



WHAT IS AN AIR COOLING UNIT?

- Mobile refrigeration unit for cooling work place air in underground mines.
- Uses direct expansion cycle.
- R407c refrigerant.
- Condenser heat rejected to a water stream.
- Two sizes available: 100kW and 250kW.
- High-pressure condenser enables U-tube or hydropower water system utilisation for ACU MkII.
- Saves dewatering pumping power by reducing cooling water usage.
- Heat rejection to water up to 40°C
- Heat rejection to reject air streams via closed water loop and standard cooling car/heat exchanger.
- No connection to central refrigeration plant needed.

AIR COOLING UNIT

- **Direct underground air cooling.**
- **Modular and mobile.**
- **High positional efficiency.**
- **Cooling on demand.**
- **10°C WB temperature reduction.**
- **Heat rejection to water up to 40°C.**
- **Superior energy efficiency.**
- **Mobile fridge plant.**

SPECIFICATIONS

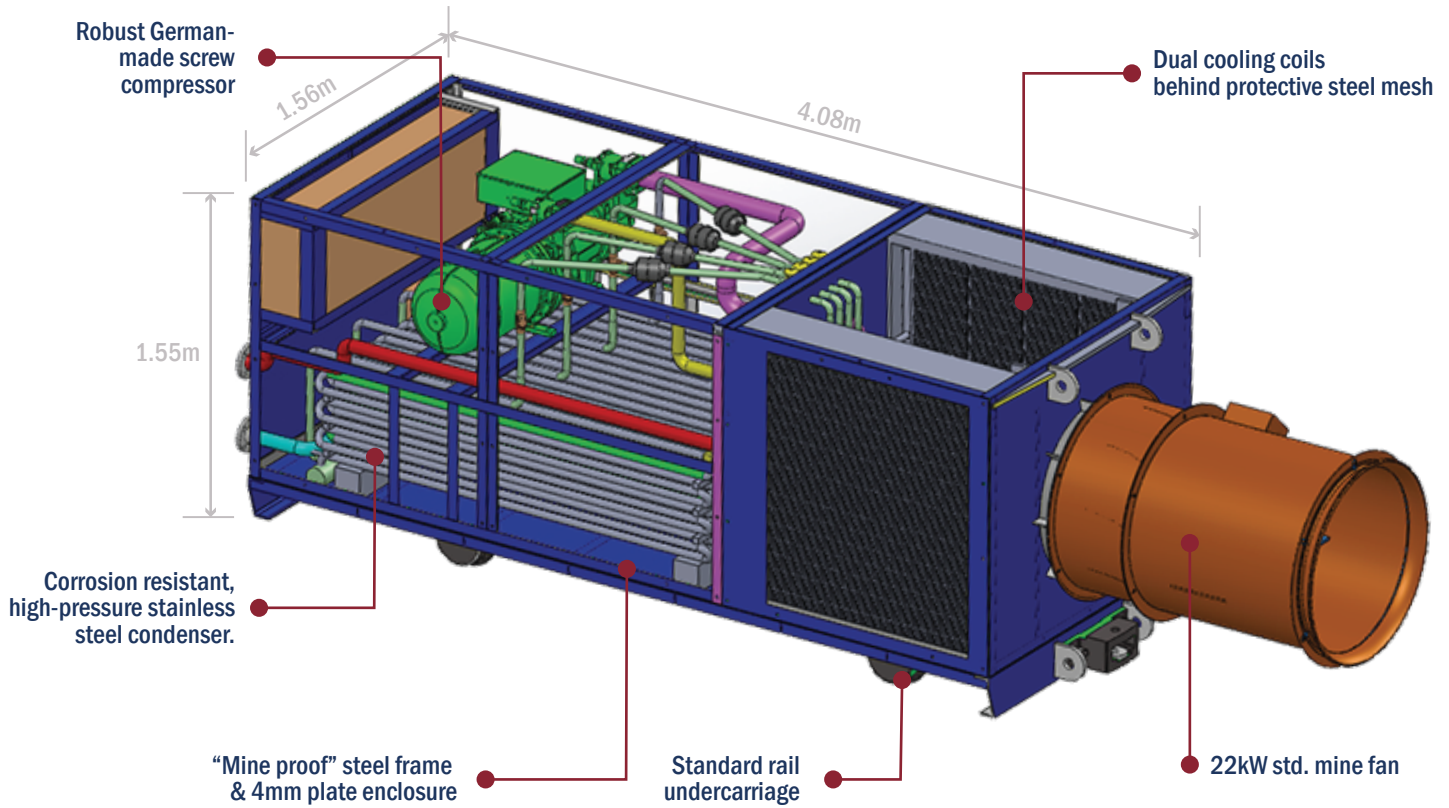
**ACU
MkI**

**ACU
MkII**

	100kW	250kW
Cooling duty	100kW	250kW
Typical drop in air wet bulb temperature	Between 5°C and 10°C	
Coefficient of Performance	3	3
Standard mine fan	7.5 kW	22 kW
Allowable water pressure	10 bar	200 bar
Maximum water inlet temperature	40°C	40°C
Water flow rate	1.6 l/s	3.9 l/s
Water temperature rise	20°C	20°C
Voltage	525 V	525 V
Compressor power	24 kW	75 kW
Unit mass (excl. fan)	1.3 ton	4.2 ton



M - T e c h
i n d u s t r i a l



APPLICATIONS:

The situations that demand ACUs for cooling are always unique. Therefore M-Tech Industrial can provide assistance with the setup and application.

DEVELOPMENT END COOLING

ACUs provide a solution to cool those far-out notoriously hot workplaces, or development ends where cooling infrastructure always lags behind.

ELECTRICAL ROOMS & PUMP STATIONS

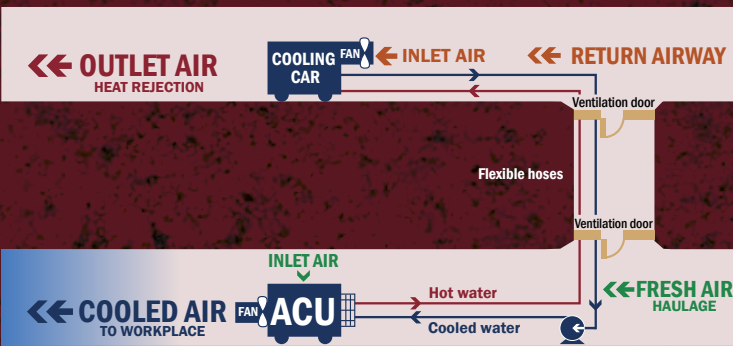
Cooling of control rooms, underground winder houses, pump stations or substations.



APPLICATIONS:

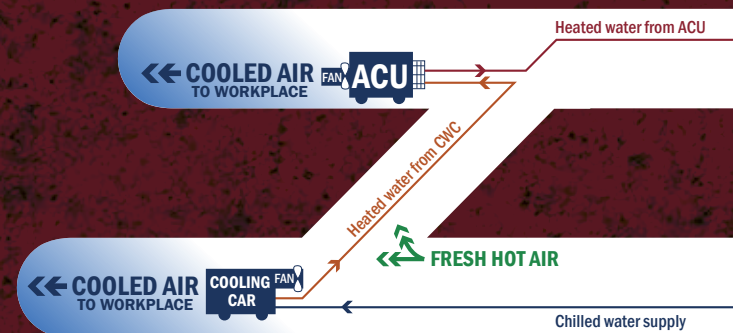
Water flow rate control is set up according to the demands of each situation. For example, for minimum water consumption the flow rate can be controlled to maximise water outlet temperature.

STANDALONE, LOCAL CLOSED WATER LOOP. HEAT REJECTION TO RETURN AIR.



Water flow control method: pumped in a closed circulation loop to a cooling car in the Return Airway.

REUSE OF RETURN WATER FROM A COOLING CAR.



Water flow control method: the ACU uses the flow rate as determined by the cooling car flow control.

TRACK RECORD

M-TECH AIR COOLING UNITS HAVE A SOLID TRACK RECORD AT SEVERAL MINES:

- Sibanye Beatrix Mine
- Harmony Kusasalethu
- Village Main Reef



In actual mining conditions, the ACU performs on its design specification and delivers the promised wet bulb reduction.

Leon Smith
Occupational Environment Manager,
AngloGold Ashanti Kopanang Mine



MAINTENANCE AND SUPPORT

M-Tech Industrial provides full service and support for ACU's across Southern Africa. Full maintenance and support are included in the sale.

LEASE OR OWN

Various options are available to obtain ACUs for your site. Please contact us for a discussion of options.

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