



Winemaking – an art built on technology

Improving wine processing with high speed separators





The advantages of high-speed centrifugal separation

Alfa Laval is one of the world's leading suppliers of separation technologies for industries where exceptional hygiene, reliability and gentle processing are crucial.

The technology edge

Alfa Laval has been working closely with wineries for many years to help produce high-value quality wines with space-saving separation equipment that keeps investment requirements to a minimum.

With thousands of reference installations over the world, Alfa Laval is widely recognized as a leader in innovative technology solutions designed to meet current winemaking challenges.

High-speed centrifugal separation, combined with a range of other specialist technologies, ensures reliable, consistent operation, low product losses and energy-efficient production of quality wines.

Operating advantages

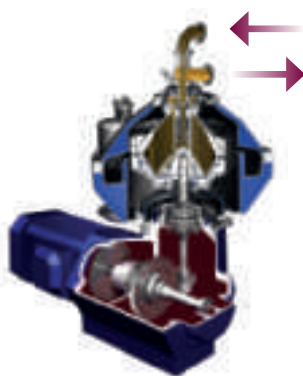
- Continuous process
- Efficient separation and consistent performance
- Faster processing
- Less need for multiple tanks and cooling energy
- Compact, space-saving installation
- Limited water and electricity requirements
- Easy to keep clean, in order to maintain hygiene standards and wine quality

Benefits for winemaking

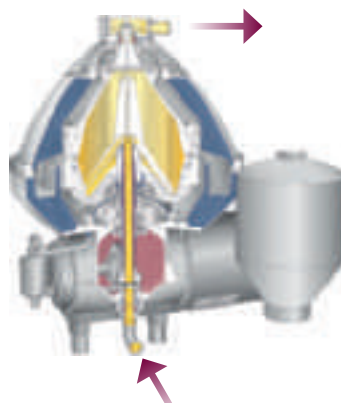
- Ideal for multiple duties in winemaking
- Exceptionally low oxygen pick up
- Improved control of vinification and product quality
- Minimal product loss
- No loss of aroma or carbon dioxide
- Less need for consumables (filters, aids, membranes, finings, etc.)
- Boosted performance from cross-flow filters
- Rapid, automatic CIP, which minimizes downtime, manpower requirements and cleaning costs



How it works



Conventional top-fed centrifuge



Hermetic centrifuge

High-speed centrifugal separation

In a high-speed separator, suspended solids are separated from a liquid by the g-force created in the rotating bowl of the separator.

Clara separators are specially designed for handling sensitive products smoothly and gently, with high separation efficiency, stringent hygiene standards and low energy consumption.

The solids are discharged intermittently – triggered either by timer or by turbidity – with very low product losses, and the clarified liquid leaves the separator via the liquid outlet.

To prevent product oxidation and loss of important volatile aromas or carbon dioxide, the outlet of the conventional top-fed version is fitted with an OxyStop liquid seal, resulting in an oxygen pick-up of less than 20 ppb.

Conventional compared to hermetic centrifuges

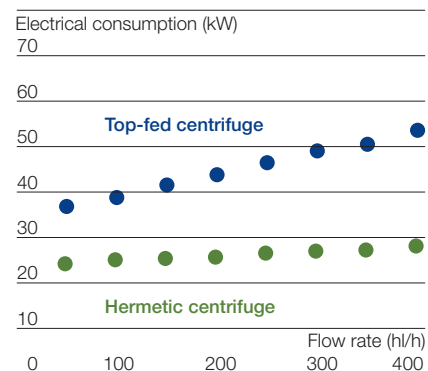
Basically there are two main types of separator designs – the conventional top-fed separator and the bottom-fed hermetic separator.

In a conventional separator, the product enters as well as leaves the centrifuge from the top.

In a hermetic centrifuge, the product is fed from the bottom and leaves the bowl from the top at the centre, which means the bowl is completely filled with liquid. The inlets and outlets are fitted with mechanical seals to allow the liquid in the bowl to be pressurized and keep the product completely sealed off from the atmosphere, resulting in zero oxygen pick-up. An impeller in the outlet boosts the pressure of the separated liquid.

All Alfa Laval centrifuges are designed to provide a smooth flow through the machine. In the hermetic design, this has been further improved and the “centre-to-centre” flow pattern minimizes disruption of delicate particles.

In addition to all the advantages of a smooth, gentle product flow, the hermetic design also provides power savings of as much as 40% compared to conventional top-fed centrifuges.



In hermetic bottom-fed centrifuges energy consumption is significantly reduced.

How high-speed centrifugal separators can help the winemaker

Pre- and post-fermentation

Alfa Laval Clara high-speed centrifugal separators provide you with an exceptionally gentle, effective way to remove unwanted particles from a range of different liquids during pre-fermentation processes as well as in several post-fermentation steps.

All year round

These separators are ideal for use during the harvest, when the grapes need to be processed very quickly. But they are also equally effective for other processing steps throughout the year – making such equipment a good investment choice.

Must clarification

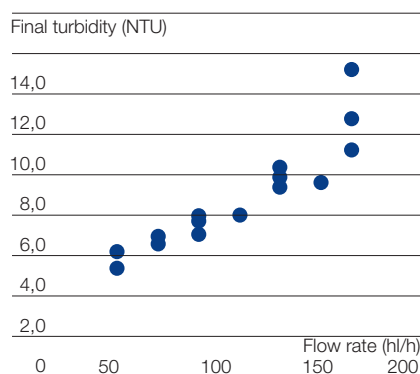
Grape must usually contains a wide variety of undesirable solids and microorganisms that have to be removed to ensure good-quality wine.

Clara separators enable you to do this quickly and effectively, and without the space-stealing tanks or cooling energy needed for gravity settling.

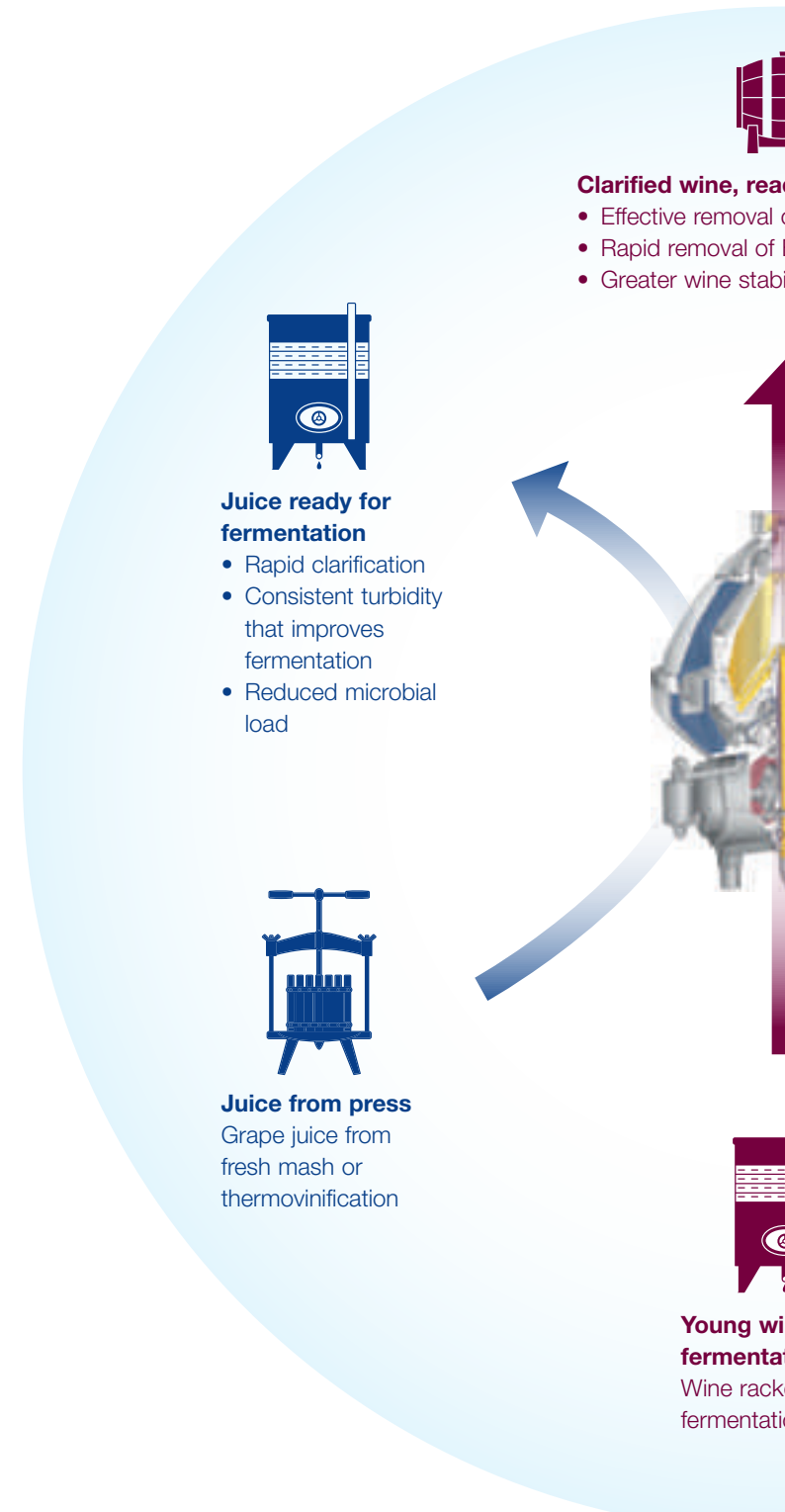
Compared with flotation, centrifugal separation also reduces the needs for fining agents and ensures consistent performance.

Compared with vacuum filtration, centrifugal separation does away with the use of filter aids, and therefore limits the resulting disposal problems and environmental impacts.

You benefit from better control of fermentation processes, less need for sulphur dioxide and overall improvements in wine quality.



Example of young rosé wine clarification (inlet turbidity 1930 NTU) with Clara 200





Ready for stabilization

of yeast
Brettanomyces yeast
stability



Ready for bottling

- Rapid polishing, ideal for bottling on demand
- Low turbidity results
- Increases cross-flow filtration capacity by 30–75%
- No change in wine matrix quality



Wine from ageing

Still wine and sparkling wine after stabilization and ageing



Wine from ageing tanks

aged from
on tanks

Clarifying young wine

High-speed centrifugal separation is one of the most cost-effective ways to remove yeast residues, grape residue, bacteria, crystals, flocculated colloids, etc. from young wine

Contact with yeast residues is likely to give rise to bad taste and odours in the young wine, so it has to be clarified as soon as possible.

With a Clara separator, you can do this at any time, and stop the fermentation exactly when you want. This is especially useful when making sweet wine. You can, of course, also separate the wine after it has been resting on the lees.

Centrifuging the wine after fermentation also boosts the effectiveness of malolactic fermentation and tartaric stabilization. You can also use a Clara separator to reduce the level of Brettanomyces yeast in the wine, and for protein stabilization via inline bentonite dosing.

Centrifugal separation makes your young wine much more stable, with consistent specifications that boost product quality as well as shelf life.

Polishing sparkling and still wine prior to bottling

Ready wines, still wines and sparkling wines are often clarified once they've been stabilized. At this stage, the solids content (crystals, colloids, finings residue, etc.) is usually very low, but disc-stack centrifuges are an ideal way to polish the wine prior to final filtration or bottling.

When second fermentation is carried out in a pressure tank, you can use a Clara separator to remove the yeast and produce a wine that is truly sparkling clear. A hermetically sealed centrifuge enables you to clarify sparkling wines at any required pressure.

Wine centrifuges can also be used in combination with cross-flow filtration, with the separator helping to reduce fouling in the filter setup. This can help you increase throughput by as much as 75%, in addition to boosting membrane service life.

High-speed centrifugal separation is a rapid process that provides you with the flexibility to clarify your wine as fluctuating production and market conditions require, with no need for costly, space-hogging tanks.



You choose the configuration

Clara high-speed centrifugal separators are available in a large number of different configurations. Simply choose the one that best suits your operating requirements.

Wide choice

Clara high-speed centrifugal separators are versatile and scalable. You can choose between models with clarification capacities from 20–400 hectolitres/hour.

Clara separators are available in different designs, including both conventional and hermetic configurations. You can select smaller Clara units skid-mounted for rapid, space-saving installation.

Flexible – installed anywhere

This means you can install these separator units virtually anywhere, from laboratory or small-scale operations up to large-scale winemaking plants with huge capacities. You can choose between a “multi-purpose” bowl and disc stack design so you can use this one separator for several different processes (such as clarifying must and wine flows), or a setup specially adapted for one particular use.

Alfa Laval also provides a range of peripheral engineered solutions to make it easy to integrate the separator unit into your winery.

Easy to bring on line

You can quickly and easily commission your Clara high-speed separators, with a minimum of downtime or interruptions to your winemaking setup.

Dealing with changing conditions

The many different configurations give you maximum flexibility to deal with fluctuating market conditions, as well as helping ensure the best possible return on investment in your overall winemaking setup.

(hl/hour)	Must	Young wine	Sparkling & still wine polishing
Clara 20	2 - 5	5 - 15	-
Clara 80	10 - 20	50 - 70	30 - 60
Clara 200	40 - 60	120 - 180	70 - 140
Clara 250	-	100 - 200	90 - 180
BRPX 714	-	120 - 250	120 - 200
Clara 601	100 - 150	200 - 300	200 - 250
Clara 701	-	200 - 400	300 - 400

Actual capacity depends on the amount of solids in the feed, raw material quality and the level of clarity needed in the end product.



Clara 250 module (compact, mobile, plug & play)



Alfa Laval Service – extending efficiency

Centrifugal separation – what's in it for you

- Rapid, continuous and efficient clarification
- Better control of the process
- Consistent performance with less product loss
- Hermetic design prevents oxidation or loss of carbon dioxide
- Reduced need for consumables
- Easy to install and to operate
- Low power consumption
- Easy to keep clean (CIP) to maintain hygiene standards and wine quality



Clara 701 installed in French winery

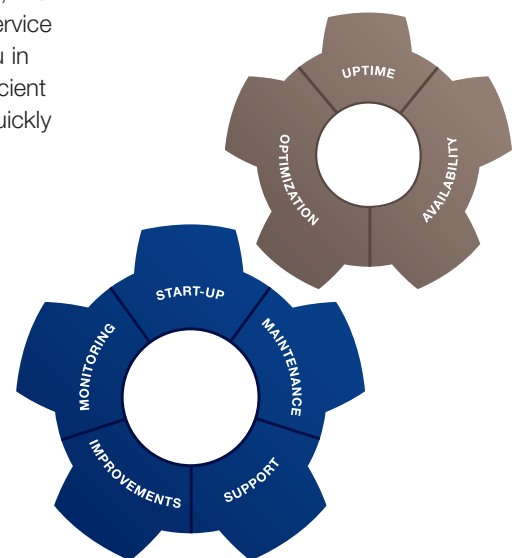
Maintenance boosts margins

Regular service and good maintenance are essential for ensuring the best possible operating efficiency and return on investment.

Alfa Laval Service provides a wide range of efficiency-boosting support to cover the entire operating life of your Clara separator. This can include installation and commissioning, regular maintenance, genuine spare parts, monitoring systems, reconditioning and condition/performance audits.

Wherever you need us

Alfa Laval can provide you with service partner support on a global scale, with a strong local focus. Alfa Laval service specialists are ready to assist you in nearly 100 countries, and our efficient logistics chain makes sure you quickly get any spare parts you need.



Alfa Laval in brief

Alfa Laval is a leading global provider of specialized products and engineering 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, foodstuff, 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