

Genano Application Note

Isolation Rooms for Airborne Infection Control

The need for isolation rooms is constantly growing as epidemic diseases pose an on-going global threat. Controlled isolation of infected patients prevents airborne diseases (such as tuberculosis, MRSA, SARS) from spreading to clinicians and other patients, and contaminating indoor air through ventilation.

Negative pressure isolation rooms are often needed rapidly in place when an outbreak occurs, yet not all hospitals have the luxury of designing and building new state-of-the-art isolation rooms. Fortunately, existing patient rooms can be converted into isolation rooms with the right design and equipment.

A key element in isolation room infection control is the ventilation system, characterized by the air change rate per hour (ACH). According to published standards, ACH should be between 6 to 12 in an isolation room. This may be difficult to achieve with an existing ventilation system.

Mobile air purifiers units are a cost-effective and easy way to build and to improve the performance of existing isolation rooms. **Supplementary air purifier units increase the isolation room ACH and prevent pathogens from spreading outside with the exhaust air.** Infection control can be maximized using advanced air decontamination technology that captures and eliminates even nanosized infectious agents inside the isolation room.



BEST PRACTICES IN ISOLATION ROOM DESIGN

- Smooth collaboration between hospital facility management and the clinicians responsible for infection control
- Common guidelines and regulations that cover the engineering controls of an isolation room
- Negative pressure isolation to prevent infected airborne particles from escaping to adjacent spaces
- Careful sealage of the negative pressure room to prevent any leakages
- Periodic and ongoing assessment of performance to comply with guidelines and set targets

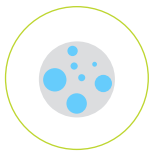
GENANO'S ADVANTAGES

- 1** Prevents airborne infections from spreading by eliminating pathogens down to $0.003\ \mu\text{m}$ size.
- 2** Increases air change rate and boosts ventilation in the room.
- 3** Cost-effective and fast solution to build isolation rooms.



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ISOLATION ROOM DESIGN with Genano air purifiers



**EFFICIENT
INFECTION
CONTROL**

The supply air flow in an isolation room is commonly filtered by HEPA, which only collects particles of $0.3\ \mu\text{m}$ and bigger in diameter. Many airborne pathogens are much smaller.

Genano's core advantage is the ability to remove airborne microbes of all sizes - down to nanometer scale. In addition, Genano also eliminates the microbes instead of just collecting them.

Genano provides constant air flow and cleanliness level. HEPA filters cannot kill microbes but may in fact act as a growth substrate especially in hot and humid conditions. Genano does not provide substrate for microbes to grow.



**BOOST
VENTILATION &
INCREASE ACH**

With Genano air purifiers units, existing rooms can be converted to isolation rooms and new ones can be built quickly and efficiently.

When the total ACH does not meet the requirement of 6-12 ACH, Genano is capable of bringing an additional boost to the current operating room ventilation system. The total ACH of the room is determined cumulatively by the room ventilation rate and the re-circulating Genano air purifier. At the same time, the Genano unit constantly circulates air, collecting and eliminating pathogens down to nanometer scale.



**CREATE
NEGATIVE
PRESSURE**

Isolation rooms must have a negative air pressure to prevent contaminated air from entering the exhaust ventilation and contaminating other premises of the hospital. If the central ventilation is not capable of providing an adequate pressurization, contaminated air from the room can be exhausted through a Genano unit equipped with a negative pressure kit. This is a fast and cost-effective solution especially for an acute need for numerous isolation rooms.

Periodic and ongoing assessment of negative pressure isolation rooms is crucial and must comply with hospital-specific working practices and guidelines.