

Pneumatics down the Mine

Extreme applications for screw compressors.

Modern screw compressors often have a hard time of things. Even so, cases always arise that surprise even insiders to the industry and show what potential is hidden in these machines. One of these surprises is the Zielitz mine near Magdeburg in Germany, run by the Kali & Salz Company, GmbH. At the present time, around 33 000 tons of raw potassium salt are brought to the surface each day.

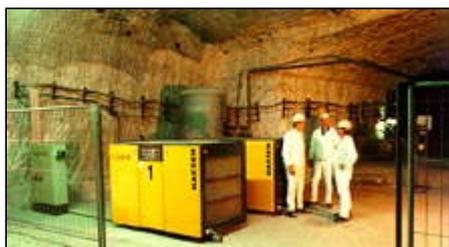


All equipment used in the mine, such as this transport vehicle, must be cleaned of potassium salt dust regularly. This is accomplished by intensive blowing. The air needed for this work is supplied by an AS 35 oil-cooled screw compressor from KAESER.

Visiting the potassium salt mine in Zielitz is a little different to a normal factory tour. Before the Report Team was allowed to descend into the mine with deputy district engineer Ulrich Elies they had to don protective clothing. Within a few minutes the three members of the team were transformed into a mining crew, complete with working suit, helmet, miner's lamp and a so-called 'self-rescuer'. This portable unit supplies breathing air for extreme emergencies and must be carried by everyone down in the mine. Just as when you board a flight, a thorough introduction to safety followed, during which a video was shown that familiarized them with the safety regulations and gave recommendations for behaviour in an emergency.

Rapid descent

The roomy lift, used for the transport of all vehicles, equipment and plant needed in the mine, descended with the visitors at a speed of 8 m/s. Down below, at around 700 metres under the surface, the temperature can reach up to 35 °C and the air is absolutely salt dry. Instead of narrow tunnels with low ceilings such as exist in coal mines, the whole potassium salt mine was penetrated by a spacious cave system that stretched over many miles. Together with Ulrich Elies, the Report Team climbed into an open jeep. They then drove to the first destination up extremely steep rises and down very rapid descents. All that the headlights lit up during the spooky drive was salt, salt everywhere. The walls, ceiling and floor of this intricate maze of tunnels all consist of this grey-white mass that was stored here by nature many millions of years ago. Now and then huge transport vehicles loomed up that seemed to consist only of monstrous shovels and oversized rubber wheels. They thundered past and disappeared again in the darkness.



This compressor installation, located at a depth of over 700 metres, supplies the workshops in the mine. In the photo are (from the left) District Engineer Ulrich Elies with Michael Bahr and Hans-Joachim Stierwald from the Report Team.

Extreme conditions

The first stop was in a space almost - four metres high. Here, at a depth of 700 metres, we found a compressor installation from KAESER comprising two CS 76 screw compressors complete with a MAC 41 sequence controller, air receiver and air treatment units. "This central installation supplies the workshops in the mine with compressed air" said Ulrich Elies. But, believe it or not, this compressor location was outdone later: a KAESER AS 35 screw compressor was being used directly at one of the faces of the mine. Frank Thyrolf, an employee of the mining company, demonstrated the task given to this compressor. The air was supplied via a hose to a blow-gun with which he cleaned a transport vehicle. To make the compressed air quickly available at the respective locations, the compressor was mounted on runners (see large photo on the facing page). Clouds of salty dust were blown into the air, dust that enveloped the compressor too. A glance inside the cabinet was no surprise either: all components were covered in a thick layer of dust. "Despite these extreme environmental conditions, all 12 AS compressors in the mine work without problem" assured us Ulrich Elies. Highly effective bag filters effectively prevent the potassium salt particles from entering the internal parts of the compressor. It is no wonder that the district engineer has learned to appreciate the quality of the AS compressors. As he said, "You can really rely on these machines". KAESER compressors are also in use on the surface too. An installation comprising four DS 140 screw compressors with an overall capacity of 55.2 m³/min at 7.5 bar has been supplying the salt treatment equipment with compressed air since the Autumn of 1995.

Mobile air down the mine

We heard of another very interesting application from our field service team: in the Sigmundshall potassium mine of the Kali & Salz GmbH in Wunstorf, Germany, a Mobilair 50 portable construction compressor from KAESER is mounted on a light transport vehicle. The machine supplies compressed air for blowing out points on the railway lines, cleaning vehicles and machines and for driving pneumatic tools.

