



KÜHLTECHNIK

THE INNOVATIVE WAY TO COOL DOWN

High on location efficiency for road heading and tunneling

AIR COOLING MACHINES

The application

During the process of extracting coal from the soil underground or while advancing through the mountain during construction of tunnels, the generated heat needs to be taken out to the surface and dispensed into the atmosphere away from its original source.

We differentiate here between centralized and de-centralized cooling systems. Decentralized systems are efficient and most economical if cooling is only needed at a few points far apart from each other.

Our compact design enables you to move the units along with your shredders through the ground. They work with a high coefficient of performance and do not require sophisticated water pipe insulation. The systems are low maintenance and designed to be repair-friendly, therefore more robust and reliable.



Concept

In general terms the atmosphere underground is cooled down by **evaporative refrigerants** in a heat exchanger (evaporator).

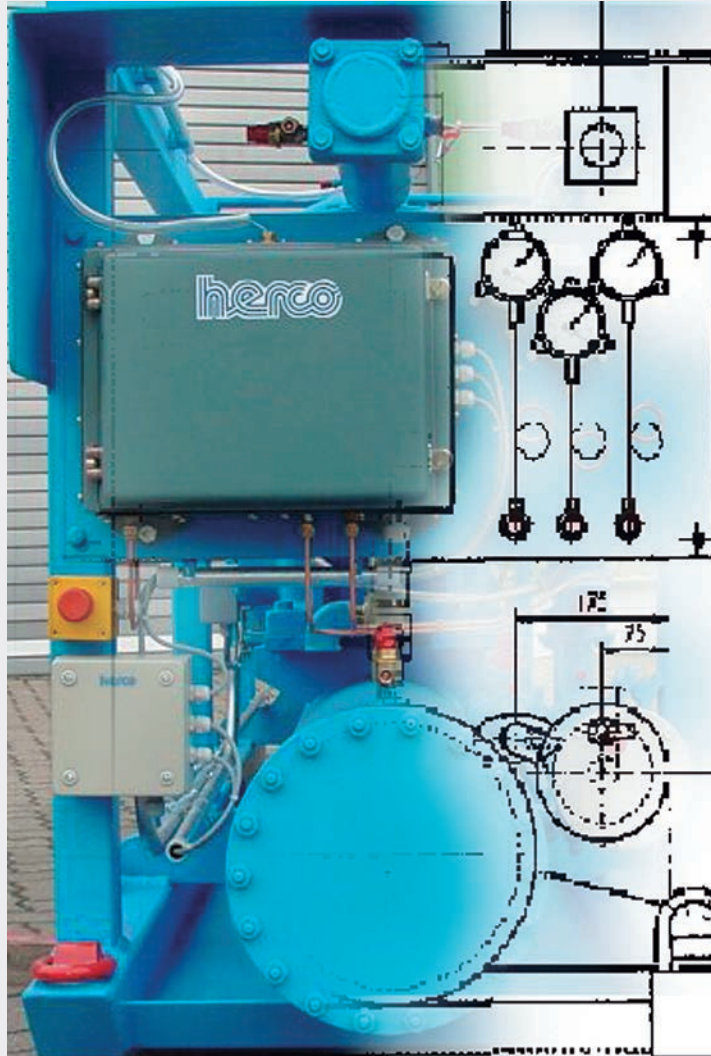
The main unit consisting of a compressor, condenser, and instrumentation, elevates the pressure of the refrigerant. The heat and pressure that is adsorbed during this process will be transported via pipeline to the water heat exchanger, the so-called condenser. Here the gaseous refrigerant condenses and the expansion valve lowers the pressure. The Freon now is injected into the evaporator where it exchanges the heat between the air and the refrigerant.

The heat that has been transferred to the water in the **water cooled condenser** can easily be transported via pipe above ground and exchanged either with fresh water, river water, ground water, or through a re-cooler-unit.

General Assembly

The two-component air cooling machine consists of: Machine unit incl. compressor, electrical motor, condenser, control unit and our standard 5m distance positioned evaporator. The evaporator is specially designed for extreme high concentration of dust. The **re-cooling unit** exchanges the

system, for cleaning, provides longevity even if the dust concentration is extremely high. Compressor and evaporator are protected by a solid frame and housing. They are connected through flexible stainless steel piping, whereas the re-cooling unit is connected through uninsulated rigid piping.



heat, which is being absorbed under ground through water spraying system and forced air. The re-cooling unit consists of copper plates. The large distance between the copper plates and the water spraying

Control and Safety

The evaporation pressure via an internal hydraulic capacity system controls the output of the compressor. Pressure and temperature safety switches control the refrigerant circle and the oil pressure in the compressor. In addition, the compressor and the condenser are protected by a safety valve.

Planning, Construction, Installation, Commissioning and Maintenance

Our units range from 50 to 500 kW cooling capacity. The integration of our machines into your existing systems as well as the design, manufacturing, and commissioning is all performed by our trained Herco staff.

The most integral parts, such as heat exchangers, electrical panels (including software package), are designed and built at our facility in Wesel, Germany.

Reliable, long-term partners in the industry supply major parts such as compressors and various other components. Total overhauls of existing units are carried out at our facility.

Our staff can either do **maintenance** and repair or we can offer training to your maintenance crews and the units can be maintained in house.

Type	- Refrig. capacity - Motor capacity	- Air volume flow - Pressure drop	Cooling water flow	Dimensions: - Machine part - Evaporator
WEK 230	230 kW 75 kW	5,5 m³/s 1200 Pa	16 m³/h	3200/800/1200 mm 3100/650/1150 mm
WEK 280	300 kW 90 kW	7,5 m³/s 1200 Pa	22 m³/h	3200/800/1200 mm 3100/840/1150 mm
WEK 350	370 kW 110 kW	10 m³/s 1200 Pa	26 m³/h	3200/840/1400 mm 3100/1120/1150 mm
WEK 450	460 kW 132 kW	15 m³/s 1200 Pa	32 m³/h	3200/840/1400 mm 4000/840/2200 mm

Inlet temperature cooling water: 20° C

Inlet temperature air 32° C/75% humidity

herco
KÜHLTECHNIK

Rudolf-Diesel-Straße 28

D-46485 Wesel

phone + 49 (0) 2 81/95 27 7-0

fax + 49 (0) 2 81/95 27 7-26

email: info@herco-gmbh.com

internet: www.herco-gmbh.com