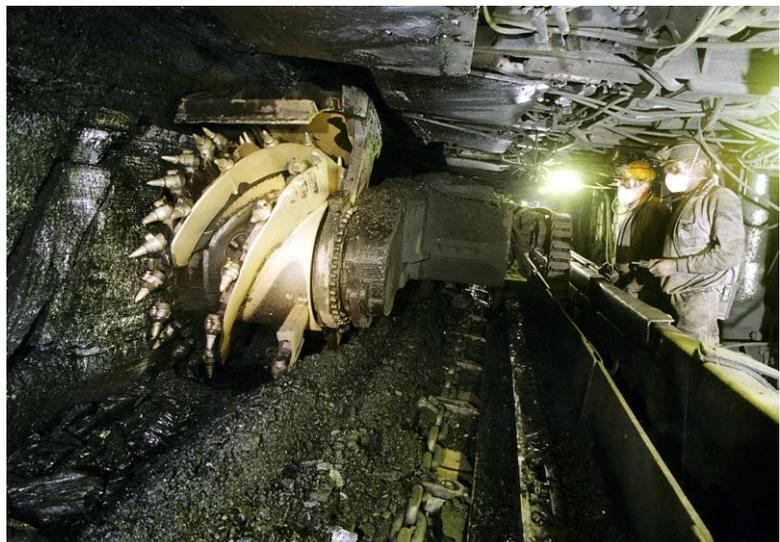


In modern mechanised coal mines, hydraulic shields (also called roof supports) are designed to ensure that the working longwall is kept supported and hence safe. These shields use large hydraulic cylinders which support the roof ie legs and horizontal cylinders that move shields forward and advance the face conveyor ie rams. The longwall power pack must be able to develop a pressure of up to 420 bar and provide the high volume of fluid a fast longwall requires. The hydraulic fluid used is categorised as (HFA). This type of fluid has at least 95% water, combined with specialist additives, to produce emulsions or solutions.



Example: RAG Ensdorf Nordschacht

The pumping system installed at Nordschacht supplied the longwall equipment with HFA fluid over a distance of around 5000 metres. Three faces were supplied simultaneously from the same station.

The frequency-controlled pumps automatically adapted to the fluid requirements without manual intervention being necessary.

This station was the first mining station in the world to control pressure completely automatically by means of a frequency converter.

The system is located on the 24th and thus lowest level of the Saar mine at a depth of 1790 metres. Both the mining field when the station was installed, and the subsequent field were both supplied from this strategically favourable point.

Hydraulic longwall power packs

As the system was built very close to the fresh air shaft, regulations allowed non explosion proof technology to be used.

Each pump had a maximum pressure of 420 bar, maximum flow of 318 l/min from 250 kW input power. Six pumps were installed.



The system went into operation above ground in May 2004

Nowadays KAMAT supplies longwall mining pumps up to 800 kW and 1100 l/min per pump.