EREMA Filter Systems for Thermoplastics

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HIGH TECH RECYCLING

The Company

As the worldwide leader in manufacturing of plastics recycling equipment Erema has a wealth of experience in filtering polymer melts.

Over the years polymer filtration has become one of Erema's key areas of expertise, due to its quality-defining aspects.
There are currently more than 2000 Erema polymer filters being used all over the world for numerous different applications to the satisfaction of Erema's customers.

As your reliable partner for filtration solutions we offer a wide production program of advanced filter systems, comprehensive advice, prompt service and worldwide support.
The Technical Centre at our headquarters in Linz/Austria gives you the opportunity to conduct filtration tests under realistic production conditions.

Different melt filter systems for almost any specific requirement

Criteria such as throughput capacity range and type of application, besides individual process requirements, are critical factors in choosing the most cost-efficient melt filter solution. Our wide range of filters and the various sizes available mean that you will nearly always find a custom Erema filter system to meet your specific needs.
Erema melt filters meet the very highest quality standards and are characterised by their heavy-duty construction, high degree of automation and high-performance availability.
Our products range from simple, manual lever-operated pivot disc safety filters to one-, two- or four-piston partial area backflush screen changers as well as the high end laser filter for heavily-contaminated polymers.

EREMA partial area backflush melt filter SW 2/134 RTF

EREMA partial area backflush melt filter SW 4/104 RTF

EREMA partial area backflush melt filter SW 8/250 RTF

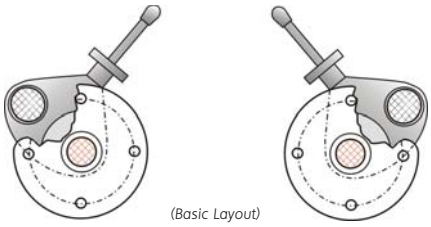
EREMA Laser filter LF 2/350

The Products

Erema pivot disc safety filter

Manual discontinuous Erema filter for filtration of clean polymer melts ("safety filtration")

Available sizes:
CL 104: Active filter area 85cm^2
CL 120: Active filter area 113cm^2



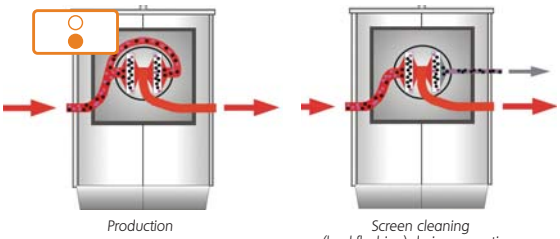
(Basic Layout)

Erema Partial Area Backflush Screen Changer (RTF-Series)

Erema RTF piston screen changers are different from widely-available conventional systems due to their completely automatic ***partial area*** backflushing system. Thanks to their unique design (pressure balanced double screen design per piston) Erema partial area backflush systems function extremely well with a wide range of filtering requirements.
The characteristics of Erema partial area backflush systems can be summarised as follows:

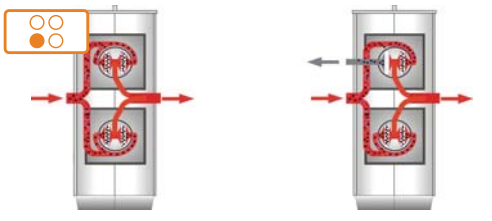
- **Minimise influence** on downstream processes thanks to lowest pressure fluctuations during backflushing and screen changing (RTF 4 and RTF 8).
- **Efficient, reliable backflushing mechanism** (optionally in VC-configuration) with very short backflush channels. This dramatically increases screen service life and keeps backflushing material losses to a minimum.
- **Back purging is triggered completely automatically,** reducing operator requirement.

Partial surface backflushing technology involves flushing a comparatively small area of the screen surface in relation to the total active screen area by passing a central stream of clean melt through from the back of the screen. High velocity is possible at the screen due to the small surface area of screen to be flushed (in particular with VC-configuration) at a time, resulting in optimum cleaning efficiency. It is also possible to adjust the backflushing stream, using a replaceable throttle nozzle on the clean side of the filter (preventing risk of clogging with contamination!), adapting the system to individual requirements. The large total screen area that remains active even during backflushing and screen changing and the correct match of throttle nozzle enable this system to be implemented even with sensitive downstream processes.



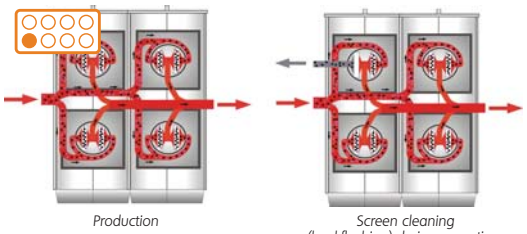
Production — Screen cleaning (backflushing) during operation

EREMA RTF-2:
Semi-continuous partial area backflush filter with 2 screens for lightly-contaminated polymers (basic layout)



Production — Screen cleaning (backflushing) during operation

EREMA RTF-4:
Fully-continuous partial area backflush filter with 4 screens for medium contaminated polymers and low pressure differences (basic layout)

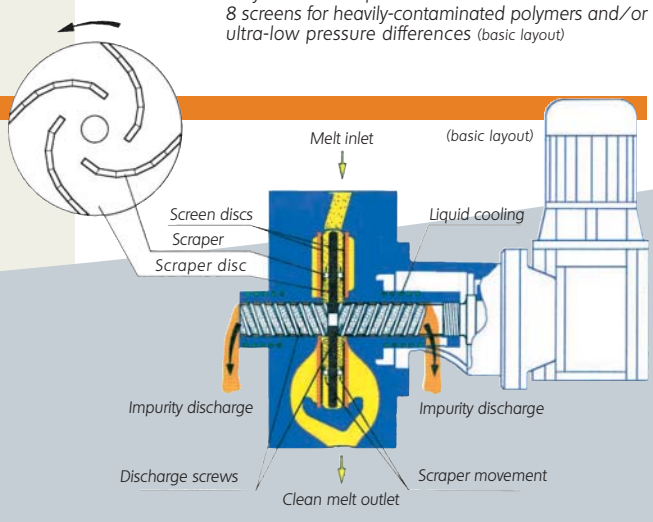


Production — Screen cleaning (backflushing) during operation

EREMA RTF-8:
Fully-continuous partial area backflush filter with 8 screens for heavily-contaminated polymers and/or ultra-low pressure differences (basic layout)

Erema Laser filter

Constant pressure, self-cleaning, high-capacity filter for extremely heavily contaminated polymer melts (see separate brochure).

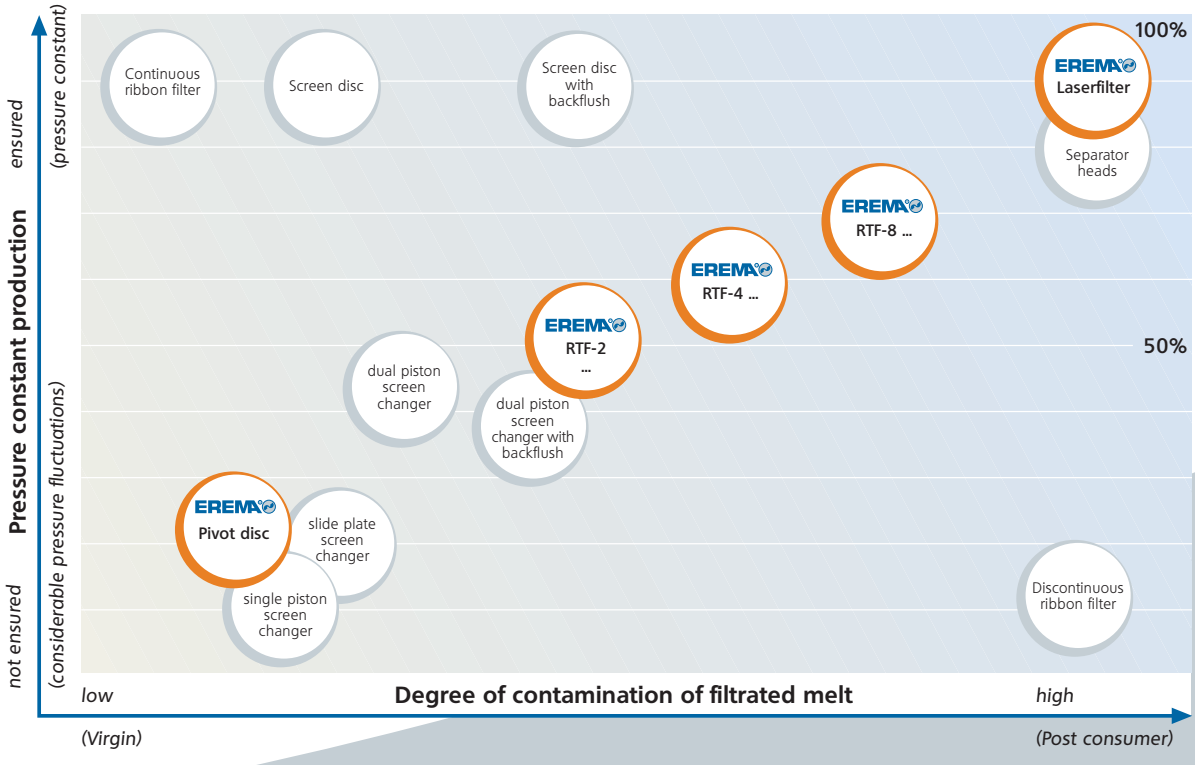


Applications for Erema filter systems

- **Discontinuous filtration**
  Discontinuous melt filters which interrupt the melt stream during screen changes are mainly used for applications with a low level of contamination. These systems are suitable for extruders that are easy to start up after each screen change, or where regular short interruptions to production are necessary anyway (e.g. for pellitiser knife changes) and long screen changing intervals are normal.

- **Continuous filtration with partial area backflushing technology**
  Continuous Erema filter systems with fully automatic partial area backflushing are recommended for applications with higher levels of contamination or complicated start-up procedures. The fully-automatic cleaning mechanism greatly reduces operator involvement and prevents downtime and time consuming start-ups. They also boost cost-effectiveness by allowing higher proportions of recycled material to be processed without compromising the quality of the final product. An additional advantage is the comparatively large *active* area of the Erema RTF-type filters which can even prevent peaks in contamination from interrupting the process. Due to the gentle filtration with low viscosities and consequently low shearing of the melt at the screens, resulting from the large total active screen area of the Erema RTF-filters, also gels (depending on application), besides solid contamination, can be held back.

Which filter system for which application?



The diagram shows schematically applications for different conventional filter systems being available on the market with reference to the two main parameters process constancy (system ability to maintain pressure constant filtration) and filtration capacity of system (capability to deal with contamination in the melt).

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Optional technologies ...

... for optimising the cost-effectiveness of Erema backflush screen changer systems

Erema backflush filter with "VC" (Valve Controlled) technology. The new Erema technology for a drastic reduction of melt losses during back-flushing.

Available as an option, the latest developments to proven Erema RTF systems feature a modification that dramatically reduces melt losses during backflushing. This has been made possible by an extreme shortening of the backflushing ways (channels and cavities) plus using new technologies to clean only a fraction of a screen at a time, when applying backflushing. This results in a previously unattainable level of screen cleaning and extraordinary small, economical usage of melt needed to backflush a screen. Details available on request.
These new technologies are especially useful in the filtration of heavily contaminated melts, allowing up to tens of thousands of euros in reduced melt losses to be saved every year.

Erema support plates

The optional 4 mm thin support plates are extremely robust and, by supplying a larger open screen area, enable better utilisation of the active screen surface. Especially when filtering low viscosity melts (e.g. PET and PA), they reduce the filter back pressure by an average of 10% and increase the service life of the screen set. These can easily be retrofitted to Erema RTF screen changers, in combination with modified support breaker plates, to optimise existing filter systems.

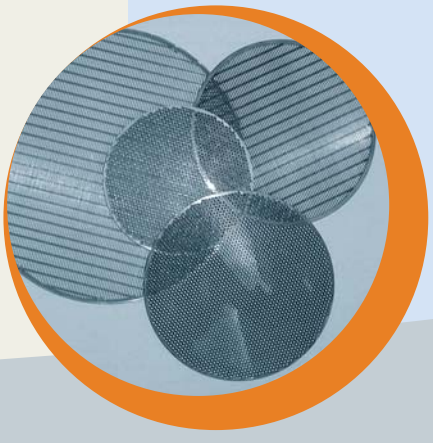
Active total filter screen surface Erema RTF backflush screen changer-series

Screen diameter (mm)	82 mm	104 mm	134 mm	170 mm	250 mm
Filter system with .../ total active screen area in cm^2					
1 carrier piston (2 screens)					
SW 2/104 RTF		170 cm^2			
SW 2/134 RTF			282 cm^2		
SW 2/170 RTF				454 cm^2	
SW 2/250 RTF					982 cm^2
2 carrier pistons (4 screens)					
SW 4/82 RTF	211 cm^2				
SW 4/104 RTF		340 cm^2			
SW 4/134 RTF			564 cm^2		
SW 4/170 RTF				907 cm^2	
SW 4/250 RTF					1963 cm^2
4 carrier pistons (8 screens)					
SW 8/104 RTF		680 cm^2			
SW 8/134 RTF			1128 cm^2		
SW 8/170 RTF				1814 cm^2	
SW 8/250 RTF					3926 cm^2

Technical data Erema Laser filter

Laser filter type	**LF 2/350**
Total filter surface (cm^2)	1470
No. of heating zones	5
Heating rating (kW)	18
Motor rating (kW)	3,0
Scraper disk speed (rpm)	1-8
Max. operating pressure (bar)	350
Throughput capacity (kg/h)	250-1200

(see separate brochure)



Erema-„Support-Plates"

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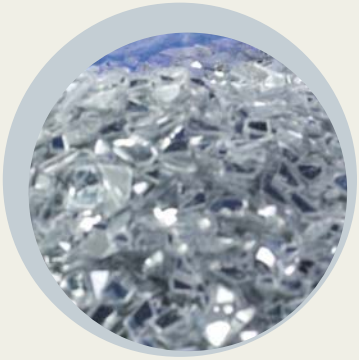
Your advantages



Fields of application for and individual advantages resulting from the use of the Erema partial area backflush filter system:

Recycling

- Increases screen service life, reducing screen costs and backflush melt loss costs with new intelligent, optimised partial area backflushing systems
- Enables processing of higher levels of contaminants due to large active screen surface
- Manages peaks in contamination
- Provides higher level of automation due to automatic backflushing function, reducing labour cost.
- Improves homogenisation of the melt
- Eliminates fine particles and strand breaks
- Very high contamination filtering capacity available with laser filters (see separate brochure)

Fibre production

- Ultra-fine filtration capability at moderate pressure levels
- Effective filtering of gels (depending on application)
- Dramatic increase in service life for spin pack units (candle filters)
- Enables processing of higher levels of regenerate

Blown film and flat film production

- Effective filtering of gel-type particles thanks to low velocities and low shearing at screens.
- Lowest possible pressure fluctuations due to partial area backflushing and adjustable backflush stream
- Enables higher levels of repellets to be processed to increase cost-effectiveness
- Fully automatic filtration and filter cleaning without interrupting production

Pipe production

- Reduces costs by allowing higher levels of recycling material to be used
- Maintains tight tolerances for final product even during backflushing
- Does not interrupt production thanks to fully automatic filtration

Repellet / Masterbatch production

- Hot die face pelletising: high grain uniformity even during backflushing (cleaning) of screens.
- Strand pelletising: strands do not break off during backflushing
- Uniform, steady process thanks to consistent pressure and fully-automatic backflushing
- Improved homogenising and mixing of the processed melt material

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