A clear advantage in beverage processing

The Clara disc stack separator range

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
The Clara range:
gentle treatment, efficiency, low power

The Clara range of high-speed separators is specially developed for the food and beverage industries.

In developing the Clara range, we emphasized gentle product treatment, high separation efficiency and low power consumption.

Each model has its advantages

Within the Clara range there are models of all sizes – from laboratory or pilot scale operation to models for large food or beverage plants with huge capacities. Depending on model the Clara separators are available in different designs, from non-hermetic (‘top fed’), to fully hermetic design.

The Clara separators have several distinct advantages, depending on the model.

Disc inlet
The disc inlet enables the feed to accelerate in a very gentle way. This increases separation efficiency and minimizes foaming.

Oxy-Stop
The liquid seal in the separator outlet prevents oxidation of the product and loss of volatile aromas or CO₂.

Fully hermetic design
The fully hermetic design is achieved by a combination of a hollow spindle inlet, a hermetic outlet provided by a mechanical seal, and a separator bowl completely filled with liquid.

In addition to maximum separation efficiency and significantly reduced power consumption, the fully hermetic concept prevents any air-liquid interface, which otherwise is a source of foaming and food degradation.

Hollow spindle design
Our unique hollow spindle design ensures the gentlest acceleration of shear-sensitive particles. This leads to maximum separation efficiency and reduced power consumption at the same time.

Selection guide for the different designs available in the Clara separator range.

<table>
<thead>
<tr>
<th>Model</th>
<th>Inlet type</th>
<th>Outlet seal</th>
<th>Fully hermetic</th>
<th>Skid</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clara 20</td>
<td>Disc inlet</td>
<td>No</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>Clara 80</td>
<td>Wing inlet</td>
<td>Mechanical seal</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>Clara 200</td>
<td>Disc inlet</td>
<td>Mechanical seal/Oxy-Stop</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>Clara 250</td>
<td>Hollow spindle</td>
<td>Mechanical seal</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Clara 401</td>
<td>Hollow spindle</td>
<td>Mechanical seal/Oxy-Stop</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Clara 501</td>
<td>Hollow spindle</td>
<td>Mechanical seal/Oxy-Stop</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Clara 601</td>
<td>Hollow spindle</td>
<td>Mechanical seal/Oxy-Stop</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Clara 701</td>
<td>Hollow spindle</td>
<td>Mechanical seal/Oxy-Stop</td>
<td>Yes</td>
<td>No</td>
</tr>
</tbody>
</table>

Alfa Laval components and systems for beverage processing
High-speed separators
Decanter centrifuges
Heat exchangers, including evaporators, pasteurizers, sterilizers, etc.
Membrane filtration systems
Aroma recovery units
Pumps, valves, tubes & fittings, and other fluid handling components
Tank cleaning components
Control and automation systems
Auxiliary systems for small and large models

The smaller models Clara 20, Clara 80, Clara 200 and Clara 250 are all skid mounted to facilitate installation, minimize footprint and make them mobile (all the skids have wheels). On the skid are all the equipment needed for efficient and reliable operation of the separator. There is a control panel and a pipe rack containing all the necessary components to feed the separator with product and service water.

The larger models are less suitable for skid mounting. Here, the electrical panels for starter and control panel are mounted on a stainless steel, self-supported, frame. Product and service water piping with all valves and gauges are mounted on the opposite side of the same frame.

Feed pumps and pumps for solids discharge are available as option for all Clara models. The larger Clara models also have turbidity meter and capacity control as option.

Besides the Clara range Alfa Laval also has other separators for beverage processing such as the CR-models for citrus oil.

Other applications

In addition to wine, citrus, tea and coffee the Clara range is suitable for a number of other applications such as:

- Juice from apples, berries and other deciduous fruits
- Tropical juices like passion fruit, mango and pineapple
- Various industrial fermentation applications

A size to fit your citrus processing needs

In citrus processing the Clara separators can be used for a number of different clarification duties. Whether your main product is Not For Concentrate (NFC) or juice concentrate, we offer the Clara separator size you need. Alfa Laval’s range of citrus separators also includes our CR range of models dedicated to juice de-ooling and cold pressed peel oil recovery.

The capacities depend on the raw material to be processed and the process technology applied.

### NFC juice

When producing NFC juice, quality is the very essence of what you are trying to achieve. With state-of-the-art inlet systems the Clara separators are ideally fit for this process, regardless if the duty is to adjust pulp level before pasteurization or as pretreatment to a de-bittering system.

### Juice concentrate

For concentrate juice a Clara separator can be used to clarify the juice prior to concentration. With proper clarification evaporator run times can be increased thanks to less fouling.

### Pulp wash & core wash

In order to maximise the solids recovery also water extractable soluble solids (wesos) need to be recovered. How this is done depends on type of extractors, finishers etc but there is always a suitable Clara separator for the duty at hand.

### Juice production

![Citrus Juice Production Diagram](citrus_diagram.png)

- **NFC juice**
- **Juice concentrate**
- **Pulp wash & core wash**

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Fully hermetic Clara separator with Alfa Laval’s unique hollow spindle inlet. Its design allows for the smoothest possible feed acceleration.
Wine

For the modern winemaker a Clara separator offers several opportunities to optimize the winemaking process, also from a quality point of view. The processes that need time and hands-on care to get the best result, such as fermentation and maturation, should have the time and attention needed. Focus on what is important and let a Clara separator clarify the must or wine with more reliable results, in less time and with less work.

With a continuously working Clara separator the use of kieselguhr filters can be reduced. This cuts costs in buying and disposal of the kieselguhr as well as the manpower needed to clean and prepare the filters.

Must clarification
With a soft press or a decanter for juice extraction there is no need to keep the must in a settling tank. Run it directly through a Clara separator and save time as well as the energy needed to cool the tank. It also requires less space.

As the solids volume discharged from a Clara separator are much less than the tank bottom from the settling tank, a smaller kieselguhr filter is needed as well.

Since must is a demanding separator application with high solids load, make sure to choose a model with high efficiency solids discharge, a feature all Clara models have.

Young wine clarification
With a Clara separator it is possible to stop the fermentation when you want, simply by running the young wine through the separator. It of course also possible to separate the wine after its been resting on the lees.

Mature wine clarification
When the wine is ready the storage tanks can be emptied rapidly over the Clara separator, with a clear wine as result.

Sparkling wine
When second fermentation is made in a pressure tank a Clara separator can be used to remove the yeast and produce a wine that is truly sparkling clear. A reliable seal is crucial to keep the CO₂ in place.

The capacities depend on the raw material to be processed and the process technology applied.

<table>
<thead>
<tr>
<th></th>
<th>Clara 20</th>
<th>Clara 60</th>
<th>Clara 200</th>
<th>Clara 400</th>
<th>Clara 600</th>
<th>Clara 750</th>
</tr>
</thead>
<tbody>
<tr>
<td>Must, m³/h</td>
<td>1</td>
<td>3</td>
<td>6</td>
<td>12</td>
<td>15</td>
<td>18</td>
</tr>
<tr>
<td>Young wine, m³/h</td>
<td>2</td>
<td>7</td>
<td>16</td>
<td>25</td>
<td>30</td>
<td>30</td>
</tr>
<tr>
<td>Mature wine, m³/h</td>
<td>3</td>
<td>12</td>
<td>14</td>
<td>20</td>
<td>20</td>
<td>30</td>
</tr>
<tr>
<td>Sparkling wine, m³/h</td>
<td>150</td>
<td>4</td>
<td>15</td>
<td>25</td>
<td>30</td>
<td>30</td>
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</table>
Tea producers use a wide variety of process set-ups for processing of their product into the varieties of different tea products available on the market. However the same basic techniques are used in making a processed tea product regardless if the customer’s end product is Ready To Drink (RTD) tea, tea powder or tea polyphenols etc.

After infusion of tea raw material in hot water, the product is fed via a prefiltration and a cooling step to the clarifier to remove fine particles from the extract. In the clarification step, all modern tea producers can benefit from the high-speed separator technology, which has also proven effective in meeting the customer’s requirements. In addition to the Clara range, Alfa Laval offers several other models to complete the range for tea customers of all application duties and capacity requirements.

**RTD tea**

When producing RTD tea, the demands on clarity of the end product are exceptionally high, especially when the end product is to be bottled in transparent PET bottles for cold serving. The Clara separators are a perfect fit to this process due to maximum separation capacity and gentle treatment of the product, resulting in a tea with premium clarity.

**Tea concentrate**

For tea concentrate a Clara separator can be used to clarify the tea prior to concentration. Moreover, with the unique inlet system, a Clara separator has a perfect fit to be used after pre-concentration for removal of precipitations that occur due to pre-concentration and cooling. A Clara separator can also be used for final polishing of the tea prior to final evaporation and drying.

**Aroma recovery**

In the aroma recovery process the flavour components of the extract are recovered. For the removal of suspended solids from the extract a Clara separator can be used.

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The capacities depend on the raw material to be processed and the process technology applied.

<table>
<thead>
<tr>
<th>Class</th>
<th>10</th>
<th>20</th>
<th>30</th>
<th>40</th>
<th>50</th>
<th>60</th>
<th>70</th>
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</thead>
<tbody>
<tr>
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<td>1</td>
<td>4</td>
<td>10</td>
<td>12</td>
<td>20</td>
<td>25</td>
<td>25</td>
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<tr>
<td>Clara 80</td>
<td>1</td>
<td>4</td>
<td>10</td>
<td>12</td>
<td>20</td>
<td>25</td>
<td>25</td>
</tr>
<tr>
<td>Clara 200</td>
<td>1</td>
<td>4</td>
<td>10</td>
<td>12</td>
<td>20</td>
<td>25</td>
<td>25</td>
</tr>
<tr>
<td>Clara 401</td>
<td>1</td>
<td>4</td>
<td>10</td>
<td>12</td>
<td>20</td>
<td>25</td>
<td>25</td>
</tr>
</tbody>
</table>
In coffee processing the Clara separators can be used whether the end customer is producing concentrate coffee, RTD coffee or coffee aromas. Alfa Laval’s range of coffee separators also includes models dedicated to processing of spent grounds, coffee deoiling and high density products.

Coffee concentrate
For coffee concentrate a Clara separator is placed in the process line after extraction, to remove insolubles from the coffee extract before going to evaporation. The separator minimizes or eliminates the need for more labour intensive filter equipment. With premium clarification evaporator operation times can be increased thanks to less clogging and fouling.

RTD coffee
In recent years, the market has seen an increase in the popularity of coffee sold in bottles and ready for consumption. In the clarification step, most modern producers use separators due to their many advantages. With a Clara separator, a coffee producer can achieve high capacities of premium quality coffee extracts with large throughputs.

Aroma recovery
In the aroma recovery process the flavour and aromas in the coffee extract are recovered. The Clara separator can be used for removal of suspended solids from the extract.

The capacities depend on the raw coffee to be processed and the process technology applied.

<table>
<thead>
<tr>
<th>Class</th>
<th>Class 50</th>
<th>Class 250</th>
<th>Class 501</th>
<th>Class 701</th>
</tr>
</thead>
<tbody>
<tr>
<td>clarifier m³/h</td>
<td>0.5</td>
<td>2</td>
<td>6</td>
<td>Not suitable</td>
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</table>

Coffee production

Keep that premium coffee flavor and aroma

Nonstop Performance

Keeping your plant up and running at peak performance is essential for the success of your business. That boils down to support. Alfa Laval sees service as a lifelong commitment to optimizing your plant’s performance. This means both being on hand whenever you need us as well as providing predictive maintenance for optimal uptime.

The Nonstop Performance service offer is designed to do just that.

Nonstop Performance
Our service offer is structured into four levels of performance agreements. They range from the One Star level covering basic needs, up to the comprehensive Four Star level where we function as your long-term performance partner. You decide which level is best.

Whatever level of service you need, we work with you to tailor a package that is right for you.

Global service – locally
With over 50 Service Centres worldwide manned with highly trained personnel you can be sure you’ll get the service you need – when you need it. Alfa Laval’s global spare parts distribution network is unmatched by any other supplier. That means you get parts faster and cheaper. And keep production rolling round the clock.

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