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C FILTER STATION

HIGH-PRESSURE FACE SUPPLY SYSTEM | A HIGH-PRESSURE PUMP | B TANK UNIT | C FILTER STATION | D EMULSION MIXING PLANT

FILTER STATION

FUNCTION AND DESIGN

The filter station is a main component of the high-pressure face supply system. It provides effective fitration and thus increases the life of important and expensive support components.

In order to ensure an optimum filtration the fluid is filtered both in the high-pressure line and in the return line. The number of filters required for each application depends on the technical requirements of the respective longwall equipment. In most cases the filters are used in two-fold or three-fold design to increase product safety.

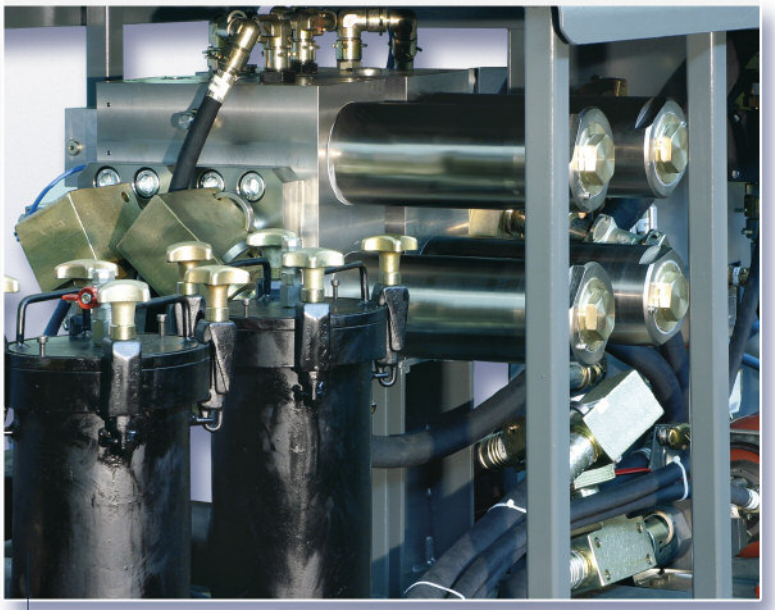
The backflushable high-pressure filters are installed into the pressure line directly behind the pump and remove the dirt particles from the hydraulic fluid before these can reach the longwall equipment.

When backflushing, the dirt particles removed are drained via a separate line. High-pressure sensors installed at the filter monitor the differential pressure in the filter and thus the degree of contamination of the filter elements. As soon as this differential pressure exceeds a predefined value the backflushing operation will start automatically. This process is monitored electronically by the filter control system and can be parameterized as requested by the customer.

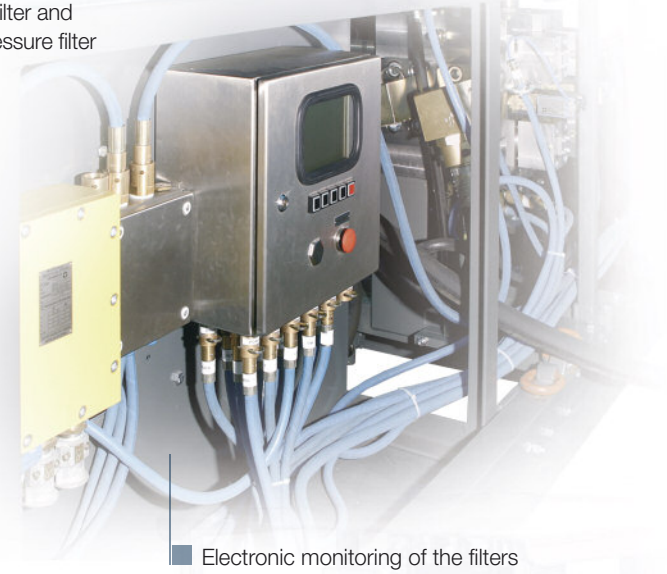
The filter control system communicates directly with the pump control system. After the fluid has passed the whole longwall face it is routed through the dual backflush filters before being returned to the tank. This proceeding is absolutely necessary as the support components are subjected to high mechanical and hydraulic loads which cause the components to wear and particles to be rubbed off. The dual backflush filters are equipped with an optical display for the differential pressure which allows to see the degree of contamination of the filter elements.

If the differential pressure rises to a certain level an internal by-pass valve will open so that the filter element can be circumvented. This prevents the build-up of backpressure in the return line.
A change-over unit allows to switch the two filter chambers such that either both elements or just one element is active. This way, one filter element can be replaced while the second filter chamber remains operative. For cleaning of the interior of the filter drain openings are provided at the filter for the dirt and the clean side.

Mesh and port sizes of the filters can be matched to the requirements and wishes of the customers.



Return filter and high-pressure filter



Electronic monitoring of the filters by means of the MCU

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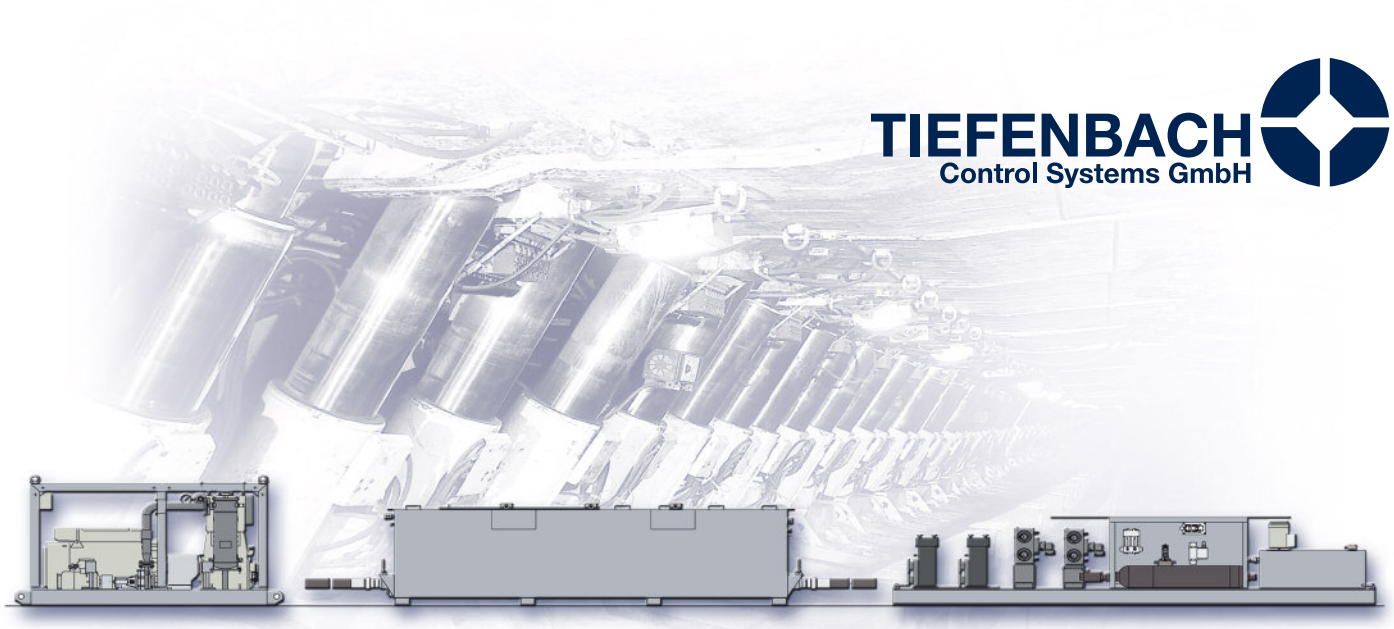
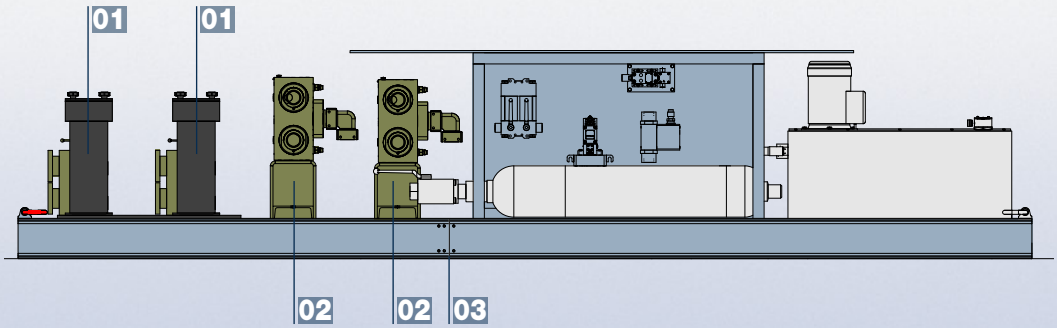
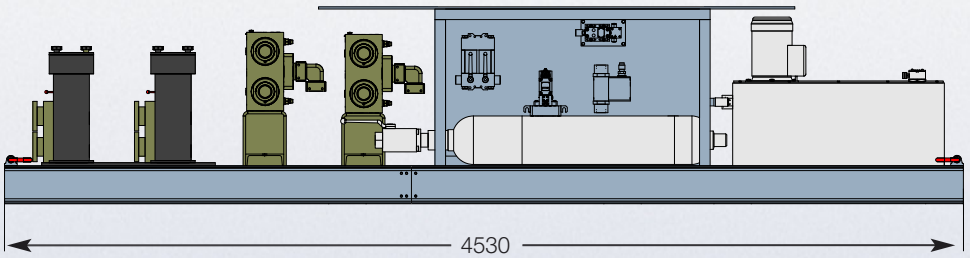
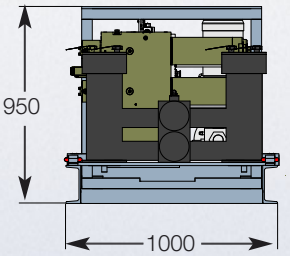


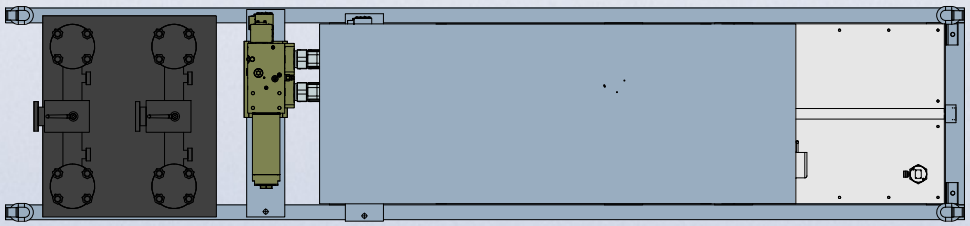
FILTER STATION



01 Return line filter
02 High-pressure filter backflushable
03 Separable assembly frame







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Filter station and
emulsion mixing plant

TECHNICAL DATA

RETURN LINE FILTER

Operating pressure	max. 16 bar
Opening pressure, bypass	3 bar
Flow rate	max. 600 l/min
Fitting position	vertical
Weight	approx. 140 kg
Housing	steel, surface finished
Filter mesh size	50 µm

BACKFLUSH FILTER

Max. perm. operating pressure	350 bar
Min. perm. operating pressure	100 bar
Test pressure	700 bar
Differential pressure for backflushing	adjustable between 1 bar and 40 bart
Time intervals for backflushing	adjustable between 1 min and 600 mint
Type of filter	pressure filter
Filter mesh size	as requested by the customer, 25 µm / 40µm
Filter element	fabric cylinder
Filter mesh size, pilot control	25 µm
Flow rate	1000 l/min
Ports: Input P_{in} / output P_{out} Leakage L / L1 Pressure indicator MP_{in} Pressure indicator MP_{out}	 flange DN51 SSO thread G1/2 thread G3/4 thread G1
Housing material	high-grade steel
Fitting position	any, cartridge length to be taken into consideration
Weight	approx. 220 kg
Input voltage (power supply unit)	24/36/42/110/127/230 V AC
Output voltage U_i	13.5 V
Output current I_i (intrinsically safe)	1.55 A
Type of protection	Ex I M2 EEx d [ib] I

The technical data listed here refer to the standard design.
▸ Further options are available upon request.

Subject to technical alterations

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Tiefenbach Control Systems GmbH · Rombacher Hütte 18a · 44795 Bochum
Telephone +49 (0) 234 - 777 66-0 · Fax +49 (0) 234 - 777 66-999
info@tiefenbach-controlsystems.com · www.tiefenbach-controlsystems.com