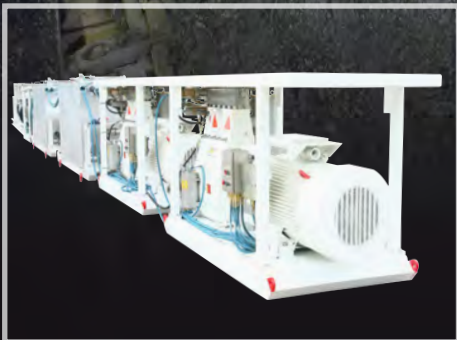


# DAT Bergbautechnik GmbH

From a single source



# DAT

**BERGBAUTECHNIK GMBH**



**DAT Bergbautechnik GmbH** is synonymous with innovative and state-of-the-art technology including the technical advice for their customers and the service offerings necessary for such complex installations.

DAT has the necessary system knowledge as well as the most experienced specialists to work out solutions quickly and service our customers worldwide. DAT additionally calls in companies specializing in certain components and component groups who help instantly and in an uncomplicated manner whenever problems occur.

Our hallmarks are state-of-the-art mining technology, quality, on-time delivery and an excellent service which all contribute to your success at the mines. DAT supports its customers up to the point when the installations are taken into operation and of course offers an optimum after-sales service. The customers decide whether they want support when the need arises or continuous support the details of which are laid down in a service contract.

In addition to brand-new systems and machinery DAT also offers used, optimally refurbished mining equipment.



Assembly of a HP pump system



Refurbishing shield supports



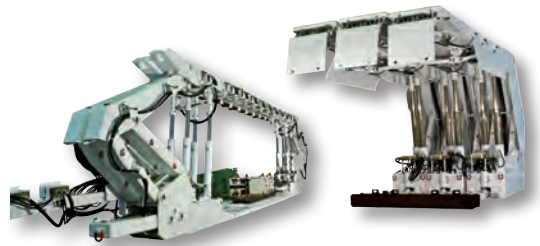
CAD workplace in the design department

DAT Bergbautechnik GmbH located in Wesel



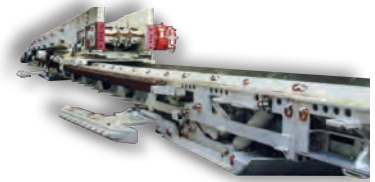
# Product range

Special shields  
Face-end shields  
Entry shields  
Portal shields



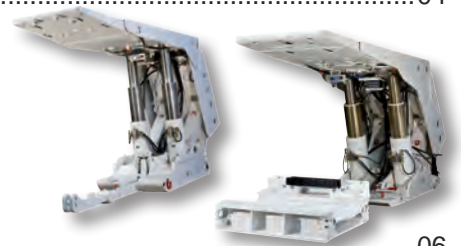
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Transfer stations  
Belt tailpieces



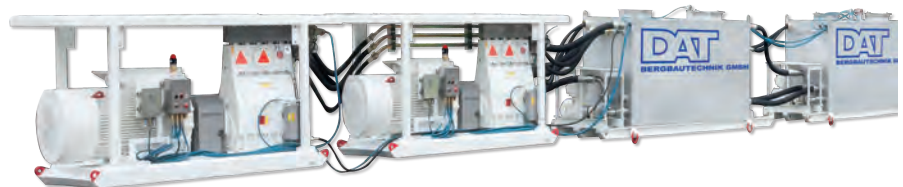
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Shield support  
Refurbished face support



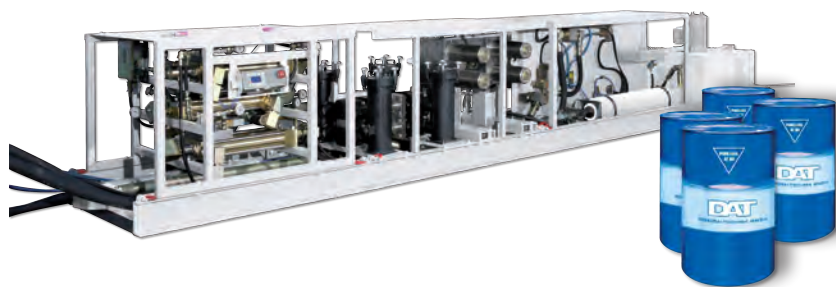
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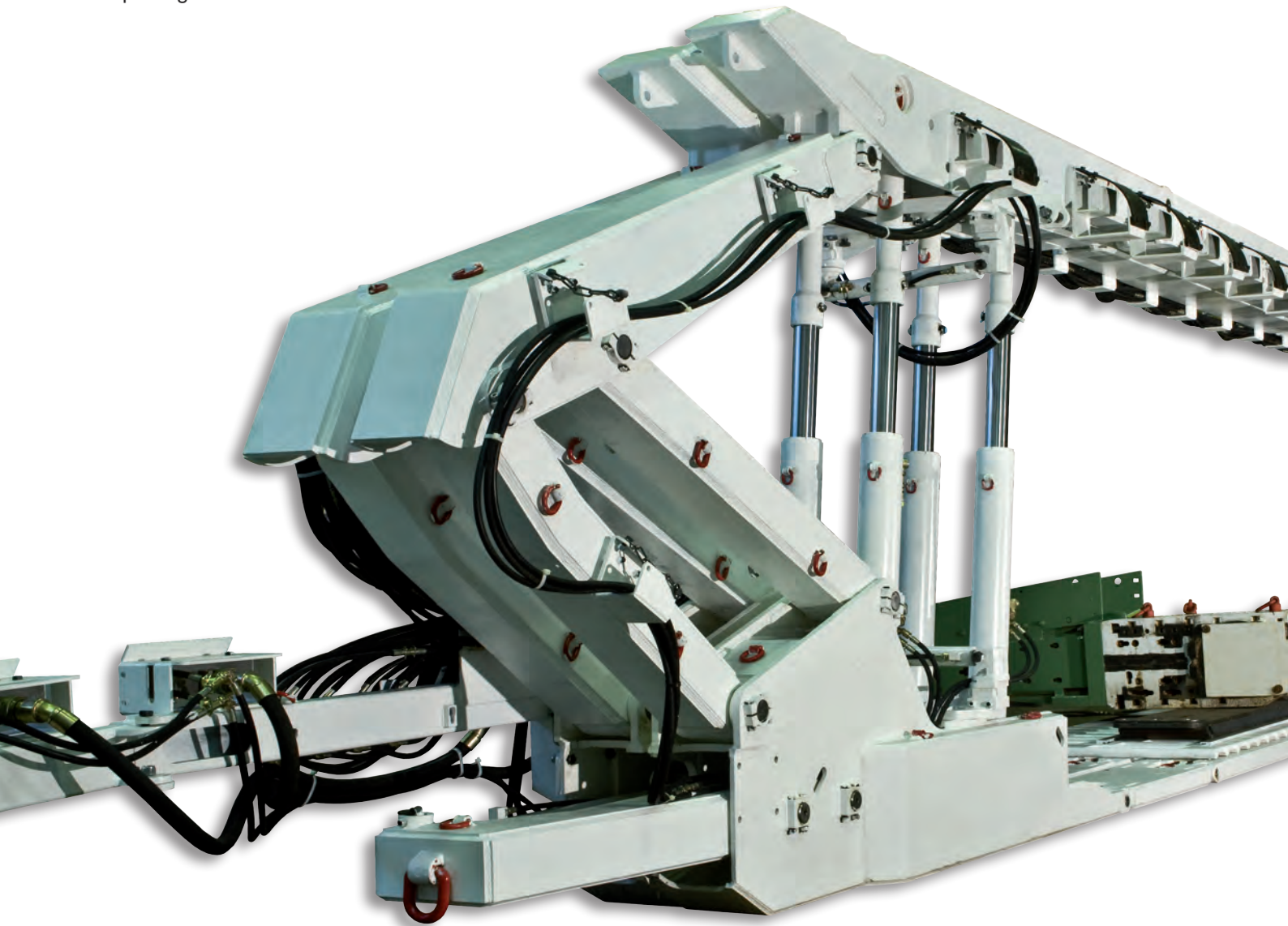
## Special shields

For special applications in the face and entry areas DAT has suitable solutions, as for example roadside shields, face-end shields for the placement of roadside packs, self-advancing teams of shields with sliding shuttering panel or double entry shields for arch support entries.

The portal shield is a special entry shield for entries with arch type support. It takes on the supporting function at the intersection of face

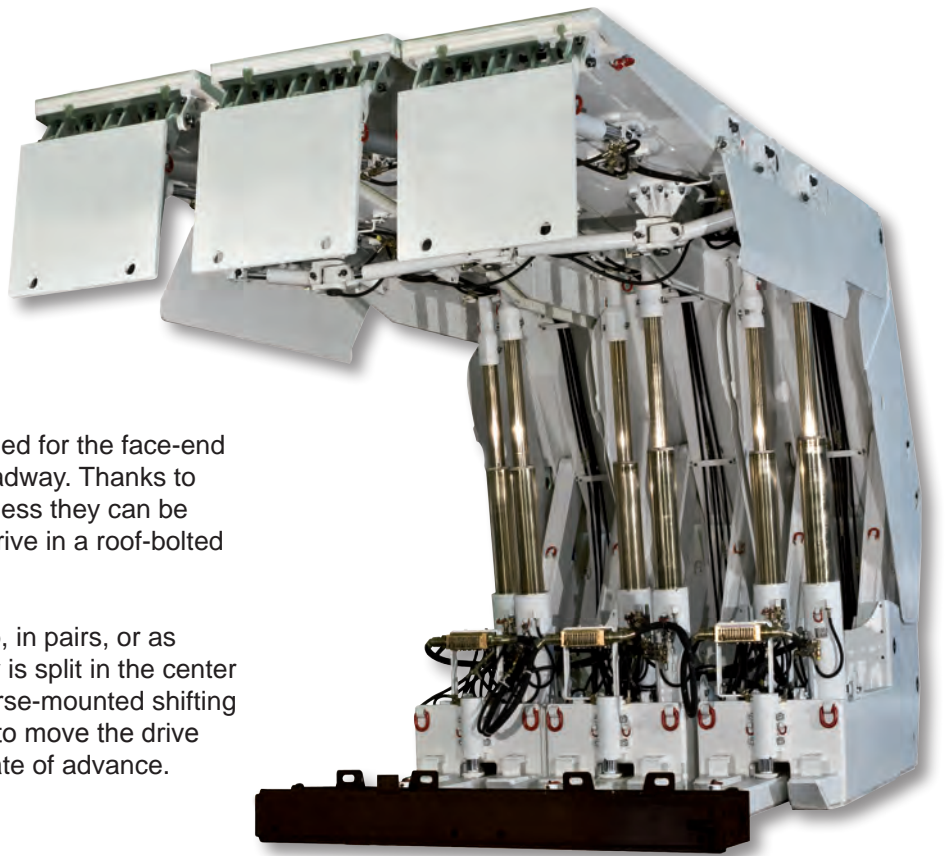
and entry and serves as shifting device for the headgate drive. The special design of the supporting skid under the headgate drive ensures the mobility of the drive in the entry.

The portal shield can be used in shearer and plow operations both at the headgate and at the tailgate.



Portal shield

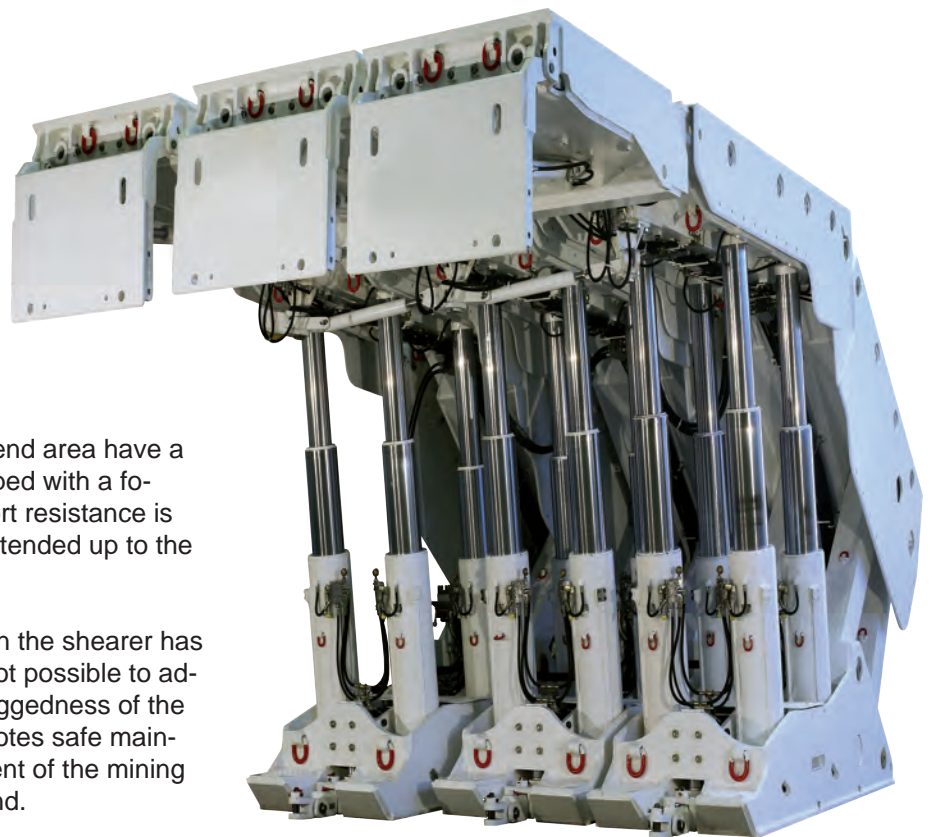




**2-leg entry shields** are designed for the face-end area and for the roof-bolted roadway. Thanks to their small width and compactness they can be positioned optimally over the drive in a roof-bolted roadway.

They can be applied in a group, in pairs, or as single shield. The main canopy is split in the center to facilitate transport. The reverse-mounted shifting unit offers sufficient clearance to move the drive unit forward according to the rate of advance.

2-leg entry shield



**4-leg entry shields** for the face-end area have a rigid main canopy which is equipped with a forepole extension. The high support resistance is ensured even if the forepole is extended up to the coalface.

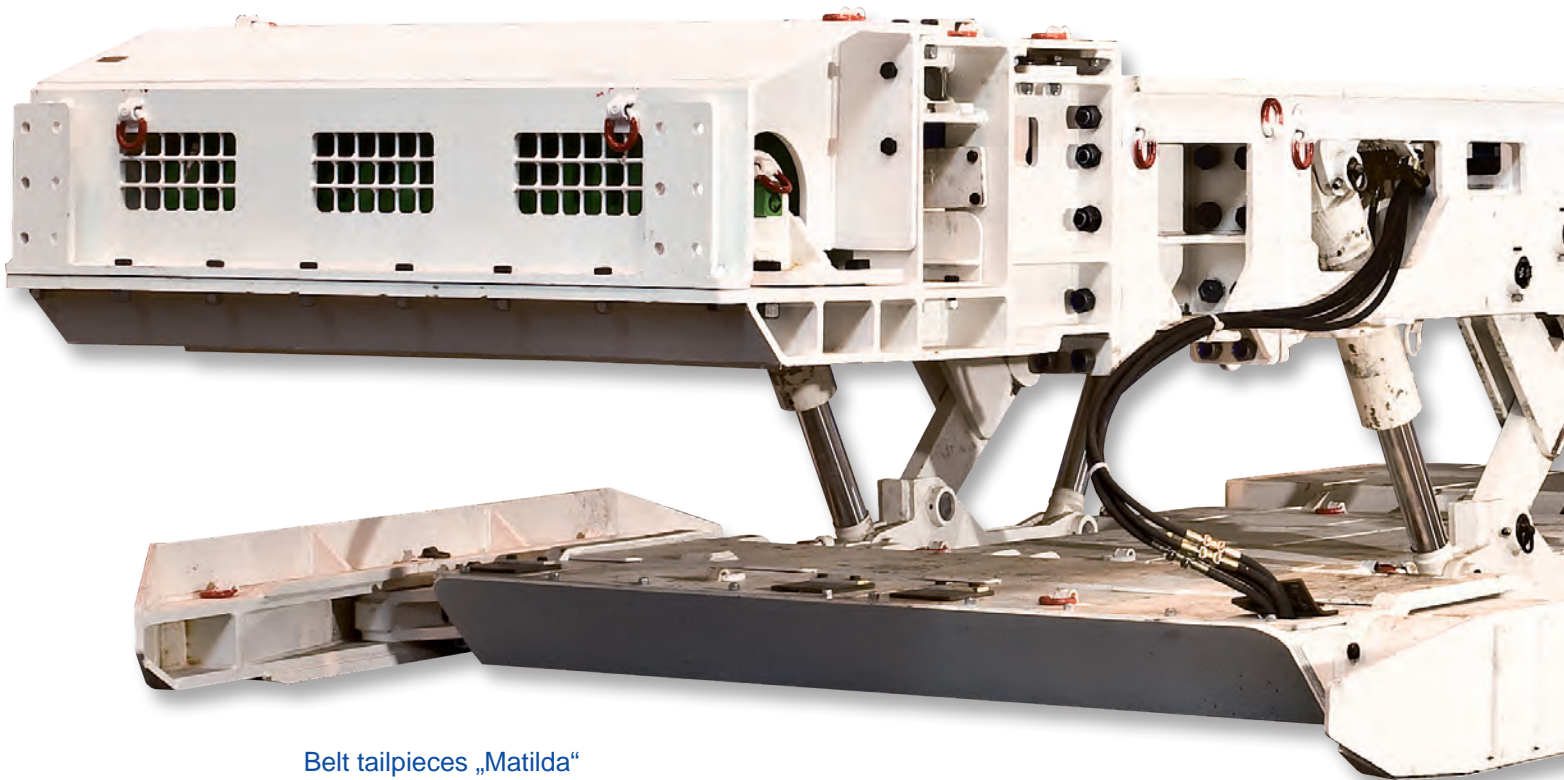
This is particularly important when the shearer has arrived at the face end and it is not possible to advance the shields. The special ruggedness of the canopy with the face guard promotes safe maintenance as well as the replacement of the mining tools of the shearer at the face end.

4-leg entry shield

## Belt tailpieces

For the entry area DAT offers shifting systems in a wide variety of designs. So for example, hydraulic shifting units, also with belt tailpiece, and vertically braced abutments.

The „Matilda“ style unit plays a special role in the coal haulage from the mine working. It supports the end of the stageloader. It is self-propelled and permits 3, 6, 9, or 12 m overlaps.



Belt tailpieces „Matilda“



Belt tailpiece lowered

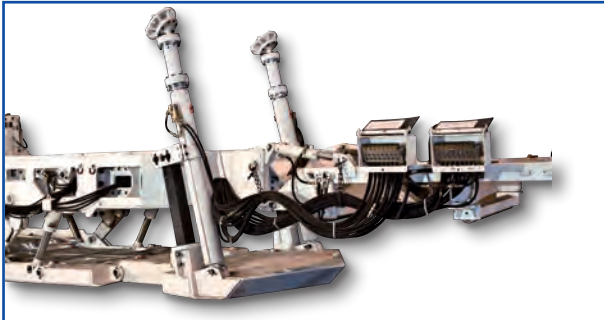
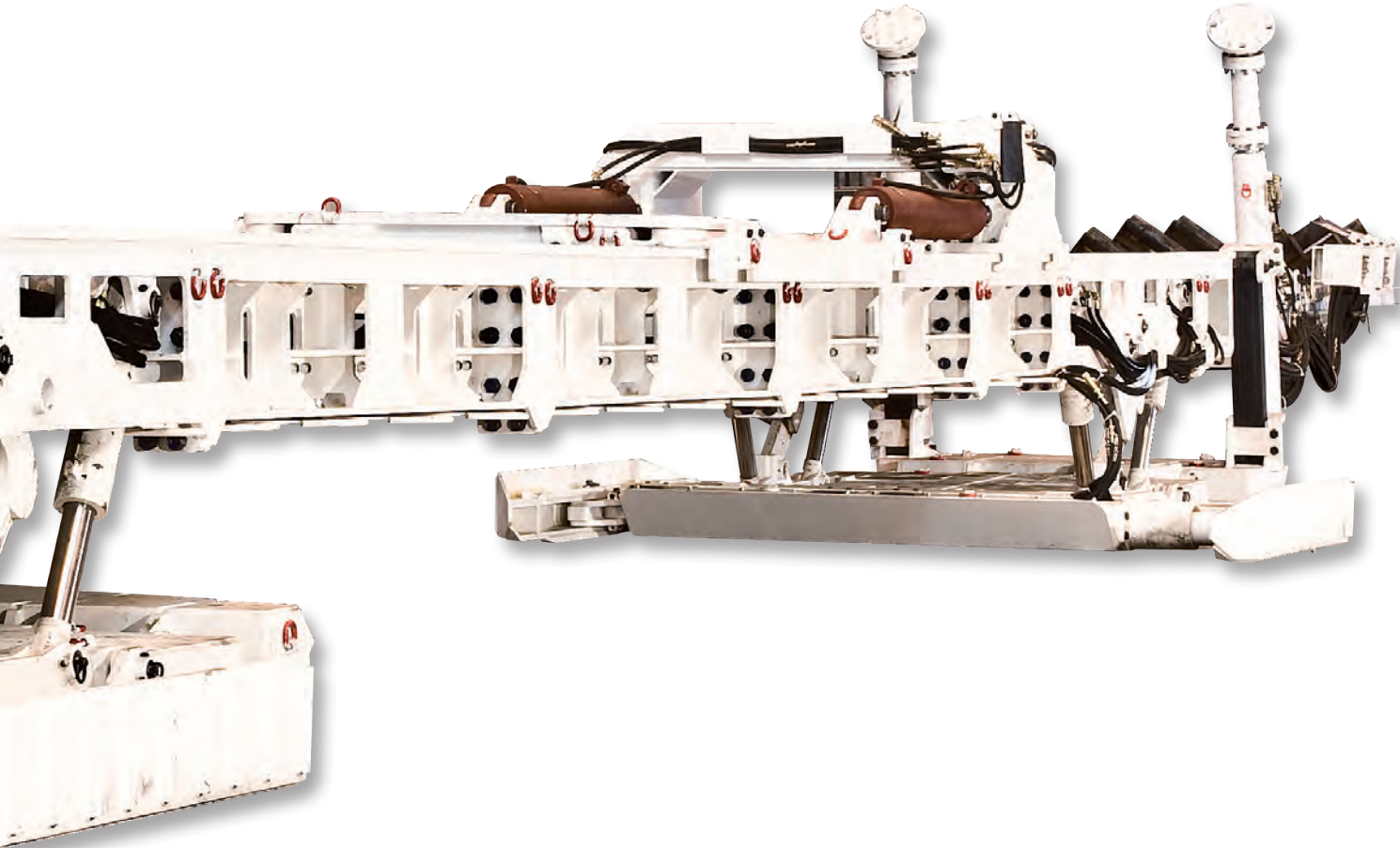


Shifting unit of belt tailpiece



It comes provided with its own hydraulic system which allows aligning it horizontally and vertically. The shifting unit (including reed rod system, upon request) moves both the stage-loader and the belt tailpiece.

The belt tailpiece is designed for belt widths of 1000, 1200, and 1400 mm. It can be supplied with self-cleaning return drum and, if necessary, also with brake drive for rising or dipping entries.



Control unit of belt tailpiece



Belt tailpiece with piggy-back chain conveyor

# Shield support

An important task DAT Bergbautechnik has put itself is the refurbishing of mining equipment that had already been in use.

Used machines and equipment are refurbished and, if necessary, new components added to allow their re-use in a mine.

This procedure offers extremely economical solutions for the customers and at the same time contributes to handling the environment and its resources in a responsible way.

Customers can save about 30 % to 50 % of the costs as compared to new components and are additionally offered a guarantee period of up to two years.

Accurate quality controls ensure that these components function properly when used again.

We are pleased to state reference installations if you are interested.



Used shield support units in outdoor storage

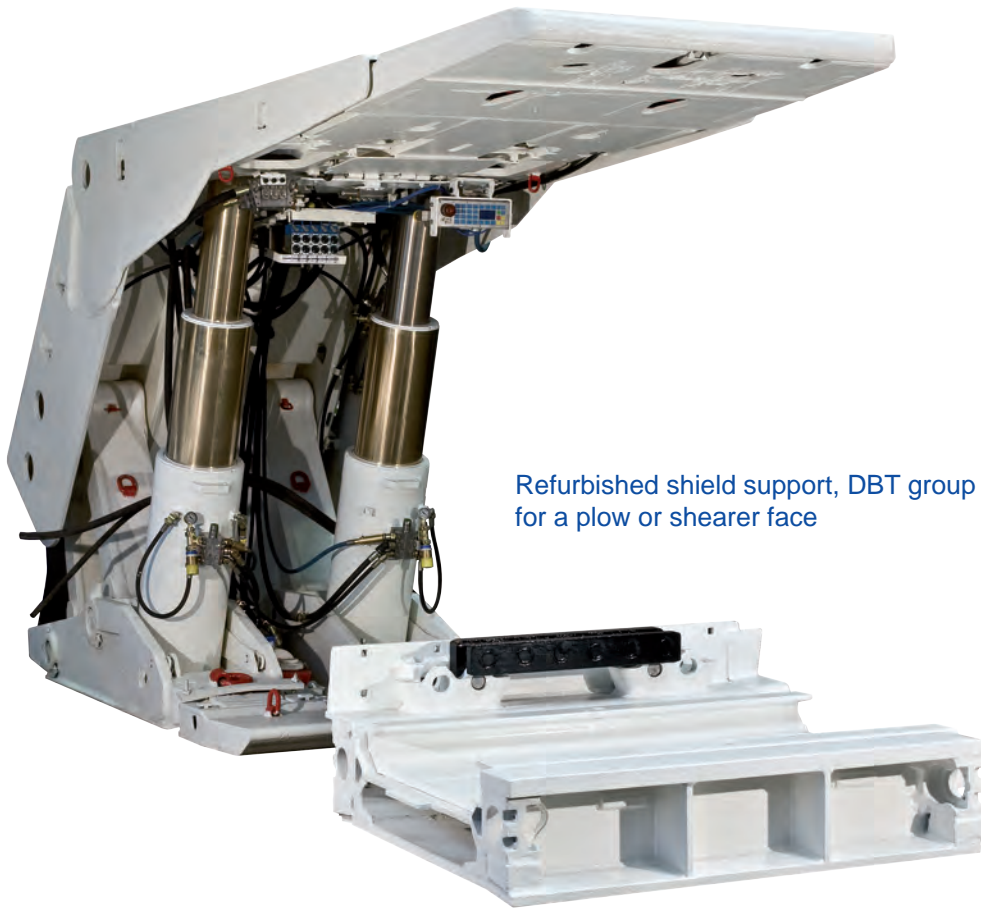


Refurbished shields



Refurbishing shield supports





Refurbished shield support, DBT group 2,  
for a plow or shearer face



Refurbished shield support, DBT group 3,  
for a shearer face

# Pump technology

The economic efficiency of underground coal mining operations essentially depends on a reliable supply of the longwall face with high pressure.

The heart of every hydraulic face supply system is the pump station with its components as there are high-pressure pump unit, tank system, filter station, and emulsion mixing plant.

DAT Bergbautechnik offers a perfectly matched mobile supply system which ensures an optimum supply of the mining equipment with hydraulic fluid. High-quality and reliable components guarantee ease of maintenance and proper functioning of the complete system. Installed in rugged tubular frames it can be used either as stationary unit or attached to an overhead monorail. Up to four pump units are applied to increase

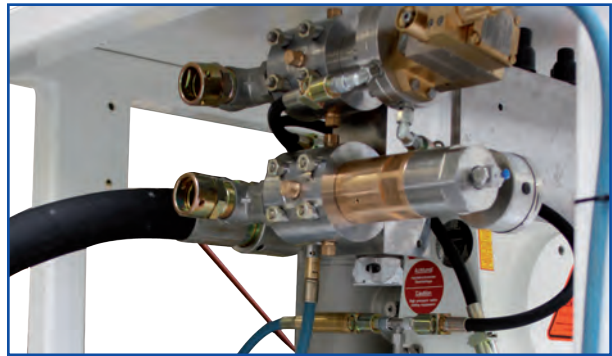
production safety. They deliver the hydraulic fluid via the backflushable high-pressure filters into the longwall face.

The electrical control and a diagnostic system developed especially for these applications ensure that the system works properly. The high-pressure pump HDP 257 is the ideal space-saving alternative for particularly confined spaces.

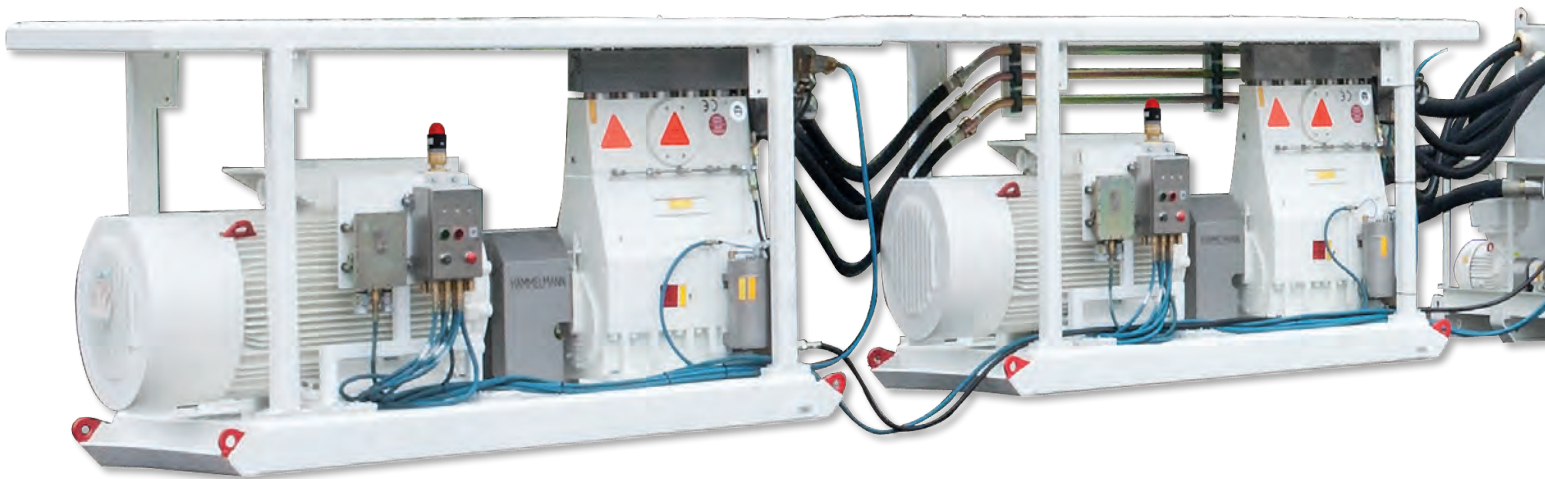
A high degree of reliability and low-pulsation running characteristics are the special advantages of this newly developed 5-piston pump. It is suitable for use with water and HFA fluids.



Onboard control unit



Patented pump circulation valve of the spraying station and of the HP pump

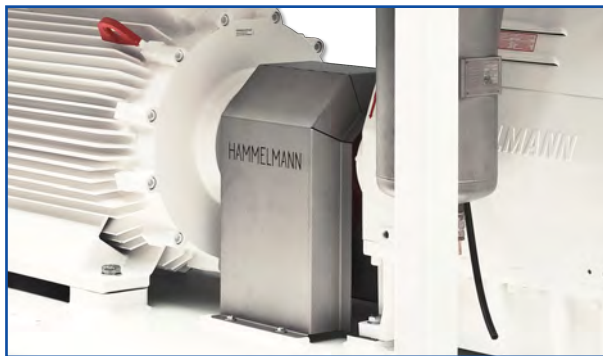






Central control

Central control of the backflushable high-pressure filters, the backflushable water filters (cascade filter) and monitoring system for the return line filters as well as the complete high-pressure pump control



High-performance coupling



Supply filter



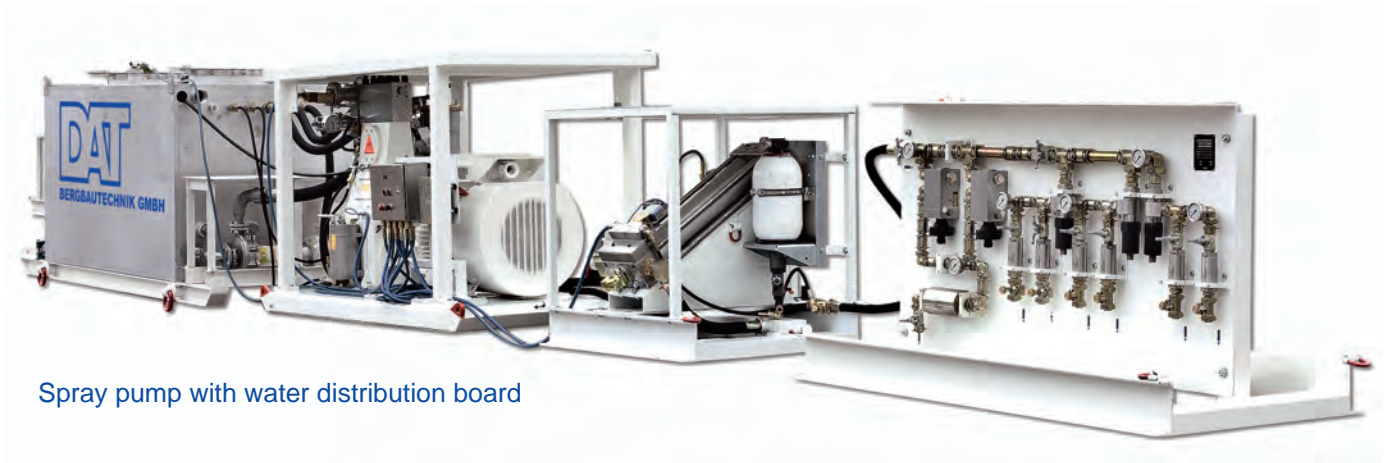
# Spray- and cooling pump

Spray pumps are designed for supplying the different systems applied in underground mines with high pressure water for dust suppression on the mining machines and shields and for the cooling of heavy-duty engines such as electric motors and heavy mining gearboxes.

They protect the miner against hazards from extreme exposure to rock and coal dust and the machinery with high drive powers against thermal overloads.

They make the mining operations safe and provide for continuous production without downtimes due to high dust levels or shutdowns due to thermal reasons. The high quality of the well-proven DAT pump stations ensure safe operation with minimum exposure of man and machine to dust.

The pumps are designed as piston pumps and are fully automatic electronically controlled units. The valve technology required for the pump control is similar to that of the emulsion pumps for the shield supply.



Spray pump with water distribution board



Local control unit



Electronically controlled fresh water valve



## Water distribution board

The water distribution board connected downstream of the pump cleans, measures and controls the water volume flows and the permissible water pressure required in the different parts of the installation. It is used for pressure reduction and for the control of the flow rates.

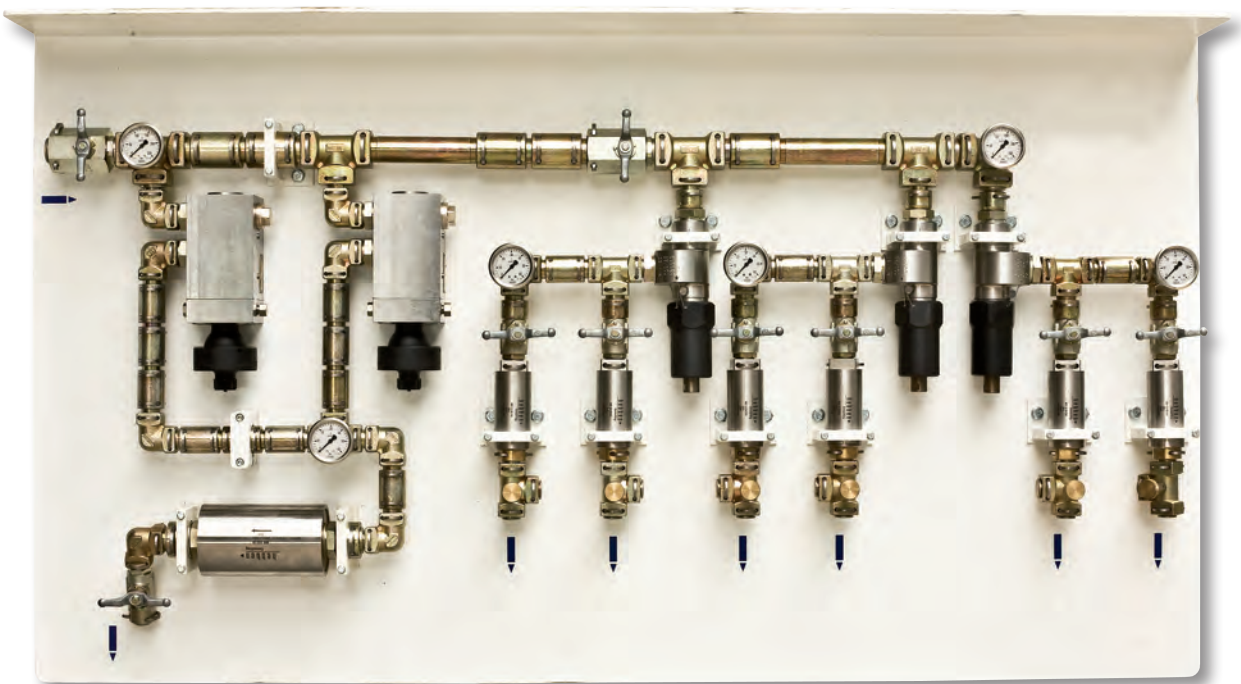
The water distribution board consists of backflushable high-pressure double filters, reducing valves, manual shut-off devices, flow control valves, intrinsically safe solenoid valves as well as Steck-O type inlet and outlet fittings which possess plug-in connections in form of an O. The elements are arranged on a common suspendible base plate.

The flow control valve works independently of pressure and ensures a constant flow, operates very accurately and does not require any maintenance whatsoever. These features result in an excellent operating safety.

To reduce the pressure to the required level, as for example for motor cooling (max. 25 bar), reducing valves are used which reduce pressures of up to 350 bar down to 10 bar minimum.

Specially matched back-flush filters clean the water.

The water distribution boards are used both for the cooling and the spraying system. This prevents overheating and motor as well as gearboxes always receive the same amount of water.



Water distribution board

# Filter technology

Constantly increasing performance and growing automation of hydraulically operated equipment and installations require that all components function properly.

For the high-pressure face supply system a filter system is used which provides for an effective filtration of the hydraulic fluids thus extending the life of important and expensive support components.

In order to achieve optimum filtration the fluid is filtered both in the high-pressure line and the return line. The number of filters required depends on the technical requirements of the longwall equipment. In most cases, two or three filters are installed for increased product safety.

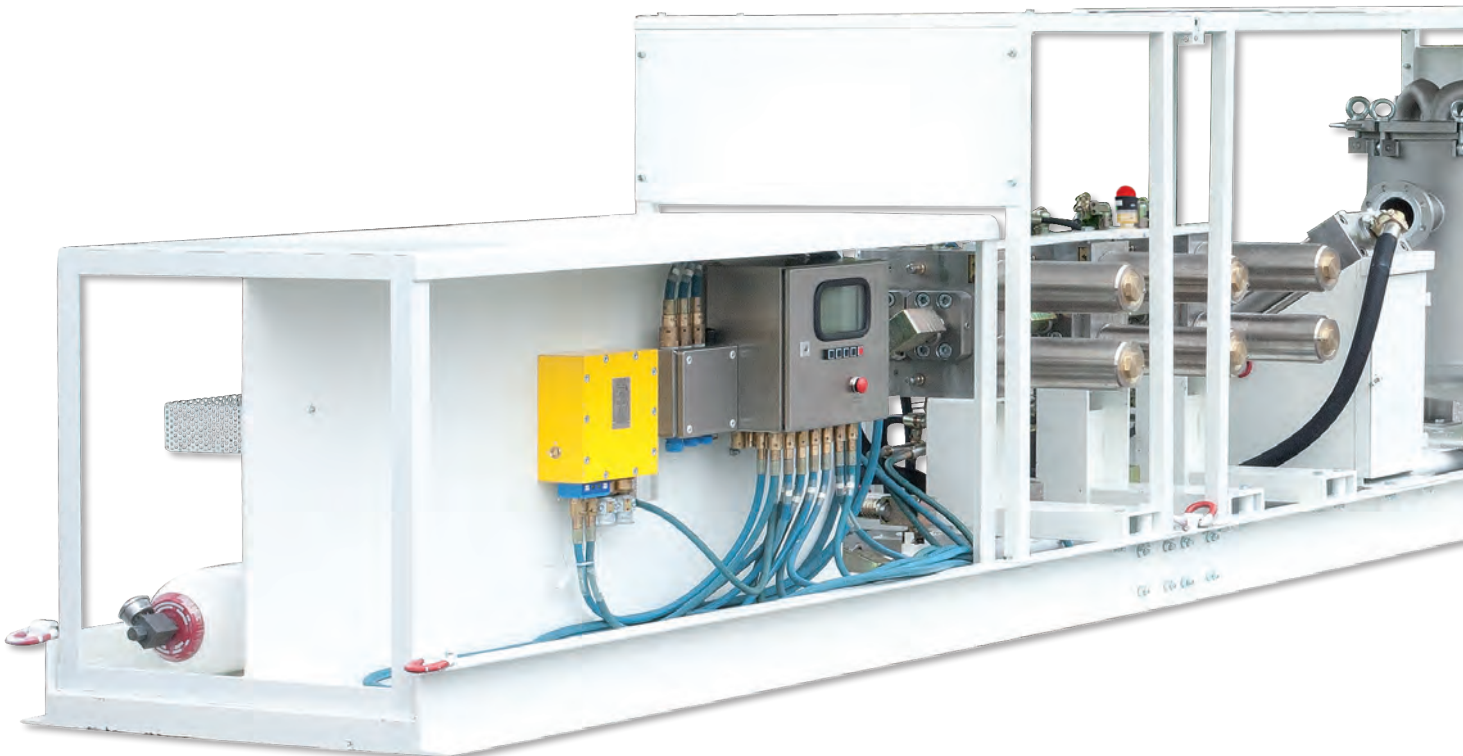
Backflushable high-pressure filters are installed in the pressure line direct downstream of the pump



Cascade filter



Return line filter station



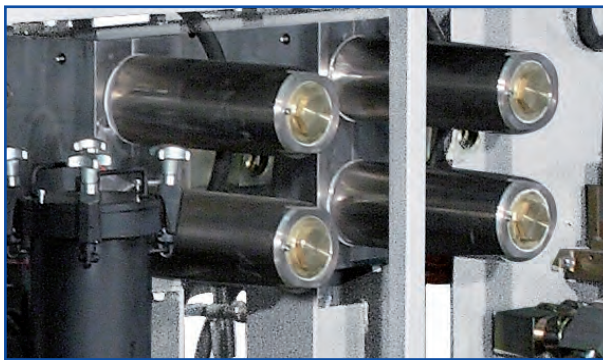


and remove the impurities from the fluid before they can reach the longwall equipment. During the backflushing process, the impurities removed are flushed out via a separate line.

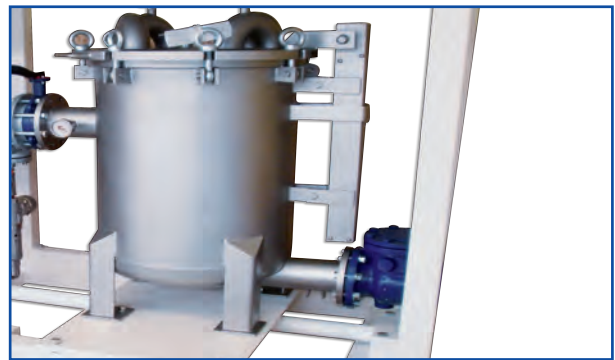
The filter control directly communicates with the pump control.  
After the fluid has gone through the face and before it is returned to the tank it passes through the

double backflush filters. This is necessary as the support components are subjected to high mechanical and hydraulic loads causing wear to the components and resulting in the abrasion of particles.

The well-proven hydraulic fluids of DAT are the optimum choice for high-pressure face supply systems.



Backflush filter



Bag filter



# High-pressure lines

The WE-ER® high-pressure pipeline system with its lines and fittings offers the possibility of a fast connection without having to use additional tools.

The lines are used in the face hydraulic system as well as for the transport of pastes or building materials, at operating pressures of up to 500 bar.

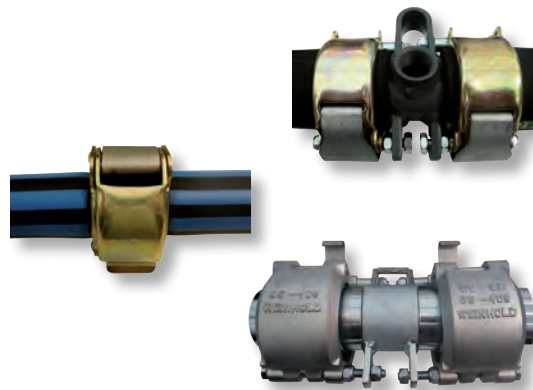


WE-ER® Pipe couplings

The components are absolutely easy to install. Thanks to their construction a re-tensioning is not required.

As soon as the pipe coupling flanges have been pushed together the connection is absolutely leak-proof.

The use of the high-pressure pipe system with the WE-ER® high-pressure pipe couplings permits trouble-free dismantling even after a long operating time.



Hose couplings for high-pressure hoses



High-pressure pipelines



## High-pressure hoses

High-pressure hoses are used for the transmission of fluids which are subjected to high pressure. They consist of four high-tensile steel wire spirals. The oil-resistant synthetic rubber which serves as the outer sheath additionally features high abrasion resistance, ozone resistance, weather proofness and flame resistance.

The temperature of application of a high-pressure hose is from -40°C to +100°C, the maximum operating pressure is 460 bar.



## Hydraulic fluids

DAT not only offers a huge range of hydraulic products and accessories but also has the hydraulic fluids needed to operate them.

Purelube AE 60 is one of these hydraulic concentrates. It is a stable emulsifying medium of group HFA-E for use with hydraulic shield supports underground.

It fulfils the criteria of the 7th Luxembourg Report on requirements and tests applicable to fire-resistant hydraulic fluids for power transmission and

control in coal mines and RAG Standard N 762 830 for the prevention of crevice corrosion.

The hydraulic concentrate emulsion Purelube AE 60 belongs to water hazard class WGK 1 (Hygiene Institute Gelsenkirchen).

Other hydraulic concentrates of relevance include the preserving agents „Bakterizid 1“ and „Bakterizid BO“ (re-preservation) as well as the fungicide „Bakterizid RH1“.



DAT hydraulic fluids in barrels and cans

# Measuring and control technology

Grünewald measuring devices are individual measuring systems for volume flow measurements, pressure, temperature, and level measurements or combinations thereof. For example, a flow meter can be provided with an integrated temperature and/or pressure measuring facility. In the field of filling level measurements an additional temperature measurement can be integrated into the level measuring device.

An extensive configuration spectrum allows to tailor the measuring devices to the respective application.

The measuring devices provide a connection between the measurement and the visualization and/or documentation on downstream control systems. For this purpose, miscellaneous output signals are available.

The measuring devices are designed for use under very rough and difficult environmental conditions. Due to their extremely solid construction they can withstand very high mechanical loads.

They are therefore ideally suited for their tasks in underground mines whether used in underground installations or fitted to underground mining machines and equipment as e.g. shearers, roadheaders, drill carriages, belt systems, cooling systems, filter stations, pump stations, pipeline systems ...



Flow indicator



Volume flow meter, pressure gauge



Level measuring devices on a tank station



# Gas measuring devices and power supply units

Woelke Industrieelektronik GmbH is constantly developing new and innovative solutions in the field of intrinsically safe measuring technology for potentially explosive atmospheres in underground mines. This is closely linked with the exchange of specialized knowledge with our customers and certified test centers.

Suggestions for new developments are taken up and implemented in a customized way. The quality assurance system used in our production of electrical equipment and components is inspected once every year by official bodies and certified. The company has modern measuring systems for calibrating and adjusting ventilation technology devices for domestic and international coal mining.

Experienced engineers from the fields of physics, electronics, and mechanics will be pleased to assist you in your planning upon request. Individual training courses on the application and maintenance of the devices used can be held both in our head office in Essen and at the customer's site.



Hand measuring device Methawo 5.100, AVS4 with alarm device



Evaluator GMA 30.00.5xx, Sensor/transmitter GMM 01.13.180



Supply unit USV 4.2

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