



MineARC's TunnelSAFE Multi-Service Vehicle (MSV) Refuge Chamber

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MineARC: Leaders in Industrial Safety

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 15 years' experience, our key focus on quality control, product advancement and our specialist knowledge and expertise has meant that MineARC Refuge Chambers have successfully saved lives in multiple real life tunnelling emergencies around the globe.

MineARC's TunnelSAFE range of refuge chambers are highly customisable to suit any project and can be built to comply with the ITA's "*Guidelines for the Provision of Refuge Chambers Under Construction*" and *BSEN 16191*.





The TunnelSAFE Range

MineARC has developed a comprehensive TunnelSAFE range; designed to meet the needs of the industry at all stages of the project life-cycle and across all tunnelling techniques.



Gantry Design



Rail Design



MSV Design



Drill & Blast Design



MineARC's TunnelSAFE Multi-Service Vehicle (MSV) Design

Based on industry demand, MineARC has developed the MSV Design Refuge Chamber, which is custom engineered and manufactured to be mounted to a multi-service vehicle.

The MSV Design provides a portable safe haven for workers during routine tunnel inspections and maintenance works.

- First refuge chamber of its kind in the world
- Provides an advantage over traditional refuge chambers due to its mobility
- The ability to be able to control the vehicle from within the refuge chamber means that all personnel, including the driver, are safe for the duration of the journey.





Mobility & Driver Integration

TunnelSAFE MSV's have been specifically designed as a mobile unit in order to provide a safe means of escape in an emergency.

- Can be fitted with the client's own remote control system, allowing the vehicle to be operated from within the refuge chamber.
- Custom engineered mounting points to specifically match the client's MSV, allowing easy bolt-on installation.
- Can be designed with a driver control panel at both ends, allowing the MSV to be driven in either direction.





CO / CO₂ Scrubbing



TunnelSAFE Chambers use active chemicals and MineARC's Extra-Low-Voltage (ELV) Scrubbing System to 'scrub' the build-up of harmful CO₂ and CO from the air inside the refuge chamber.

- Operational 'hub' of the chamber that controls power, lighting and scrubbing
- MineARC's MARCISORB Chemical Cartridges provide superior scrubbing capacity



Positive Pressure Maintenance System (PPMS)

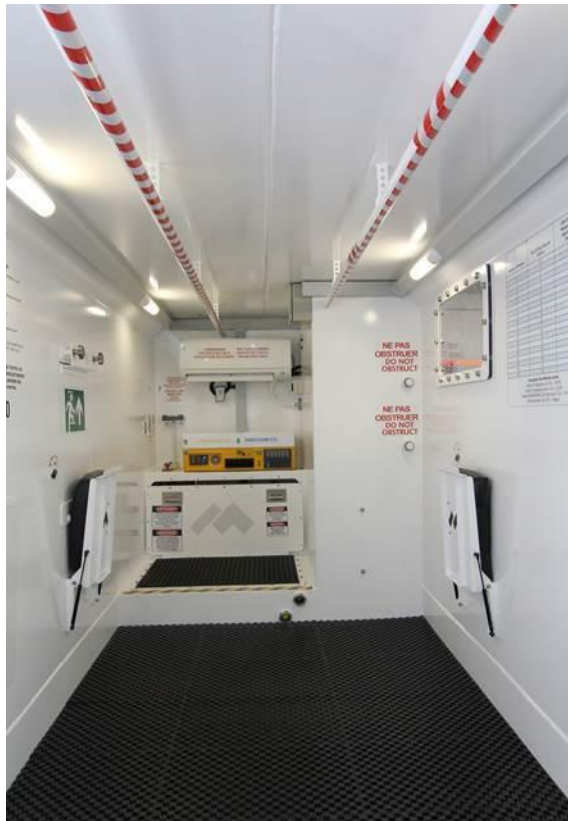
The MineARC PPMS is a unique piece of equipment, designed to help maintain a safe, breathable atmosphere within the refuge chamber.



- Securely mounted to the interior wall of the chamber, and powered by a 24VDC power supply,
- Electric solenoid valve opens and closes to release measured amounts of breathable air from compressed air cylinders in order to maintain a positive internal pressure in the chamber.
- Quantity of breathable air cylinders is configurable to suit various internal volumes and durations of operation.



Custom Shapes & Layouts



All aspects of the TunnelSAFE MSV Design can be customised by MineARC Engineers to suit most project specifications, therefore no two chambers are the same.

- Shape
- Standard dimensions
- Blast resistance
- Internal volume
- Occupancy
- Entry style
- Minimum entrapment duration



Extreme Temperature Control

MineARC has developed several temperature control upgrades for tunnelling projects that experience high ambient temperatures.

- **Self-contained Misting System** assists in heat suppression of the external environment by emitting a fine mist of water around the exterior of the chamber. This mist flash-evaporates under high temperatures, creating a temperature barrier around the chamber.
- **High ambient air conditioning** system designed to function effectively in ambient temperature conditions of up to 50°C.





Stakeholders

Engineer: Errol Hassett

Client: MineARC driven initiative.
Projects sold to include Brenner Base Tunnel Project (Austria) & Lyon-Turin Tunnel Project (France).

Contractor: None – MineARC driven initiative.