

YOU ARE NOW 20' UNDERGROUND



MineARC[®] AirGEN Standalone Scrubber

The MineARC AirGEN Standalone scrubber can be used to create safe, breathable air for personnel sheltering in an enclosed space from an external hazard.



airGEN



MineARC AirGEN
Standalone Scrubber
AG-35



SCAN TO DOWNLOAD
BROCHURE

Emergency refuge chambers and auxiliary mining products

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 15 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 six international locations including;

- Perth, Western Australia
- Johannesburg, South Africa
- Dallas, Texas
- Santiago, Chile
- Beijing, China
- Barcelona, Spain

This allows MineARC to provide 24 hour service and engineering support to our expanding list of clients in over 40 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



Bureau Veritas ISO 9001:2008 Quality Management Systems



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



Why the MineARC AirGEN?

The MineARC AirGEN is a standalone air regenerative system that 'scrubs' the air inside enclosed spaces - removing harmful gases such as CO (carbon monoxide) and CO₂ (carbon dioxide) - a vital requirement for any sealed environment sheltering human life for an extended period of time.

Only a shelter that is 100% sealed from the external environment, guarantees safety from the ingress of smoke and other harmful toxins. Both CO and CO₂ can become lethal in high concentrations. This valuable life saving equipment has been designed to operate standalone in any refuge chamber, safe haven, bomb shelter or survival shelter.



Carbon Dioxide and Carbon Monoxide

Carbon dioxide (CO₂) is a colorless, odorless gas that is produced during human respiration. A typical person will produce between 24 to 30 litres of CO₂ per hour (0.85 to 1.1ft³).

CO₂ is a simple asphyxiate and causes adverse health effects at elevated concentrations. The United States Mine Health & Safety Administration (MSHA) stipulates a permissible exposure limit of 1% and a ceiling limit of 2.5% for miners trapped in a coal mine. Similarly, the Occupational Safety and Health Administration (OSHA) have set a permissible exposure limit of 0.5% over an 8-hour work day, with a ceiling exposure limit of 3% for a 10 minute period. The symptoms of CO₂ exposure are listed below.

| CO ₂ Concentrations | Symptoms |
|--------------------------------|--|
| 0.03% | Normal concentration in air |
| 0.5% | Lung ventilation increases by 5% |
| 1% | Symptoms may begin to occur |
| 2-3% | Symptoms of simple asphyxia occur |
| 5-10% | Prolonged exposure could result in unconsciousness and death |
| >10% | Unconsciousness in less than 1 minute, leading to death |

Carbon Monoxide

Carbon monoxide (CO) is an asphyxiate that is endogenously produced by humans at varying levels depending on different health factors (i.e. smokers, obesity, hypertension, anemia, age). CO exposure exerts its main toxic effect via its ability to interfere with organs that have a high metabolic demand for oxygen (O₂).

The Occupational Safety and Health Association (OSHA) specifies that the carbon monoxide content of the atmosphere in a room, building, vehicle, railcar or any enclosed space shall be maintained at not more than 50 parts per million (ppm) for an eight hour period.



Construction



- Powder coated steel construction
- 76mm (3") blower with corrosion resistant motor
- Simple single switch operation
- Easy fitment of chemical cartridges (see next page)
- Green LED light to indicate operation
- Rubber mounting feet

| Dimensions | | | | |
|---|-------------|---------------|----------------|--------------|
| | Length | Height | Width | Weight |
| Dimensions with chemical cartridge installed: | 457mm / 18" | 343mm / 13.5" | 349mm / 13.75" | 24kg / 53lbs |

*Note CO/CO₂ cartridges are sold separately

Chemical Cartridges



MARCISORB-CO



MARCISORB-CO2

MARCISORB chemical cartridges absorb ('scrub') concentrations of CO and CO₂ from the air inside closed spaces, regenerating the air, making it safe to breathe.

- Built of high grade polypropylene plastics
- Sealed into a barrier film bag with pressure relief valve
- Long shelf life
- Material Safety Data Sheets supplied
- Number of CO₂ cartridges required is dependent on occupancy and runtime
- Number of CO cartridges required is based on enclosure volume, starting CO concentration, and desired ending concentration

Operating Instructions

- Instructions are mounted directly on the AirGEN unit for easy access
- Includes directions for CO₂ and CO cartridges
- Provides approximate change out periods for CO₂ cartridge for various occupancies
- Includes recommended oxygen regulator settings for various occupancies



Optional Features



Battery Backup & Charger

- Minimum 36-140 hour battery backup system should mains electrical supply fail (longer durations can be attained with carbon dioxide scrubbing only, multiple units, and/or by cycling the power).
- UL/CSA or CE listed 12 Volt battery charger
- 90-135 Volt or 185-265V AC with retractable power cord
- LCD battery monitoring display
- Recessed handles for ease of handling
- Mounts directly to AirGEN Scrubber
- Additional height: 254mm (10")
- Additional weight: 32kgs (70lbs)



Gas Monitoring



Digital

- Honeywell Impact Pro Multi-Gas Detector
- Provides real-time gas monitoring of O₂, CO, and CO₂ (infrared)
- Can be powered through existing 12 or 24 Volt supply – or alternatively with addition of integrated battery backup & charger system (shown above)
- Charging cradle conveniently mounts to scrubber unit



Manual

- Gastec Manual Gas Detector
- Reliable and easy to use
- Utilizes pre-filled chemical tubes that react to air being drawn through the hand-held pump device
- Tests levels of CO, CO₂ and O₂ (recommended once hourly)
- Includes 40 hour supply of sampling tubes

Optional Features

Oxygen Supply

The MineARC AirGEN is designed to be used in conjunction with an oxygen supply. MineARC Systems offers both oxygen candles and compressed oxygen / compressed air cylinders.



Oxygen Candle Kit

- 2,600L (92ft³) of oxygen produced within 60-70 minutes of ignition
- Military approved – supplied with Safety Data Sheet for additional information
- Includes igniter match, stainless steel stand, and handling gloves
- Ideal for small occupancy and/or short duration sheltering

*Note Units must be shipped Hazmat.



Oxygen Regulator

- Medical grade oxygen regulator with flow selection from 1-30 persons
- CGA-540 valve connection required
- Supplied with rubber gloves for regulator handling
- 8,500L (303ft³) compressed oxygen cylinders



Compressed Air Regulator

- Breathing air regulator with flow selection
- CGA-346 or CGA-347 valve connection required
- 8,500L (303ft³) or 12,380L (437ft³) breathable compressed air cylinders

Suitable for Multiple Industries and Applications

Survival Shelters

Fires, floods, hurricanes, and tornados are all reason to escape to a survival shelter, keeping family and friends safe. The MineARC AirGEN is compact in size, stores for extended periods, and is easy to operate. The addition of a scrubbing system permits a shelter that is ventilated from the outside to be converted to a fully isolated environment, protected from external hazards.



Bomb Shelters

An underground bomb shelter should have the capability of shutting down all outside sources of air for an extended period following a nuclear attack. During the first hours of a nuclear attack, smoke, carbon monoxide, and radiation particles could overcome the ventilation system which is reliant on air from outside.

In a sealed environment carbon dioxide will buildup very quickly and at a concentration of just 3%, and asphyxiation can occur rapidly. The MineARC AirGEN controls the buildup of carbon dioxide, maintaining safe levels for occupants, while toxic gases outside the shelter dissipate.



Chemical Processing

In the event of a toxic chemical release, fire, explosion or other hazardous emergency, personnel need a secure 'go-to' area. Safe havens and control rooms should be fitted with a scrubber system to prevent the buildup of toxic levels of CO and CO₂ produced by the sheltering occupants. The MineARC AirGEN allows extended entrapment times whilst awaiting rescue, or for the external hazard to dissipate.



Mining

The MineARC AirGEN is ideal for a range of underground mining applications:

- Refuge chambers that lack either CO or CO₂ scrubbing.
- Purging of airlocks and fresh air bases for mine rescue crews.
- Emergency air for hoist/shaft control rooms.

The easily installed unit can be connected to any redundant 6-34V connection or alternatively charged via a 110V or 220V outlet then powered from its own battery backup as required.





mineARC
SYSTEMS





CO2

CARBON
DIOXIDE
OFF
CARBON
MONOXIDE

MineARC NORTH AMERICA

MineARC EUROPE

MineARC CHINA

MineARC SOUTH AMERICA

MineARC AFRICA

MineARC AUSTRALIA

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A QUOTE

The world's leading manufacturer of emergency life-saving refuge


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