



Case Study:

Upcycling a Refuge Chamber for Staff Training

Lundin Mining improved their safety education program by repurposing an out-of-operation safe refuge to facilitate on-site training.

Repurposing Assets to Improve Safety Training On-Site

Understanding how to operate a chamber is essential. Training lays the foundation for personnel to develop their skills and knowledge of safety and emergency procedures.

Lundin Mining was looking to reinvigorate their emergency response training, without impacting expenditure and operations on site. Coincidentally, a decommissioned refuge chamber was lying in wait.

Lundin Mining is a diversified Canadian based metals mining company with operations in Chile, the United States of America, Portugal and Sweden, primarily producing copper, nickel and zinc. Alcaparrosa is one of Lundin Mining's three mines located in Tierra Amarilla in northern Chile.

Refuge chamber MAA-045 had not been operational for several years before it was refurbished into a dedicated training chamber. Under the direction of Mr Nelson Navarro Chief of Management and Control of Mining Costs, MineARC Systems and Lundin Mining worked closely to give the chamber a new life and improve safety training across the mine site. After three months, the newly restored chamber was suitable to conduct on-going operational training to all mine personnel.

Ensuring the safety of all personnel through operational training and refuge chamber management is essential.



Pictured: The original free pour chemical scrubbing system within the refuge was replaced with MineARC's MARCISORB chemical cartridges.



Challenges

- Ensure personnel were adequately trained in emergency response procedures including the operation of a refuge chamber.
- Control the costs of supplies and resources.
- Continue to gain value from a disused refuge chamber.

Solutions

- Repurpose the older model refuge chamber through refurbishment.
- Reduce waste and ongoing supply costs by refurbishing a refuge chamber.
- Utilise the restored refuge chamber for on-site training.

01.

Refuge Chamber Refurbishment

Lundin Mining was able to tailor the rebuild to conform to their current fleet. The refurbishment of MAA-045 brought the equipment in-line with technology incorporated into active chambers underground, including a new scrubbing system, power supply and operational guidelines.

The original free pour chemical scrubbing system within the MineSAFE Refuge Chamber was replaced with the latest scrubbing technology and MineARC's MARCISORB chemical cartridges. A chemical cartridge scrubber reduces manual handling of chemicals, improves accurate chemical distribution and storage space within the chamber.

Spare parts and new devices were installed and fresh supplies provided. A complete overhaul of the wiring was required to support the new components and upgraded systems. Importantly, all batteries were replaced to ensure adequate power to the refuge chamber's life support systems (including scrubbing units, air conditioning and lighting), in the event of a loss of mains power.



Pictured: The internal components were stripped in preparation for replacement and upgrades.



Pictured: Once complete, the refuge chamber was secured above ground for training purposes.

A hands-on approach allows participants the chance to experience the operation of a refuge chambers, demonstrated within the context of the underground environment. Understanding how to run a refuge chamber can make a significant difference to how an individual reacts in an emergency.

By refurbishing an older model refuge chamber, Lundin can schedule training during mine maintenance utilising the more accessible training chamber. An above ground training chamber permitted the mine to conduct on-site training for personnel to operate and service refuge chambers and removed the need to transport trainees underground. Contractors and employees are provided with hands-on experience to develop the correct skills and know-how to operate all underground refuge chambers confidently.

02.

On-site Refuge Chamber Training

By taking advantage of a MineARC's Refurbishment Program, Lundin Mining transformed an out-of-operation refuge chamber into a dedicated training chamber, improving safety and reducing the impact on operations.

Discover more information on our refurbishment or training programs or contact us.



Pictured: Battery Box on the rear of an underground refuge chamber at Lundin's Eagle Mine

Tailored Industry Solutions

Refuge Chambers

- MineSAFE Standard Design

Life-Supporting Technology

- CO and CO₂ Scrubber
- MARCISORB Chemical Cartridges
- Uninterrupted Power Supply (Battery Back-Up)
- Air conditioning

Training & Education

- On-site operational training
- On-site certified refuge chamber servicing
- Operational guides
- e-learning access

For More Information

To learn more about how MineARC Systems can support your site, visit minearc.com

Contact Us

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