Metso

Pressure filtration

FP filter

Benefits

- Adaptable to unsteady process conditions
- Membrane squeezing reduces cycle times
- Improved process results
- Equalized build-up of the filter cake
- Reduced quantity of wash liquid and time
- Lower energy consumption during cake drying
- Short technical times ensure the highest specific filtration capacity

In metallurgical operations the increased use of hydrometallurgy requires pressure filtration to dewater and wash leach residues and precipitates. Metso FP (Hoesch) pressure filters have earned a reputation for delivering and exceeding the targeted process performance with reliability and low operating costs.

Metso FP pressure filters are available with semi or fully automatic control of both the mechanical operation and process optimization. The filter's programmable logic controller controls all operations. Additional equipment, such as conveyors and process equipment, can be integrated into the control philosophy. Metso offers comprehensive technical sales, testing and maintenance services to select the optimum filter, assist with plant design, and ensure the filter runs efficiently and reliably.

The filtration areas of Metso FP pressure filters range from 30 m^3 to 1 200 m^3 and the chamber volumes from 0.4 m^3 up to 25 m^3. The filter plates are vertically orientated in a pack.

Product description
The plate pack is located between two rigid plates. The plate pack is opened plate by plate with the plate shifting device and closed by hydraulic cylinder. In the closed position the
plates form a solid plate pack of sealed chambers with two filter cloths in between each pair of plates.

The process liquids enter into the filter through slurry distribution channels that are formed when the plate pack is closed. The slurry to be dewatered is pumped into all chambers simultaneously to form a filter cake on both sides of the chamber.

After completion of the filtration, opening the plate pack will discharge the cake. Thanks to modular components, customers are able to choose from standard equipment and optional accessories to adapt the pressure filter to their individual service conditions.

Filter press designs
Traditional sidebar designs is used to support the standard plates over long filtration times. Modern sidebar designs are operated in applications with high tonnages and short cycle times. The selection of the right equipment for each application is defined by the process conditions and available space requirements.

Plate shifting device
The industrially proven plate shifting device is based on a robust stainless steel plate carrier activated by hydraulically driven chain system. This operates in an HPDM profile to reduce friction, wear and tear and as protection against pollution and corrosion. Corrosion resistance is one of the main advantages of this design, Metso is the market leader in terms of this innovative feature.

Closing pressure control
Metso equips all vertical plate filters with an automatic closing pressure control system. The control system adjusts the required closing pressure in relation to the active internal pressure of the filter. This reduction in overpressure reduces structural stresses and is an important factor in extending the lifetimes for filter plates as polypropylene has a tendency to flow when exposed to high temperatures and pressure.

Security devices
Operational security can be realized via different options from manual to fully automatic operation. The common industry standard includes the utilization of light curtains as protection against mechanical movements, as well as movable splash guards to protect against hot and toxic slurry.

Plates: Standard center - feed plate
Metso FP center-feed plates have standard DIN plate dimensions. The membrane material selection is based on multiple criteria: Polypropylene (PP) has good chemical resistance and is a cost-effective solution in many applications. Rubber offers higher flexibility and resistance against abrasion. This enables increased chamber depths (60 mm) and easier replacement. The greater flexibility ensures consistent process results despite changing process conditions and difficult slurries. The advantages of rubber membranes multiply with increased process temperatures. Other plate systems are available as an option.

Cloth washing device
Periodically operating high-pressure cloth cleaning devices ensure consistent process performance, as well as enhanced lifetime of the filter cloth. The correct selection of the cloth wash water pump pressure matches the system to the customer's operating conditions.

Swivel plates
Swivel plates collect filtrate leakage and cloth cleaning water to avoid product losses and prevent spillage at the filter installation. Multiple construction materials are available to suit the requirements for most process liquids.


Plate shifting device


Feeding pressure control

Squeezing medium and pressure water station
Depending on the operating pressure and product requirements, two different squeezing mediums can be utilized in the FP membrane filter presses, either air or water. The squeezing medium distribution manifold and hose connections to the membrane plates are included in the standard delivery. In addition pre-assembled pressure water stations are available to ensure the reliable operation of the filters.

Head piece piping and valve sets
The configuration of valves and process connections to the filter is determined by the filtration sequence, these connections to the filter are made through the head piece piping and valve systems. To simplify installation and site assembly Metso can provide factory assembled and tested head piece manifolds.

Corrosion Protection
The modular design of the filters allows the installation of corrosion protection packages to cope with these extreme operating conditions. The packages include claddings and construction in different materials, as well as special paint systems.

Cake Discharge
The cake discharge begins during the opening of the sealing cylinder, followed by the automatic plate shifter. The cake in the opened chambers drops by gravity. Metso FP Sidebar - the workhorse for filtration applications The SB (sidebar) series membrane filter press offers proven and reliable technology for most applications from standard to tailored solutions for highly corrosive applications. The design is suitable for the required operating conditions and combines exceptional component lifetimes with minimum maintenance. Operations, especially with extended filtration times, minimize the effect of long technical times on the specific filter capacity.

The standard range includes plate sizes of 1 200, 1 500 and 2 000 mm.

Technical datasheet – FP filter

Type	Side Bar		
Plate dimensions (mm x mm)	1200 x 1200	1500 x 1500	2000 x 2000
Max operating pressure (bar)	16	16	16
Filter width (safety equipment included) (mm)	3500	3700	4100
Filter length (mm)	5350 – 12 350	5750 – 14 750	9855 – 18 855
Filter weight (washing device included) (mm)	3500	3600	4300
Chamber depth (mm)	25, 40, 50, 60		
Filtration area (min-max) (m^2)	33-462	54-666	85-1200
Filtration volume (Max.) (m^3)	0.4-5.4	0.8-11.6	1.3-25
Weight (Min – Max) (t)	11-23	19-40	45-78
Installed power, hydraulic unit (kW)	7.5	11.5	7.5 + 15
Installed power, washing device (kW)	0.75	0.75	0.75

Metso is a frontrunner in providing sustainable technologies, end-to-end solutions and services for the aggregates, minerals processing and metals refining industries globally. By helping our customers increase their productivity, improve their energy and water efficiency and environmental performance with our process and product expertise, we are the **partner for positive change.**

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