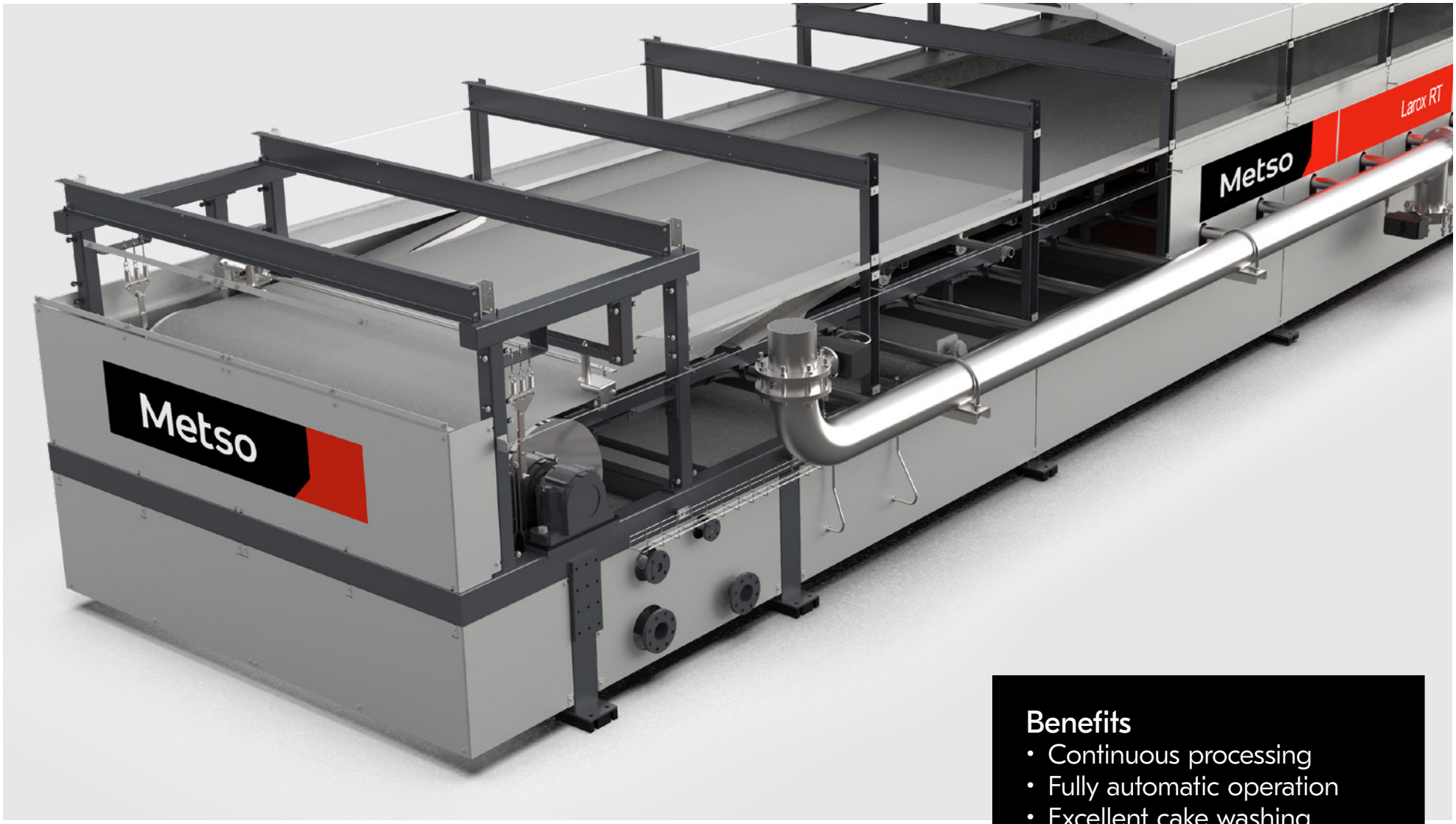
# Metso

Vacuum filtration

# Larox® RT




Metso Larox® RT (Reciprocating Tray) belt filters utilize a totally unique design proven over 50 years, the filter offers true multi-step processing in a single unit. The processing capabilities include superior cake washing in either co-current or counter-current modes and enhanced dewatering through cake vibration, mechanical compression or thermal drying.

Larox® RT filters are used in over 500 different processes due to their ability to handle a wide range of materials and produce high purity products at a very economic cost. The filters offer a very high availability (97% or better) combined with low maintenance and operating costs while the installed cost is lower than many alternatives.

## Benefits

- Continuous processing
- Fully automatic operation
- Excellent cake washing efficiency
- True multistep processing
- Very low operating cost
- High availability & low maintenance cost


# Take advantage of extremely high availability combined with low service and operational costs operating the Larox® RT

The advantages, include co-current or counter-current washing, reflux washing, vibration, different forms of mechanical compression and thermal drying. Larox® RT filters are highly configurable and can be used in almost any combination for multi-step processing.

**Operating principle**
At the heart of the filter is a very simple concept; a continuously moving filter cloth that does not require a rubber support belt. Instead, an open grid located in a profiled tray runs the length of the filter and supports the cloth.

A vacuum to separate the solids and liquids is applied to the underside of the cloth. When the vacuum is applied, the forward movement of the cloth pulls the tray with it at the same speed. As the tray advances to a specific point, the vacuum is briefly removed, and the tray is returned to its original position. The vacuum is then re-applied and the tray moves again with the cloth.

**Control system**
The filter functions continuously and is fully automatic with an electro-pneumatic control panel mounted on the filter. The vacuum and air intake valves, as well as the tray retraction, are pneumatically operated. The mechanical operation of the filter is controlled by a small PLC system.

**Vacuum tray**
The vacuum tray has a flat base with angled sides and is modular. The total length depends on the application and required unit capacity. The high sides prevent overflow of slurry and wash liquid feeds. Sections can be combined in any required arrangement for the separation, washing and drying sections. In the vacuum tray the filter cloth is supported by removable grids.

### Materials of construction
Trays and grids and all other wetted parts are available in a wide range of materials to suit various process conditions. Standard the wetted parts are AISI316 with PP grids.

### Corrosion resistant materials
The Larox® RT is especially suited for corrosive processes, as all wetted parts can be totally non-metallic.

### PanStrecker Cloth Tracking
The PanStrecker cloth tracking system consists of a pair of rollers on either side of the filter cloth that grip the cloth without stressing or pinching it. The continually reacting system uses a pneumatic controller that actuates the rollers, continuously aligning the filter cloth to the center of the filter.

In combination with the automatic cloth tensioning system, the cloth is continuously tracked, tensioned and kept in proper alignment, which prevents cloth creasing.

### Cloth washing
To ensure a constant and optimum filtration, the filter cloth is washed continuously. Flat jet sprays angled to achieve maximum impact for cleaning the cloth ensure that a "clean" cloth is always presented to the incoming slurry.

### Optional features
For Larox® RT filters a number of extra options are available:

- Vapor hoods - can cover the full length or only a specific section of the filter, can be stainless steel or polypropylene, provided with side windows all hoods are designed to deliver condensate back to the vacuum tray.
- Drip trays - normally not required as Larox® RT filters are dry operating, but they can be incorporated when the filter is installed on open flooring.
- Cake chutes - available as standard design.

### Slurry feed
The slurry is continuously fed to the filter by means of a splash plate with feeding points to guarantee a smooth cake of constant thickness. Several alternative systems are available should the slurry require a special feeding system.

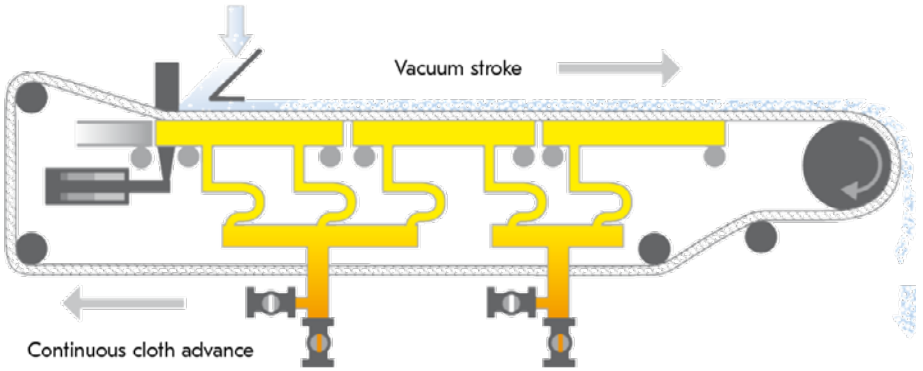
### Cake wash
The ability to carry out multiple wash steps, with each wash filtrate collected into its own receiver enables the Larox® RT filter to produce a very high purity cake (up to 99.99% or better) with low wash water consumption. Cloth wash liquid can also be recycled back onto the filter as cake wash liquid where "water-balance" is an issue.

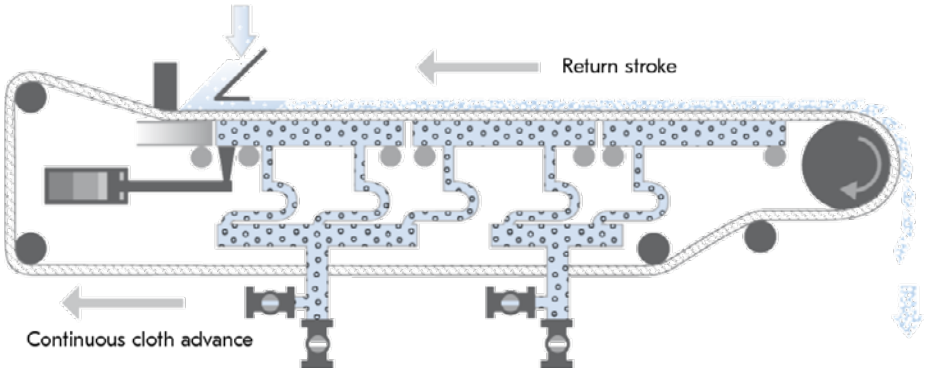
### Co-current cake washing
The Larox® RT filters offer superior washing capabilities, as an equal vacuum is applied to every part of the filter surface. Since the tray and support grids are repositioned on each retraction, dead spots in the filter cake are eliminated. Co-current washing can utilize one or more steps and can involve more than one wash liquid types, as each liquid can be completely isolated from the others.

### Counter-current cake washing
The ability to carry out multi-step, counter-current cake washing is the specialty of the Larox® RT filter. Proven in installations including up to 15 wash steps in a single filter, extremely high levels of product purity can be achieved continually using the minimum possible amount of wash liquid.

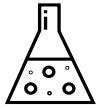
Reflux washing and chemical reaction via washing is also possible. The filters can also be set up with any desired combination of co- and counter-current washing, for example when doing ion exchange on zeolites. As with co-current washing, the filter ensures total isolation of all washes and filtrates.

The preferred system, especially for counter-current washing, is to use cake wash-weirs. These weirs have the

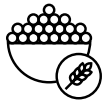


## Bio-processing
- Biomass
- Bio-lignin
- Fermentation broth

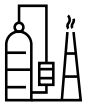


## Chemicals
- Agrochemicals
- Boric acid
- Catalysts
- Fertilizers
- Gypsum
- Herbicides
- Lactic acid
- Pigments and dyestuffs
- Zeolites



## Foodstuffs
- Citric acid
- Hydrolyzed protein
- Pectin
- Fatty acid separations
- Tartaric acid

## Metallurgy
- Alumina
- Hydro-metallurgical leach processes
- Lithium brine
- Metal salts



## Petrochemical
- Caprolactam
- Isophthalic acid
- Phthalic acid
- Terephthalic acid

## Pharmaceuticals
- Amino acids
- Antibiotics
- Vitamins

## Rubber and plastics
- Polymers and resins
- ABS/MBS
- PPS
- Viton
- Additives, vulcanizers, antioxidants, silica

## Waste process
- Aluminum salt waste
- Fly ash
- Waste recovery

advantage of not plugging when solids containing filtrate is used for cake washing, as their design ensures solids can pass through the wash box. In cases where spray washing is required, spray bars are utilized in place of the wash boxes and the spray nozzles are chosen according to the application.

### Mechanical dewatering

To further decrease cake moisture on compressible cakes, it is possible to include various forms of mechanical dewatering on the Larox® RT filter. The possibilities include a simple Vacuum Seal Belt (VSB) for easy compressible filter cakes or cakes that crack readily, a Vacuum Press Belt (VPB) adding multistage mechanical compression while maintaining vacuum at the same time. Press Belt (PB) where a greater mechanical squeezing force is applied to the cake after the vacuum section of the filter. For cakes with thixotropic behavior cake vibration can be added to the Larox® RT filter.

### Drying

When the cake has a high permeability, allowing increased air flow, also air (pre-) drying can be integrated with the dewatering and washing process steps.

# Technical specifications

| Larox RT 0.575 | | 2.8 | 4.2 | 5.6 | 7.0 |
|---|---|---|---|---|---|
| Filtration area | $m^2$ | 1.6 | 2.4 | 3.2 | 4.0 |
| Overall width | mm | 2 320 | | | |
| Overall length | mm | 6 250 | 7 650 | 9 050 | 10 450 |
| Overall height | mm | 2 220 (without hood), 2 250 (with hood) | | | |
| Empty weight (without hood) | kg | 1 720 | 2 120 | 2 440 | 2 740 |
| Installed power | kW | 0.75 | | | |

| Larox RT 1.15 | | 2.8 | 4.2 | 5.6 | 7.1 | 8.4 | 9.8 | 11.2 |
|---|---|---|---|---|---|---|---|---|
| Filtration area | $m^2$ | 3.2 | 4.8 | 6.4 | 8.1 | 9.7 | 11.3 | 12.9 |
| Overall width | mm | | 2 734 | | | | | |
| Overall length | mm | 6 250 | 7 650 | 9 050 | 10 450 | 11 850 | 13 250 | 14 650 |
| Overall height | mm | | 2 221 (without hood), 2 275 (with hood) | | | | | |
| Empty weight (without hood) | kg | 2 100 | 2 500 | 2 900 | 3 300 | 3 650 | 4 000 | 4 400 |
| Installed power | kW | | 0.75 | | | | | |

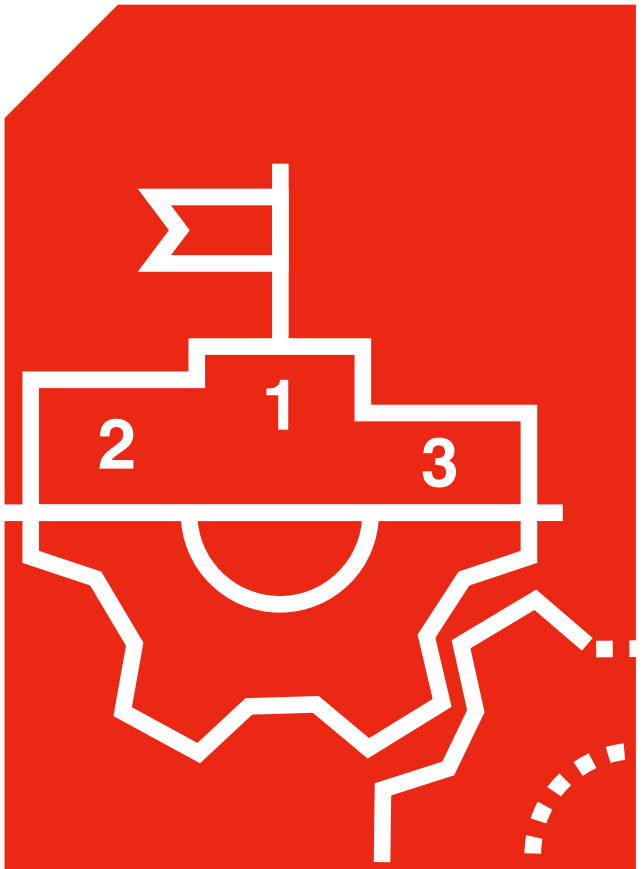
| Larox RT 1.6 | | 4.2 | 5.7 | 7.0 | 8.4 | 9.8 | 11.2 |
|---|---|---|---|---|---|---|---|
| Filtration area | $m^2$ | 6.7 | 9.0 | 11.2 | 13.4 | 15.7 | 17.9 |
| Overall width | mm | 3 208 | | | | | |
| Overall length | mm | 7 650 | 9 050 | 10 450 | 11 850 | 13 250 | 14 650 |
| Overall height | mm | 2 221 (without hood), 2 275 (with hood) | | | | | |
| Empty weight (without hood) | kg | 3 320 | 3 740 | 4 150 | 4 570 | 4 970 | 5 400 |
| Installed power | kW | 0.75 | | 1.1 | | | |

| Larox RT 2.1 | | 7.0 | 8.4 | 9.8 | 11.2 | 12.6 | 14.0 |
|---|---|---|---|---|---|---|---|
| Filtration area | $m^2$ | 14.7 | 17.6 | 20.6 | 23.5 | 26.5 | 29.4 |
| Overall width | mm | 4 060 | | | | | |
| Overall length | mm | 10 900 | 12 300 | 13 700 | 15 100 | 16 500 | 17 900 |
| Overall height | mm | 2 500 (without and with hood) | | | | | |
| Empty weight (without hood) | kg | 6 230 | 6 730 | 7 250 | 7 730 | 8 170 | 8 610 |
| Installed power | kW | 0.75 | 1.1 | | | | 2.2 |

| Larox RT 3.0 | | 9.8 | 11.2 | 12.6 | 14.0 | 15.4 | 16.8 | 18.2 | 19.6 | 21.0 |
|---|---|---|---|---|---|---|---|---|---|---|
| Filtration area | $m^2$ | 29.4 | 33.6 | 37.8 | 42.0 | 46.2 | 50.4 | 54.6 | 58.8 | 63.0 |
| Overall width | mm | 5 064 | | | | | | | | |
| Overall length | mm | 13 700 | 15 100 | 16 500 | 17 900 | 19 300 | 20 700 | 22 100 | 23 500 | 24 900 |
| Overall height | mm | 2 660 (without and with hood) | | | | | | | | |
| Empty weight | kg | 8 820 | 9 365 | 9 875 | 10 395 | 10 950 | 11 450 | 11 950 | 12 450 | 12 950 |
| Installed power | kW | 2.2 | | | | | 3.0 | | | |

# 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 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.**

Metso

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