



THE ISOLATION CHAMBER with a filtration and ventilation air handling unit for biomedical applications, has been designed to create an isolated, closed space for patients infected with SARS-COV-2 or patients under quarantine.

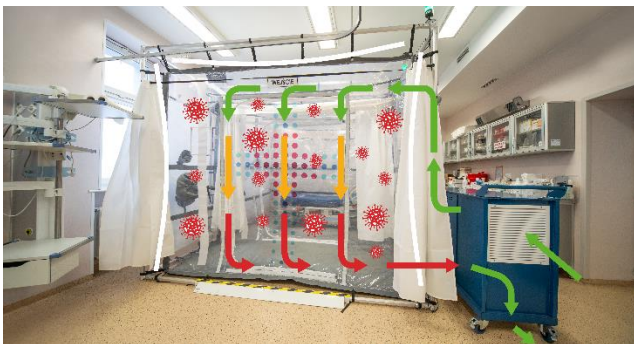
The chamber is designed to be used by medical personnel.



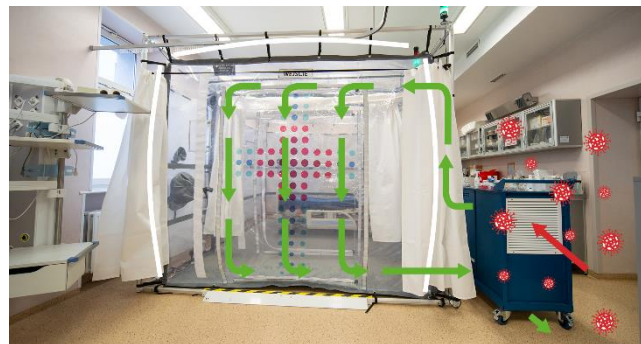
Due to the modular design of the ISOLATION CHAMBER, it is best suited for COVID-dedicated hospitals, large medical centers, nursing homes and other public institutions, which have to create special zones of isolation.

The Isolation Chamber offers the following functionality:

- The AHU can be switched into the negative or positive pressure mode (the positive pressure helps to prevent entering particles and pathogens from the outside into the isolation chamber, which is useful for isolating e.g. non-infected persons, or creating the so-called "clean room" for industrial applications)



NEGATIVE PRESSURE MODE



POSITIVE PRESSURE MODE

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After detaching from the isolation chamber, the Air Handling Unit is able to operate in one of the following modes, depending on the specific scenario:

AIR CLEANER MODE – the AHU works as an air cleaner and is capable of cleaning up to 800 m³ of air per hour.



AIR EXTRACTOR – after attaching a flexible hose to the AHU and running the hose outside of the building, the AHU can be used for venting rooms and corridors after the process of decontamination (by fogging), this mode has the capacity of 300 m³ of air per hour.

Description:

- The filtration and ventilation Air Handling Unit (AHU) maintains the negative pressure of minimum 10 Pa inside the chamber, filters the air entering the chamber and clears the air extracted from the chamber. It ensures appropriate quantity of fresh air inside the patient's section, manages the entrance and exit procedure and ventilates the chamber after the decontamination process.



- The AHU is equipped with a 3-stage filtration system for the air entering the unit and for the air extracted from the unit. The AHU uses G4, F7, H14 filters.

- The AHU chambers have been soundproofed with a special noise dampening material to ensure the highest comfort for both the patient and staff.
- Despite its weight, the AHU is very mobile thanks to the swivel wheels on bearings with a motion lock mechanism to ensure stability when parked.
- The air supply and exhaust ducts of the AHU are made of smooth galvanized pipes with a quick connection system ensuring superior tightness.

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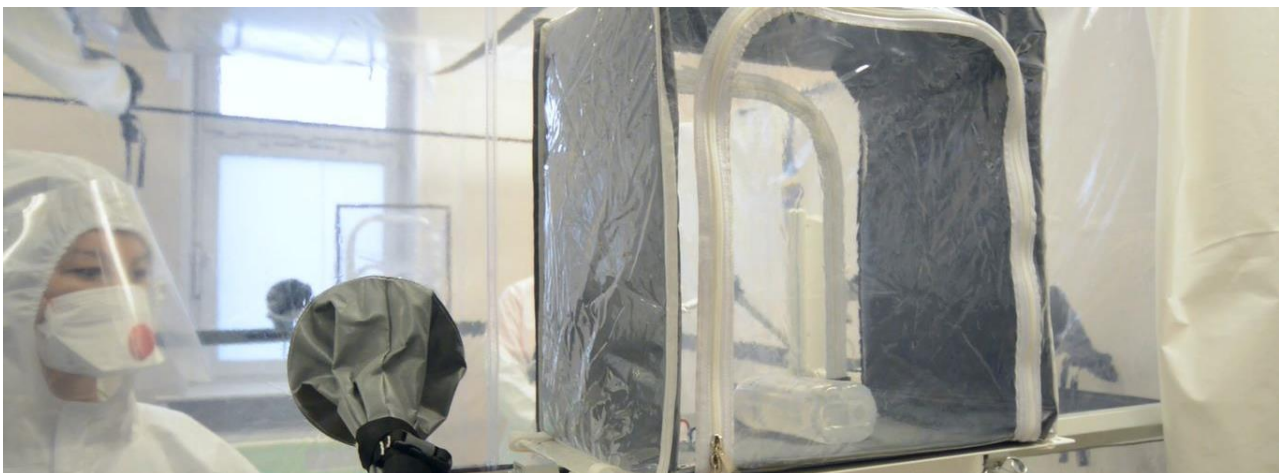


- The alarm system (visual and audible alarm system) managing the entrance and exit procedure, signals the following conditions:
 - Correct/incorrect level of negative pressure inside chambers
 - Air fan malfunctions
 - Replacement of worn out filters
 - Vestibule (air lock) entrance/exit is possible
 - Patient's section entrance/exit is possible
 - CO₂ level inside the patient's section exceeded



- User Friendly Controls

- The transparent foil enables constant observation of the patient's condition without having to enter the cabin.
- Openings with sleeves interface with the devices of the filtering and ventilation system to ensure ventilation and filtration of the air inside the chamber.
- The lightweight and modular design of the frame allows for quick and easy assembly and disassembly of the chamber.
- The frame is made of unified aluminum profiles with hexagonal cross-section.
- Frame connectors are made of anti-corrosive or painted steel.
- The chamber has the shape of a closed cube, with the vestibule (air lock) and the patient's section inside.
- The chamber is suspended on the frame via straps with snap buckles.
- The chamber floor is made of reinforced PVC fabric.
- The entrance to the air lock and patient's section are zipped.
- The left chamber wall is equipped with technical openings (for supply of medical equipment, introducing medical gases, etc.), one in each chamber.
- The vestibule has a lock-type technical opening for disposing used Personal Protection Equipment.
- On the right wall of the chamber there are openings for introducing the filtering and ventilation AHU pipes.
- The sleeves have tapes with snap buckles to compress and seal the connection.
- The blowing tunnels of the filtering and ventilation AHU system are suspended via carabiners.
- The chamber has a pocket for the medical report.
- Inside the vestibule there are Velcro tapes for mounting the decontamination system.
- There are horizontal straps with snap buckles around the cabin to evenly tighten the fabric and reduce the effects of negative pressure,
- Airlock for small items (which allows for handing over small objects or a meal into the chamber without having to enter the vestibule).



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Technical Parameters – ISOLATION CHAMBER

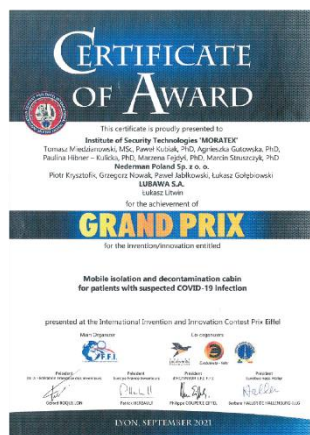
Working width	2,70 m (±10%)
Working height	2,35 m (±10%)
Working length	3,50 m (±10%)
Total width	3,00 m (±10%)
Total height	2,57 m (±10%)
Total length	3,80 m (±10%)
Working floor space (total)	9,45 m ² (±10%)
Working floor space – vestibule	2,70 m ² (±10%)
Working floor space – patient room	6,75 m ² (±10%)
Weight – chamber with air ducts	31,50 kg (±10%)
Weight – curtains (10 pieces)	10,50 kg (±10%)
Weight – frame with accessories and ramp	70 kg (±10%)

Technical parameters – FILTRATION AND VENTILATION AIR HANDLING UNIT

Length	1,45 m (±10%)
Width	0,52 m (±10%)
Height	1,16 m (±10%)
Weight	113 kg (±10%)
Power Supply	230 [V] AC (±10%)
Power	200 W (±10%)
Maximum output (air supply mode)	300 m ³ /h (±10%)
Maximum negative pressure inside the chamber	25 Pa (±10%)
Acoustic pressure level (160 m ³ /h)	45 dBA (±10%)
Acoustic pressure level (200 m ³ /h)	49 dBA (±10%)

The Institute of Safety Technologies "MORATEX" supervised the process of validation of the developed product in terms of functional properties and safety.

Product development reference document: "Guidelines for the design, manufacture, acceptance and operation of ventilation and air conditioning systems for entities performing medical activities". Warsaw 2018, Publisher: Employers of Poland – a document recommended by the Ministry of Health as an auxiliary document for design and modernization of the infrastructure of entities performing medical activities.



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