Optional blinds or liquid crystal smart glass, as well as façade windows, are available. Illuminated glass wall elements help set aesthetic accents, enhancing the visual appeal and functionality of the space.

6. Door system: The Biomotion door system includes the mechanical and electrical components for sliding and hinged doors, allowing for a safe and ergonomic touchless entry, minimizing contamination risks.





7. Built-in elements: Biomotion offers a wide range of built-in elements to complement your workflows. Control panels, InfoBar, LED X-ray film viewers, signal lights and much more can be added to your room to improve everyday usability and convenience, ensuring an efficient and well-organized workspace.

8. Parted system: Three-part panels with a 200 mm installation element are suited to the installation of medical gas outlets, sockets or other wall installations. Elements can be easily disassembled and reinstalled during maintenance or modernization, providing ease of access and adaptability.

9. Surgical, Endoscopy & Anaesthesia Pendants: Biomotion offers specialized pendants designed for surgical, endoscopy and anaesthesia applications. These pendants are equipped with multiple arms for optimal reach and flexibility, integrated with medical gas outlets, electrical sockets and data ports. They provide a robust solution for organizing and accessing essential equipment and supplies, enhancing the efficiency and safety of medical procedures.



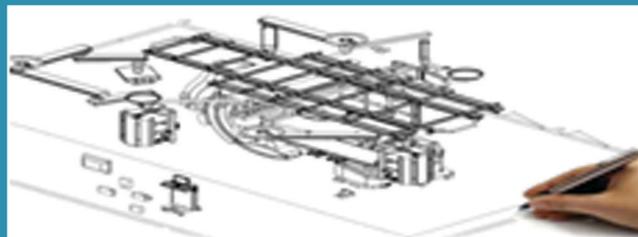


MODULAR OPERATION THEATRE

Modular represents a unique combination of design, quality, innovation and flexibility which enable customised adaptations, upgrades and the integration of new devices to be carried out at any time.

The highest quality standards are met, prefabricated modules are tailor-made to the customer's requirements and the integration of new systems and devices for operating rooms, preparation rooms and scrub areas.

We are focused on providing ideal clinical conditions in operating rooms. An OR is a dynamic work environment in which its important to communicate, have a sterile, filtered air, flushed antibacterial surfaces and controlled conditions in the OR.



Planning:

The design of the modular system is carried out in accordance with technical building requirements. We are focused on planning, designing, providing 3D visualizations and simulations for our customers according to the needs. We suggest the ideal materials which can be used, integrate all the medical equipment's and technologies internally as well as externally in order to provide the best possible solution for our customers. Our main focus remains ensuring the best possible use of resources for our customers.

Design:

Our solutions are in accordance with the international guidelines, regulations and norms. We follow NABH, GMP and FDA guidelines.

Construction:

The turnkey solutions for the OR's include complete wall and ceiling panels, HVAC, Laminar flow, antibacterial vinyl / epoxy flooring, medical gas outlets and all the medical equipment's to complement and integrate all parameters essential for the smooth operation of an OR.



The advantage of the modular systems are:
Quick installation time.
Surfaces easy to clean and disinfect.
Ease of access to all equipments and wiring behind the wall panels.
Easy dismantling for new construction, renovation and maintenance.
Perfect Integration with other equipment's.
Modern and aesthetic.

We offer the below mentioned solutions for the OR:

Wall Systems And Ceiling Systems:

Stainless-Steel PUFF panels, Pre-painted Stainless-Steel panels, GI panels with anti-microbial paint, Antibacterial PU paint on brick wall, Antibacterial PVC panels, HPL PUFF paneling, Glass, Corian and Radio-opaque lining on walls. The wall paneling is usually 50 mm thick where-as the ceiling is 30mm thick. Graphic images can also be added to add a soothing effect on the healthcare professionals and the patient.





Biomotion OR Integration Systems

Modern Operating Rooms (OR) continue to grow in complexity as new devices, processes, surgical technologies, communication methods and the need for real-time patient data enter the clinical environment. Hospitals and Ambulatory Surgery Centers must also adapt to emerging guidance, to limit exposure, to infectious disease without compromising patient care or staff safety.

Biomotion Operating Room Integration Systems, including the BioVue Integration System, are designed to:

- Improve OR workflows by putting the information you need at your fingertips.
- Allow OR staff to remotely collaborate with peers through 4K display technology during surgical procedures.
- Minimize traffic in the OR reduce trip hazards, increase clinical team safety and conserve personal protective equipment (PPE).



Metaflex Doors

Sliding Door- HPL/SS304/SMS



Sliding direction: Horizontally from left or Right
Single parting/Bi-parting. The door panel is of 60 mm thickness. (50 mm thickness for clean room) Besides EPDM sealing gasket, a special lower sealing gasket is fitted on the bottom profile of the door to ensure 100% hermetic sealing.

Metaflex is the first company in India which has introduced 100% hermetic sealing door. Available with options of manual and automation.

Standard sizes available 1200 x 2100 mm, 1500 x 2100 mm, 1800 x 2100 mm. Options: Customization as per client's requirement.

Sliding direction: Horizontally from left or Right
Single parting/Bi parting.



Clean Room-Swing HPL door

Door leaf thickness- 44 mm
4 mm thick HPL laminates
PU Insulated Core
Dead Lock (Std), Mortise Lever Handle (Optional)
Anodized Aluminum Alloy Door Profiles
Wall frame 80 mm x 60 mm
Flush View Port- 300x300 mm (standard), option maximum size 300 x 600 mm
Door Closure (on active leaf)
Concealed Flush Bolt on Passive Leaf.
Concealed Drop Seal
No Organic Material (No Decay, No Contamination)
Available in single leaf and double leaf door with automation.
(With Open/Close synchronization in both leaves).

WINDOWS:



Observation window flushed in the walls with double glazed glass. Optionally can be equipped with manual, automatic and electrically operated blinds and shutters and can be provided with lead glass for radiation protection.



SURGEON CONTROL PANEL:

The control panel is mainly used in operation theatre rooms to display the operation time, time of the day, controlling and displaying Temperature & Humidity, medical gas alarm and telephone. We manufacture and supply a wide range of Surgeon Control Panel. We are manufacturing the membrane type, touch glass type and touch screen type control panels. Our control panels are CE Marked.

TOUCH SCREEN

The touch sensitive monitor is available in 22", 27" and 32" screen from reputed brands which operates and monitors OT parameters like temperature, humidity. The graphical interface is capable of displaying all kinds of complex topologies. The status and command information is presented in a manner that is well structured and clear. The android based software is both modular and flexible, enabling it to be adapted or expanded, or to accommodate new technologies. The touch screen comprises of the following features:

1. Daytime Digital Clock Elapsed
2. Time Digital Clock
3. Anesthesia Countdown (Reverse Countdown)
4. Temperature & Humidity Indicator
5. Peripheral & OT Light Controller
6. Medical Gas Alarm (Hi/Low/Normal)
7. Hands Free Telephone
8. Music System
9. Room Differential Pressure



SPECIFICATION:

Cut-out Dimension :	860 mm X 470 mm X 200 mm.
Circuit Voltage :	24V & 12V DC.
Digital Clock :	(HH:MM:SS).
Elapsed Clock :	(HH:MM:SS) (Start-Stop-Reset)
Anesthesia Clock :	(HH:MM:SS) Reverse Countdown. Separate Switch For Display ON/OFF.
Light Control :	3 Channel (2 For Peripheral Lights & 1 For Plan Air) 0-10 V Dimming Range 2 Channel (2 For OT Lights On/Off) and 2 OT Lights.
Temperature & Humidity :	Display Room Temperature & Humidity.
Gas Alarm :	5 Channel (4 Gases + 1 Vacuum) (High/ Low/ Normal/ Indication).
Hands Free Phone :	Dialing & Receiving Calls With Caller ID.
Hepa Filter :	Shows Hepa Filter Status (Normal/Choke).
Music Player :	Plays Mp3 & Other Supported Files Through Wired And Bluetooth Transmission.

21" TOUCH SCREEN MONITOR



With the touch sensitive monitor, is a 21" touch screen monitor which can be operated directly at the touch of a finger. We have incorporated the following features in the control panel:

1. Day time Digital Clock Elapsed
2. Time Digital Clock
3. Anesthesia Countdown (Reverse Count down)
4. Temperature & Humidity Indicator
5. Peripheral & OT Light Controller
6. Medical Gas Alarm (Hi/Low/Normal)
7. Hands Free Telephone
8. Music System
9. Room Differential Pressure
10. HEPA Filter Status

SPECIFICATION:

Cut-out Dimension :	860 mm X 470 mm X 200 mm.
Circuit Voltage :	24V & 12V DC.
Digital Clock :	(HH:MM:SS).
Elapsed Clock :	(HH:MM:SS) (Start-Stop-Reset)
Anesthesia Clock :	(HH:MM:SS) Reverse Countdown. Separate Switch For Display ON/OFF.
Light Control :	3 Channel (2 For Peripheral Lights & 1 For Plan Air) 0-10 V Dimming Range 2 Channel (2 For OT Lights On/Off) and 2 OT Lights.
Temperature & Humidity :	Display Room Temperature & Humidity.
Gas Alarm :	5 Channel (4 Gases + 1 Vacuum) (High/ Low/ Normal/ Indication).
Hands Free Phone :	Dialing & Receiving Calls With Caller ID.
Hepa Filter :	Shows Hepa Filter Status (Normal/Choke).
Music Player :	Plays Mp3 & Other Supported Files Through Wired And Bluetooth Transmission.

10" TOUCH SCREEN

The touch sensitive monitor 10" touch panel is extremely robust

We have incorporated the following features in the control panel:

1. Daytime Digital Clock.
2. Elapsed Time Digital Clock.
3. Anesthesia Countdown (Reverse Countdown).
4. Temperature & Humidity Indicator.
5. Peripheral & OT Light Controller.
6. Medical Gas Alarm (Hi/Low/Normal).
7. Hands Free Telephone.
8. Music System.
9. Room Differential Pressure.
10. HEPA Filter Status
11. IPS and UPS alarm



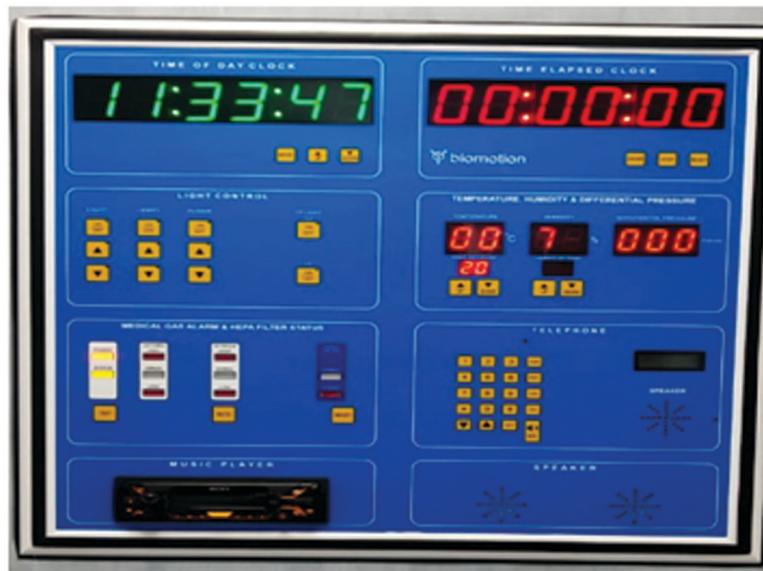
SPECIFICATION:

Cut-out Dimension :	245 mm X 155 mm X 150 mm.
Circuit Voltage :	24V & 12V DC.
Digital Clock :	(HH:MM:SS).
Elapsed Clock :	(HH:MM:SS) (Start-Stop-Reset) Separate Switch for Display On/Off.
Temperature & Humidity :	Display and control of Room Temperature & Humidity.
Light Control :	2 Channel (2 For Peripheral Lights with 0-10V Dimming Range) 2 Channel (2 For OT Lights On/ Off)
Gas Alarm :	5 Channel (4 Gases + 1 Vacuum) (High / Low / Normal Indication).
Hands Free Phone :	Dialing & Receiving Calls With Caller ID.
Hepa Filter :	Shows Hepa Filter Status (Normal/ Choke).
Room Pressure :	Displays Differential Room Pressure.
IPS and UPS Alarm	Displays IPS and UPS Alarm
Music	Option of Local and Bluetooth.

MEMBRANE CONTROL PANEL

Biomotion Membrane Surgeon Control Panel has been designed to cope with the operating theatre environment. PCB based model which is designed to be user friendly and extremely durable and can be customized as per requirement. The control panel comprising of following features.

1. Day time Digital Clock Elapsed.
2. Time Digital Clock.
3. Temperature & Humidity Indicator.
4. Peripheral Light Controller.
5. Medical Gas Alarm (Hi/ Low/ Normal).
6. LCD Hands Free Telephone.
7. Music System.
8. Room Differential Pressure.
9. HEPA Filter Status.



SPECIFICATION:

Cut-out Dimension :	640 mm X 640 mm X 110 mm.
Circuit Voltage :	24V DC.
Digital Clock :	Green Color Display (1.8 "Character HH:MM:SS) (Set-Up-Down).
Elapsed Clock :	Red Color Display (1.8 "Character HH:MM:SS) (Start-Stop-Reset).
Temperature & Humidity :	Display Room Temperature & Humidity With Controlling Outputs
Light Control :	3 Channel (2 For Peripheral Lights & 1 For Plan Air) 0-10V Dimming Range. (Can Be Customized To Maximum Of 6 Channel).
Gas Alarm :	5 Channel (4 Gases + 1 Vacuum) (High / Low / Normal Indication).
Hands Free Phone :	Dialing & Receiving Calls With Caller ID.
Optional Features Include :	Measurement And Display Of Differential Room Pressure Music System. Display HEPA Filter Status.

MAGNETIC WRITING BOARD



The magnetic writing board for the clean rooms is used for writing down information by doctors / technicians. The magnetic writing board is flushed into the Clean room wall.

The board is also coated with an antimicrobial coating making it useful for all clean rooms. The front panel can be made from Magnetic powder coated sheet and glass.

Size : 845 X 550 X 29 mm

Cutout Size : 825 X 530 mm

PASS BOX – STATIC AND DYNAMIC



We manufacture static and dynamic pass boxes with the following features.

The pass boxes are made from high quality Stainless Steel 304 Matte material.

It comes with a 1.2 mm double skinned door with matte finishing with 4 mm thick toughened glass to view inside.

Protected with Electro-magnetic locks. It consists of LED Light and UV Light.

Electrical on / off switch with both side displays.

The dynamic pass box consists of blower with vertical down flow creating a class 100/ ISO class 5 environment.

The Velocity at Grill is 0.45 ± 0.05 mps (90 ± 20 FPM), Noise level < 65Db on scale and it comes with H-14 grade HEPA Filter having efficiency 99.999% at $0.3 \mu\text{m}$. It comes with a Magnehelic pressure gauge to measure the pressure inside the chamber.



SCRUB SINK



Scrub sinks are made from Stainless Steel 304 material. We manufacture Single, Double and Triple scrub sink station in combination of Manual, IR operated, Knee Operated and foot switch operated configuration. The scrub sinks are made from high quality stainless steel SS 304 having electronic or manual taps with thermostatic controller which can be floor or wall mounted.

The scrub sinks can have extra accessories such as automatic, electrical and manual soap dispensers, paper towel dispensers and endoscope and catheter washing trays and hooks.

PRESSURE RELIEF DAMPER



Biomotion supplies SS 304 grade Pressure relief dampers with SS blade to maintain +ve pressure inside the OT. Gear operated manual dampers to be operated from laminar flow to plenum all complete as per Specifications.

Characteristics of our PRD include:

Ideal for maintaining differential room pressure, when doors are opened between clean rooms & external atmosphere.

Remains closed at pressure below the set pressure & open fully at pressure only fractionally above the threshold.

Pressure:

Cut-out Dimension: 325 (H) X 300 (W) X 100 (D) mm. We can customized the size as per user requirement.

STORAGE SYSTEM



Operation Room Storage is used for storing medical equipment, devices, medicines, etc and made from Stainless Steel with height adjustable shelves and drawers with clear glass and hinged door.

LED PERIPHERAL LUMINARIES

Biomotion specializes in the manufacture of LED Peripheral OT Ceiling Light Panels.

FEATURES:

1. Biomotion Luminaries Are Designed To Avoid Reflections (Anti-Glare).
2. Biomotion Luminaries Are Designed Specially To Facilitate The Seamless Design Of The Modular Operation Theatre In Hospitals.
3. Biomotion Luminaries Are Ip54 Grade Suited Ideally For Clean Room.



PROPERTIES

Led Life	- 100,000 Hours
Colour Rendering	- >90%
Efficiency	- >85%
Colour Temperature	- 6500K
Maximum Surface Luminance	- >13000 Lux
Dimensions	- 300 mm X 600 mm & 600 mm X 600 mm

LED X-RAY VIEW BOX (HIGH END VERSION)



Biomotion specializes in the manufacturing of LED based X-Ray Film Viewers (X-Ray Illuminator / X-Ray View Box). Keeping the needs of the doctors in mind along with the continuously changing demands of Hospitals and Nursing Homes, we have developed a sleek and effective LED Viewing System to view M.R.I, C.T. and X-Ray images. Biomotion offers Single Screen, Double Screen (Dual Screen), Three Screen (Triple Screen), Four Screen (Quadruple Screen) View Boxes.

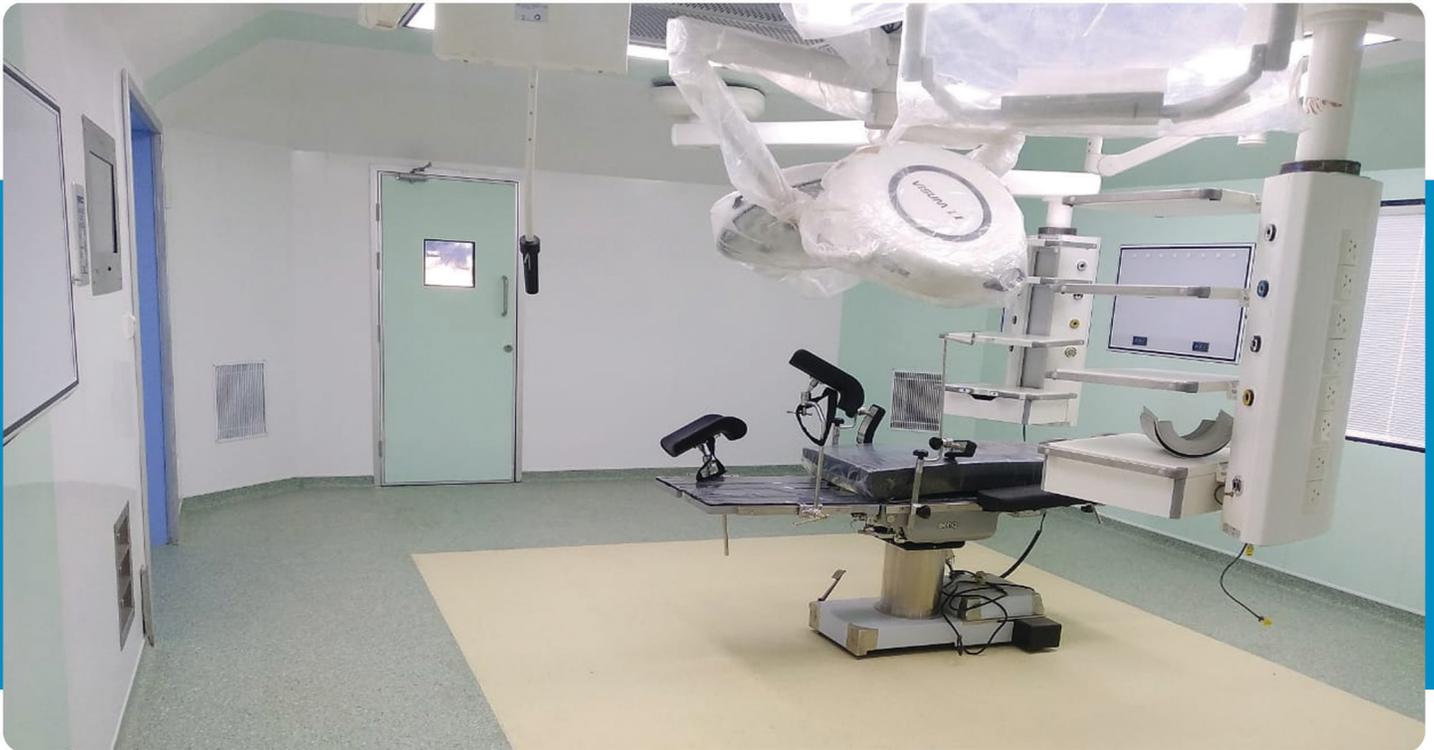
FEATURES:

1. Slim, Durable and Energy Effective.
2. Efficient: Savings Range From 82% To 93%.
3. No UV Emission.
4. Unparallel latest LED backlight technology. 4-5 times longer than regular CCFL/EEFL.
5. Power Efficient. L.E.D Light With Long Life - Upto 100,000 Hours.
6. Reliable Magnetic Nipper.
7. Initial Brightness Can Be Set.
8. Film Activation Switch-automatic Shutdown If No Film Inserted.
9. 12 Step Digital Dimmer To Get The Perfect Brightness.

PARAMETER		SINGLE SCREEN	DUAL SCREEN	TRIPLE SCREEN	QUADRUPLE SCREEN
Dimensions (mm)	Frame (W x H x D)	503 (W) x 503 (H) x 29 (D) mm	880 (W) x 503 (H) x 29 (D) mm	1255 (W) x 503 (H) x 29 (D) mm	1631 (W) x 503 (H) x 29 (D) mm
	Viewing Area (W x H)	360 (W) x 440 (H) mm	736 (W) x 440 (H) mm	1112 (W) x 440 (H) mm	1488 (W) x 440 (H) mm
Power Consumption		15W	30W	45W	60W
Light Source		LED	LED	LED	LED
Power Supply Input		AC100-240V 50/60Hz	AC100-240V 50/60Hz	AC100-240V 50/60Hz	AC100-240V 50/60Hz
Brightness (LUX)		>10,000	>10,000	>10,000	>10,000
Net Weight (Kgs)		4.8	8.8	12.4	16



Premium hygienic / Antimicrobial Cladding System



Premium hygienic / Antimicrobial Cladding System

Standard Sheet sizes:

Length: 2438mm (8')

Width: 1220mm (4')

Depth: 2.5mm

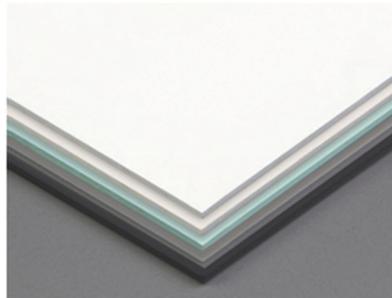
6 colours

Choose from: White | Ivory |

Pastel Green | Pastel Blue |

Grey | Titanium. Choice of Picture

sheet available on request subject to minimum order quantities.





Hospital Rooms



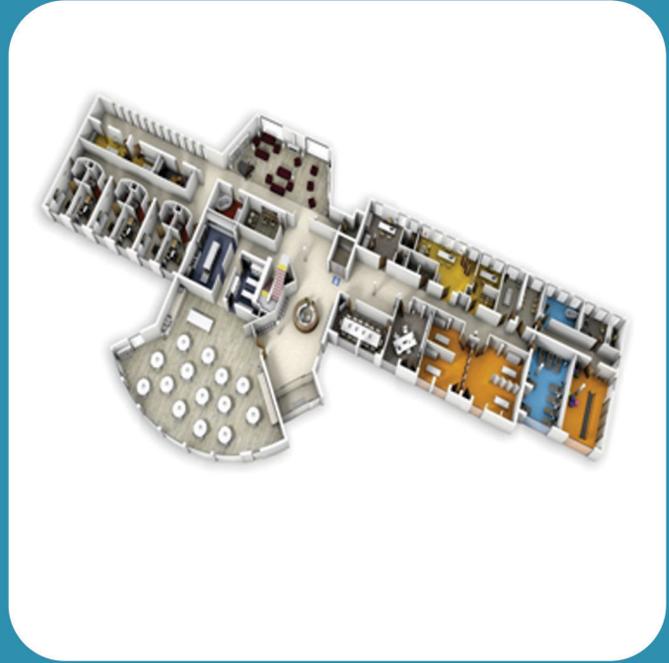
Hospital Reception





Wall & Floor Vinyl

Main Components & Different Kind of Finishes



Premium hygienic / Antimicrobial Cladding System – Wall & Ceiling

2 mm Antimicrobial Wall Cladding is a premium smooth-surfaced PVC wall cladding sheet for 'hygiene-critical environments' like hospitals, Operation Theatres, IVF OT, Pharmaceuticals etc.

Protection from viruses and germs: antimicrobial (actively prevents the spread of germs and is easy to clean & scratch-resistant)

Surface finish
Smooth gloss finish





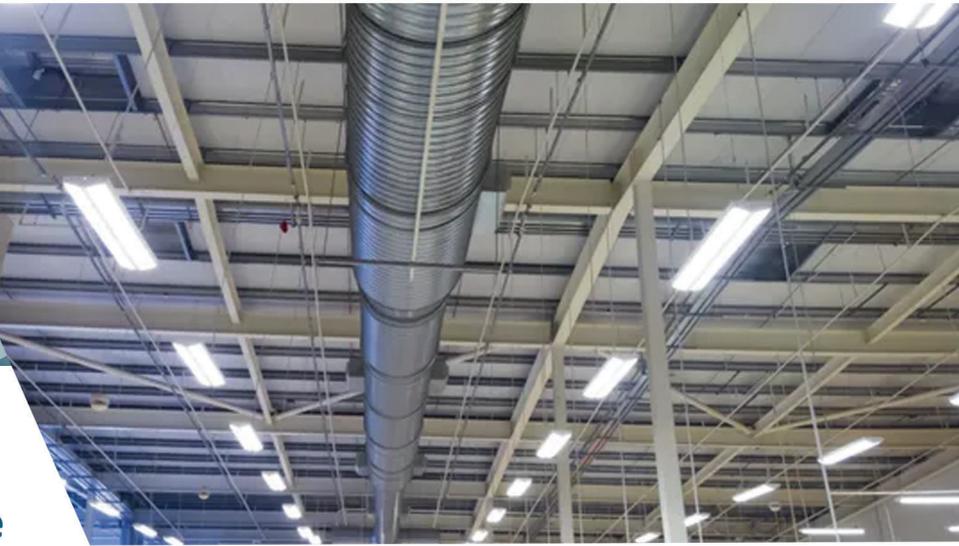
HPL Antimicrobial panels for Modular OR & Critical Care Zone

HUMAN ENGINEERING
A CLINICAL NEEDS



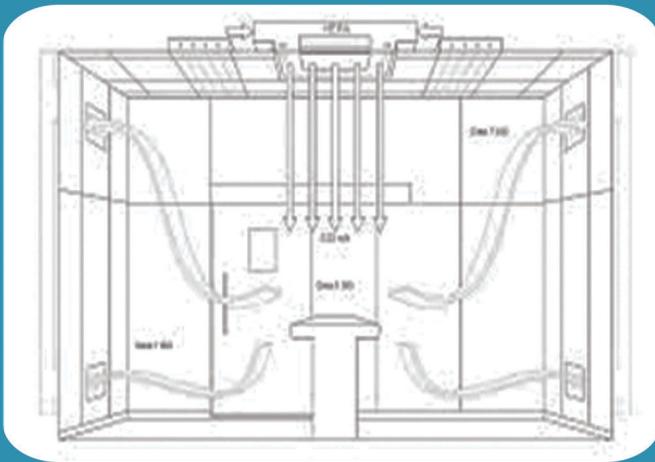
Biomotion State of Art OR

Durable and versatile with aesthetic appeal of HPL



Ventilation / Air Change

Main Components & Different Kind of Finishes



1. Air Change Per Hour: Minimum total air changes should be 20 based on international guidelines although the same will vary with biological load and the location. The fresh air component of the air change is required to be minimum 4 air changes (ie 16%) out of total minimum 20 air changes.

2. Air Velocity: The vertical down flow of air coming out of the diffusers should be able to carry bacteria carrying particle load away from the operating table. The airflow needs to be unidirectional and downwards on the OT table. The air velocity recommended as per the international and national guidelines is 90-120 FPM at the Grill / Diffuser level.

3. Positive Pressure: There is a requirement to maintain positive pressure differential between OT and adjoining areas to prevent outside air entry into OT. The minimum positive pressure recommended is 15 Pascal (0.05 inches of water).

4. Air Handling/Filtration: should be same as previous. When not possible, the OTs should be well ventilated with 2 filtrations (pre and micro filters should be in position at the AHU).

5. Temperature & Humidity: The temperature should be maintained at 20°C (70°F) \pm 2°C inside the OT all the time with corresponding relative humidity (RH) of 55% \pm 10%. Appropriate devices to monitor and display these conditions inside the OT may be installed.



CEILING SUPPLY UNIT





Biomotion provides custom-designed ceiling-mounted pendants and columns, precisely engineered to meet your specific operational requirements. Our solutions are tailored for surgical suites, anesthesia environments, ICUs, neonatology units, recovery rooms, and emergency departments.

With outstanding load capacity and a wide range of configuration options, the Biomotion ceiling supply unit enables virtually limitless horizontal and vertical positioning, ensuring your workstation is ideally arranged for maximum efficiency and optimal patient care.

SINGLE ARM PENDANT DOUBLE ARM PENDANT RIGID PENDANT



ENDOSCOPIC PENDANT

HORIZONTAL PENDANT





TECHNICAL DETAILS

Description	RIGID	SINGLE ARM	DOUBLE ARM
L x W - Console	300 mm x 200 mm	300 mm x 200 mm	300 mm x 200 mm
Height - Console	600 mm - 1000 mm	600 mm - 1000 mm	600 mm - 1000 mm
Arm Length	-	500 mm, 750 mm 1000 mm	500 mm, 750 mm 1000 mm and their combinations
Arm Thickness	-	8 mm	8 mm
Console Thickness	3 mm	3 mm	3 mm
Shape	Rectangle, Triangle	Rectangle	Rectangle
Rotation	Console 330°	0 - 330°	0 - 330°
Self-Weight	35 kg	95 kg	125 kg
Land Carrying Capacity	Max. 80 kg	Max. 120 kg	Max. 100 kg

PRODUCT DETAILS

Comply to	IS / ISO 11197:2019, IS / ISO IEC 60601-1:2015 + A1:2020 IS / ISO 7396-1 :2016 + A1 : 2017, IS ISO 9170-1 : 2017 IS / ISO 19054:2005 + A 1: 2016 (Medical Rail)
Material	High Strength Aluminium Extrusion
Application	Hospital, Clinical Purpose
Medical Rails	Integrated in Monitor Tray Itself
Gas and Vacuum units	5 - 8 Nos of connections with customized combinations
Electricals	5 - 8 Nos of 5/15A Combinations with customization with Data Port (RJ45) with Earth Protective Wiring
Earthing	Protective Earth
Aesthetics	High quality surface finish. Epoxy coated to RAL 7035 (Textured)
Connecting Hose (H.P.)	Length-Based on OT Height, Colour Coated with standard end fittings •NIST Connection on Request with extra cost
Versatility	Configurable & economic adaptation of various services

EXTRA ACCESSORIES (Add-Ons)



TRAY



WIRED
BASKET



MONITOR
ARM



MONITOR
TRAY



I.V. STAND



TRAY WITH
DRAWER



Bio-HVAC

1. The Modular Air Handling units are units with, wide and universal applications, characterised by the possibility of individual configuration tailored to the needs and preferences of the customer.

2. The units are selected using the ClimaCAD OnLine software, certified by Eurovent.

3. Capacity: from 1100 m³/h to 100,000 m³/h
Energy recovery: up to 87% recovery efficiency

Placing: floor & Ceiling mounted units and available with Single and Double Modular units.

4. The Modular Air Handling units meet the highest energy-efficiency requirements as VFD driven, The devices can be equipped with various heat recovery options:

Rotary heat wheel.

Counter-flow hexagonal recuperator.

Cross-flow plate heat recuperator.

Run-around coil.

The maximum recovery efficiency reaches 87%.

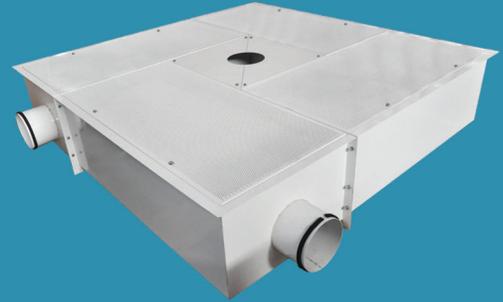
All units are available with multi-functional controls that performs advanced energy-saving functions based on measurements of air quality parameters.



LAMINAR AIR FLOW

Product Overview

- Modular design, easy assembly and installation at site
- Designed for operating theatre, providing laminar airflow
- Rust free - Galvanised steel completed with epoxy powder coated
- Room side replaceable HEPA filters
- Air tight construction
- Perforated diffuser completed with epoxy powder coated
- Sample port available
- Air tight surgical light path
- Unidirectional airflow



Filter Specification

EN1822	H13, H14
ISO 29463	ISO 35 H, ISO 45 H
Filter Depth (mm)	69
Media Type	eFRM
Frame Material	Aluminium
Separator Style	Hot Melt
Gasket Material (Standard)	PU
Gasket Material (Optional)	Neoprene, EPDM
Gasket Position	Upstream
Faceguard Position	Both Sides
Antimicrobial Available	No
Recommended Final Resistance	500 Pa
Max Operating Temperature	70°C
Air Filtration Certificate	UL 900

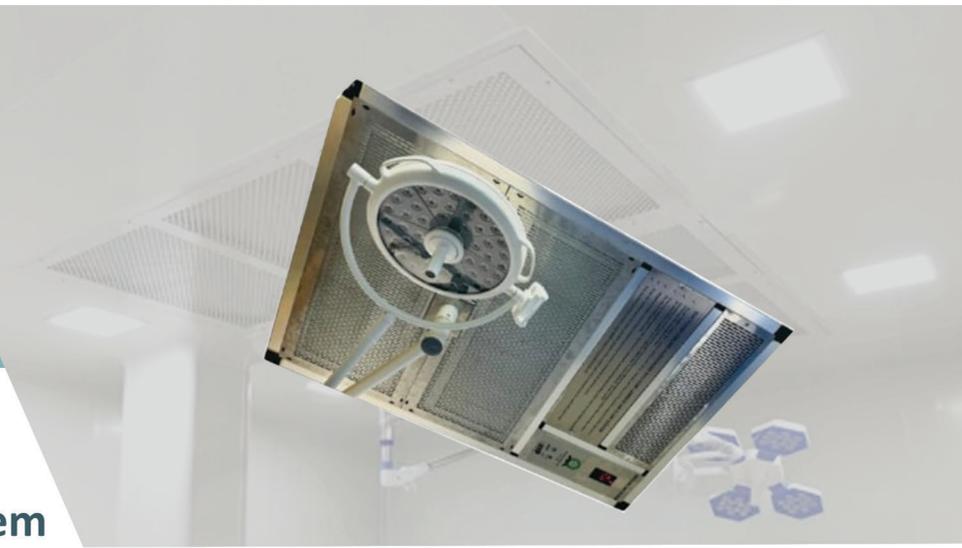
Housing Specification

Housing Depth (mm)	400
Housing Material	GI Finished with Epoxy Coated
Supply Air Grill	Perforated
Supply Air Grill Material	GI Finished with Epoxy Coated
Inlet Collar (mm)	200
Inlet Diffuser	Prefix Diffusion Plate
Special Size Available	Yes

Part Number	No. of Module	Actual Size mm (H x W x D)	Rated Airflow (CMH)		
			at 0.25 m/s	at 0.30 m/s	at 0.45 m/s
M154-514814-1001P	4	1880 x 1880 x 400	2,339	2,806	4,209
M154-514814-1002P	2 + 4	1880 x 2480 x 400	3,165	3,798	5,697
M154-514814-1003P	2 + 4	2480 x 2480 x 400	4,334	5,201	7,802
M154-514814-1004P	4 + 4	3080 x 3080 x 400	7,016	8,419	12,628

Part Number	No. of Module	Required Quantity	Filter Class	Rated Initial Resistance (Pa)
CR II 1800 x 2400 x 400				
M5752-4413-298	550 x 1150 x 69	4	H14	80
CRU-II 1880 x 2480 x 400				
M5752-4413-2878	550 x 850 x 69	2	H14	80
M5752-4413-298	550 x 1150 x 69	4		
CRU-II 2440 x 2480 x 400				
M5752-4413-2878	550 x 850 x 69	2	H14	80
M5752-4413-3274	850 x 1150 x 69	4		
CRU-II 3080 x 3080 x 400				
M5752-4413-298	550 x 1150 x 69	4	H14	80
M5752-4413-549	1150 x 1150 x 69			

**Other filter classifications are available upon request.*



biomotion[®] Ductless AHU with Laminar Air Flow System

REVOLUTIONARY IN HOSPITAL AIR CONDITIONING SYSTEM Customized Solution for Air Borne Infection Control Wherever You Want

For The First Time In The History of Healthcare, We Are Proud To Present Ductless Air Handling Unit .



**Save Upto Rs.
16,24,448/year in OPEX**

Why Compromise When You Have Better Option Available

Compatible with DX Condensing Unit, VRV & Chiller Plant, which Can be Maintained by Local AC Technician

- 7 Times Less Electrical Consumption than Traditional System.
- 15 Times More Savings Compared to the Traditional System.
- 10 Times Better Air Quality with Our Ductless Air Handling Units.



**biomotion[®] Ductless AHU
with Laminar Air Flow System**



Biomotions Ductless Laminar Airflow System creating a filtered and sterile air tent on the operating table, the Ductless Laminar Air Flow System provides the highest standards of patient safety. This air tent keeps the contaminated air out of the air tent. Class I (1–10 Particles) air quality is found near the HEPA filter in the Ductless Laminar Air Flow System. Class III (100–1000 Particles) and Class IV (1000–10,000 Particles) air quality are found on the Operation Theatre table.

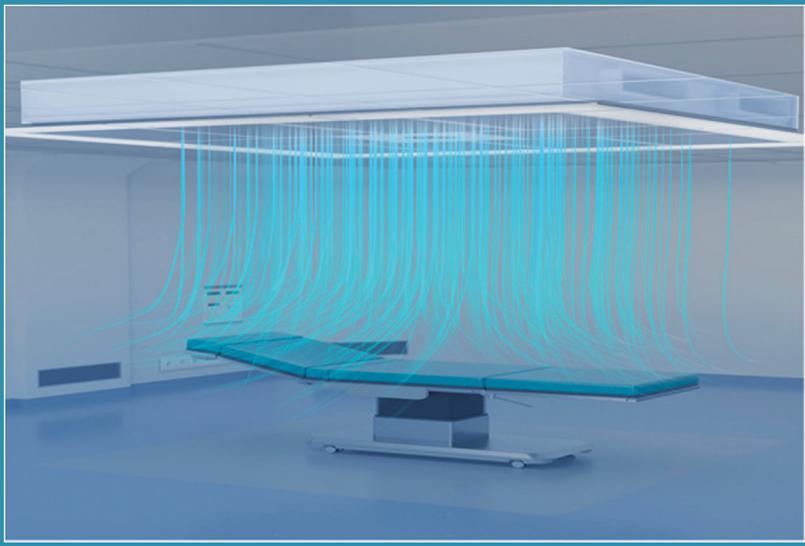
The quality of the air in the Operation Theatre Advantages of the Laminar Air Flow System Without Ducts:- A 0.18 kW blower to provide a 90–120 FPM air velocity at the grill or diffuser level.

Simple daily upkeep from within the OT. The UV light provided by the system prevents germs and fungi from growing on the HEPA filter, which has a lifespan of two to three years. A digital differential pressure gauge provides an audio visual alert and a display of the HEPA filter's condition. Display of temperature and humidity on LAF show.



biomotion®
Laminar Air Flow System

DESC: LAMINAR AIR FLOW SYSTEM			
DEV: BIOMOTION MEDICAL TECHNOLOGY			
SE: KUALA LUMPUR			
BIOMOTION MEDICAL TECHNOLOGY 50/50 Road, Kuching Papanan 1046, West Bengal, Kerala 700204 6276114949/0949123 Pn-42424242, 42424242			
TEL: 0949123456789			
DATE:	DESIGN:	SCALE:	STATUS:
REVISION:	DATE:	BY:	APPROVED:





Air Filtration And Circulation System For MOT, ICU, NICU

This System helps to prevent nosocomial infection and hospital-acquired infection. This system delivers 20-30 air changes per hour, 2.5 Pa positive pressure & 20% fresh air to minimize the biological burden. Incoming air in OT is filtered through 2 pre-filters, a non-woven bonded activated carbon filter which removes VOC and bad smell from air, and a 0.3 micron HEPA filter to arrest bacteria, fungus, and molds. This is a compact system with an aluminum composite panel and thermal profiling which does not rust easily, increasing the life of laminar air flow significantly.

Negative ionizer deactivates bacteria and virus and thus minimizes air particle count and gives freshness in the OT. Easy for maintenance as a nylon pre-filter placed in the suction part has to be cleaned once a week with plain water.





Why prefer a Ductless System over conventional Ducted System ?

A typical uncleaned Ducted System after a year or two



The horrifying reality

These images of Ducts that have neglected maintenance are horrifying and to imagine Patient and Hospital staff breathing Air coming from these Duct feels like compromising their Health and Quality of Life



The Major Issue

After a point in the life cycle of the Duct, the Ducts which were installed to control the Air born infection themselves becomes the source of infection in the modular OT which is deadly

Ductless Laminar Air Flow System

Ductless Laminar Air flow system offers superior levels of patient protection through making filtered and sterile air tent on operation table, this Air tent does not allow the infected air to enter the air tent

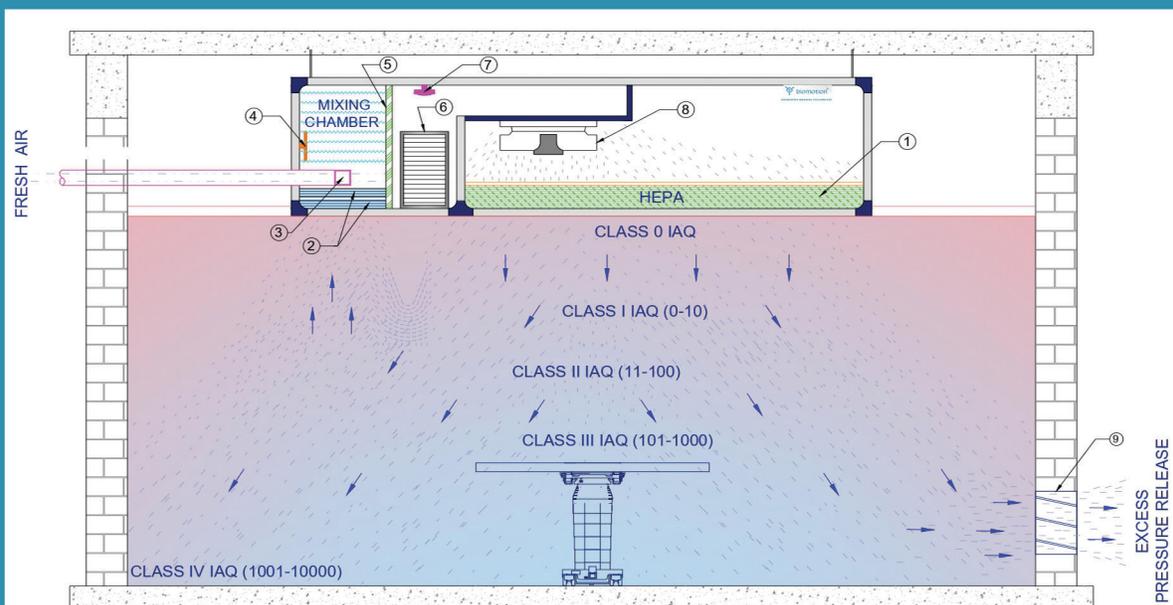
The Ductless Laminar Air Flow System has

- Class I (1-10 Particles) air quality near the HEPA filter
- Class III (100-1000 Particles) air quality on the Operation Theatre table
- Class IV (1000-10000 Particles) air quality throughout the Operation Theatre



What's Inside Ductless Laminar Air Flow System

AIR FLOW PATTERN



POSITIVE PRESSURE INSIDE OT DOESN'T ALLOW ANY BLANK POCKETS IN ANY CORNER

No	Name	No	Name	No	Name
1	HEPA FILTER (0.3 Micron)	4	NEGATIVE IONIZER	7	U V LIGHT
2	PRE FILTERS (5 & 10 Micron)	5	ACTIVATIO CARBON FILTER	8	AIR BLOWER
3	FRESH AIR DAMPER	6	EVAPORATOR COIL	9	PRESSURE RELEASE

Benefits of Ductless Laminar Air Flow System :

- 0.180kW blower to give air velocity 90-120 FPM flow at grill/diffuser level.
- Easy routine cleaning from inside the OT.
- Life of the HEPA filter used in the system is 3 years.
- UV light given near cooling coil to avoid the bacteria, fungus growth on HEPA filter.
- Digital differential pressure gauge gives display to HEPA filter condition.
- Temperature and Humidity display given on LAF show operational area's actual reading.



**PATENTED
AHU cum Ductless
Laminar Flow System**

Advantages of Ductless System against conventional Ducted System

**Basic Ductless Laminar OT with
Ceiling mounted Air Handling Unit**



OPERATION COMPARISON FOR OT SIZE 20X20X10

DUCTED AHU	DUCTLESS AHU
<ul style="list-style-type: none"> • Generally requirement of Tonnage is upto 11 to 16TR • Blower required for Ducted system is of 3HP to 5HP • During non functional hours AHU blower needs to run for 24 Hrs. Else Duct becomes wet due to condensation and bacterial proliferation occurs. 	<ul style="list-style-type: none"> • Generally requirement of Tonnage is upto 5.5 to 8TR. • Blower required for Ducted system is of 0.180 KW. • System needs to be operated 1 Hour prior to surgery.

COST COMPARISON FOR OT SIZE 20X20X10

DUCTED AHU	DUCTLESS AHU
Generally Power consumption of 1 TR - 0.8 KW/HR, TR required in the ducted system is 11 TR, Power consumption of 11 TR= 11x0.8 KW=8.8 KW/HR. Considering minimum hours usages = 6HR, the Rate of 1 Unit of energy is Rs.12/-	Generally Power consumption of 1 TR - 0.8 KW/HR, TR required in the ductless system is upto 8 TR, Power consumption of 8 TR= 8x0.8 KW=6.4 KW/HR. Considering minimum hours usages = 6+1HR, the Rate of 1 Unit of energy is Rs.12/-

TOTAL YEARLY COST COMPARISON

PARAMETERS	DUCTED AIR HANDLING UNIT	DUCTLESS AHU
Electrical Consumption	10,32,804/-	1,28,772/-
Annual Maintenance	1,00,000/-	50,000/-
HEPA Filter	1,92,000/-	48,000/-
Robotic DUCT Cleaning	1,00,000/-	-
AHU Room	5,00,000/-	-
Total	19,24,804	2,26,772/-

As we can see from the calculation the ducted system consume 7 times more cost i.e. Rs. 16,98,032/- as compared to Ductless Air Handling Unit



Positive and Negative Pressure ICU & NICU

Introduction

Pressure Zones:

POSITIVE PRESSURE	NEGATIVE PRESSURE
- Prevents contaminants from entering.	- Contains contaminants within the room.

Applications

POSITIVE PRESSURE ICU/NICU	NEGATIVE PRESSURE ICU/NICU
<ul style="list-style-type: none"> - For immunocompromised patients (e.g., transplant, burn patients). - Ensures external contaminants do not enter the room. 	<ul style="list-style-type: none"> - For infectious diseases (e.g., TB, COVID-19). - Prevents the spread of airborne pathogens to other areas.

Key Features

POSITIVE PRESSURE	NEGATIVE PRESSURE
<ul style="list-style-type: none"> - Airflow Design: Greater air supply than exhaust, ensuring higher pressure inside. - HEPA Filters: Remove contaminants. - Application: Ideal for immunocompromised patients and neonatal units. 	<ul style="list-style-type: none"> - Airflow Design: Greater exhaust than supply, ensuring lower pressure inside. - Containment: Keeps air borne pathogens contained. - Application: Used in isolation rooms and for patients with infectious diseases.

Ventilation & Airflow Management

POSITIVE PRESSURE	NEGATIVE PRESSURE
<ul style="list-style-type: none"> - Air Changes per Hour (ACH): 12-15 ACH. - Airflow Direction: Outward. 	<ul style="list-style-type: none"> - Air Changes per Hour (ACH): Minimum of 12 ACH. - Airflow Direction: Inward.

Infection Control Considerations

POSITIVE PRESSURE	NEGATIVE PRESSURE
<ul style="list-style-type: none"> - Prevents entry of external pathogens. - Requires regular monitoring of pressure differentials. 	<ul style="list-style-type: none"> - Contains infectious agents within the room. - Needs continuous monitoring of airflow and filtration systems.



Patient and Staff Safety

POSITIVE PRESSURE	NEGATIVE PRESSURE
<ul style="list-style-type: none"> - Reduces infection risk for vulnerable patients. - Requires strict protocols for pressure balance. 	<ul style="list-style-type: none"> - Protects healthcare workers and other patients from infections. - Requires airtight construction and regular HVAC maintenance.

Design Considerations

POSITIVE PRESSURE	NEGATIVE PRESSURE
<ul style="list-style-type: none"> - Sealed windows/doors and controlled access points. 	<ul style="list-style-type: none"> - Dedicated exhaust systems, airlocks, and anterooms for staff entry.

Compliance with Standards

POSITIVE PRESSURE	NEGATIVE PRESSURE
<ul style="list-style-type: none"> - Adheres to NABH and ASHRAE standards. 	<ul style="list-style-type: none"> - Compliance with CDC and WHO guidelines.

Challenges

POSITIVE PRESSURE	NEGATIVE PRESSURE
<ul style="list-style-type: none"> - Maintaining consistent pressure, energy usage. 	<ul style="list-style-type: none"> - Preventing leaks, ensuring containment.

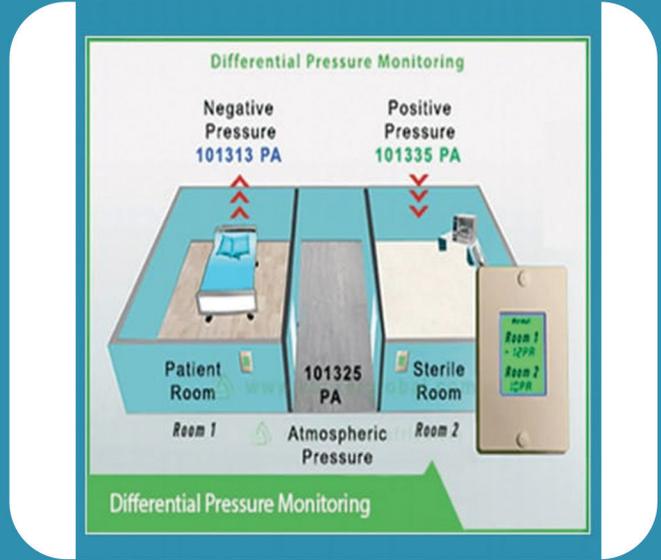
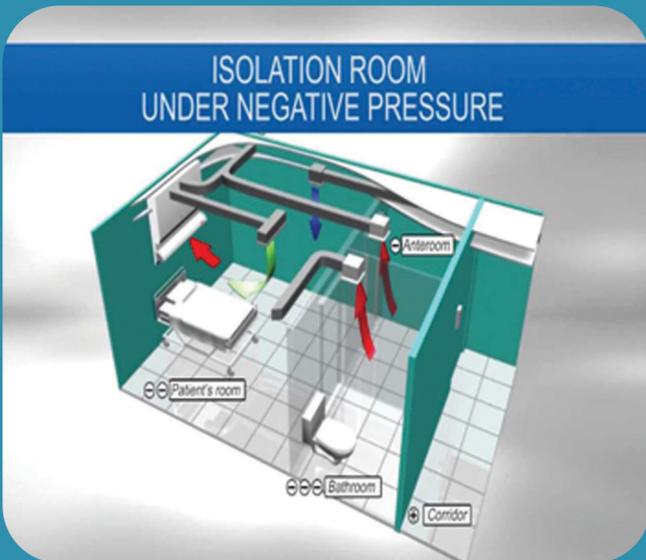
Solutions

POSITIVE PRESSURE	NEGATIVE PRESSURE
<ul style="list-style-type: none"> - Advanced HVAC, regular checks. 	<ul style="list-style-type: none"> - High-quality construction, routine maintenance.

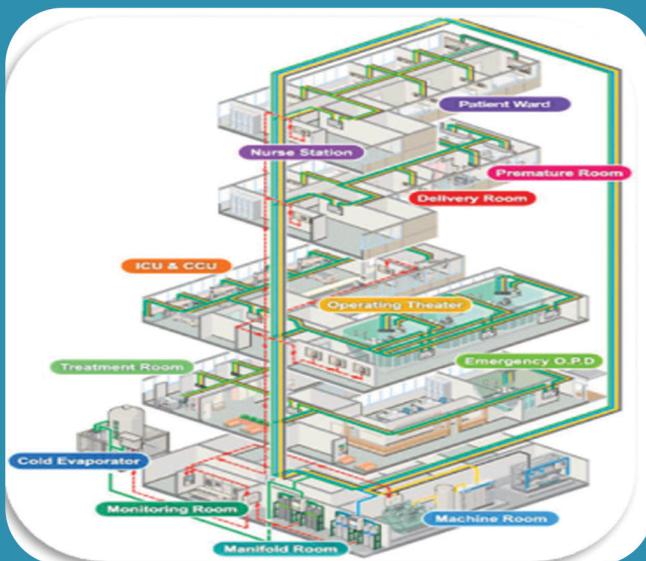


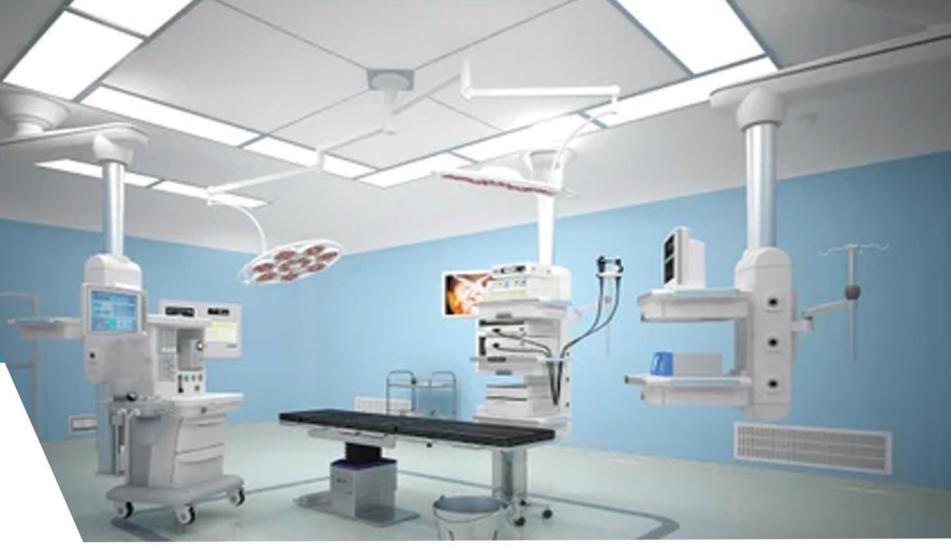


Isolation Room Under Negative Pressure



MGPS SYSTEM



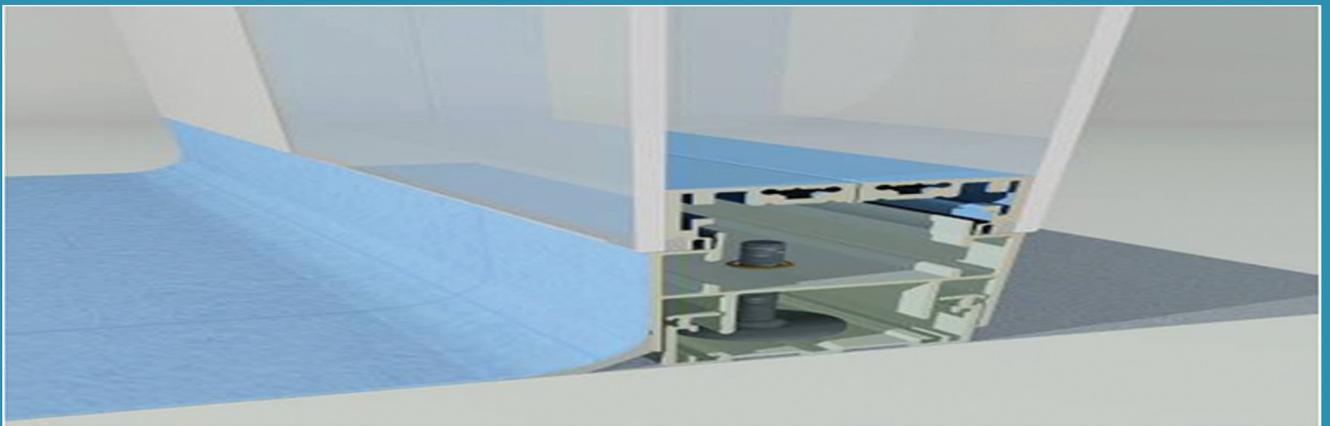


In-house Design





In-house Critical Design





In-house ICU Design







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