



DRIVING...
HEALTHCARE
TOWARDS
EXCELLENCE



MODULAR OPERATION THEATRE & ICU

www.volantiscare.com



SHARE YOUR
DREAMS

WITH US & WE PROMISE TO
MAKE THEM
A REALITY

About Us

Volantis Healthcare Solutions (VHS) was conceptualized in the year 2005 and formally established in the year 2011. During the period of 7 years we and our team actively studied various aspects of Healthcare infrastructure design while practically handling a few projects and came to a conclusion on focussing upon the key primary areas namely Operation Theatres, ICU's and Casualty Areas.

We at Volantis Healthcare Solutions desire to bring about the Evolution in Healthcare to your Door steps. Our experienced team of engineers continuously strive to bridge the gap between evolving technologies and ideas to further Health care in a true sense.

Making the above possible in a most efficient and cost effective manner is the challenge Volantis Healthcare Solutions has vowed on your behalf. VHS is dedicated to break the monotony in designing of Healthcare facilities.

Volantis brings about the best of Technological Evolution in Modular Pre-Fabricated Operation Theatres and ICU's to the Healthcare Sector.

Services Offered

- ▼ Designing of New / Existing Operation Theatre Complex as per NABH.
- ▼ Designing of High Acuity Areas like ICU & Casualty.
- ▼ Construction of Operation Theatres Through In house Expert Team.
- ▼ Designing and Execution of Air Conditioning System as per Current Standard.
- ▼ Manufacturing of Customised Items For ICU, Casualty and Operation Theatre.



VOLANTIS MODULAR OPERATION Theatre

VHS defines Modular surfaces as tough, seamless, scratch resistant, non-reactive, easily cleanable & easily mountable. Should have high life expectancy, should be customizable as per varied challenges at the site. Should have faster and simultaneous installation process to save on installation time. VHS recommends elimination of sharp corners by creating chamfers or covings for cleanable and debris free corners. The modular wall and ceilings are preferably fabricated by the same material. This has following available choices

- Galvanized Iron (GI) (skin passed, zinc passivated, Pre and Post fabricated)
- HPL (High Pressure Laminates)
- Various grades of PVC
- Stainless Steel 304 (Might not be fully Seamless)

OUR MODULAR LAMINAR AIR FLOW

HTM 03-01 (Health Technical Memorandum), ASHRAE/ASHE (American Society of Heating, Refrigerating and Air Conditioning Engineers / American Society for Healthcare Engineering) gives us a ready made insight into the exact design considerations of Modern Modular Operation Theatres. Along with the above International Authorities, NABH (National Accreditation Board for Hospitals & Healthcare Providers) also has given its clear recommendations on the HVAC system used in modern day operation theaters.

The recommendations re-iterate and define the basics as follows:

- 1) Dilution of bacterial load by continuous feed of HEPA filtered air into the operating room.
- 2) Addition of adequate amount of fresh air maintains the quality of air in the Operation Theatre along with appropriate no of Air Changes (ACH).
- 3) Dilution of dust particles (Class 100) to be maintained over the surgical site with known velocities, which are not turbulent but laminar, to create an undisturbed flow of clean air at least over the Surgical Site.
- 4) Choice of Suitable size of the central plenum to accommodate the Surgical team and the instrumentation.

VHS uses the plenum design where the central area not only serves as the supplier of clean, laminar Air in the Operation Room but also sufficient Ambient lighting over the Surgical Site which can be set as per the users desire.

The double monofilament diffuser ensures balancing of supply air and laminarity during its course vertically downwards. It freshens up the ambience with good illumination control inside an operation room. Both put together helps increasing the endurance of the surgical team.

VHS gives continuous display of differential pressure across the HEPA filter and within the room which keeps one well informed about the correct working of the filtration system as per set norms by the enforcing bodies.

OUR MODULAR CONTROL PANEL

The activity carried out in an OT makes it Imperative for the utilities to be fail proof in Nature. It requires a Singular Design process to lay the Electrical, MGPS and other Utilities and has to be done with utmost care. We need a continuous monitoring of all Inputs to the OT to ensure smooth operation of all Equipments, Devices and Vital supplies.

Volantis has developed a first in the country Control Panel System (Volantis Touch Sense) which ensures continuous monitoring of the sterility of an OT and at the same time monitors the Vitals of an OT and makes the data available centrally for the surgical team during the Operative procedures. Its unique HEPA filter monitoring tool not only assesses the health of the HEPA Filter but also gives user a direct monitoring of the sterility of an OT.

The Room Pressure monitoring tool gives user the confidence of operating in a real

controlled environment where no outside Air is allowed. Room and HEPA filter pressure changes also gives user the status of all other filters placed in the Air Conditioning system and prompts for timely maintenance. This ensures longevity of the HEPA filters, increase in the efficiency of the Air Conditioning system and savings in Electrical Power.

The "Volantis Touch Sense" is a touch screen LED control Panel is scalable and can optionally accommodate the HIS, PACS networks.

VHS control panel with its exclusive approach puts the surgeon fully in command of the operation theatre. The design and installation of control panel is done in a manner to integrate & monitor all electrical and gas supplies to the OR. The exact routing of electrical cables along with Circuit Breakers at junctions reduces chances of sudden electrical failures inside an OR.

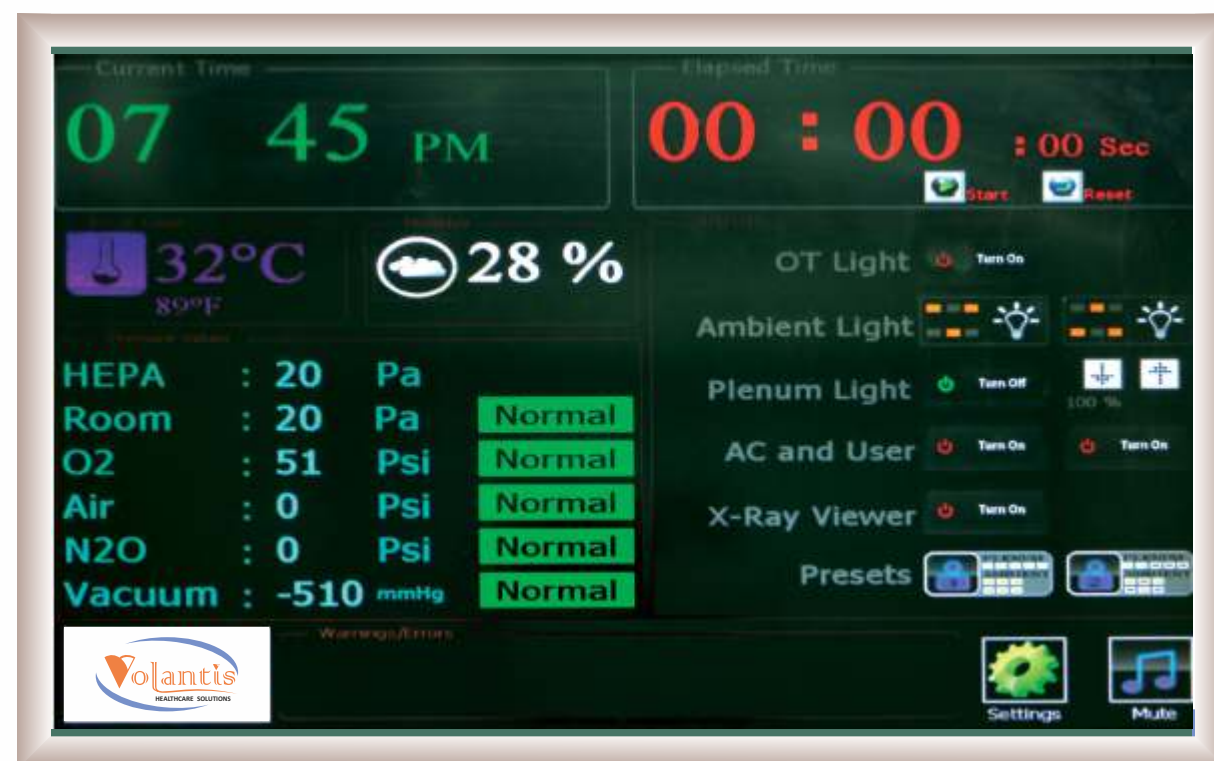
OUR MODULAR CONTROL PANEL

Volantis Capsense Control Panel



The "Volantis Cap Sense" control panel is also a standalone monitoring tool which propagates the strong message of Volantis towards operation and maintenance of a Modern Day Operation Room (OR).

1. Day time clock
2. Elapsed time clock
3. Lighting controls for Central Plenum and Peripheral lights with intensity control
4. HEPA filter Differential pressure alarm
5. Room air differential pressure with alarm
6. Oxygen pressure levels with Alarms
7. Vacuum pressure levels with Alarms
8. Medical Air pressure with Alarms
9. Nitrous oxide pressure level with Alarms
10. Room Temperature/ Humidity with alarms
11. OT Lights controls with optional intensity control
12. Control for electronic X-Ray View box
13. One open switch for user to decide
14. Two presets Display/Controls on our control panel



Volantis Touchsense Control Panel



MERITS OF MODERN DAY

OPERATION THEATRE

- Reduction of HAI (Hospital Acquired Infection), SSI (Surgical Site Infections), HCAI (Healthcare Associated Infections).
- Functionality of HVAC (Heating, Ventilation and Air Conditioning) systems.
- Design & Implementation of Electrical, MGPS (Medical Gas Pipe System), HVAC, Integration.
- Cost Optimization.
- Higher Through put and Faster Turn around times.

WHY VOLANTIS?



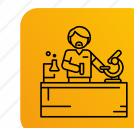
**Specialists in
Hospital Infra Design**



**Researching the
Best for you**



**Record of timely
completion of projects**



**Indigenous
development process**



**Long Standing
experience team 20 +
years in Healthcare**



**Developing
the Best for you**



**Making
evolution affordable**

Care for Health Care.....



Our System Ergonomics

Volantis Operation rooms are designed with ergonomics and practicality with optimal usage of space and manpower. Apart from the other modules, ceiling suspended delivery units (most commonly called as Ceiling Pendants) deliver best suited ergonomics to a workplace like OR and ICU.

Volantis has in house OEM's who are experts in delivering tailor made solutions for individual needs. We have close to 28 combinations available for different needs.

Volantis strongly recommends the use of ceiling pendants in the ICU's and OR's to create a more practical and clutter free ambience. In fact ICU's can also be designed with wall delivery units also known as Bed Head Panels wherever possible.

Our Door System

Volantis recommends a good airtight door system for the Operation Room. Metallic & HPL doors with appropriate insulation are the options to choose. Wide variety and designs of GI, SS, HPL doors are available in Swinging as well as Sliding doors. The choice of doors will entirely depend upon the fire rating requirements of the Operation Theatre complex and the HVAC norms.



Our Ergonomic Lighting System

Volantis Peripheral lights in the Operation Room, confirms to the IP65 standards and are exclusively manufactured at our state of the art facility.

Our Ergonomic Washing /Scrubbing System

VHS has done a lot of research in modern scrubbing techniques. We have developed user friendly designs in SS 304 to assist the surgeon in appropriate wash before the surgery.

OUR MODULAR WINDOW TO ATMOSPHERE

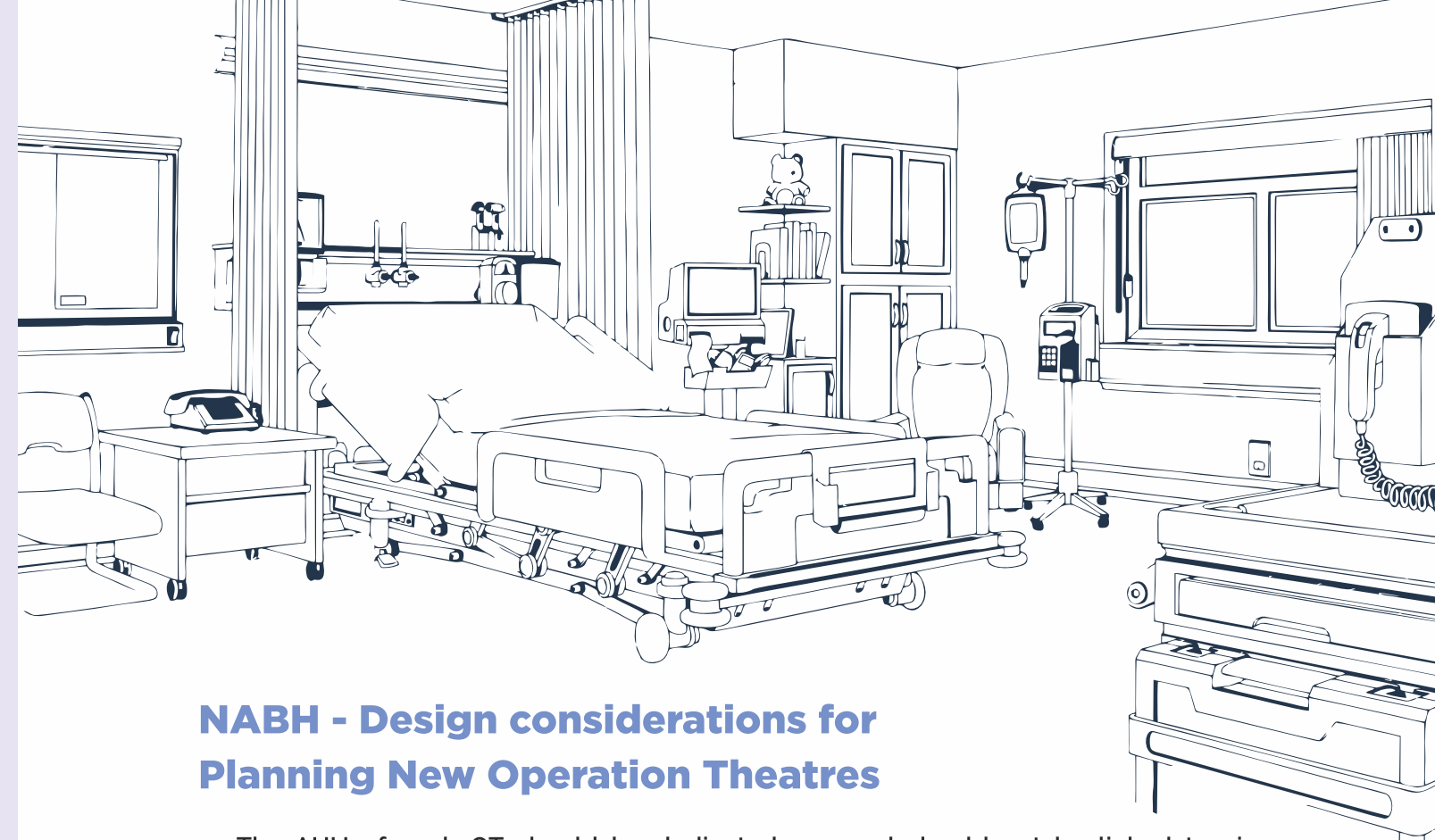


Volantis strongly recommends the use of Flushed double glass windows to allow natural sun light inside the operation theatre. Outside view also helps reduce the claustrophobia and monotony inside a closed space. The window can have motorized blinds sandwiched within the double glass layers to control the brightness as per requirements.

The sunlight kills bad bacteria: The German soldiers after World War I knew of

the discoveries that had been made in 1903 by the Nobel Prize winner Niels Finsen. They used sunlight to disinfect and heal wounds. Sunlight deprivation can cause condition called Seasonal affective Disorder (SAD), a form of depression.

VHS recommends the use of good music system for the occupants inside an OR. The music system can also double up as a PA (Public Announcement) system for communication within the OR complex.



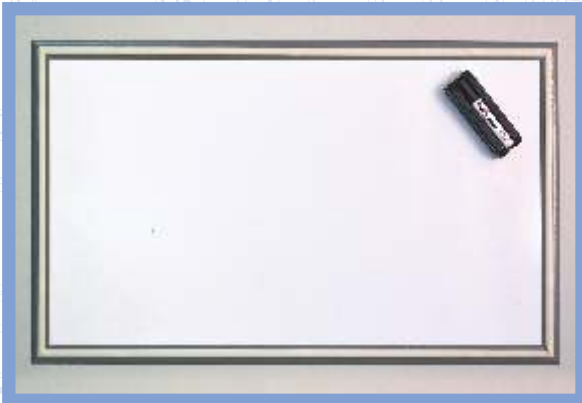
NABH - Design considerations for Planning New Operation Theatres

- 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.
- During the non functional hours AHU blower will be operational round the clock (may be without temperature control). Variable frequency devices (VFD) may be used to conserve energy.
- Window & split A/c should not be used in any type of OT because they are pure recirculating units and have convenient pockets for microbial growth which cannot be sealed.
- The 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. Hermetic sealing of the doors is recommended.
- Validation of system to be done as per ISO 14664 standards and should include:
 - Temperature and Humidity check
 - Air particulate count
 - Air Change Rate Calculation
 - Air velocity at outlet of terminal filtration unit /filters
 - Pressure Differential levels of the OT art ambient/adjoining areas.
 - Validation of HEPA Filters by appropriate tests like DOP etc; repeat after 6month in case HEPA found healthy.
- Maintenance of the system: It is recommended that periodic preventive maintenance be carried out in terms of cleaning of pre filters at the interval of 15 days. Preventive maintenance of all the part is carried out as per manufacturer recommendations.



Embedded or Flushed Fitment of Utilities:

It is recommended to fix all the utilities flushed within the modular walls to create an unhindered periphery around the OT table. The Utilities like View Box, Writing Board, Control Panel, Storage and Power Outlets are all fixed flushed with the Modular Walls



Our Modular Flooring



“Put your heart, mind and soul into even your smallest acts. This is the secret of success.”

- Swami Sivananda



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