

Fast-track Negative Pressure Isolation System for Respiratory Infectious Disease Control

 Energy & Environment

 Health & Wellness

Buildings and Construction Technology

Biomedical and Genetic Engineering

Opportunity

COVID-19, SARS-CoV2 or any highly infectious virus are overwhelmed the healthcare/medical systems in many countries. In severe scenario, patients are treated in hospitals corridors, general wards, and temporary isolation rooms, and in makeshift hospitals, which puts both the patients and the healthcare workers at great risk. An ultra-high concentration of droplets (virus hosts) appears in the breathing zone and the virus can remain viable and infectious in aerosols for many hours, furthermore, and non-invasive ventilation and exhaled air dispersion pose a great risk of infection for medical workers/patients in hospitals.

Technology

The invented technology relates to a new ventilation system that can thoroughly filter viral particles and quickly stop the spread of infectious virus, such as Covid-19, in the air and at low cost. The fast-track ventilation system is easy to install and can be used in high-risk places such as hospitals and washrooms, effectively reducing the risk of virus transmission. The enclosed ventilation system has a pipe frame made of polyvinyl chloride (PVC) with extraction ports. It is equipped with a transparent PVC hood and high efficiency particulate air (HEPA) filters, and can be placed on hospital beds to protect healthcare workers by effectively blocking and filtering viruses. Experimental data shows that aerosols in an enclosed area can be thoroughly extracted by the system within two minutes. Its air change rate can be as high as 26 air changes per hour (ACH), higher than the rate of 12 ACH in a negative pressure ward.

Advantages

- Fast-tracking, safe, and application-based ventilation system
- Economically and easily setting up the system
- Portable and applicable to a variety of high-risk scenarios

Applications

- Patient wards/ICU in hospitals and waiting room in isolation centers, etc.
- Vented enclosure to protect passengers/aircrew on airplanes and trains

Remarks

Inventions Geneva
Evaluation Days (IGED)
2022 - Silver Medal

IP Status

Patent filed



Technology Readiness
Level (TRL) ?

6

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Develop
Concept

Proof
Concept

Follow-on
Funding

Build Value

- Portable washrooms and makeshift hospitals

