

StormSAFE Cyclone Shelter

The StormSAFE is a fully portable, modular unit, specifically designed to withstand extreme weather conditions.



STORMSAFE

Emergency refuge chambers and ancillary mining products

Company Profile

MineARC Systems is the global leader in the manufacture and supply of emergency refuge chambers used in the mining, tunnelling and chemical processing industries.



With over 15 years' experience in the industry, our dedication to ongoing research and development has kept us at the forefront of safe refuge technology.

MineARC Refuge Chambers have been successfully used around the world in multiple mine and tunnelling emergencies to save lives.

MineARC has offices and manufacturing facilities in Australia, South Africa, Chile, China, Europe and the United States, as well as a strong distribution network worldwide. We manufacture and supply refuge chambers to operations in over 40 countries.

All MineARC Refuge Chambers comply with the highest international industry regulations and guidelines.

MineARC is the only refuge chamber manufacturer in the world with an ISO: 9001 quality rating.

www.minearc.com



ISO 9001 Quality Rating



European CE Certified to Machinery Norms



Australian C-Tick Standards: AS4100-1998, AS3570.1-18, AS2208, AS3000, AS1716-15



Canadian Standards Association (CSA)



United States National Electrical Code (NEC) 2011

The MineARC StormSAFE

The StormSAFE Cyclone Shelter represents MineARC's latest solution in above-ground safe refuges for industry.

Designed specifically for regional industrial sites that experience extreme weather conditions, the StormSAFE has been engineered to withstand wind speeds in excess of 300km/hr. The unit complies with the Australian Building Code's 'Region D Rating' for tropical cyclones, and the Australian & New Zealand Standard AS/NZ1170.2, with a Building Code of Australia Importance Level of 4.

The StormSAFE Shelter features a fully portable, modular design comprising a series of individual units that bolt together, creating a single internal environment. The design allows for easy disassembly and relocation as required.

The standard MineARC StormSAFE is designed to house any size team comfortably, offering bunk-style bedding, ample seating, kitchenette facilities and toilet amenities. Its clever modular design means that the space can be customised for any specification, particularly in regards to size, occupancy and internal features.

The StormSAFE is a cost effective option for remote industrial sites, allowing personnel to remain on-site to continue production right up to a 'blue' alert. For sites experiencing regular extreme weather conditions, this minimises costly down-time and process disruptions significantly.



StormSAFE Exterior

The standard StormSAFE Shelter is designed as a modular unit that bolts together, providing ample internal space. Constructed from 5mm solid steel, it can withstand wind speeds in excess of 300km/hr and complies with 'Region D Rating' for tropical cyclones.



ROOF MOUNTED LOUVRES

SEALING DOOR

STEEL CONSTRUCTION
FOR REGION D RATING

WATER TANKS AT
REAR OF CHAMBER

ROTATING HANDLES

REFLECTIVE SIGNAGE

SIREN & STROBE
WARNING SIGNALS

UPS BATTERY
BACKUP

PORTAL WINDOWS

MULTIPLE ENTRY WAYS

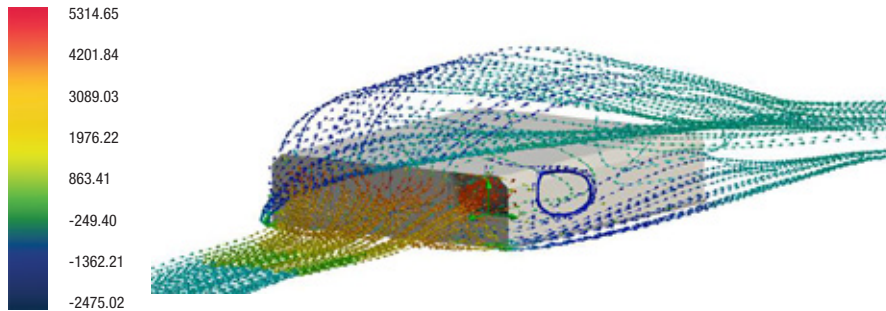
LOUVRED AIR VENTS

BOLT TOGETHER
MODULAR UNITS



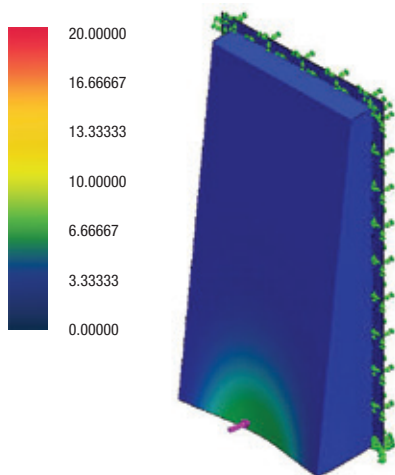
Precision Engineered Design

Wind Stability



MineARC Engineers have utilised flow simulation software to accurately analyse the flow path of cyclonic wind from all directions acting on the StormSAFE. By determining the areas of positive and negative pressures caused by air passing over the geometry, over engineers were able to develop a chamber design that is both stable and self-weighting, whilst also remaining easily transportable.

Impact Resistance



FEA structural analyses have been conducted to determine the maximum deflection of the StormSAFE, ensuring the impact energy of flying debris will not allow the shell to yield.

AS1170.2 Debris Impact Calculations specify the following:

- A cyclone shelter must withstand impact of a spherical steel ball, of 8mm diameter and 2g mass, travelling at 144km/h; and
- A cyclone shelter must withstand impact of a 4kg mass travelling at 144km/hr, with a cross section of 100mm x 50mm

FEA software and manual tests by MineARC engineers have confirmed the StormSAFE to display deflections below a fraction of a millimetre and a stress impact well below yield across the chamber, proving compliance with the aforementioned aspects of AS1170.2.

Ventilation System



RAIN
AS2428.1



WIND
AS2428.2



FIRE
AS2428.4



COEFFICIENT OF
DISCHARGE
AS2428.5



CYCLONE
RATED

The StormSAFE's AS 2428.1/2 compliant ventilation system provides effective, natural air flow, whilst ensuring optimal protection in even the most extreme weather conditions. The system has been Australian engineered and designed to withstand Region D Rated cyclonic conditions.

Plumbing

If kitchenette and toilet modules are required, the MineARC StormSAFE is built to conform to AS3500 Plumbing and Drainage Regulations. Fresh water is provided to the facilities via a gravity fed water storage bank. An effluent tank is mounted underneath the floor of the chamber, externally accessible for emptying via pumping.

UPS Battery Backup

A standard StormSAFE chamber is designed with a UPS battery backup system, capable of powering the unit for 36 hours stand alone. This includes providing power to all internal fluorescent lighting, emergency exit signs, and external warning lights. Extended back up is available upon request.

StormSAFE Sleeping Quarters

The standard StormSAFE Chamber includes dormitory modules with bunk-style bedding, ideal for scenarios in which personnel are taking shelter for long periods of time. Available in single, double or triple configurations.

TURBO FAN

CLIMBING RUNGS

SAFETY SIGNAGE

LOUVRED
AIR VENTS

OPTIONAL STORAGE NETS
ON INTERIOR WALLS

MATTRESS OPTIONS:

- STANDARD FOAM
- WATERPROOF
- FIRE RETARDANT

StormSAFE Interior

FLOURESCENT LIGHTING

SPLIT SYSTEM
AIR CONDITIONING

ELECTRICAL SYSTEMS

TOILET FACILITIES

POWER & COMMS
CONNECTION

STAINLESS STEEL
SINK & STORAGE

SLEEPING QUARTERS
(SEE PG. 7)

The central module can be configured to contain a kitchenette and mess hall facilities, as well as all necessary control and communication systems. Other modules incorporate recreation ammentities and ablutions, utilising MineARC's award winning EnviroLAV technology as an option.

*Fridge and microwaves not provided as standard.



COMMUNAL SEATING AREA

WATER & OIL REPELLENT CARPETING

INSTRUCTIONAL SIGNAGE



Like all MineARC Chambers, the StormSAFE is highly customisable to suit any client requirement or project specification:

“The MineARC team, from initial concept discussions through to handover on site, provided a professional service. The design of the StormSAFE product evolved during construction to meet the conflicting requirements of two separate end user locations.

The StormSAFE shelter met all of our technical criteria and the internal fit out provides total flexibility for seating arrangements within the two centre modules.”

- Trevor Beattie
Capital Works Manager, Atlas Iron

StormSAFE Configurations

The StormSAFE features a modular design, that can be built to suit site requirements. Standard ammenty options are as follows:

Sleeping Quarters

Dormitory modules, featuring triple bunk-style bedding, ideal for extended refuge. Mattresses included.

Kitchenette

Basic food preparation facilities, including a stainless steel sink, storage, and power access for additional ammeneties.

Ablutions

EnviroLAV toilet system, available in either single-sex or uni-sex. Includes hand-basin and wall mounted EnviroWASH soap dispenser.

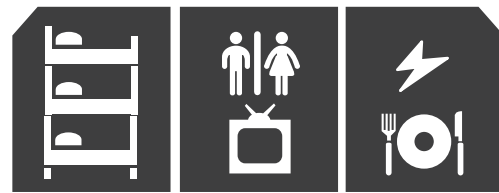
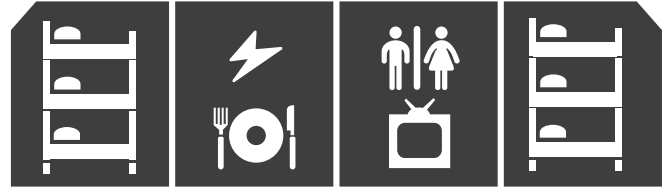
Control Systems

All necessary communication and electrical connections for a prolonged refuge period, including UPS battery backup.

Recreation

Mess-hall area for general use, including tables and seating. Optional LCD TV screens available.

Example Configurations:



Custom bedding



UPS Battery Backup



Stainless steel sink



Recreation area



Toilet facilities



Inverters

StormSAFE Feature Summary

Fully Portable, Modular Design

Can Withstand Wind Speeds of up to 300km/h

Built to Local Compliance Standards and Building Specifications

Tailored Interior Space

No Special Transport Permits Required - Loads onto a Flat Bed Truck

Customisable To Your Site's Requirements

Standard Features

- Fully customisable, modular design
- 5mm (3/16") steel construction
- Viewing portal
- Reflective signage and durable paint exterior
- Outward opening door with securing handle
- Air vents
- Airconditioning
- Interior lighting
- Bunk-style bedding
- Carpeted flooring
- Communication ports
- UPS battery back-up
- Water tanks

Optional Features

- Language of choice for documentation and instruction
- Capacity for fridge and microwave
- Fold away tables and seating
- Kitchenette with stainless steel sink
- Toilet facilities
- First aid kit
- Additional entertainment options



MineARC NORTH AMERICA

MineARC EUROPE

MineARC CHINA

MineARC SOUTH AMERICA

MineARC AFRICA

MineARC AUSTRALIA

MineARC® Systems

HEAD OFFICE

MineARC AUSTRALIA

274 Welshpool Road, Perth,
Australia 6106
ph: +61 (8) 9333 4966
fax: +61 (8) 9333 4900
email: info@minearc.com.au

MineARC NORTH AMERICA

4850 W. Ledbetter Drive
Dallas, Texas, 75236 USA
ph: +1 (214) 337 5100
fax: +1 (214) 337 5103
email: info@minearc.com

MineARC SOUTH AMERICA

Avda. El Salto N°4001 oficina 142 A,
Piso 14 Comuna de Huechuraba,
Santiago, Chile
ph: +56 2 2964 4290
fax: +56 2 2964 4291
email: info@minearc.com

MineARC AFRICA

Stand 205, Flaming Rock Rd, Northlands
Business Park, 29 Newmarket Street,
North Riding, Johannesburg, South Africa
ph: +27 (0) 11 796 5162
fax: +27 (0) 86 504 1750
email: info@minearc.co.za

MineARC CHINA

Room 209, Tower C, Fangheng
International Center, NO. 6 Wangjing
Futong Street, Chaoyang District,
Beijing, PR China 100102
ph: +86 10 8472 6488 / 8472 6508
email: info@minearc.com.au

MineARC EUROPE

Level 3, 97 Jermyn St,
London,
SW1Y 6JE
ph: +44 7866 913 207
ph: +44 2073 899 053
email: info@minearc.com.au

Emergency refuge chambers and ancillary mining products


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SYSTEMS

www.minearc.com