

Metso

Double-sided pressure filtration

Larox[®] PF-DS



Double-sided pressure filter

Larox® PF-DS

Larox® PF-DS is a fully automatic tower press filter with a unique double sided (DS) filtration in the filter chambers. The process features include thin cake filtration and multiple options for cake washing. With the flexible operation and superior process results, the Larox® PF-DS filter is successfully used in a wide range of applications.



Benefits

- Excellent processing of difficult and slow-filtering materials
- Multiple cake washing options that result in superior washing
- Guaranteed cake discharge even with challenging material
- Fully automatic cycle for consistent results under varying process conditions
- Eliminating the need for rubber membranes
- Options for efficient and automatic in-situ cleaning (CIP)
- Suitable for food-grade materials
- Complies with FDA standards

Proven technology for reliable operation

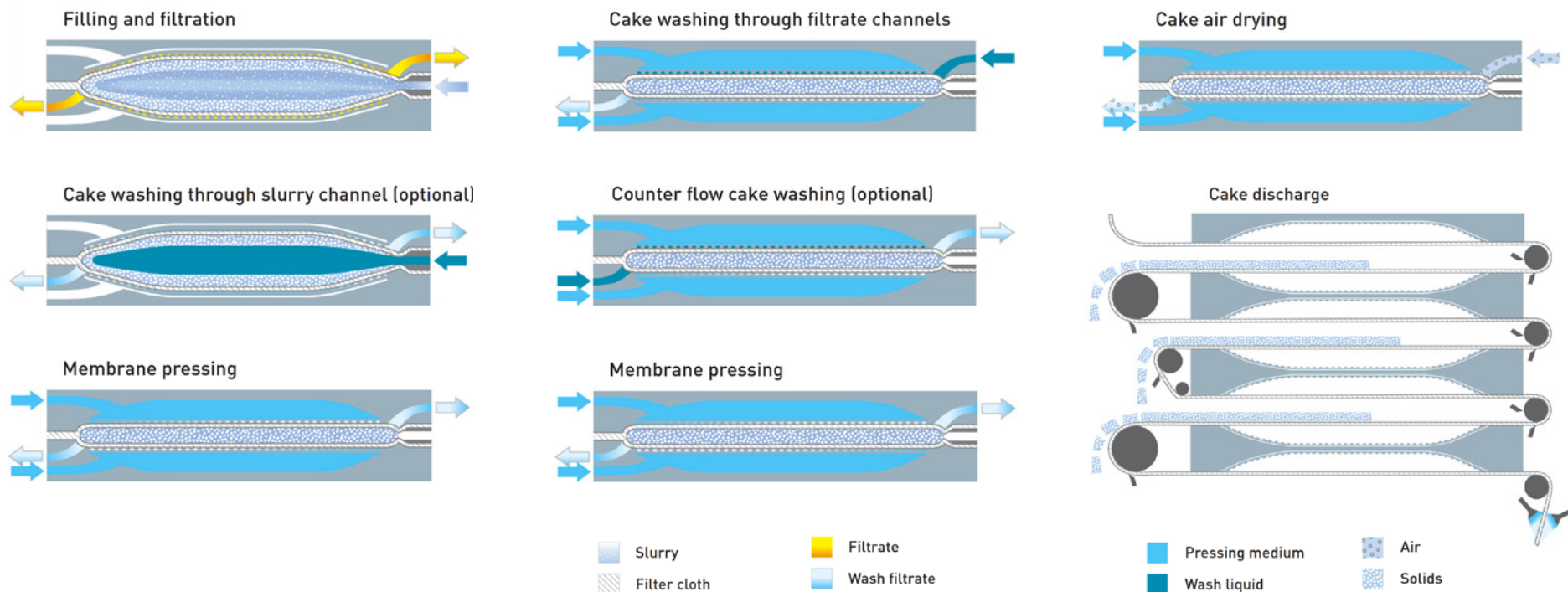
The Larox® PF-DS tower press filter plate pack is composed of polypropylene membrane filter plates stacked on top of each other. The plates form filtration chambers, with each filter chamber having its own filtration area on both sides. This combines to 4.7 m² per chamber.

One endless filter cloth runs through the whole filter, and filtration always takes place from one side of the filter cloth. A wide range of cloth types is available to meet different application needs. The endless filter cloth ensures efficient discharge of all cake from each individual chamber in every cycle, eliminating the need for manual intervention.

Depending on the number of chambers, the total filtration area is 38–94 m² per unit, with an operating pressure up to 16 bar.

Larox pressure filter family

The Larox® PF-DS is part of the Larox pressure filter family and shares the frame, opening and closing mechanism, cloth system, automation platform and several other parts. The double-sided plate pack and its process features is unique for the Larox® PF-DS.



Operating principle

The Larox® PF-DS filtration process is a fully automated batch process, where each cycle starts with filling the chambers after which the filtration starts. The cake forms on the top and bottom side of the filtration chamber, hence the term "double-sided" filter.

At the end of the filtration cycle, there is the option to directly switch to cake wash and start washing the cakes through the slurry channel.

After introducing pressing water behind the membranes, the cakes are pressed together in membrane pressing 1, evening out the cakes while reducing the moisture.

The second option for cake washing is now through the filtrate channels on top of the chamber, through the cake down to the bottom filtrate channels. During this cake washing the membrane pressing can be maintained to

hold the cake together and avoid cake cracking, thus minimizing channeling of the cake wash liquid.

Optionally, the cake washing through the filtrate channels can be reversed from the bottom channels to the top.

Now for final membrane pressing, the pressing pressure can be increased up to 16 bar to minimize the remaining moisture in the filter cakes.

Finally, air drying - the final step - is introduced to remove remaining moisture from the cakes and the plate pack.

When the process cycle is ended, the plate pack opens, and the filter cakes are discharged from one side of the filter. As the filter cloth is on both sides of the chamber, the cake is only in contact with the cloth. By moving the endless cloth, all cakes are discharged from the chambers

and scrapers are provided to ensure fully automatic cake discharge without operator presence.

After each cycle, when the endless filter cloth is moving, it passes through a set of water spray bars to wash the cloth. This maintains cloth permeability, consistent filter performance and extends cloth life.

Fully automatic operation and simple maintenance

Larox® PF-DS Filters operate fully automatic. They can be controlled from either a stand-alone panel or through a distributed control system. Automation extends beyond basic filter sequencing to full process control, ensuring consistent results under varying process conditions.

The single cloth system makes a cloth change simple and quick, typically taking as little as 30 minutes. Furthermore, cloth inspection can be carried out during operation, without the need for equipment shutdown.



Technical specifications

The Larox® PF-DS from Metso has a steel coated frame. The plate pack comprises of polypropylene filter plates and membranes, with an overall filtration area of 4.7 m²/chamber.

Suitable for applications where/with:

- Fine particle filtration
- Slow filtering slurries
- Demanding cake washing
- Sticky cakes
- Full FDA compliance required
- Fully automatic filtration

Applications

- Alumina (hydroxides)
- Catalysts
- Fine chemicals
- Food/pharma applications
- Hydro metallurgical
- Metal salts
- Pigments

Frame size		2			3		4	
Chambers		8	10	12	14	16	18	20
Filtration area	m ²	37.6	47.0	56.4	65.8	75.2	84.6	94.0
Chamber volume, 25 mm	m ³	0.406	0.507	0.608	0.710	0.811	0.913	1.014
Chamber volume, 40 mm	m ³	0.672	0.840	1.008	1.176	1.344	1.521	1.680
Chamber volume, 50 mm	m ³	0.852	1.065	1.278	1.491	1.704	1.917	2.130
Filter plates	pcs	9	11	13	15	17	19	21
Filter plate size	mm	1 200 x 2 350						
Maximum operating pressure	bar	16						
Height	mm	5 450			6 410		7 050	
Width	mm	4 760						
Lenght	mm	5 320						
Weight without auxiliary equipment	kg	32 000	33 000	35 000	37 000	39 000	40 000	42 000
Required floor area	m ²	84						
Electric motors								
Cloth drives (400 V, 50 Hz)	pcs	5	6	7	8	9	10	11
Total drive power/1500 rpm	kW	4.7	5.6	6.58	7.5	8.46	9.4	10.34
Hydraulic unit	IEC	30 kW, 1500 rpm, 50 Hz						
	NEMA	40 hp, 1800 rpm, 60 Hz						
Pressing water pump	IEC	11 kW, 3000 rpm, 50 Hz				18.5 kW, 3000 rpm, 50 Hz		
	NEMA	15 hp, 3600 rpm, 60 Hz				25 hp, 3600 rpm, 60 Hz		
Hydraulics - oil tank volume	liter	300						
Pressing water tank	m ³	1.5				3.0		

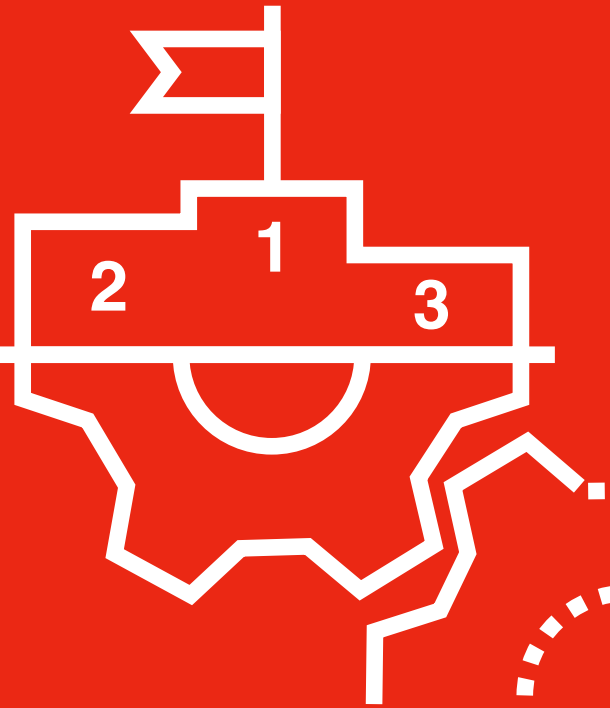
Please note that the figures below are typical and may vary depending on the final scope.
Contact Metso for exact figures.

Testing

Metso's filtration expertise is built on almost one hundred years of R&D and process knowledge, and is supported by the company's globally unique Dewatering Technology Center (DTC) in Lappeenranta, Finland.

The DTC plays a crucial role in Metso's filtration solution innovations and acts as a hub for close university cooperation related to separation technology research.

Metso has performed over 14,000 filtration tests and has delivered over 5,000 filters around the world.



Contact
your Metso
representative for
further information
on our available
services



Metso Services

At Metso we strive to deliver the best possible quality, availability, performance, and financial solutions for our beneficiation and dewatering customers. We are dedicated to the long-term journey throughout the equipment life cycle, creating win-win relationships for all stakeholders.

By combining the quality products and expertise, we possess the unique ability to partner with our end-users, provide services, reliability, innovation and results safely with sustainability at the core of all we do.



Spare and wear parts

Rely on OEM experts because not all parts are created equal. Spare and wear parts built to perform.



Maintenance, shutdowns and repairs

Trust those who know the equipment best to ensure that your production goals are met.



Modernizations, upgrades and retrofits

Whether you aim to restore equipment to its original condition or upgrade it for increase performance, explore your options.



Process optimization and connected services

By understanding your business needs, we improve performance using technology and expertise.

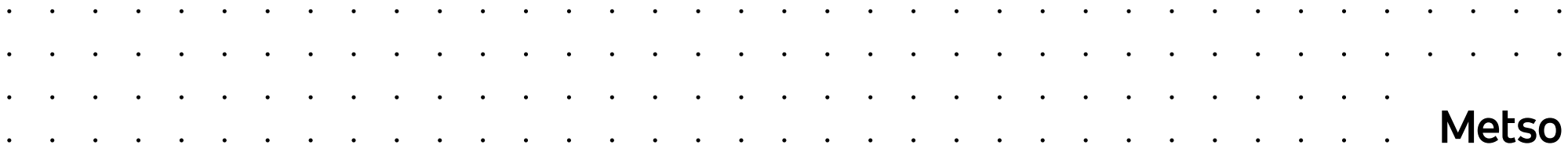


Lifecycle services

Tailored service packages delivering performance outcomes. Your goals are our goals!

Metso is a frontrunner in sustainable technologies, end-to-end solutions and services for the aggregates, minerals processing and metals refining industries globally. We improve our customers' energy and water efficiency, increase their productivity, and reduce environmental risks with our product and service expertise. We are the **partner for positive change**.

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