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novoflow GmbH
Umwelt- und Filtertechnik

The new generation of filtration

Enjoy Purity

wine filtration

beer filtration

fruit juice filtration
Dynamic cross flow filtration for wine, beer and juices

One step concentration & clarification

Large range of applications

- Clarification of cider, wine and juices
- Viable also for new wines - with or without gelatine treatment
- Test plants available for rent
- Plants and test plants available in many different sizes

Process: Combination of centrifugal and shear forces for optimal cover layer control
Filtration performance: 50 up to 20,000 liters per hour
Operating mode

- A membrane stack, mounted on and rotated by a hollow shaft inside a pressure vessel (called module)
- Filtration is performed outside to inside through the membrane layer coating on the filter disks; the filtrate/permeate is collected inside the filter disks and discharged via hollow shaft
- Fixed baffles inside the pressure vessel generate turbulences
- Modular design: Easy scale up and scale down
- Automatic back flushing
- CIP-compatible

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Advantages and special properties

- Turbidity reduction significantly below 1 NTU
- No additives needed, quality maintained
- With the use of ceramic disks, migration effects from micro pollutants such as softening agents in polymers and their potential effects on taste are excluded
- Flavour conservation by smooth rotating filtration
- Oxygen input is largely avoided, since plant is operated under pressure
- Easy cleaning
- Substantial energy savings (reduced service and operating costs)

- Plant sizes available from 0,5 - 100 m²
- Disk diameter 375 mm
- Foot print starting at 1 m²
- Energy consumption < 4 KWh/m³ of filtrate/permeate
- Inert ceramic membranes
- No changes in taste
- High durability
45 m² plant, beverage industry

20 m² Bio technology

0,5 m² Test plant

60 m² Fruit juice filtration

45 m² plant, beverage industry

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Curious? Please read on ...

**The alternative solution to presses and conventional filters**

Dynamic cross-flow filtration is becoming more popular among wine experts. This additive-free, continuous operation provides **qualitative and economic advantages** over centrifuges and pressing processes during the various stages of clarification, which is an important step in the winemaking process. It determines **taste, flavor, appearance and thus quality** and commercial success of the wine.

10 to 20% of the wine produced remains in the sediments and requires further treatment. Traditionally rotary filters and filter presses are being used for this purpose. But today, innovative technologies are introduced on a large scale, especially the dynamic cross-flow filtration with ceramic membranes.

**High content of suspended solids**

Dynamic cross flow filtration, also called single shaft disk filtration (SSDF), is preferably used when a liquid with high suspended solids content is filtered. This is the case for juice and grape juice clarification before fermentation. The clarification by ceramic membranes frees the grape juice from microorganisms, deposits and other ingredients that cause turbidity, which may be present on the grape skins. In this way an **uncontrolled fermentation and the occurrence of undesirable odors and flavors are avoided.** If grape juice is obtained with screw presses, the goal of clarification with SSDF is to **completely remove suspended solids.** Another alternative is to start with a settling step of the grape juice, use the supernatant together with the grape juice recovered from the sediment by the SSDF filter and bring the streams together to fermentation. In this case, the process is slower, because the amount of solids is larger.

SSDF filtration is superior to conventional technologies for wine clarification, because **no additives are needed** which may have operational risks such as dust formation and cause higher costs for waste disposal. SSDF require **less water** and **cleaning is also easier** than for a rotary filter.

**Almost no introduction of oxygen to the process**

The SSDF filter combines substantially higher filtration performance with significantly **reduced service and operating costs.** At the same the specific energy consumption is low. The SSDF filter is operated with ceramic discs under pressure so that **oxygen intake is substantially reduced.** This is essential for purification of oxygen sensitive wines, grape or fruit juices.

The SSDF is **easy to clean** and fully CIP compatible. **Low energy** consumption is achieved by decoupling ressure from cross flow velocity. Main applications of the SSDF include wineries and fruit juice producers. The versatile, multifunctional SSDF filter is used for juicing, clarification and sediment treatment.
Versatile

Dynamic cross-flow filtration systems with ceramic membranes become an indispensable support in the wine cellar. They are used for the following applications:
- Grape juice clarification before fermentation (Replacement of DAF)
- Wine clarification during the first and second tapping and simultaneous replacement of the subsequent cross-flow filtration
- Wine polishing before bottling with traditional inline filtration
- Wine tartar removal after stabilization

The SSDF filter generates centrifugal forces, shear forces and turbulence to separate solids from the liquid components of grape juice or wine. The raw product is fed into a stainless steel vessel containing a stack of ceramic disks rotating at a circumferential velocity of about 7 m / sec. By applying centrifugal forces, particles of higher density are kept away from the membrane surface.

novoflow GmbH provides filtration systems for filtrate / permeate volumes of 50-20000 l / h. These filters ensure reduction of wine turbidity below 1 NTU. A continuous stream of thickened sludge with a content of about 20 % suspended solids flows out of the SSDF. Therefore the loss of wine is kept at a minimum. On the other hand, the feed system reduces mechanical stress by shear forces on yeast and sediment particles and at the same time minimizes air input.

The use of displacement pumps guarantees gentle treatment of the product. Also, through the use of ceramic filter discs with a cut-off of <=0.2 micron, sterile filtration and a clear filtrate from the first second on are guaranteed.

Use the advantages

SSDF filters are used for continuous extraction of white grape juices, for clarification of certain red wines (after thermo vinification), drinks and fruit juices and for continuous treatment of tank sediments. SSDF filters are especially economical for clarification of grape juices and wines, since this process is improving the organoleptic characteristics of the wine and at the same time reduces the amount of filtration cycles. Even very new wines can be clarified shortly after their harvest with or without gelatin treatment.
novoflow GmbH
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Nelkenweg 10
D-86641 Rain am Lech

Tel.: +49 9090 70 11 50
Fax: +49 9090 70 11 48

E-Mail: vertrieb@novoflow.com
Internet: http://www.novoflow.com

ISO-certified
DIN EN 9001:2008

Bavarian State Award for Innovation 2005 and 2008