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Viessmann develops portable intensive care unit for COVID-19 patients

Viessmann has designed and developed a new modular, airtight intensive care unit (ICU), which could make a fundamental contribution to the care of seriously ill COVID-19 patients.

The mobile, climate-controlled ICU builds on expertise within Viessmann's Refrigeration Solutions division, which manufactures cold rooms with superior hygiene properties for a range of commercial applications.

Thanks to their prefabricated and modular design, the one or two-patient portable ICUs can be transported in a 40ft container and set up in under three days. They can be used both indoors, for example in exhibition halls or sports arenas, and outdoors, under appropriate cover.

The units consist of an outer chamber and airtight inner chamber, each made of 100 mm polyurethane (PU) cleanroom panels, which are SmartProtec® antimicrobial powder coated and insulated to prevent energy loss.

The outer shell of the unit is 3.2m x 3m x 7.2m (w/h/l), while the patient's chamber is 2.6m x 2.5m x 4.2m. These dimensions are designed to allow the treatment team to reach the patient from all four sides.

To avoid pressure drop and cross contamination, the entrance door to the patient's room is interlocked, as per an approved layout from the German Cleanroom Institut.

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The isolation chamber has a negative pressure of -15 Pa, as is common for the control of airborne infection in the care of patients with very contagious diseases. This is managed by a pressure sensor, as well as active pressure control and display. For immunosuppressed patients, pressure can be adjusted between +15 to +30 Pa.

Each unit features a plenum integrated air-conditioning unit for temperature control and recirculation, with separate fans for air supply and exhaust air. The design is suitable for use in temperatures of 2-40°C but it can be adjusted to operate in any conditions.

The recirculation of air flow is undertaken by two high efficiency particulate air (HEPA) H14 grade filter fan units, designed to achieve the highest levels of air quality, located above the patient's bed. The velocity can be set according to the needs and comfort of the patient, between 0.1-0.15 metres per second (m/s). The estimated grade of air quality in the bed area meets the ISO 7 or EN ISO 14644 standard for Particulate Cleanliness Class in Cleanrooms and Clean Zones. The return air is also filtered to H14-level via wall-integrated filter packages.

The unit's medical supply column is equipped in accordance with the recommendation of the Deutsche Interdisziplinäre Vereinigung für Intensiv und Notfallmedizin (DIVI) and can be adapted to clients' needs. It has standard setting dioxygen (O2), compressed air and vacuum, power sockets, a data connection and a nurse call function. The medical equipment for diagnosis and treatment can be fixed onto the vertical stainless steel tubes on both sides of the column.

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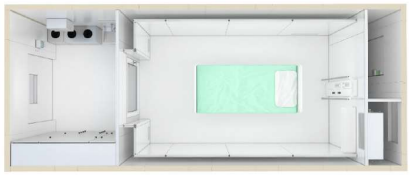
Units are also fitted with a switchboard cabinet, preassembled cable set and dimmable lighting (1000 lux in the patient's room), in accordance with the IEC 60364 and VDE 100 standards.

Viessmann is also manufacturing its own newly designed compact ventilators, high quality respiratory protective face masks and hand sanitiser at its Allendorf factory in Germany. Engineers have collaborated with clinicians and regulators to fast-track production of the new medical equipment. The disinfectant and face masks are being donated to hospitals and care facilities in the vicinity of the company's Allendorf headquarters.

Images



Viessmann has designed and developed a new modular intensive care unit, which could make a fundamental contribution to the care of seriously ill COVID-19 patients, building on expertise within its refrigeration solutions division, which manufactures cold rooms for a range of commercial applications.

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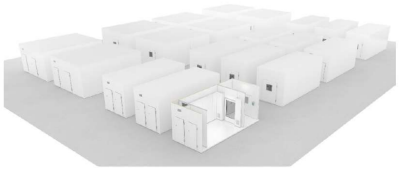	Viessmann's modular intensive care unit can be set up quickly, both indoors, for example in exhibition halls or sports arenas, and outdoors where there is appropriate cover.
	Viessmann employees have created and manufactured disinfectant, hand sanitiser and high quality respiratory protective face masks, which are being donated to hospitals and care facilities in the vicinity of its Allendorf headquarters in Germany.
	
	

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About Viessmann

Viessmann develops and manufactures seamless and integrated climate solutions for domestic and commercial living spaces, providing people with the optimum room and hot water temperature, electricity and air quality. Through digital platforms and services, Viessmann connects products and systems, ensuring the most efficient, and where possible, renewable, energy sources are employed. Founded in 1917 and employing approximately 12,300 people worldwide, the German family-owned company attaches particular importance to responsible and long-term action. Co-CEO Maximilian Viessmann represents the fourth generation of the Viessmann family. The company vision is “Creating the living space for the generations of tomorrow.” Viessmann’s UK headquarters are in Telford, Shropshire and the company has been operational in the UK since 1989.

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