ALAK

INTRODUCING FIRST DUCTLESS AIR HANDLING UNIT

Patented System for Air Borne Infection control

FOR HOSPITALS, OTS, ICU, NICU, IVF LABS

Specialized in :-

Modular Operation Theatre
PSA Oxygen Generation Plant
O3 GEN Machine
Ductless Air Handling Unit
Ductless Laminar Air Flow System

ALAK

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CONVERT ANY OT INTO LAMINAR HEPA OT WITH OUR REVOLUTIONARY DUCTLESS SYSTEM WITHIN 48 HOURS!!!

With Ceiling Suspended AHU CUM LAF System Almed Equipments have made infection control in smaller OT/Rooms very economical ,we made this system compact and effective so we can achieve our vision of *"Clean Air , Everywhere "*

We Also Provide :-

- Ozone Generator
- Ceiling Mounted AHU Cum laminar air flow system
- Medical grade pipeline system
- Negative Pressure System
- HEPA Filters
- Anesthesia Pendant
- X-ray view box
- Surgeon Control Panel
- Negative Ionizer
- Storage Box

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

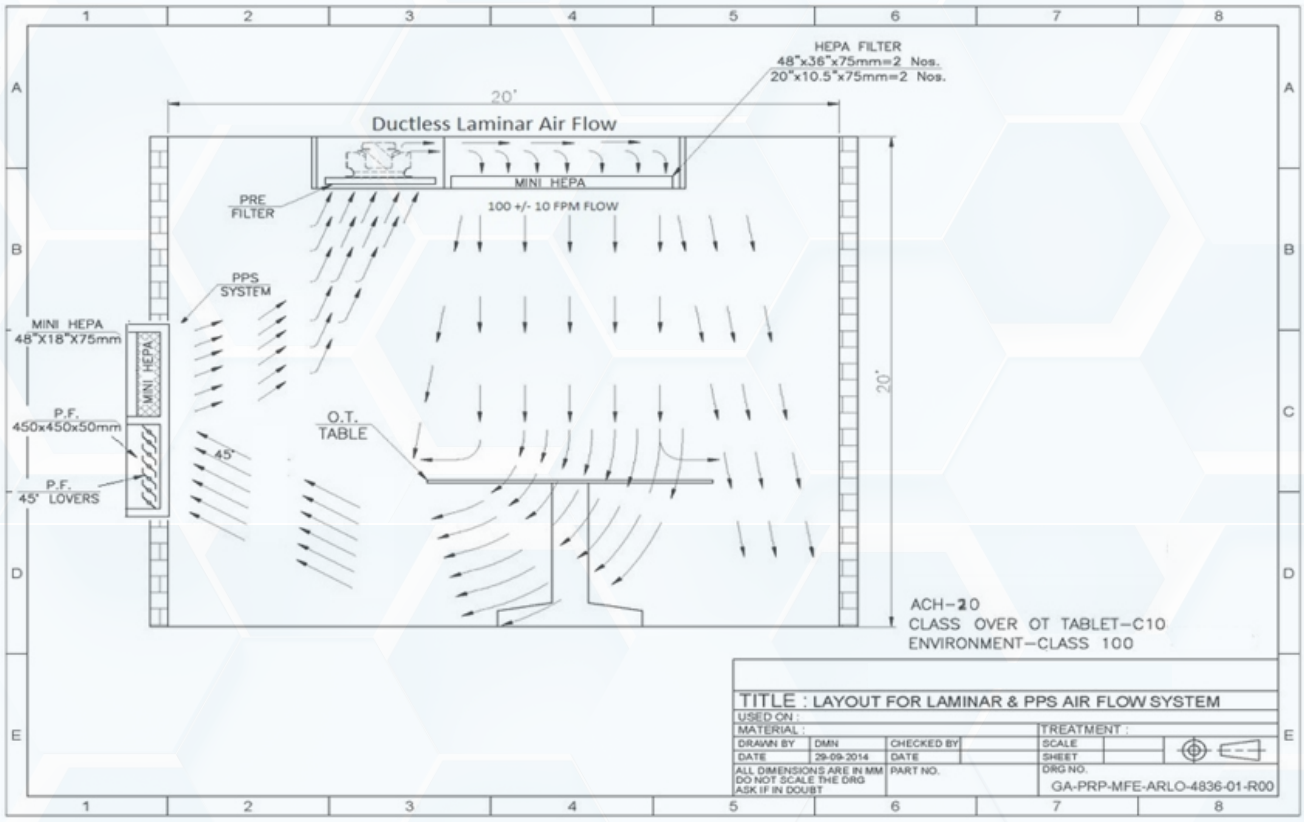
The Ductless Laminar Air Flow System has

- 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

Laminar Air Flow System

AIR Flow Pattern



Benefits of Ductless Laminar Air Flow System :-

- 0.18 kW 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 2 to 2.5 years
- UV light given to avoid the bacteria, fungus growth on HEPA filter
- Digital differential pressure gauge gives display to HEPA filter condition with audio visual alarm
- Temperature and Humidity display given on LAF show operational area's actual reading

Ductless Air Handling Unit

Ductless Air Handling Unit

For the first time in the history of Healthcare System we are proud to present Ductless Air Handling Unit

Aluminum double skin acoustic panel body with thermal break.

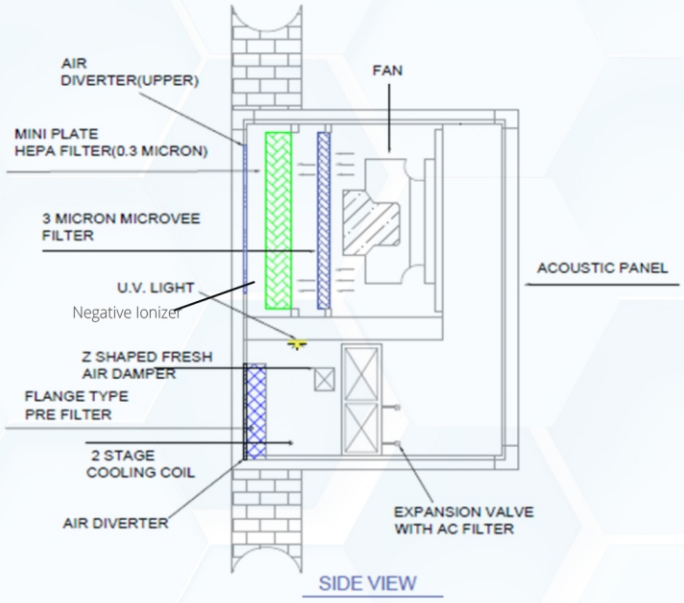
A HEPA filter of 0.3 micron is used

According to NABH Guideline :-

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 is 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.

INSIDE OF AN

Ductless Air Handling Unit



- **It has pressure damper in the unit to get desired level of fresh air & to maintain positive pressure inside the operation theater.**
- **Air recirculation keeps operation theater air more sterile**
- **Standby outdoor unit helps air conditioner to maintain desired temperature 18-21 degree in Operation Theatre.**
- **AC flows comes through AHU not from LAF which reduces chances of hypothermia in patient**
- **Easy routine cleaning of pre filters given lowers of AHU hence it is easy for maintainance**

Ductless Air Handling Unit have Live monitoring LCD display for infection controlling parameter includes:

1. Actual Temperature display with control.
2. Airflow from HEPA filter.
3. Air changes per hour.
4. Air particle quantity.
5. HEPA filter working status.
6. Positive pressure inside room.
7. Room Ready for operation indication with checklist all parameter will be sent via SMS every hour.

Difference Between Ducted and Ductless system

Ductless Air Handling Unit	Ducted Air Handling Unit
• 8 TR Outdoor Unit sufficient to give cooling in OT.	• 11 TR Compressor required in Outdoor Unit.
• 0.180 kW blower to give air velocity 90-120 FPM flow at grill/diffuser level	• 3-5 kW electrical consumption for AHU blower depending on length of the duct.
• Easy routine cleaning of pre filters given in lowers of AHU, hence it is easy for maintenance.	• Routine Cleaning of the duct is not possible
• UV light given near cooling coil to avoid fungus, bacterial growth on condensing coil.	• Not Available
• Digital Differential Pressure Gauge for checking HEPA filter status and positive pressure in room.	• Ducted System does not provide HEPA filter status through digital differential pressure gauge, they provide digital differential pressure gauge only to check positive pressure in Operation Theatre.
• LAF has to start before 1 hour to get desire particle count (class 100) on table and temperature & humidity & OT class is class-10000.	• During the non functioning hour AHU blower will be operational round the clock and particle count get on table class-10000 and OT room class get 1 Lac.
• Annual Maintenance Cost of Ductless Air Handling Unit is 3% which is nearly 25,000 Because there is no Duct, which reduces maintenance cost	• Annual Maintenance Cost of Ducted Air Handling Unit is Approximately 7% which goes upto 75,000 to 1,00,000 Rupees Because of maintenance of leakages and Insulation of Duct
• RoboticDuct Cleaning is not required in Ductless Air Handling Unit	• Robotic Duct cleaning has to be done Every 6 months before changing HEPA Filters which costs upto 50,000 Rupees i.e. 1,00,000 annually

Electrical Consumption: Ductless Air Handling Unit

Generally, Power consumption of 1 ton - 0.8 kW/hr
Tonnage required in Ductless System is 8 tons
Power consumption of 8 tons ducted system = 8 X 0.8 kW= 6.4 kW/hour
Considering Minimum hours usage= 6 plus 1-hour prior system has to be switched ON for 20 air cycles
Power Consumption in 7 hours= 44.8kW
Considering the price of 1 unit to be 11Rs
Power Consumption rate per day = Rs. 492.8
Power Consumption rate per month = Rs. 14784
Power Consumption rate per year= Rs. 1,77,408
Rest Hours= 17
No need to keep Air handling Unit ON

Total Annual Maintenance Cost = 25,000
Robotic Duct Cleaning Cost = 00 (Not Requied)
HEPA Filter Changing Cost = 48,000

Total Cost Per Year :- 2,50,408

Electrical Consumption: Ducted System

Generally, Power consumption of 1 ton - 0.8 kW/hr
Tonnage required in Ducted System is 11 tons
Power consumption of 11 tons ducted system = 11X 0.8 kW = 8.8 kW/hour
Considering Minimum hours usage= 6
Power Consumption in 6 hours= 52.8kW
Considering the price of 1 unit to be 11Rs
Power Consumption rate per day = Rs. 580.8
Power Consumption rate per month = Rs. 17424
Power Consumption rate per year= Rs. 2,09,088
Rest Hours= 18
To maintain Ambient Temperature even is Variable Fan Device is reduced to 50%
Power consumption in remaining hours= 2kW X 18 = 36 kW
Power Consumption rate per day = Rs. 396
Power Consumption rate per year= Rs. 1,42,560
Total Power Consumption Rate
Power Consumption rate per day = Rs. 976
Power Consumption rate per year= Rs. 3,51,648

Total Annual Maintenance Cost = 1,08,000
Robotic Duct Cleaning Cost = 5,25,000
AHU room consumable cost = 5,00,000
HEPA Filter Changing Cost = 1,92,000

Total cost per year 14,71,998

Therefore Going with the ductless System will save approx of INR 1225000 equlient US $ 15312.00

Ceiling suspended AHU cum LAF system

The combination of both Ductless AHU and LAF is innovated to provide both system Economical and achieve Class I air quality even in a compact space. This system has negative ionizer to deactivate Biological Burden and pollutants from air, With HEPA filter of 0.3 micron and rest filters we can achieve better Indoor air quality.

This System has following Features:

- The system Works on 1500 CFM which helps in Electricity Consumption. Unlike 4500 CFM in ducted system
- Condensing coil used in the system has larger surface area which creates lesser load on compressor ensuring smooth functioning and this lowers Power consumption.
- The Activated Carbon Filter used in our system helps to removes anesthetic gas mixtures from operating theatres and any other areas fitted with nitrous oxide terminal units.

A Unique Solution For ICU NICU

Features Of Air Filtration and Circulation System

- Helps to prevents nosocomial Infection and Hospital Acquired Infection
- 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,Non-Woven bonded activated carbon filter which removes VOC and pungent Smell from Air and 0.3 Micron HEPA filter to arrest Bacteria,fungus, molds.
- A Compact system with Aluminum composite panel and thermal profiling which does not rust easily increasing the life of the unit significantly.
- Negative Ionizer deactivates bacteria and virus and thus minimizes air particle count and give freshness in the OT
- Easy for maintenance as nylon pre-filter placed in the suction part has to cleaned once in a week with plain water.

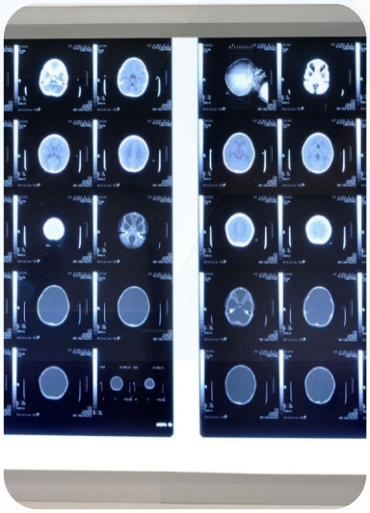
Ozone Generator

Feature Of O3 GEN – The Magical Air Disinfectant without any chemicals :- O3 Gen Kills all types of bacteria , Fungus , virus molds and reduces the biological burden upto 93% with 2.5 ppm concentration within 30 minutes. ozone having half life just 10 minutes and its biproduct is oxygen which is very safe to use in unoccupied operation theaters.

Negative Ionizer

- Power consumption 2 watt
- Cover area 150 to 180 sq. Ft
- No filteration
- No maintenance
- Improve immunity
- Increase metabolism
- 100% safe
- Good for health
- Best for room
- indicator - red led
- ONE YEAR REPLACEMENT WARRANTY

HIGHEST RATED
ANESTESIA PENDANT
★★★★★



BEST VALUE
X- RAY VIEW BOX
★★★★★

BEST VALUE
SURGEON CONTROL PANEL
★★★★★

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