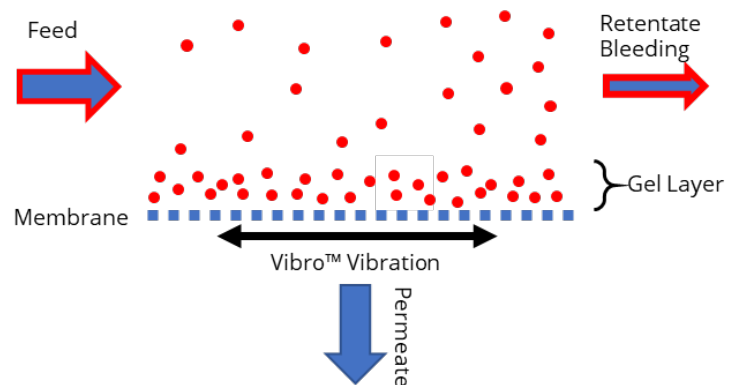




Vibro™-I

Industrial MF & UF



Disruptive in size, simplicity and process: sanitary, energy efficient, fully drainable, no dead volumes, easy to clean, easy to service and simple to operate.

SANI 
Membranes

MORE FILTRATION, LESS ENERGY

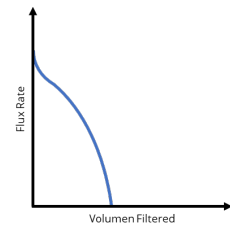
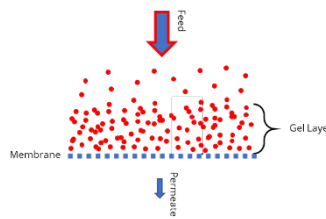
Vibro™-I

Vibro™ is the perfect filtration solution for industrial filtration applications where **low energy consumption**, high flux, sanitary function, **low capital investment**, reduced CIP costs and gentle filtration are key words. Vibro™-I systems deliver low fouling continuous filtration, where the filter is kept clean by vibration shear.

Description of filtration principals

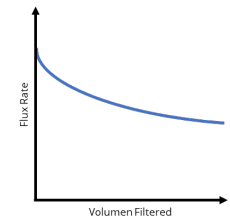
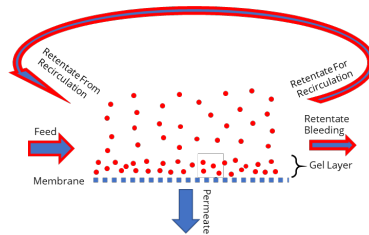
Dead-End Filtration

The feed is pressurized against the membrane. Particles and molecules form a growing gel layer that clogs the membrane.



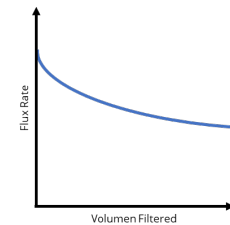
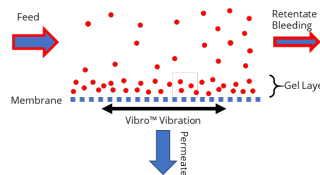
Tangential Crossflow Filtration

Pressurized feed flows fast along the membrane surface creating turbulence in the stream. The turbulence keeps the gel layer from growing.



Vibro™ Filtration

A vibrating motion of the membrane relative to the pressurized feed creates turbulence at the membrane surface. The turbulence keeps the gel layer from growing.



Vibro™ technology

A Free Flow Plate™ membrane element is fixed rigidly inside a flexibly supported retentate chamber. By vibrating the membrane element relative to the media, an optimal turbulence is created in the media at the membrane surface by the patented Vibro™ technology. The vibrating membrane enables the Vibro™ systems to filtrate the most demanding media with high viscosity and high solids with unprecedented results in terms of less fouling, higher flux, higher degree of up-concentration.

The Vibro™ can be operated as vibration driven dead-end-like filtration, where the media is

concentrated in the retentate chamber and discharged continuously or at end of operation.

The Vibro™ can also be operated as continuous filtration, with a feed pump feeding in media and continuous discharging of permeate and retentate.

The vibrating membrane will diminish fouling and create a higher flux than conventional cross flow filtration.

A 'slow' circulation pump with minimum shear can be used for mixing/homogenizing the retentate in the system if necessary.

unique filtration devices for micro- and ultrafiltration

Optimal separation even with extremely low pressure

The Vibro™-I is an industrial MF and UF membrane filtration solution for applications where low energy consumption, high flux, sanitary function, low capital investment and gentle filtration are key words. The cleansing turbulence on the membrane surface is achieved through vibration. This allows for truly uniform Trans Membranes Pressure (TMP) and secures optimal separation even at the extremely low pressures needed for continuous microfiltration.

The Vibro™-I utilizes the 2,5 m² Free Flow Plate™ module (HP1) and comes with 7,5; 15 or 20 m² membrane as 1-tower units and with 60 or 80 m² membrane as a 4-tower unit. The units can be connected in series or parallel depending on your needs.

Perfect for food and pharmaceutical production – also at high concentrations

The Vibro™-I has opened up for new applications and improvements of current applications for everyone using traditional MF and UF systems today.

The Vibro™-I is ideal for food and pharmaceutical production as all engineering solutions are sanitary and parts in media contact are in FDA / EC 1935/2004 compliant materials.

Due to the open design of the HP1 Membrane Module, the Vibro™-I can handle very difficult media with high viscosity, high mass loadings and even high particulates. When extremely difficult media are processed, it is possible to homogenize the retentate by attaching a 'slow' mix pump.

The Vibro™-I has a sanitary design with a free flow path (no spacers) and is fully drainable of both retentate and permeate. Thus, no product loss and faster CIP cycles.

Energy consumption reduced by up to 90 %

Vibro™-I is scalable from pilot scale to production, using the modular and stackable filter modules.

The tower configuration and the elimination of the crossflow pump, cooling and intricate piping layout gives the Vibro™-I systems a small footprint and reduces energy consumption by up to 90 %.

Typical applications



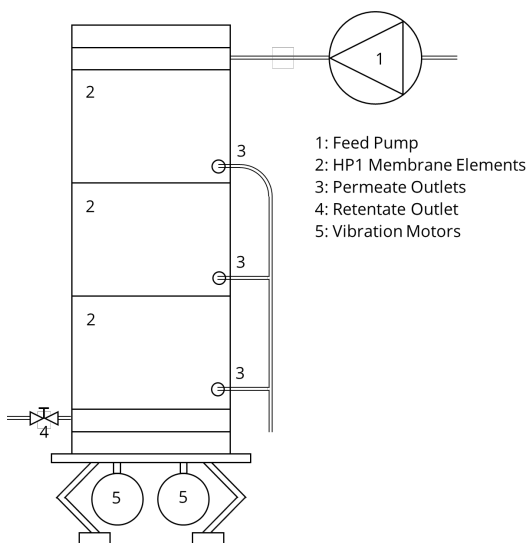
Cell harvesting, broth filtration, concentration, fractionation etc.



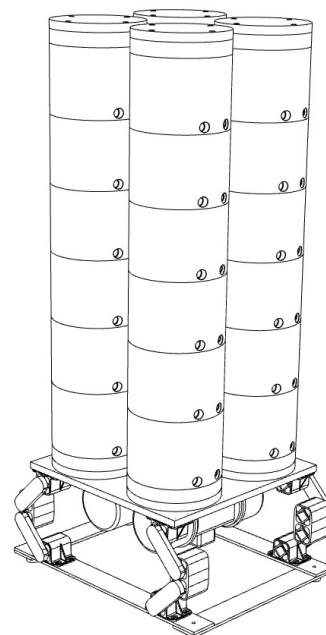
Milk fractionation, whey concentration, wine, beer filtration, juice filtration, etc.



Green protein concentration and fractionation, algae processing, etc



An example of a Vibro™-I system in operation



A 60 m² Vibro™-I system

Optimal separation with extremely low pressure

The Vibro™ technology makes it possible to run the separation with 100% uniform and extremely low TMP. Thus, improving separation and making actual microfiltration a possibility.

Perfect for food and pharmaceutical production

All engineering solutions are sanitary and all parts in media contact are in FDA / EC 1935/2004 compliant materials.

Energy consumption reduced by up to 90 %

The Vibro™ technology makes the crossflow pump redundant and as a result, the energy requirements for pumping and cooling are reduced.



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