Portable Permanent
Refuge Chambers

Portable emergency refuge solutions that can be
built into an existing refuge bay.

mineARC SYSTEMS | **mine**SAFE
PORTABLE PERMANENT

Company
Profile

MineARC Systems is the global leader in the manufacture and supply of emergency safe refuge solutions for the mining, tunnelling, chemical processing and disaster relief industries.

With over 20 years' experience, our dedication to ongoing research and development is driven by our key focus to continually offer the best and most advanced safety solutions on the market.

Our team of qualified engineers, electrical designers and technical experts form a global network across several international locations including;

• Perth, Western Australia
• Johannesburg, South Africa
• Dallas, Texas
• Santiago, Chile
• León, Mexico
• Beijing, China
• Reading, UK

This allows MineARC to provide 24 hour service and engineering support to our expanding list of clients in over 65 countries across the globe.

All MineARC Refuge Chambers and Safe Havens comply with the highest international regulations and recognised 'world's best practice' industry guidelines. Our key focus on quality control and product advancement has meant that MineARC Refuge Chambers have successfully saved lives in multiple real life industrial emergencies around the globe.

www.minearc.com

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Emergency refuge forms an integral part of an underground mine's wider Emergency Response Plan (ERP). Fires, explosions, rock-falls, flooding, and the release of smoke and other forms of toxic gas are the types of incidents that occur all too frequently, despite the high levels of planning and the safety precautions in place.

In these types of emergencies, when evacuation is no-longer safe or practical, emergency refuge is designed to provide a safe and secure 'go-to' area for personnel to gather and await extraction. MineARC Refuges have been successfully used around the world in multiple mine and tunneling emergencies to save lives.
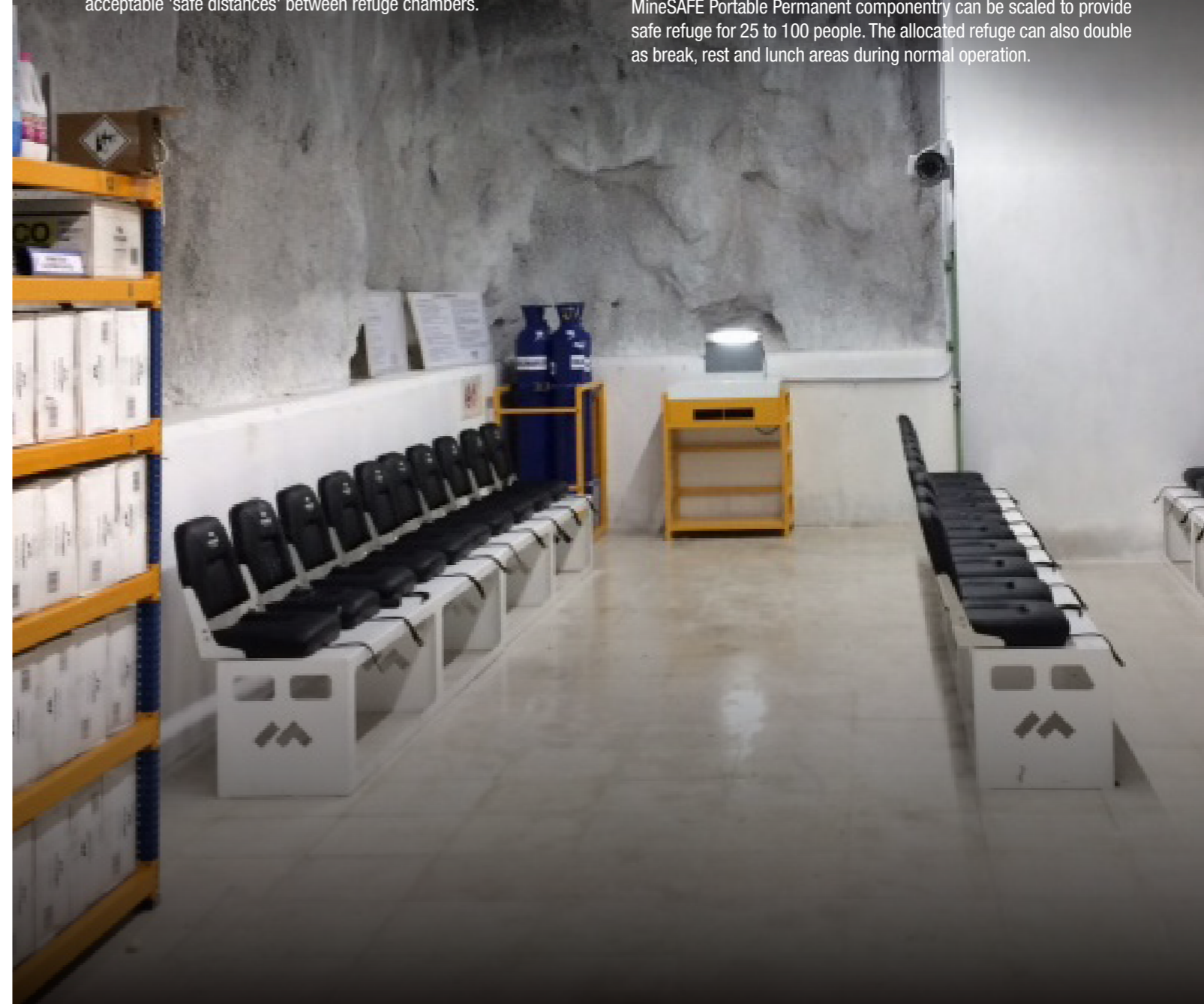
Refuge chambers should be deployed throughout the mine to create a refuge 'network' accessible to all underground personnel whilst on foot. Depending on the country/region, regulations usually state acceptable 'safe distances' between refuge chambers.

The **MineSAFE Portable Permanent** offers sites a built-in refuge option for up to 100 personnel that can be easily installed where needed. Later, as a mine is developed, the refuge chamber can be removed and relocated to where shelter is required most.

All componentry for safe refuge is housed within a standard framework of recommended equipment, vital to safe operation of the shelter in an underground emergency.

Once positioned at the entrance of a dedicated refuge bay, the MineSAFE Portable Permanent is built into to a bulkhead wall and then sealed. Drone scrubbers, booster fans and chairs are positioned within the refuge bay; then the refuge chamber simply needs to be connected to power and compressed air to be fully functioning. This eliminates the need for an intensive installation process.

MineSAFE Portable Permanent componentry can be scaled to provide safe refuge for 25 to 100 people. The allocated refuge can also double as break, rest and lunch areas during normal operation.

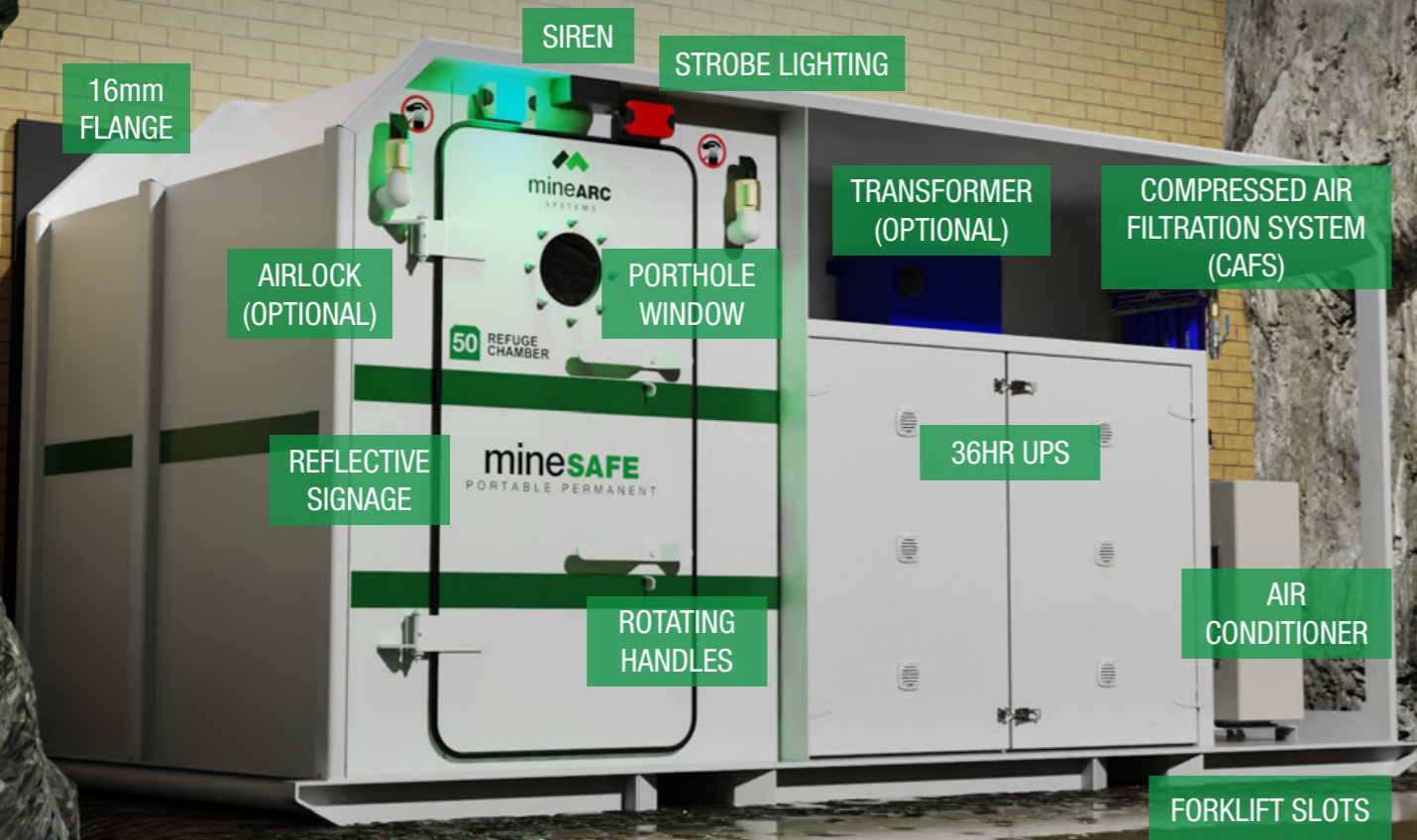| Bureau Veritas ISO 9001:2008 Quality Management Systems | MineARC® HRM Refuge Live Risk Assessment Testing | Australian C-Tick Standards: AS4100-1998, AS3570.1-18, AS2208, AS3000, AS1716-15 | Canadian Standards Association (CSA) | United States National Electrical Code (NEC) 2013/14 | European CE Certified to Machinery Norms |

16mm FLANGE

SIREN

STROBE LIGHTING

AIRLOCK (OPTIONAL)

PORTHOLE WINDOW

TRANSFORMER (OPTIONAL)

COMPRESSED AIR FILTRATION SYSTEM (CAFS)

REFLECTIVE SIGNAGE

36HR UPS

ROTATING HANDLES

AIR CONDITIONER

FORKLIFT SLOTS

AIR CONDITIONER

COMPRESSED AIR FILTRATION SYSTEM (CAFS)

PORTHOLE WINDOW

SERIES IV SCRUBBER

AURA-FX

OXYGEN CYLINDERS (CLIENT SUPPLIED)

ROTATING HANDLES

Portable Permanent
Specifications

Standard Dimensions

Model	Occupancy (persons)	Height (m/inch)	Width (m/inch)	Length (m/inch)	Weight (kg/lb)
MS-PP1-25-SIV-36	25	2.21 / 87"	2.21 / 87"	4 / 157.5"	5,200 / 11,023
MS-PP1-50-SIV-36	50	2.21 / 87"	2.21 / 87"	4 / 157.5"	6,200 / 13,228
MS-PP2-75-SIV-36	75	2.21 / 87"	2.21 / 87"	5.94 / 233.9"	8,400 / 18,078
MS-PP2-100-SIV-36	100	2.21 / 87"	2.21 / 87"	5.94 / 233.9"	9,900 / 21,385

Indicative weights only.
Height change may be required for High Flow Airlock option.

Standard Volumes

Occupancy (persons)	Minimum Volume*	Maximum Volume*
25 - 50	0.75m2 per person	1m2 per person
75 - 100	1m2 per person	1.5m2 per person

*MineARC's standards for minimum and maximum volume for refuge bays.
Additional Drone Scrubbers and Booster Fans may be required for refuge bays that exceed standard volume.

Airlock Activation

The MineSAFE Portable Permanent Refuge Chamber features a two-door entry way (passive airlock) as standard. Clients may select from a range of activation options for the airlock.

Airlocks are designed to act as a secure staging area between the safety of the refuge shelter and the outside environment. Airlocks prevent the ingress of contaminants via a stream of air.

The **Positive Pressure Flushing System** (PPFS) (pictured) is a pressurised option activated via a simple push-button system that releases controlled quantities of air from cylinders (client provided) inside the airlock.

MineARC's **High Flow Airlock** allows for rapid entry into the refuge shelter by multiple personnel at one time. Flushing curtains are located at both the entry and exit of the airlock and are activated by motion detection when the airlock doors are opened. A continual stream of air in a downwards direction forces any toxins and contaminants out of the airlock as personnel pass through.
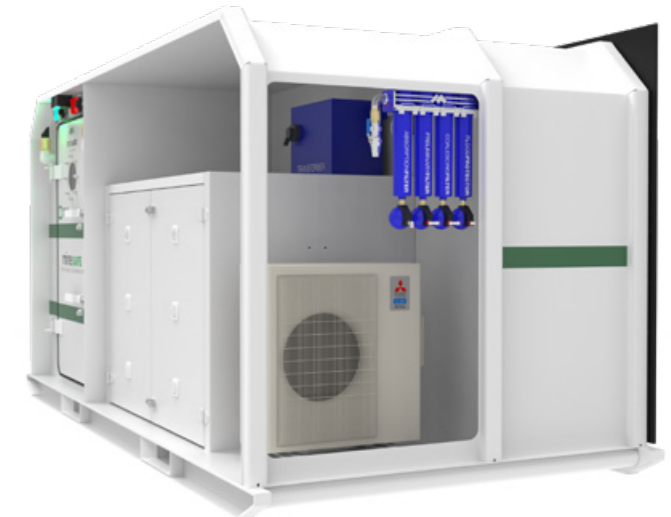
Feature
Summary

Compact, Transportable Design

25, 50, 75 or 100-Person Occupancy

5mm Steel Plate Construction

Pre-installed Bulkhead Flange (16mm)

Series IV & Drone Scrubber

Compressed Air Filtration System

Digital Gas Monitoring

Battery Back-up for 36hrs

Designed for Underground Environments

Standard Features

- 5mm Steel Plate Construction
- Series IV Scrubber
- Drone Scrubber*
- Pre-Packaged MARCISORB Chemical Cartridges
- Compressed Air Filtration System (CAFS)
- Air Conditioner
- Passive Airlock
- Air Vents & Check Valves
- Aura-FX Digital Fixed Gas Monitoring
- Intelligent Voice Audio Navigation (i.V.A.N.)
- Strobe Lighting & Siren
- Porthole Window
- Forklift Slots
- Lifting Rings
- Outward Opening Door with Robust Rotating Handle

*50 and 75-person has a minimum of 1 x 150CFM Drone Scrubber,
100-person has a minimum of 2 x 150CFM Drone Scrubbers.

Optional Features

- Airlock Activation Options
- Booster Fans
- Transformer
- GuardIAN Intelligence Network
- Additional Drone Scrubbers for Large Volume Refuge Bays
- Ergonomic Seating