

OPERATING ROOM DURING PANDEMIC

Our discussion will be on..

MODIFICATION OF EXISTING OT's

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Presented by

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Lets remember that.....

WE NEED TO PROTECT

-Our Patient and...

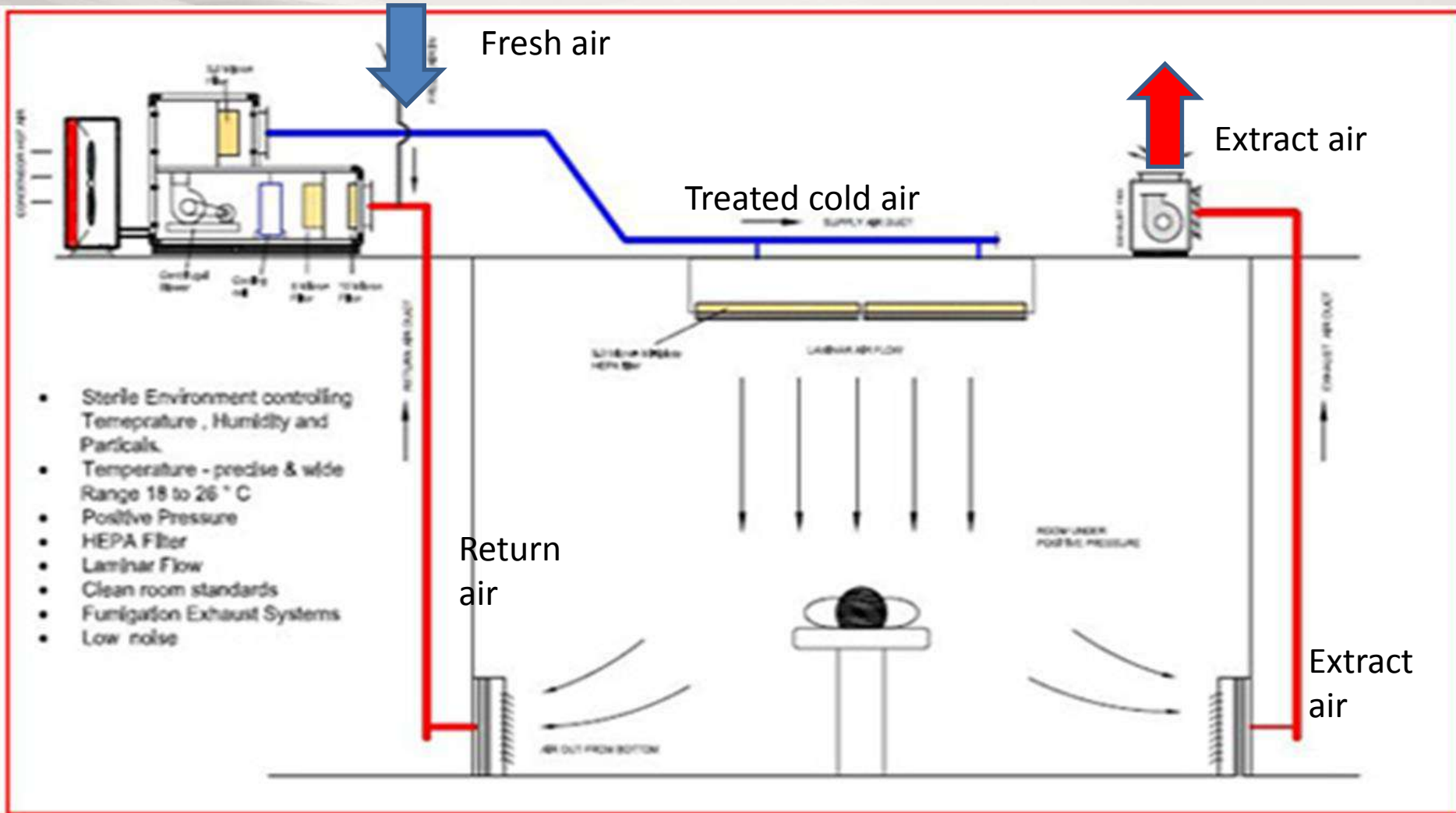
- Our healthcare personnel

COVID 19, AND IT'S PRESENT SCENARIO

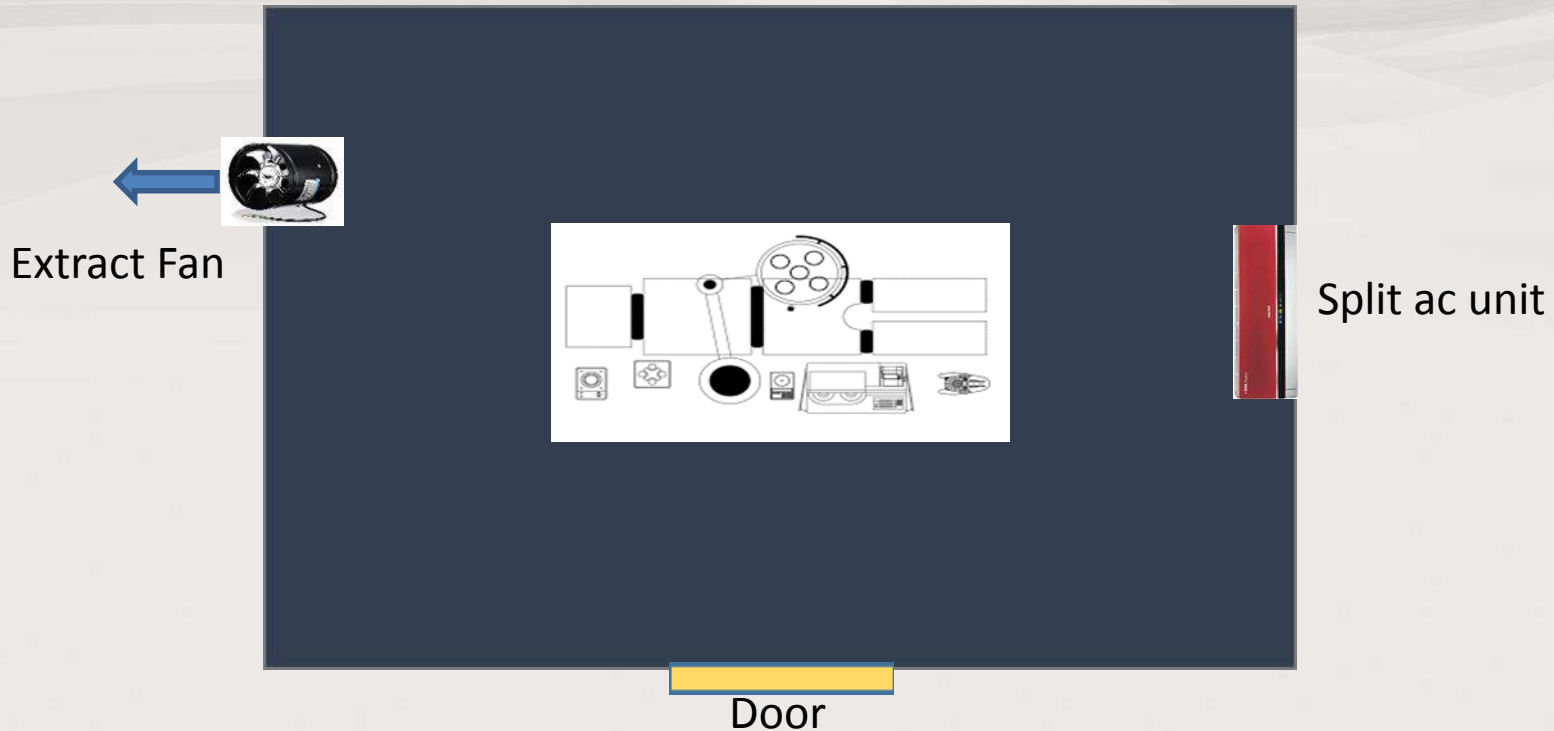
A look into our present OT's.....

- Can we quickly convert our existing + pressure Operating rooms into negative pressure Operating rooms?
- Do we have adequate Treated fresh air arrangements (minimum of 4 ach for positive pressure and atleast 12 ach for negative pressure)?
- Do we have exhaust arrangements provided for an Operating room?

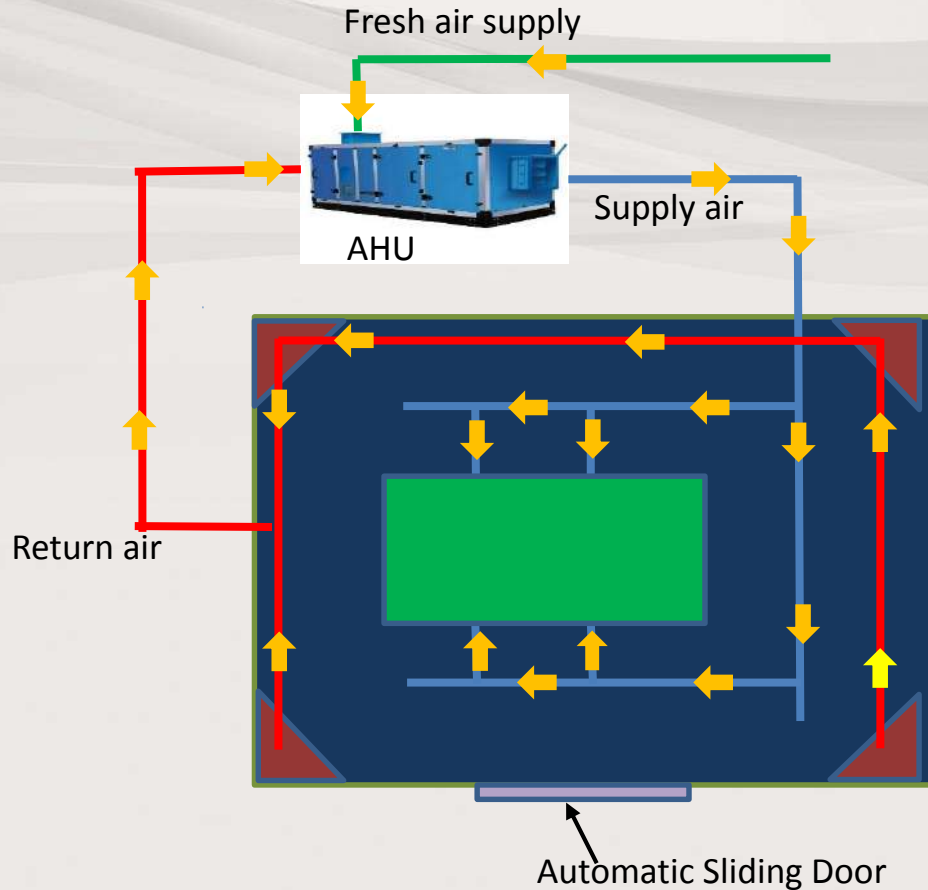
HVAC SCHEMATIC DIAGRAM OF A POSITIVE PRESSURE OPERATING ROOM



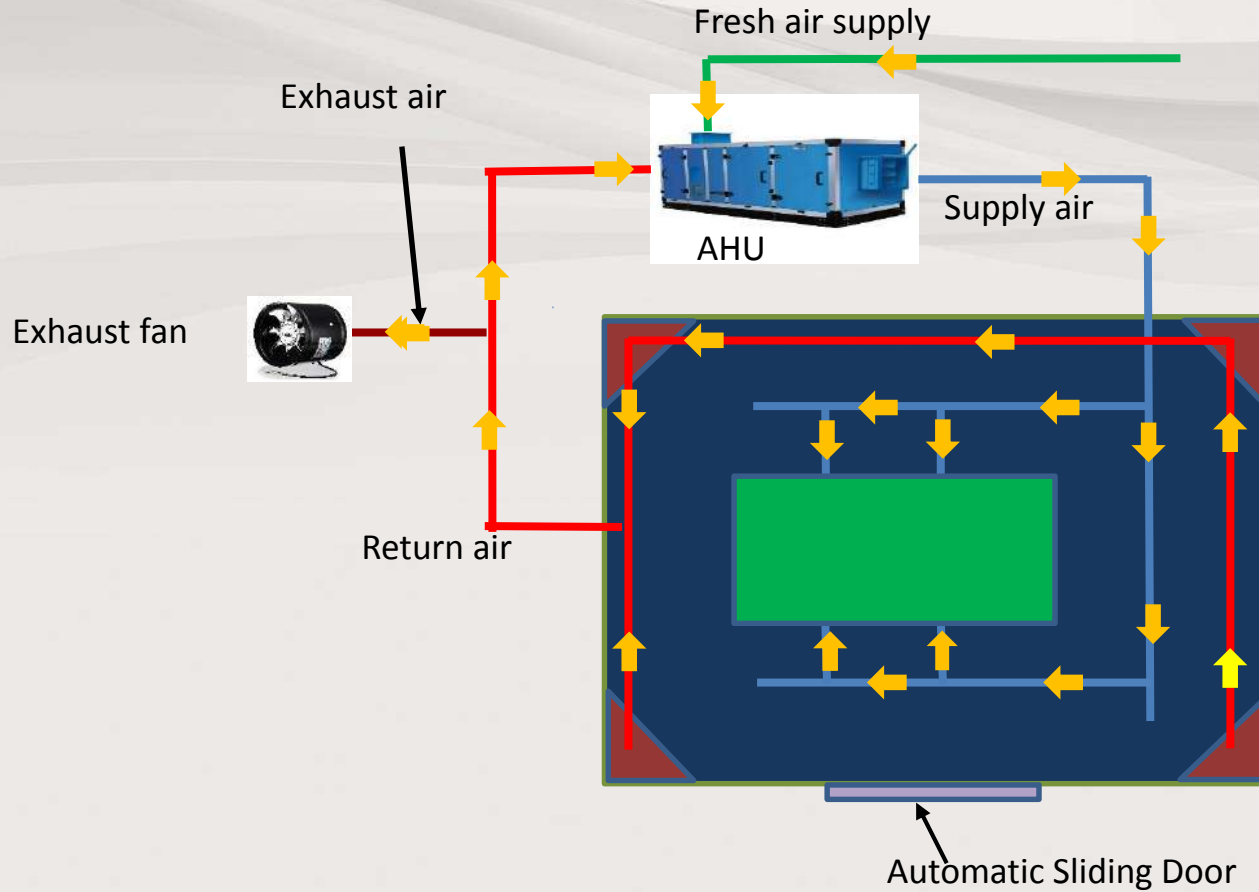
TYPICAL OT ROOMS ARE LIKE THIS...

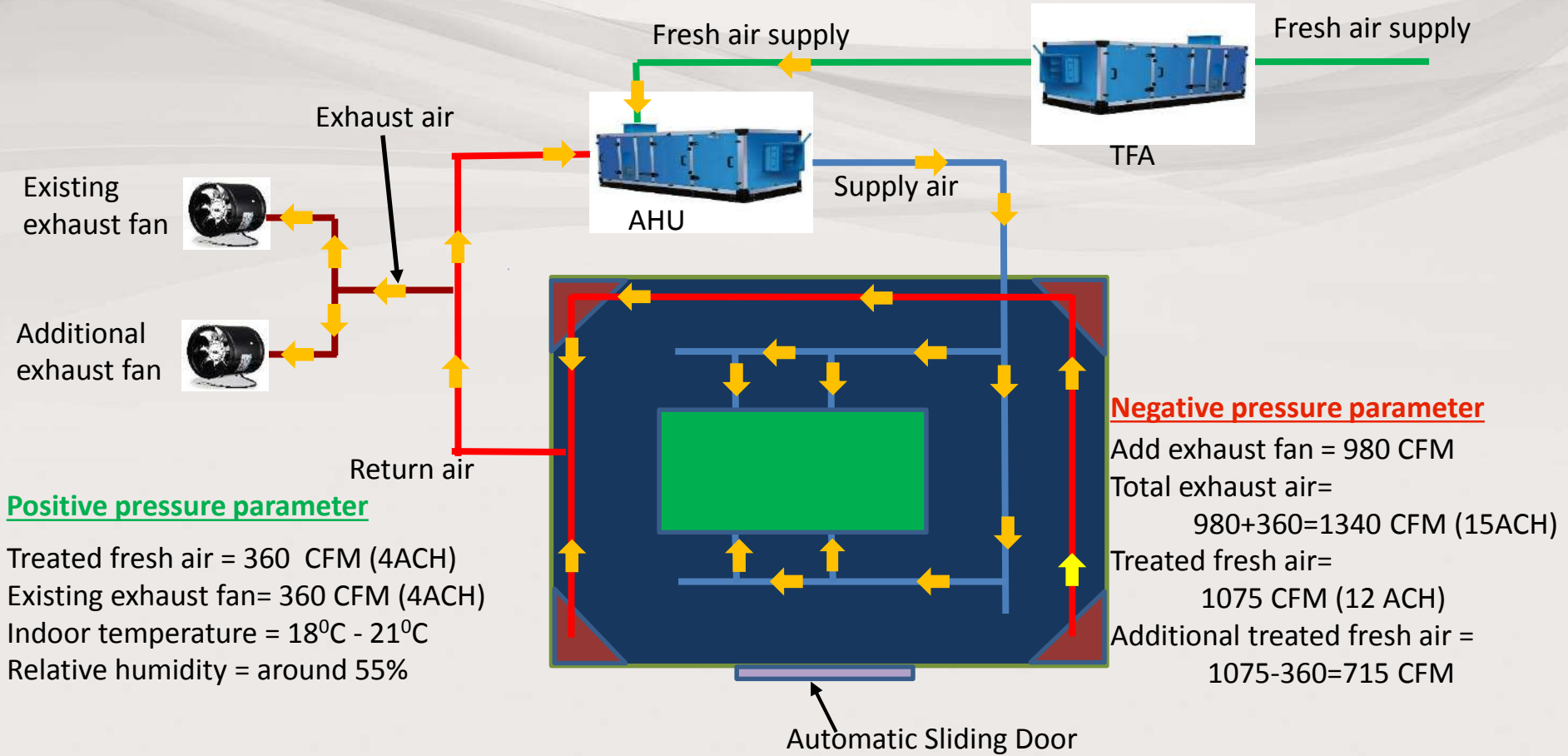


TYPICAL OT ROOMS ARE LIKE THIS...

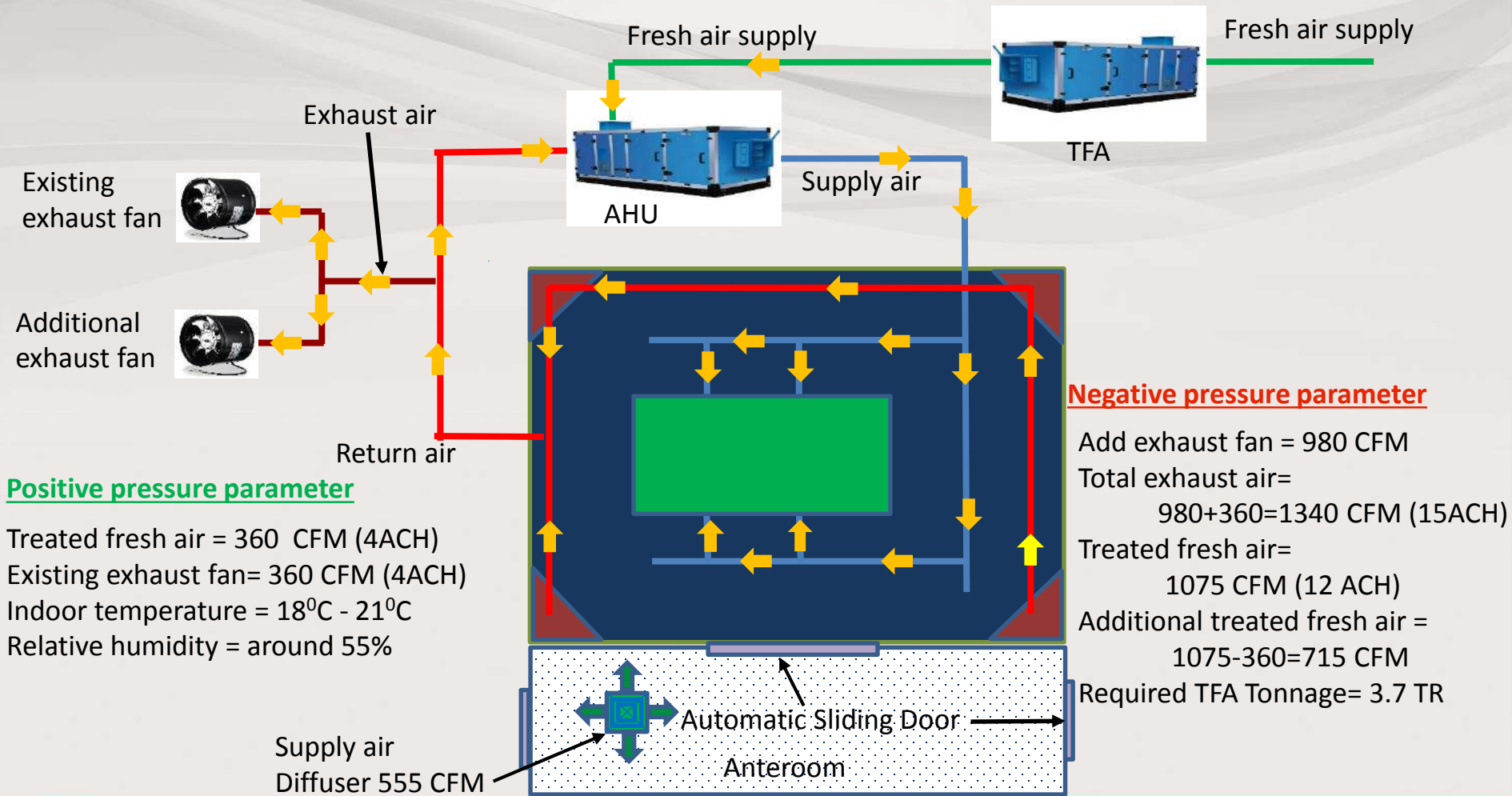


TYPICAL OT ROOMS ARE LIKE THIS...





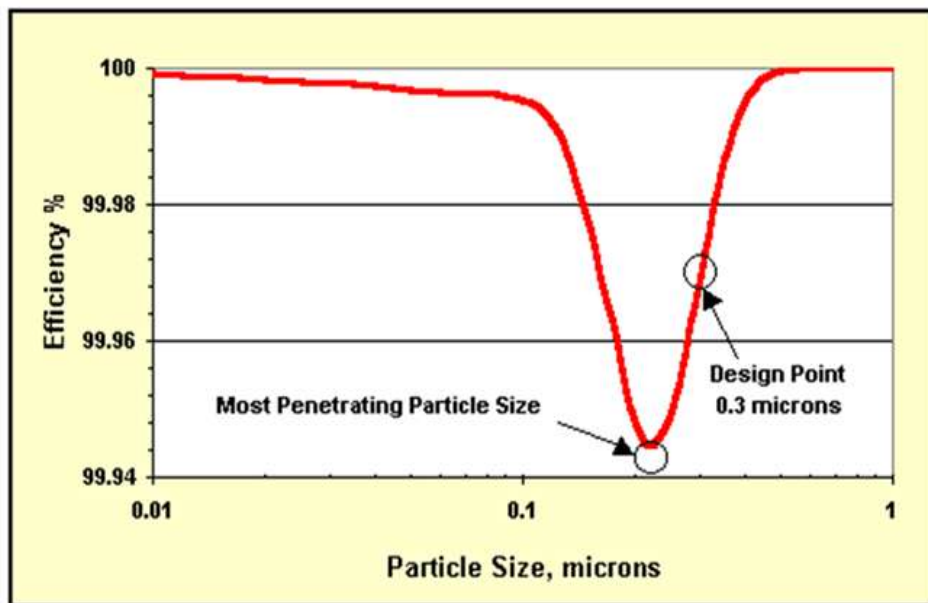
An ideal OT with both positive and negative pressure options



ADDITIONALLY WE ALSO NEED THESE IN OUR OT's?

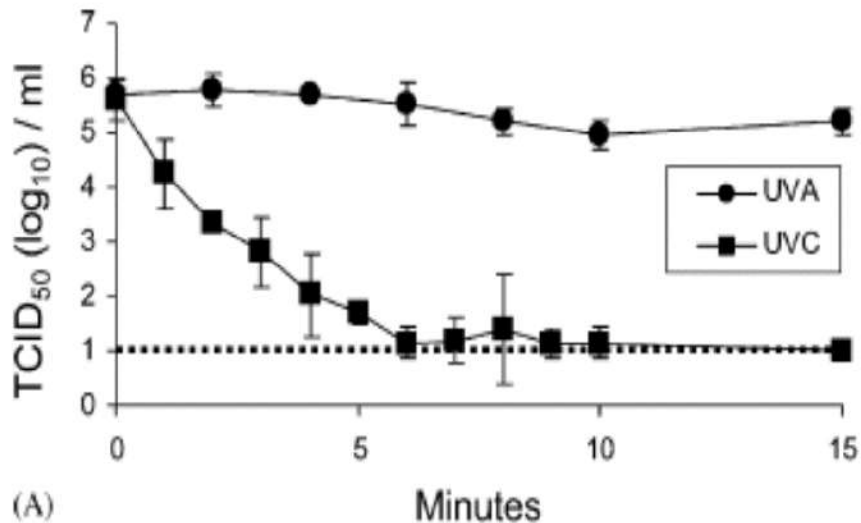
- HEPA filters to be fixed on the exhaust ducts
- Automatic controls for monitoring the performance of the cooling, ventilation and differential pressure
- Additional extract fan arrangement to convert from positive to negative pressure OT
- Additional treated fresh air arrangement to ensure indoor temperature and humidity levels are acceptable

Are HEPA Filters effective in filtering out Corona Virus ?



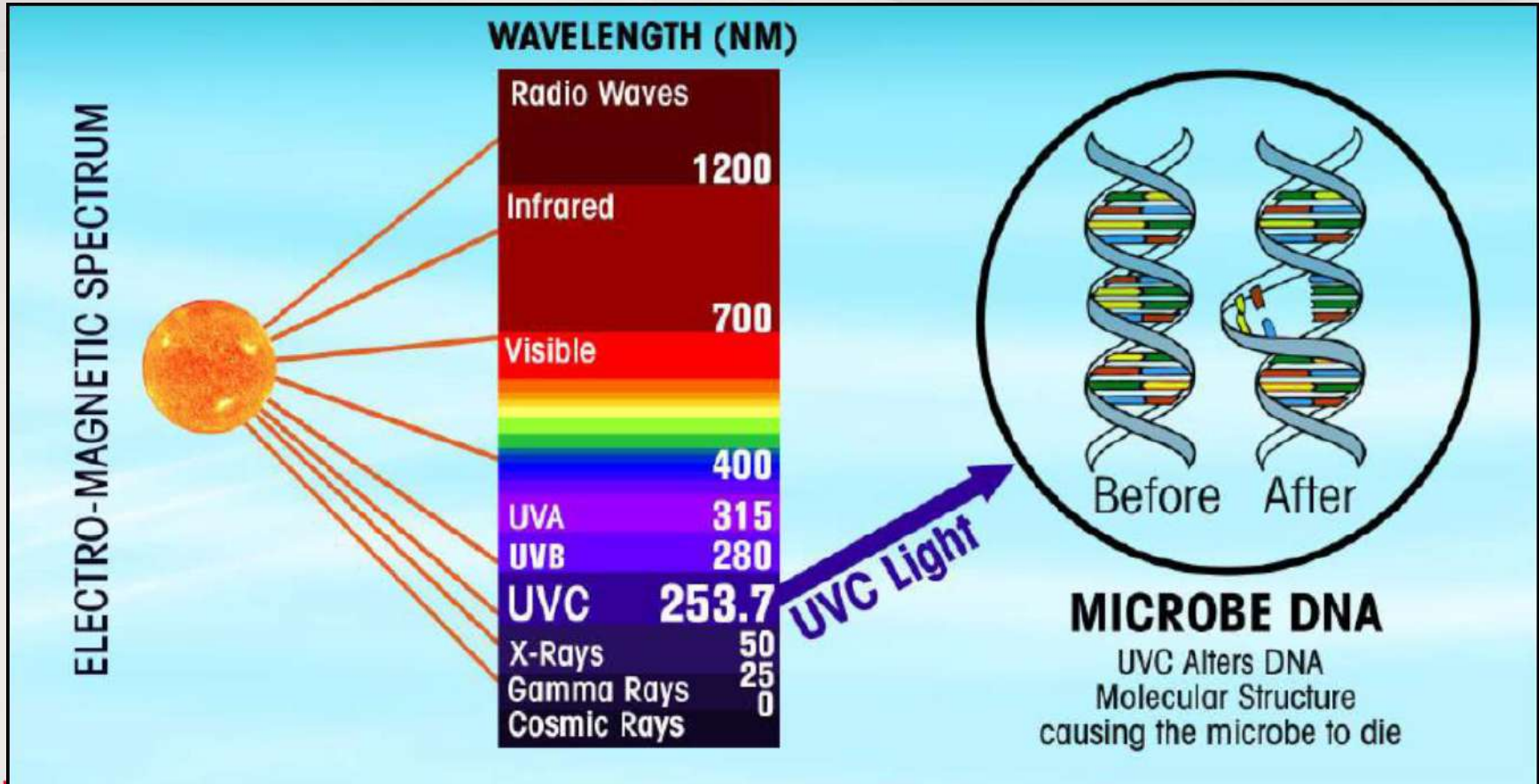
- >> Most Penetrating Particle Size (MPPS) of a HEPA Filter is that particle size for which the HEPA filter offers the lowest filtering efficiency
 - >> Efficiency offered by a HEPA filter for the MPPS is called “MPPS efficiency”.
 - >> For all particle sizes, smaller or larger than the MPPS, the HEPA filter offers an efficiency that is higher than the MPPS efficiency.
- Ref :
- 1) EN 1822 - 1 : 2019
 - 2) Severe Acute Respiratory Infections Treatment Centre : Practical manual to set up and manage a SARI treatment centre and a SARI screening facility in health care facilities, World Health Organization, March 2020

Inactivation of Corona Virus - SARS CoV.



- Exposure of virus to UVC (254 nm, 4016 $\mu\text{w}/\text{cm}^2$) light resulted in partial inactivation at 1 min with increasing efficiency up to 6 min.
- After 15 min the virus was completely inactivated to the limit of detection of the assay,
- Ref- Inactivation of the corona virus that induces severe acute respiratory syndrome, SARS-CoV
-Miriam E.R.Darnella et al , Journal of Virological methods, June 2004

UVC LIGHT



NEW PRODUCTS



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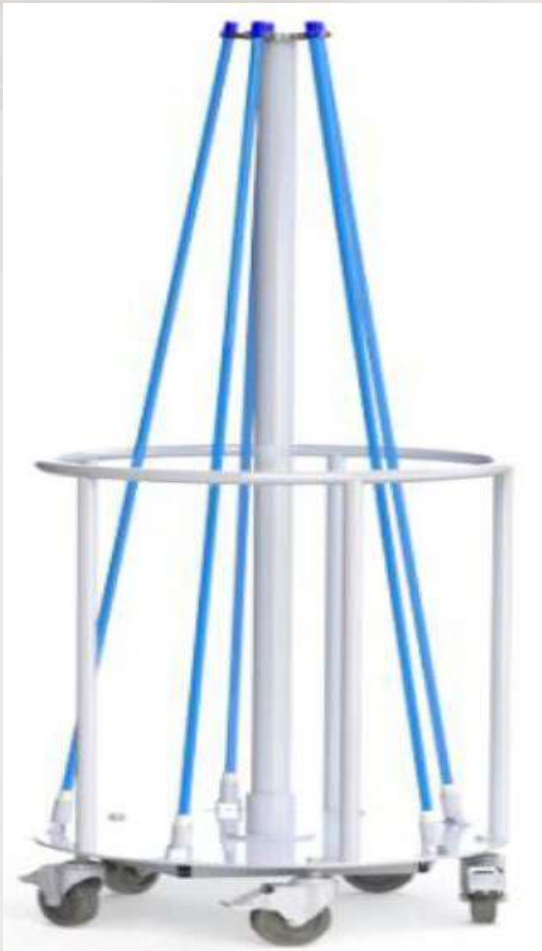
Steril Zone



- Steril – Zone (For Isolation Rooms & Operation theatres)
- Steril-Zone has inbuilt UV Lamps, Hepa Filters, Carbon Filter & blower.
- Air with microbes enters at the bottom grill, passes through all the inbuilt sections for disinfection & microbe free air exits at the top grills.

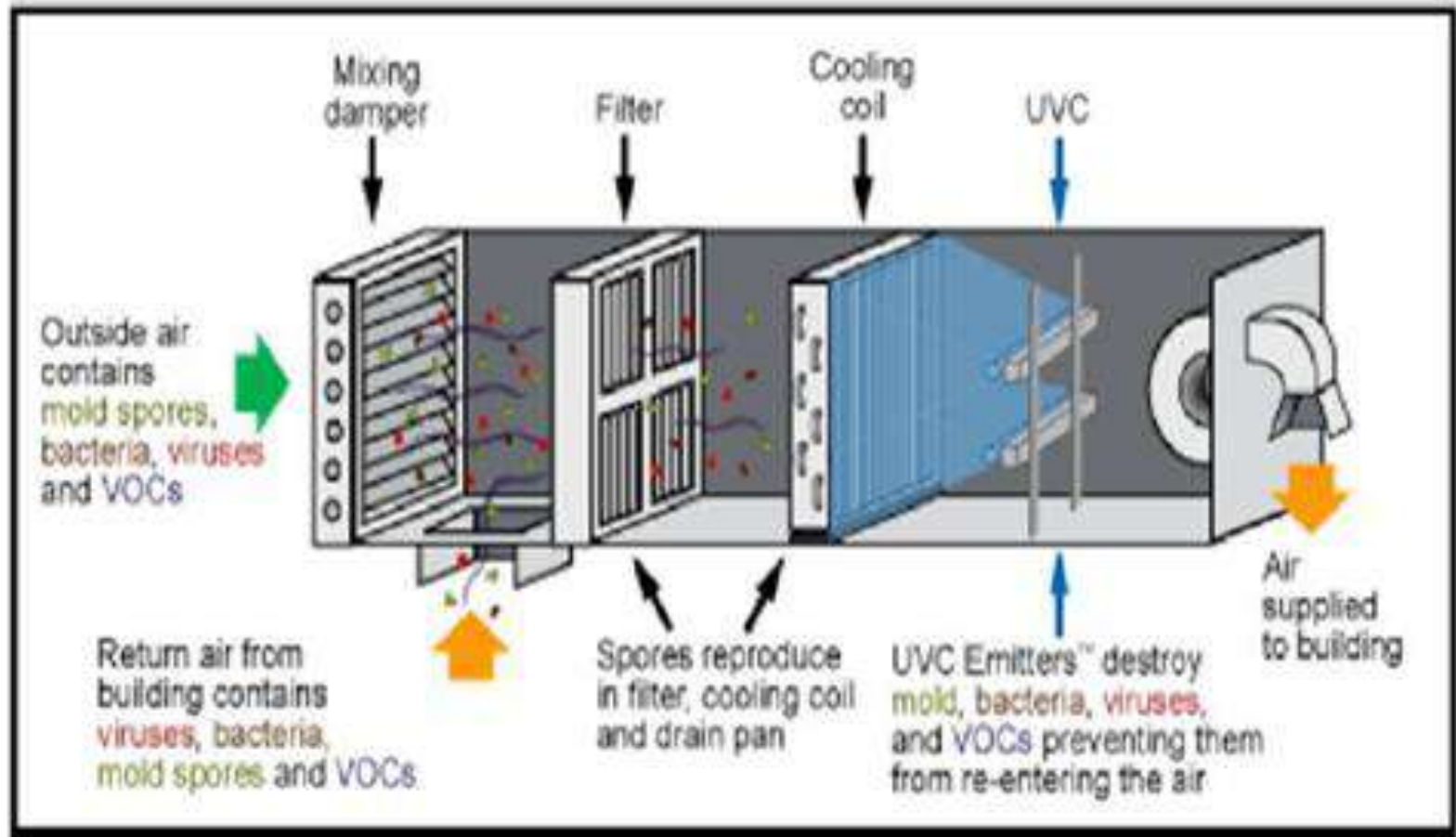
Ref: Johnson Controls International

RIDS (Suitable for Disinfection)



- Contains 5 UV Lamps mounted in a movable frame work which can be easily transportable to any location.
- RIDS has to operated in a closed room away from human beings.

UVC kept Inside the AHUs



References

- EN 1822 - 1 : 2019
- Severe Acute Respiratory Infections Treatment Centre : Practical manual to set up and manage a SARI treatment centre and a SARI screening facility in health care facilities, World Health Organization, March 2020
- Guidelines for environmental infection control in health care facilities, CDC, 2019.
- HVAC Design Manual for Hospitals & clinics, 2nd edition, ASHRAE.
- ASHRAE Technical Committee for Healthcare
- ASHRAE/ASHE Standard 170 Committee.
- Infection Prevention measures for Surgical Procedures during a Middle East Respiratory syndrome Outbreak in a Tertiary Care Hospital in South Korea
- ISHRAE COVID -19 Guidance Document for Air conditioning and Ventilation
- ISA Advisory- COVID Operation Theatre- Advisory and position statement of Indian Society of Anaesthesiologists (ISA NATIONAL) (Dr Naveen Malhotra)
- Journal of Hospital Infection(2006)- Conversion of Operating theatre from positive to negative pressure environment (T T Chow, A Kwan, Z Lin, W Bai)

QUESTIONS AND ANSWERS

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