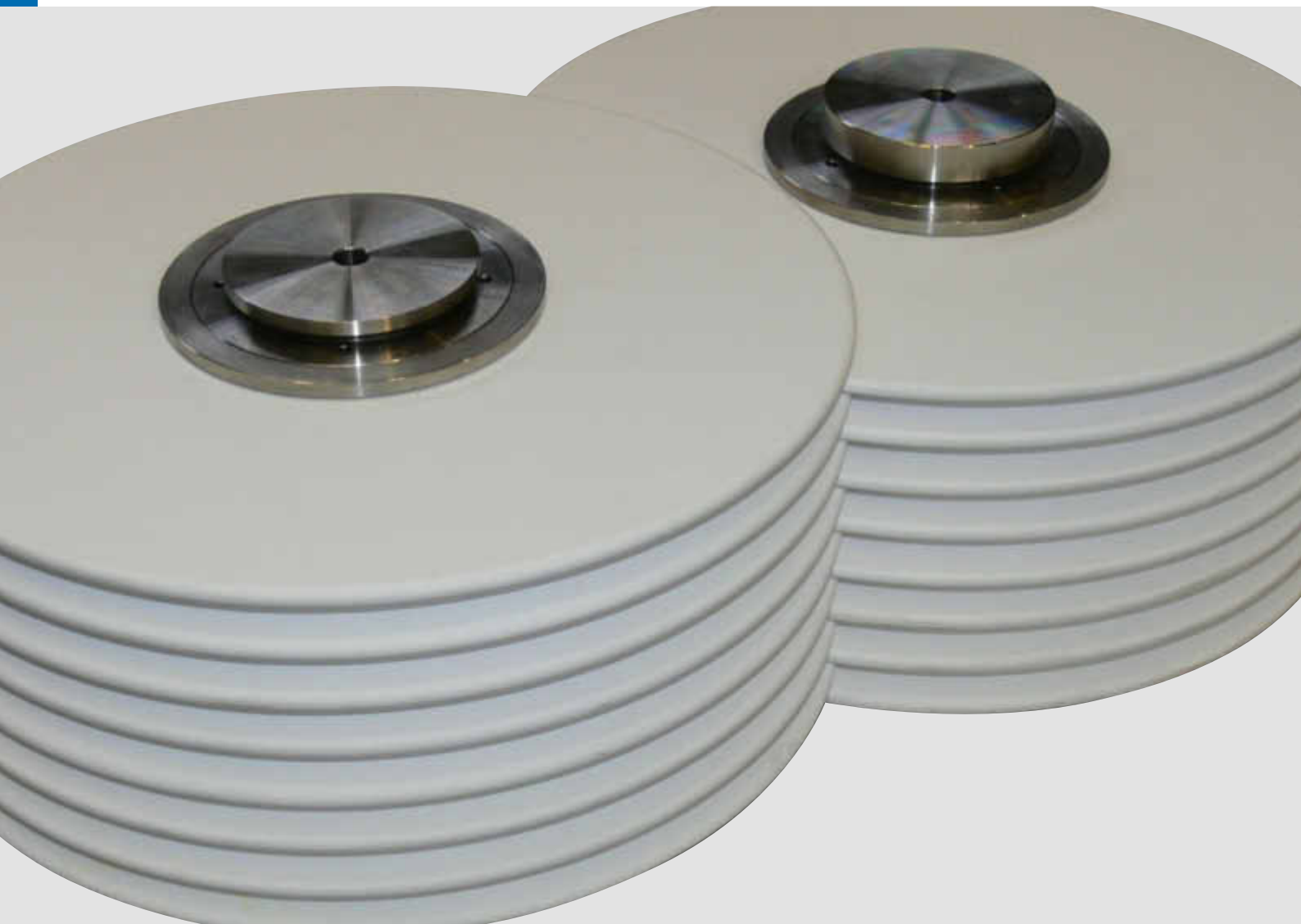


Krauss-Maffei DCF crossflow filter

Dynamic membrane filtration



Krauss-Maffei DCF crossflow filter

Dynamic membrane filtration

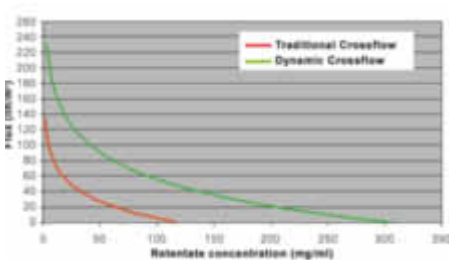
Crossflow methods for separating substances with poor filtration properties are state of the art. In chemical applications with solvents, abrasive materials, and similar, the use of ceramic filter membranes is gaining popularity.

In traditional cross-flow filtration, the development of a clogging layer on the surface of the filter membranes is prevented by pumping the feed. When handling sensitive or highly viscous products, this method is not efficient or not even feasible. In this case, traditional, circulating cross-flow filtration technologies would not be able to concentrate liquids to a highly viscous sludge. As dynamic cross-flow filtration (DCF) is able to concentrate the retentate to a sludgy consistency, the efficiency of the separation process and yield of the valuable compound are higher than from any other cross-flow technology. ANDRITZ KMPT has made further advances in the process of DCF. In this technology, overlapping, rotating discs generate a differential speed between one another. This design creates a turbulent cross-flow without using a pump to circulate the slurry. By applying wall shear stress that is at least 50% higher than in conventional cross-flow systems, the formation of a clogging layer, which obstructs the permeate flow, can be avoided or at least reduced significantly. Ceramic filter mem-

branes are installed as standard, but metal and polymer filter membranes can also be installed. Upgrades for existing plants by arranging a DCF downstream of a traditional crossflow filter enhances the process, reduces energy costs, and increases the throughput. In any event, removal of bottlenecks is often the main reason for installing a DCF, and sometimes, the reduction of energy consumption, is motivation enough.

Advantages

- Higher permeate flux and higher retentate concentration achievable.
- Processing of highly concentrated suspensions up to viscosities of 3,000 mPas.
- 80% reduction in energy consumption compared to traditional membranes.
 - lower energy costs
 - low or no suspension cooling
 - reduced thermal product treatment
- Substantial savings, in the event of subsequent evaporation or drying.
- Reduced operation costs and wider range of applications.
- Reduction of supply pressure by more effective prevention of clogging layer.
- Homogeneous trans-membrane pressure across the entire surface (no inlet or outlet zones in membranes).
- Very low dead volume in relation to the membrane surface.
- Easy inspection as the filtration surface is on the outside of the membrane.



Performance comparison

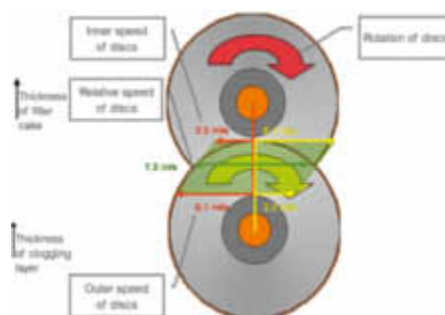
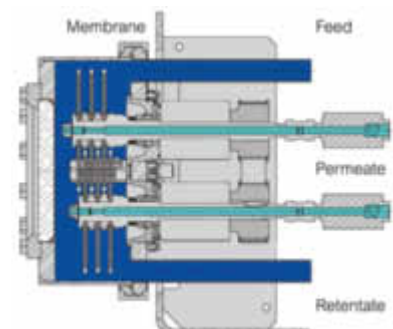


Illustration of wall shear stress



Section of a test module





Applications

Concentration of material

Bio-pharma

- Cell harvesting
- Proteins
- Enzymes

Food & beverages

- Biomass
- Aromatics

Chemical industry

- Hydroxides, colloids
- Pigments
- Polymers
- Latex
- Titanium oxide
- Calcium carbonate

Alternative energy sources

- Silicon-cutting slurry
- Micro-algae
- BTL (Bio to liquid)

Processing of liquids

Food & beverages

- Juices
- Vegetable oil
- Gelatine
- Rnzymes
- Recovery of water in starch processes
- Sterilisation of juices

Biodiesel

- Raw oil from solids, sludge

Environment

- Waste streams

Chemical industry

- Recovery of solvents and valuable liquids

Separation/washing of material

Bio-pharma

Food & beverages

Technical data (per module):

Filter area	0.03 m ² -16.4 m ²
Viscosity	up to 3,000 mPas
Membrane pore size	7 nm-2 μm



Highly viscous chemical retentate



Highly viscous biotech retentate



Purified fermentation broth

ANDRITZ stands for ultimate know-how in solid/liquid separation. Our decade-long background in this field and comprehensive technology offering enable us to supply our customers with the best solution for each application, whether in municipal or industrial sewage sludge treatment, the chemical or food industry, or for preparation of minerals and ores.



Food



Chemicals



Minerals



Mining



Environment

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