



Coal Mine Refuge Chambers

MineARC's CoalSAFE Change-Over-Station (COS)

Designed to provide a safe and secure area for miners to rest and change breathing apparatus as they exit the coal mine during an emergency.



coalSAFE
CHANGE OVER STATION



MineARC Systems - Built for Safety.

www.minearc.com



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 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
- Beijing, China
- Barcelona, Spain
- Guanajuato, Mexico

This allows MineARC to provide 24 hour service and engineering support to our expanding list of clients in over 60 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



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.

The MineARC CoalSAFE Change-Over-Station (COS) is designed to aid underground personnel as they exit the coal mine during an emergency. The station provides a secure 'staging-post' stocked with replacement breathing apparatus.

Inside the COS, breathing apparatus such as self-contained-self-rescuers (SCSR's) can be changed over in safety while providing personnel the opportunity to regroup and continue to plan their escape. Each model features custom-designed storage to accommodate site requirements.



Bureau Veritas ISO 9001:2008 Quality Management Systems



MineARC Team Based Risk Assessment Testing



WJE, Inc. Independent Blast and Structural Analysis



WV Office of Miners' Health, Safety & Training Approval



IHST, Inc. Independent Human Testing



Chinese MA Centre Certified

Also Available: EnviroLAV Coal Spec Toilet System

The EnviroLAV is the latest innovation in self-contained, portable toilet systems – ideal for the use in underground mining.

Designed to be simple to operate and maintain, the EnviroLAV is a semi-permanent structure that can be used both above and below ground wherever there is access to compressed air. The EnviroLAV requires emptying just once every 12 months, based on standard usage in optimal conditions.

For more information please visit www.minearc.com



Standard Configurations

The CoalSAFE Change-Over-Station is constructed from 5mm steel plate, with internal support wraps and surround package as standard. The intrinsically safe design features both a positive pressure entry and independent breathable air supply (high pressure compressed air cylinders), stored within the robust steel structure.

The floor of the COS is manufactured from 6mm steel plate with tubular skids. Push points are provided top and bottom at both the front and rear of the unit, providing easy manoeuvrability within an enclosed space.



CS-COS1-08

Other internal features include durable, ergonomically designed seating, dedicated storage areas for housing SCSR's, and a communications port.



CS-COS1-08



CS-COS2-12



CS-COS3-16



CS-COS4-20



CS-COS5-26



CS-COS6-30

Standard Dimensions

Model	Seated occupancy (persons)	Entry & exit flushing system	Height (m/inch)	Width (m/inch)	Length (m/inch)	Compressed air cylinders*	Total rotating occupancy**
CS-COS1-08	8	Air curtain	2.4 / 94"	2.3 / 91"	3.2 / 126"	6 = 51,600L	20 persons for 20 mins
CS-COS2-12	12	Airlock	2.4 / 94"	2.3 / 91"	4.4 / 173"	8 = 68,600L	30 persons for 15 mins
CS-COS3-16	16	Airlock	2.4 / 94"	2.3 / 91"	5.5 / 216"	10 = 86,000L	40 persons for 15 mins
CS-COS4-20	20	Airlock	2.4 / 94"	2.3 / 91"	6.9 / 272"	12 = 163,200L	50 persons for 15 mins
CS-COS5-26	26	Airlock	2.4 / 94"	2.3 / 91"	9.2 / 362"	15 = 129,000L	60 persons for 16 mins
CS-COS6-30	30	Airlock	2.4 / 94"	2.3 / 91"	10.4 / 409"	17 = 120,400L	70 persons for 15 mins

*More cylinders will increase duration of rotating occupancy

**Fewer occupants will increase duration

Standard Features



Positive Pressure Breathable Atmosphere

If personnel are planning to spend a prolonged time within the COS, they should activate the breathable air supply.

A simple compressed air regulator and auto-muffler releases 85L of compressed air, per person, per minute, providing oxygen while effectively flushing poisonous carbon dioxide from the inside of the COS. This ensures occupants are provided with clean, breathable air while they rest.



Secure Cylinder Storage

High pressure compressed air cylinders provide oxygen supply to the main internal area, as well as powering the entry / exit air curtain system. All cylinders are stored within the Change-Over-Station's robust steel structure, housed securely within MineARC certified cylinder racks.

Note: Medical grade oxygen cylinders to be provided by end user.



PAINT

- AS3570.0-18
- Sand blasted to 2.5 grit

AIR VENT / CHECK VALVE

PORTHOLE WINDOW

- AS 2208
- Blast resistant upon request

REFLECTIVE SIGNAGE

- Safety & operational
- Optional extra: Multiple languages

ROTATING HANDLES

- Double locking

SEALING DOOR

- Outward opening
- Vacuum tested seal

FORKLIFT SLOTS

CS-COS1-08

Entry and Exit Flushing



The Change-Over-Station range features a flushing entry-way designed to act as a secure staging area between the enclosed protection of the station and the outside environment.

8-person Stations feature a pneumatically operated air curtain, while models from 12 to 30-persons offer a full airlock solution.

Flushing systems are located at both the front (entry) and rear (exit) of the station.

Entry / Exit Air Curtain (8 Person Station)

The walk through layout of the 8-person COS features a pneumatically operated air curtain, fitted to both the entry and exit doors.

When a door is opened, the system is activated; releasing 200L of compressed air directly over the door and creating a barrier to help prevent toxins and smoke from entering the COS. Once the door is closed, a further release of compressed air over-pressures the internal environment, forcing any remaining toxins out through the one-way check valves.

Entry / Exit Airlock (12-30 Person Stations)

The entry and exit airlocks featured in larger model Change-Over-Stations act as a secure staging area between the enclosed protection of the COS and the outside environment.

COS airlocks feature a positive pressure flushing system that ensures the out-flow of air; preventing the ingress of contaminants while the door is open for entry. The Positive Pressure Flushing System (PPFS) provides high speed pressurisation and is activated via a simple electric push-button system.

Features Summary



- Intrinsically Safe Design**
- Breathable Air Supply**
- CO2 and CO Scrubbing (Optional)**
- Flushing Air Curtains / Airlocks**
- SCSR Storage**
- 5mm Steel Plate Construction**

Standard Features

- Intrinsically safe design
- Flushing entry / exit air curtain or airlock
- Independent breathable air supply
- 5mm steel plate construction
- Ample SCSR storage (self contained self rescuer)
- Viewing porthole
- Communication ports
- Ergonomically designed seating
- Forklift slots
- Non-slip flooring
- Pneumatic strobe lights
- Warning siren
- Cylinder storage racks
- Reflective signage

Optional Features

- Compressed mine air filter pack
- MARCis
 - Carbon dioxide & carbon monoxide scrubbing
 - Intrinsically safe air conditioning
- Emergency escape hatch
- Blast rating upgrade
- Blast shield protection
- Fire extinguisher
- First-aid kit
- Manual gas monitoring device



Service and Maintenance

The Change-Over-Station is easy to inspect and maintain, requiring minimal preventative maintenance.

MineARC Systems has a dedicated service team with the capacity to undertake all servicing requirements as well as free accredited training programs for site personnel to perform their own servicing.

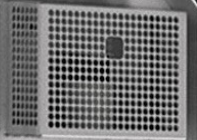




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