



Optimizing juice processing

- by using Alfa Laval membrane filtration



Greater profitability and better quality in juice production



To achieve high-quality products in a cost-effective way, manufacturers of apple juice are looking for means to improve and optimize their juice processing. Membrane filtration can both replace the traditional clarification process as well as complement evaporation used in the concentration of apple juice.

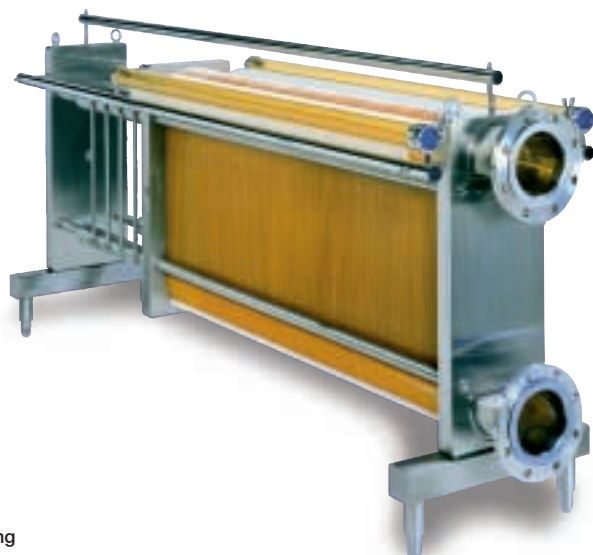
Clarification

Membrane filtration enables production of a filtered juice with a clarity and quality not previously possible. The process traditionally used in the industry for clarifying (fining) apple juice is normally both costly and difficult. It involves a long retention time in tanks as well as kieselguhr filtration.

Ultrafiltration removes suspended solids and other high molecular solids such as proteins and starch. It has proved to be an attractive substitute for the traditional process, providing both greater profitability and better quality. Prior to ultrafiltration, the juice needs to be treated with enzymes to degrade pectic substances, and can subsequently be pre-clarified to optimize the membrane filtration process. This ensures a high yield, high capacity and excellent quality.

Concentration

The most common process in conjunction with apple juice concentration is evaporation. Reverse osmosis can be used here to provide a better total solution. Reverse osmosis is normally capable of removing 50% or more of the water content prior to evaporation, making it possible to significantly reduce overall costs. Concentration levels of up to 20–22 Brix can be achieved.



Juice processing solutions

Alfa Laval has considerable experience in applying membrane filtration technology to optimize the processes used in juice production, and can provide both high-quality membranes and complete customized solutions. Both Plate & Frame and spiral wound systems can be used for processing juice, either individually or in combination. The choice of system is determined by specific customer requirements, as well as the characteristics of the feed liquid.

Alfa Laval is unique in having the skills and know-how required to propose complete solutions for the clarification of juices, by combining high-speed separators and membrane-based systems. This guarantees that Alfa Laval can always provide the solution that performs best for a minimum total cost.

Apples and more ...

In addition to apple juice, Alfa Laval membrane filtration equipment can be used to clarify and concentrate the following juices:

- strawberry
- orange (core wash)
- blackcurrant
- pear
- hawthorn
- pineapple
- date



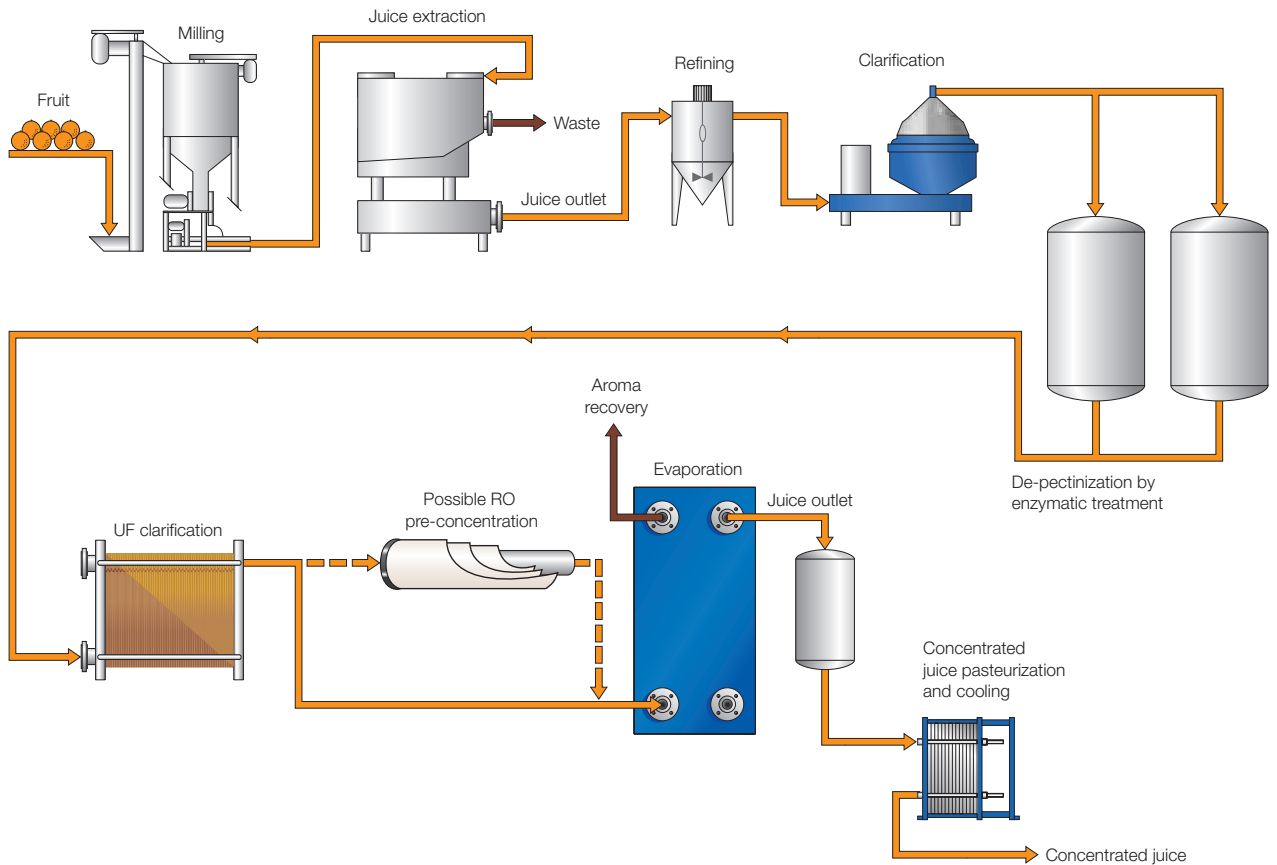


Advantages of using ultrafiltration for clarification

- High quality of the treated juice with respect to colour, clarity and taste
- High juice recovery, approximately 98–99%
- Enzyme treatment can be automated and consumption reduced to 25% of traditional quantities
- Addition of gelatine, bentonite and kieselguhr can be eliminated
- Low operating costs (labour, energy, chemicals)
- Continuous/batch/semi-batch plant operation
- Sanitary design

Advantages of using reverse osmosis for concentration

- Combination of reverse osmosis and evaporation saves 25–40% energy compared with direct evaporation processes
- Concentration up to 20 Brix with only 7–9 kWh/m³ (0.026–0.034 kWh/US gallon) removed water
- Continuous operation and CIP procedures
- 98–99% rejection of sugar and acid
- 80–90% rejection of volatile flavours
- Recycling of permeate as process water
- Sanitary design



Alfa Laval in brief

Alfa Laval is a leading global provider of specialized products and engineered solutions.

Our equipment, systems and services are dedicated to helping customers to optimize the performance of their processes. Time and time again.

We help our customers to heat, cool, separate and transport products such as oil, water, chemicals, beverages, foodstuffs, starch and pharmaceuticals.

Our worldwide organization works closely with customers in almost 100 countries to help them stay ahead.

How to contact Alfa Laval

Up-to-date Alfa Laval contact details for all countries are always available on our website at www.alfalaval.com

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