

Introduction

As hospitals are increasingly running out of valuable bed space and isolation rooms, more makeshift community care hospitals are being retrofitted in exhibition halls, sports halls, and indoor stadiums amongst others. While this set-up may serve as an aid for the pandemic-induced shortage of proper treatment and recovery areas, its open-spaced design limits its function only to recovering, "early" well patients, and to asymptomatic COVID-19 positive patients.

Esco was the first company in 1978 to build isolation rooms in Singapore/ASEAN. With this collective 42 years of experience, we offer Esco Aster Airborne Infection Isolation Room (AIIR) Technology. It is a full-encompassing innovative solution for the exponentially rising number of individuals infected with SARS-CoV-2 virus worldwide. This technology aims to provide proper isolation for COVID-19 positive individuals with varying viral shedding capacities while allowing optimal care and throughput.

Products under Esco Aster AIIR Technology range from a stand-alone quick install Makeshift Recovery and Treatment Isolation Room™ (MRTIR™) to rapid self-assembly kits, and isolation containers which are available in different models: Modular 20' Container, Modular 40' Container and Single 40' Container Premium.

Location Feasibility Enhancement

Asymptomatic carriers who are COVID-19 positive with no viral shedding symptoms are not advised but are allowed to share rooms in hospitals or be in open makeshift hospitals. Since products under Esco Aster Airborne Infection Isolation Room (AIIR) Technology come with modular partition systems, these can be co-located with temporary makeshift community hospitals for newly diagnosed patients, to be kept under closer observation before being moved into normal wards or as temporary isolation rooms for patients whose symptoms may be worsening and have high viral shedding. These can also be used to retrofit normal hospital wards or convert non-healthcare rooms into healthcare suites.

MAKESHIFT RECOVERY AND TREATMENT ISOLATION ROOM™

Esco Makeshift Recovery and Treatment Isolation Room™ (MRTIR™) is a controlled, negatively-pressurized room designed to be used by COVID-19 positive individuals with mild to moderate level of symptoms, hence, with less viral shedding often characterized by occasional coughing and sneezing.

Taking Normal Wards Further

Esco MRTIR™ can also be retrofitted into hospital wards to convert normal beds into temporary isolation rooms with optional anterooms. These hospital wards can be returned to normal wards after the COVID-19 pandemic.

In addition to this, Esco also offers optional Self-Assembly Kits which can be used for enclosed spaces which call for rapid deployment of controlled room environment. For detailed information on self-assembly kits, refer to page 4.

Key Features

- Single HEPA filter air supply
- Double HEPA filter exhaust with UV-C kill box single pass
- Room exhaust with UV-C lighting technology
- 1200 mm x 2000 mm patient bed
- Medical curtain
- Modular partitioning system
- Aluminum column and connector beams
- PVC door with vision panels
- Clear fixed windows for visibility
- LED lighting
- Pressure gauge for differential pressure monitoring
- Customizable dimensions to suit client-specific requirements

Options

- Wall-mounted / Floor-mounted static pass box
- Anteroom (required in some country regulations)
- Titanium Oxide-lined Nanomesh filter

- 3D porous foam structure
- works with 300W UV-C lighting
- provides enhanced photocatalytic air purification
- higher energy UV-C lighting resulting from photo-activation of Titanium oxide
- kills airborne viruses in droplet nuclei

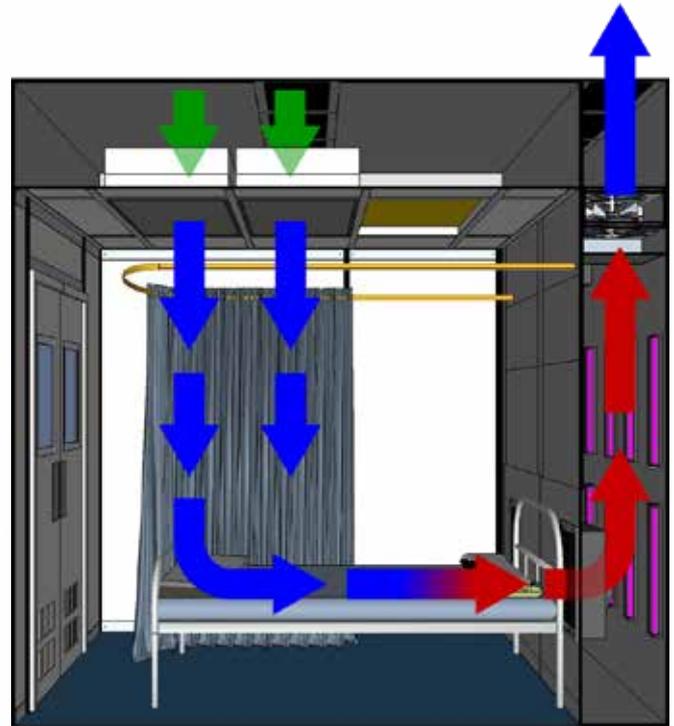


Filtration System

- Ambient air is drawn from the top of the room and is passed through a single HEPA filter, supplying the isolation room with fresh HEPA-filtered air.
- Air within the room, through appropriate engineering control, is kept at a negative pressure to the ambient environment resulting to desired air entrapment of contaminated air.
- Contaminated air will then be pulled through a double HEPA filter exhaust with UV-C kill box single pass and UV-C lighting technology before being purged out to the external environment.

Filtration Package

- **Filter:** Single HEPA filter air supply
- **Exhaust filter:** A double HEPA filter exhaust with UV-C kill box single pass and UV-C lighting technology



■ Ambient air ■ Filtered air ■ Contaminated air



Maintenance Parameters

- Rooms are recommended to be disinfected daily
- Rooms must be maintained at negative pressure (-10 to -20Pa) to ambient environment

Warranty

- 1 year warranty excluding consumables parts and accessories.
- During the period of warranty, any repair, modification, testing and commissioning performed by any unauthorized party other than Esco Service Team shall void the warranty of the unit.

GENERAL SPECIFICATIONS

Model	Makeshift Recovery and Treatment Isolation Room™	
External Dimensions (W x D x H)	2444 mm x 3020 mm x 3000 mm	
Internal Work Area, Dimensions (W x D x H)	2400 mm x 2500 mm	
Air Changes per Hour (ACH)	12 ACH	
Construction	Main Body	Polyvinyl chloride (PVC)
	Door	Polyvinyl chloride (PVC)
	Floor	Existing site floor finish
Power Consumption	20 amps	
Power Supply Options	Contact Esco for more information	
Net Weight	Contact Esco for more information	
Shipping Weight	Contact Esco for more information	
Shipping Dimensions, Maximum (W x D x H)	Contact Esco for more information	
Shipping Volume, Maximum	Contact Esco for more information	

*Dimensions can be customized and made bespoke within to suit client requirements.

SELF-ASSEMBLY KIT

A kit designed to be used for enclosed spaces which call for rapid deployment of a controlled room environment. Kit assembly allows quick conversion of pre-existing rooms and hospital wards into an improvised negatively-pressurized isolation room. With a revolutionary plug and play approach, these rooms and hospital wards can be returned to normal after the COVID-19 pandemic.

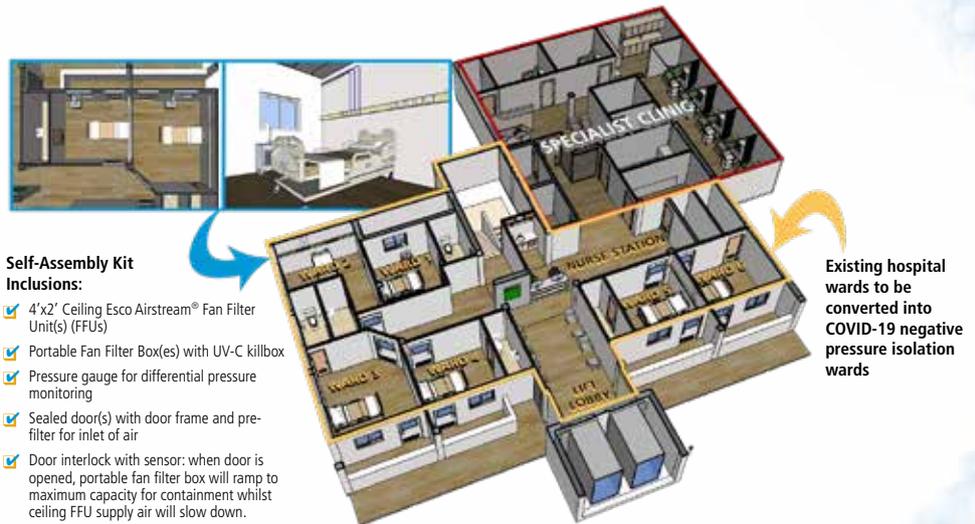
Filtration System

Inlet of air to the controlled room is facilitated by the entrance of ambient air through a pre-filter located at the lower portion of the door; while ambient air drawn from the top of the room is passed through a fan filter unit (FFU), supplying the isolation room with fresh HEPA-filtered air.

Air within the room, through appropriate engineering control, is kept at a negative pressure to the ambient environment resulting to the desired air entrapment of contaminated air.

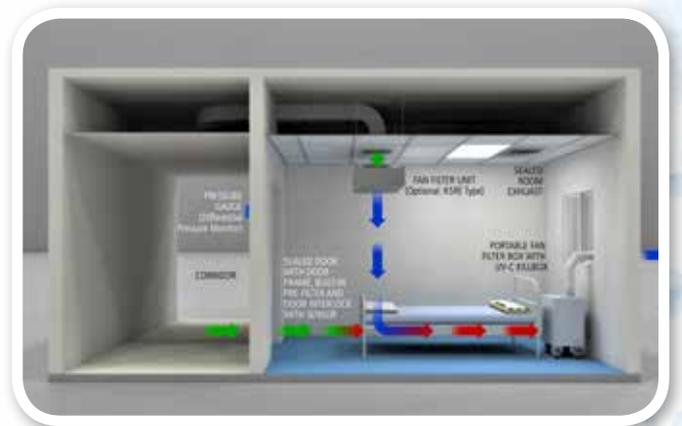
Contaminated air will then be pulled through a portable fan filter box with UV-C kill box before being purged out to the external environment.

Door interlock mechanism with sensor causes the portable fan filter box to ramp to maximum capacity for containment while ceiling FFU supply air to slow down, ensuring negative pressure is maintained within the room when opening the door.



Self-Assembly Kit Inclusions:

- ✓ 4'x2' Ceiling Esco Airstream® Fan Filter Unit(s) (FFUs)
- ✓ Portable Fan Filter Box(es) with UV-C killbox
- ✓ Pressure gauge for differential pressure monitoring
- ✓ Sealed door(s) with door frame and pre-filter for inlet of air
- ✓ Door interlock with sensor: when door is opened, portable fan filter box will ramp to maximum capacity for containment whilst ceiling FFU supply air will slow down.



■ Ambient air ■ Filtered air ■ Contaminated air

ISOLATION CONTAINERS

Modular 20' and 40' Container

An isolation room built with a personal en suite bathroom and anteroom; designed for severe viral shedding COVID-19 positive individuals often characterized by frequent coughing and sneezing with no other severe symptoms that require admission to intensive care wards.

Key Features

- Single HEPA filter air supply
- Double HEPA filter exhaust with UV-C kill box single pass
- Room exhaust with UV-C lighting technology
- En suite anteroom and bathroom
- 1200 mm x 2000 mm patient bed
- Medical curtain
- Modular partitioning system
- Aluminum column and connector beams
- Electrogalvanized steel door
- Clear fixed windows for visibility
- LED lighting
- Pressure gauge for differential pressure monitoring
- Customizable dimensions to suit client-specific requirements

Single 40' Container Premium

An isolation room built with personal en suite living room, bathroom and anteroom; designed for individuals who want private space without any other severe symptoms that may require admission to intensive care wards

Key Features

- Single HEPA filter air supply
- Double HEPA filter exhaust with UV-C kill box single pass
- Room exhaust with UV-C lighting technology
- En suite anteroom, bathroom and living room
- 1200 mm x 2000 mm patient bed
- Medical curtain
- Modular partitioning system
- Electrogalvanized steel door
- Clear fixed windows for visibility
- LED lighting
- Pressure gauge for differential pressure monitoring
- Customizable dimensions to suit client-specific requirements

Options

- Wall-mounted / Floor-mounted static pass box
- Anolyte-based disinfection system
- BioAtom™ Gun disinfection system
- BioVap™ hydrogen peroxide internal surface biodecontamination system
- Robotic hydrogen peroxide automated biodecontamination systems

Filtration System

- Ambient air is drawn from the top of the room and is passed through a single HEPA filter, supplying the isolation room with fresh HEPA-filtered air.
- Air within the room, through appropriate engineering control, is kept at a negative pressure to the ambient room resulting to desired air entrapment of contaminated air.
- Contaminated air will then be pulled through a double HEPA filter exhaust with UV-C kill box single pass and UV-C lighting technology before being purged out to the external environment.

- Ambient air
- Filtered air
- Contaminated air

Filtration Package

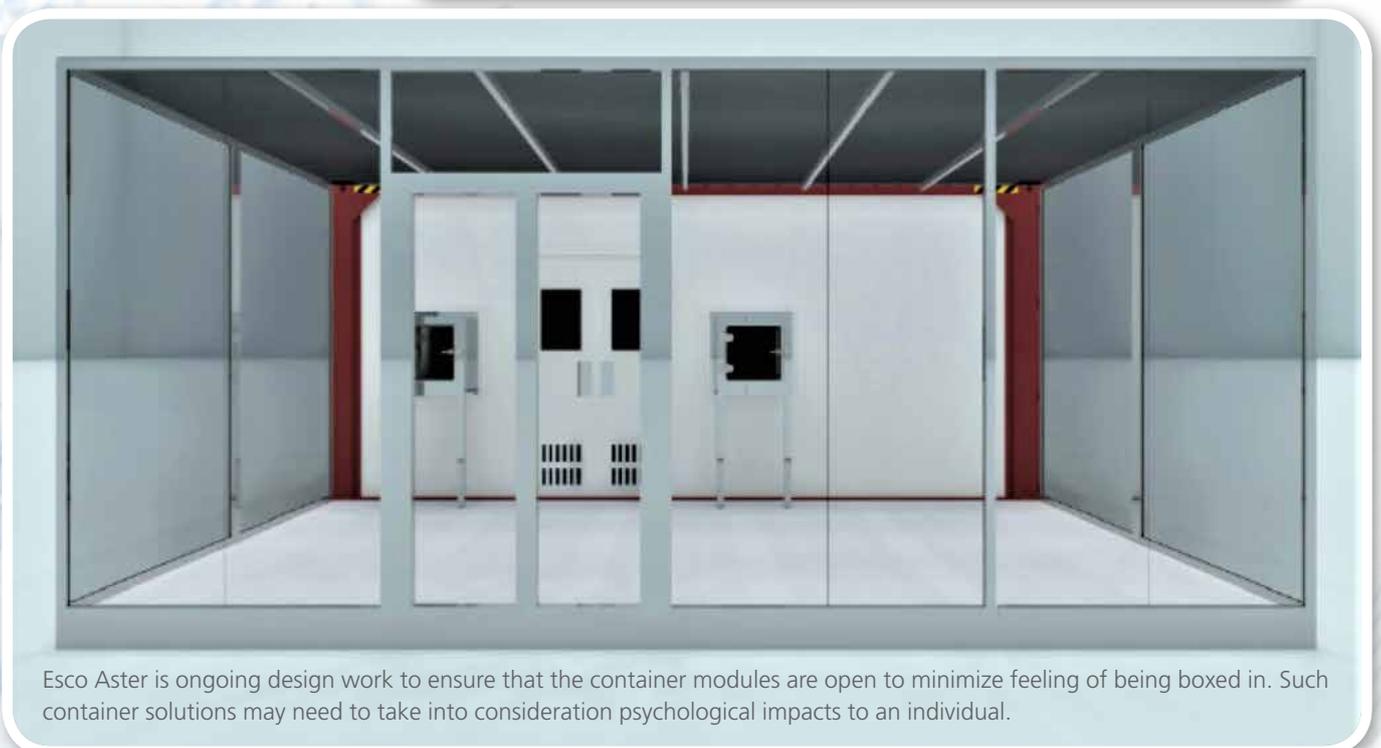
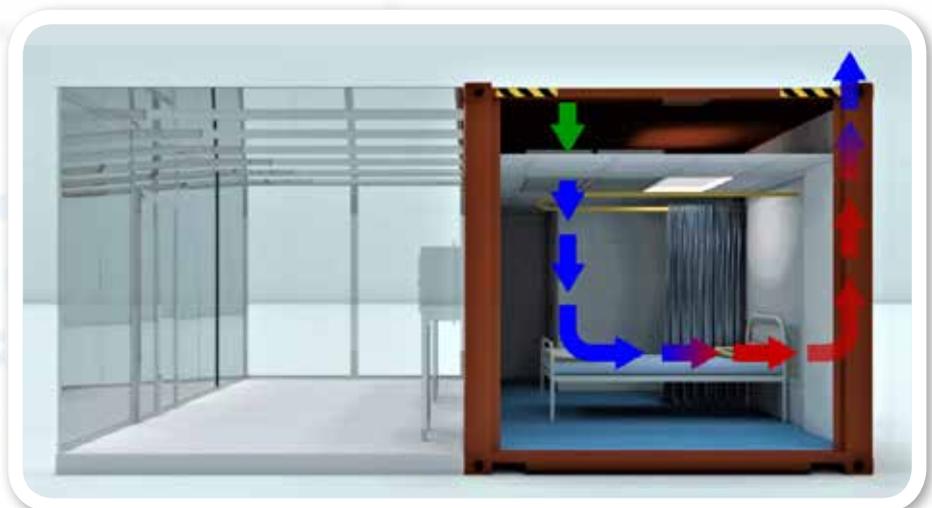
- Filter: Single HEPA filter air supply
- Exhaust filter: A double HEPA filter exhaust with UV-C kill box single pass and UV-C lighting technology

Maintenance Parameters

- The room is recommended to be disinfected 2-3 times a day with constant supervision from healthcare workers in full personal protective equipment (PPE).

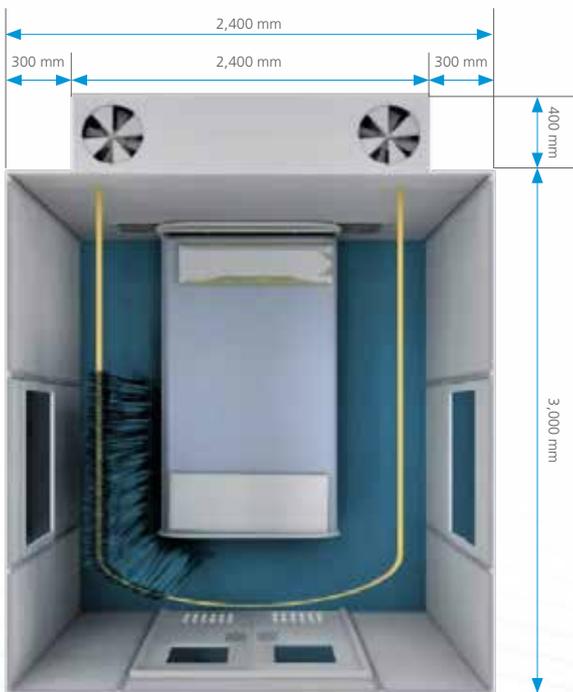
Warranty

- 1 year warranty excluding consumables parts and accessories.
- During the period of warranty, any repair, modification, testing and commissioning performed by any unauthorized party other than Esco Service Team shall void the warranty of the unit.

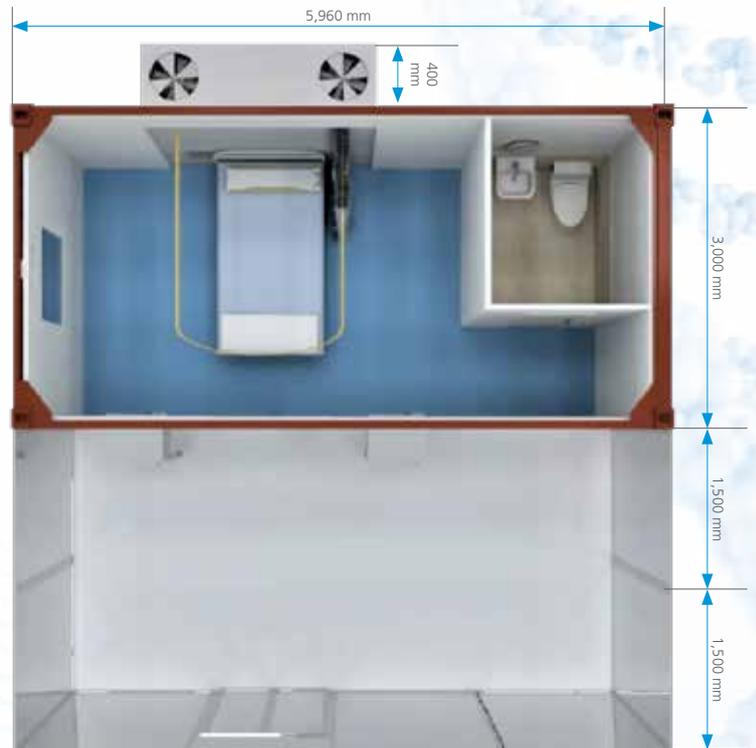
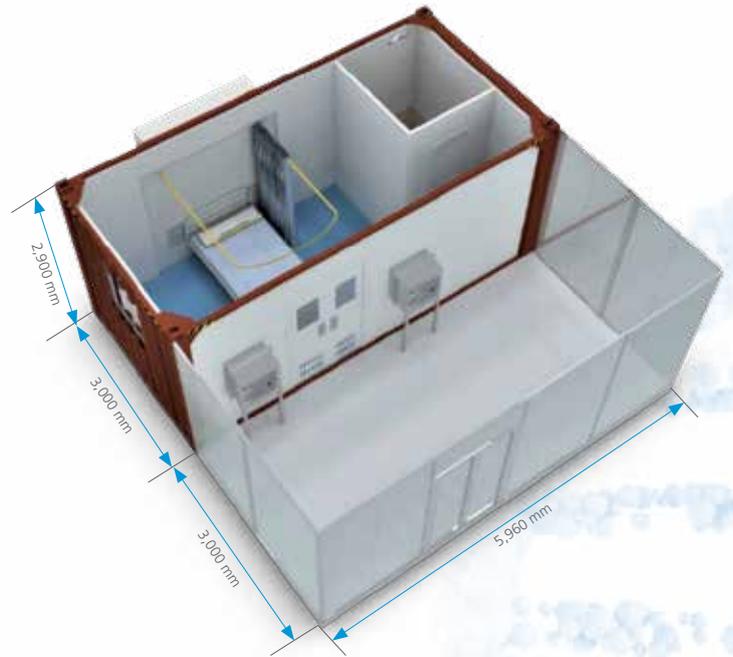


Esco Aster is ongoing design work to ensure that the container modules are open to minimize feeling of being boxed in. Such container solutions may need to take into consideration psychological impacts to an individual.

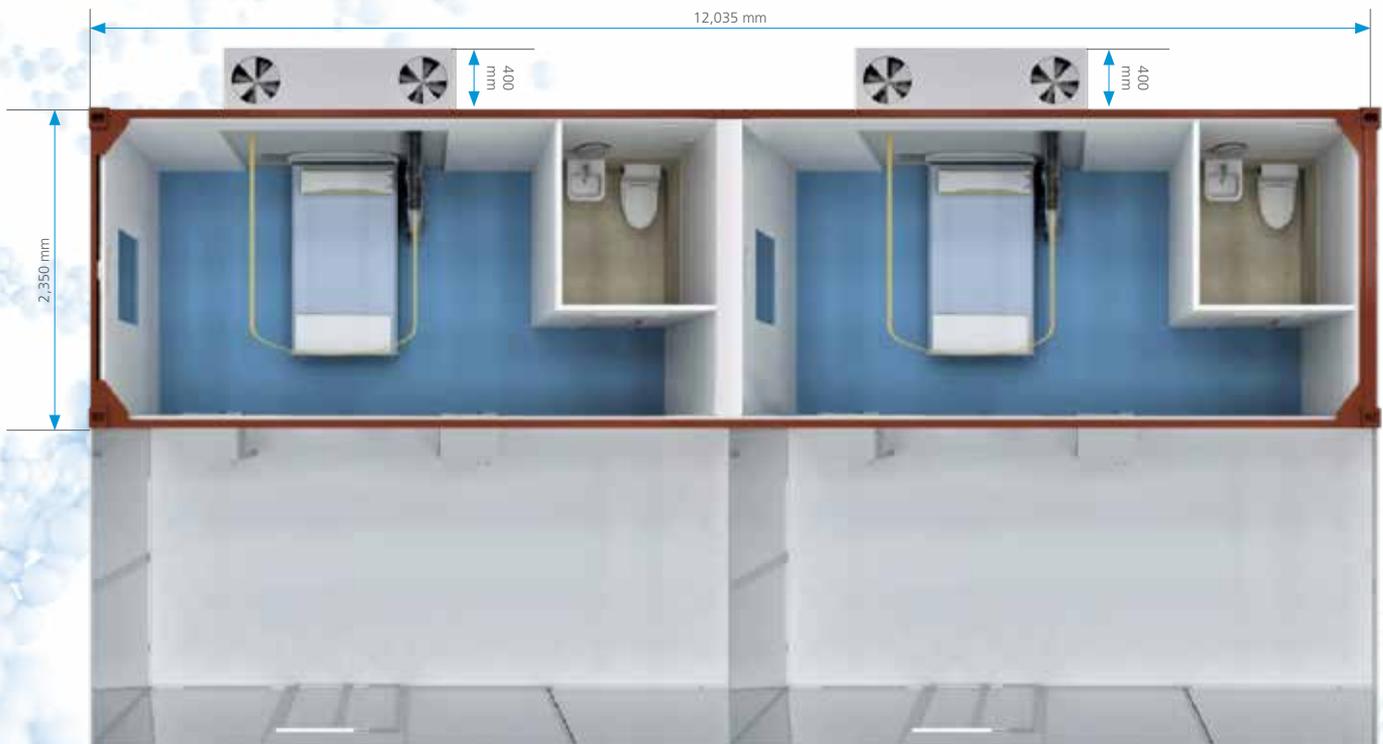
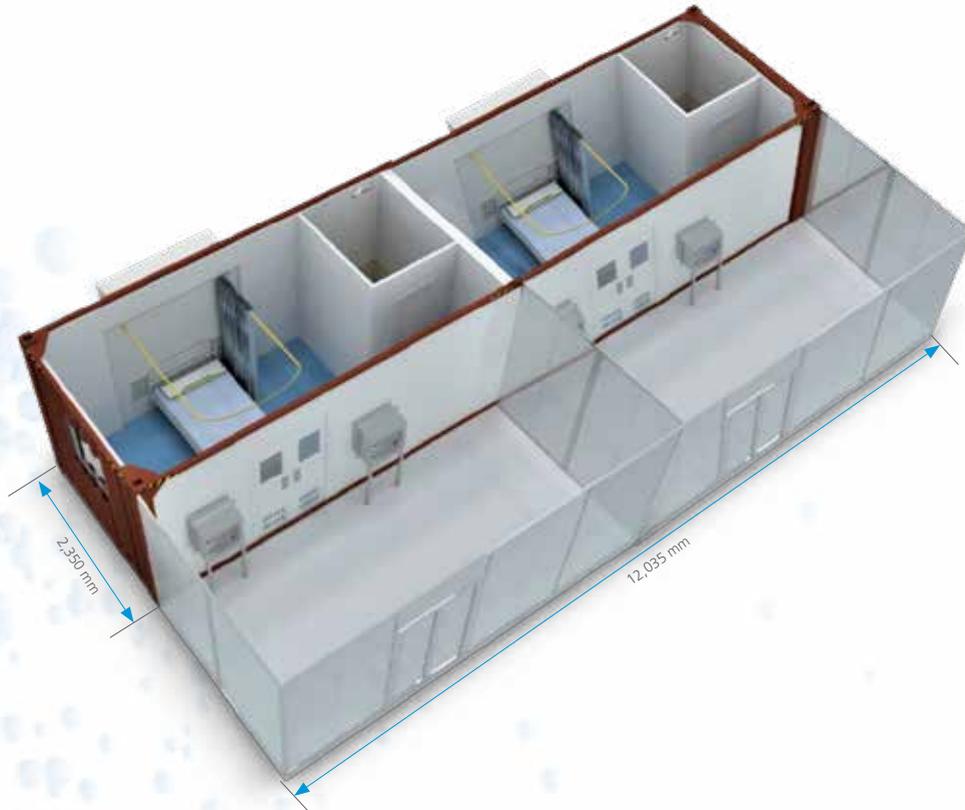
TECHNICAL DRAWING OF MAKESHIFT RECOVERY AND TREATMENT ISOLATION ROOM™ (MRTIR™)



TECHNICAL DRAWING OF MODULAR 20' CONTAINER



TECHNICAL DRAWING OF MODULAR 40' CONTAINER



GENERAL SPECIFICATIONS

Model		Modular 20' Container
External Dimensions (W x D x H)		5960 mm x 6295 mm x 2900 mm
Air Changes per Hour (ACH)		12 ACH
Construction	Main Body	Cleanroom Panel (Isolation Room); Acrylic Panel (Anteroom)
	Door	Electrogalvanized Steel
	Floor	PVC panel overlaid with vinyl sheet
Power Consumption		20 amps
Power Supply Options		Contact Esco for more information
Net Weight		Contact Esco for more information
Shipping Weight		Contact Esco for more information
Shipping Dimensions, Maximum (W x D x H)		Contact Esco for more information
Shipping Volume, Maximum		Contact Esco for more information

**Dimensions can be customized and made bespoke within to suit client requirements.*

GENERAL SPECIFICATIONS

Model		Modular 40' Container
External Dimensions		2385 mm x 12035 mm
Air Changes per Hour (ACH)		12 ACH
Construction	Main Body	Cleanroom Panel (Isolation Room); Acrylic Panel (Anteroom)
	Door	Electrogalvanized Steel
	Floor	PVC panel overlaid with vinyl sheet
Power Consumption		20 amps
Power Supply Options		Contact Esco for more information
Net Weight		Contact Esco for more information
Shipping Weight		Contact Esco for more information
Shipping Dimensions, Maximum (W x D x H)		Contact Esco for more information
Shipping Volume, Maximum		Contact Esco for more information

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