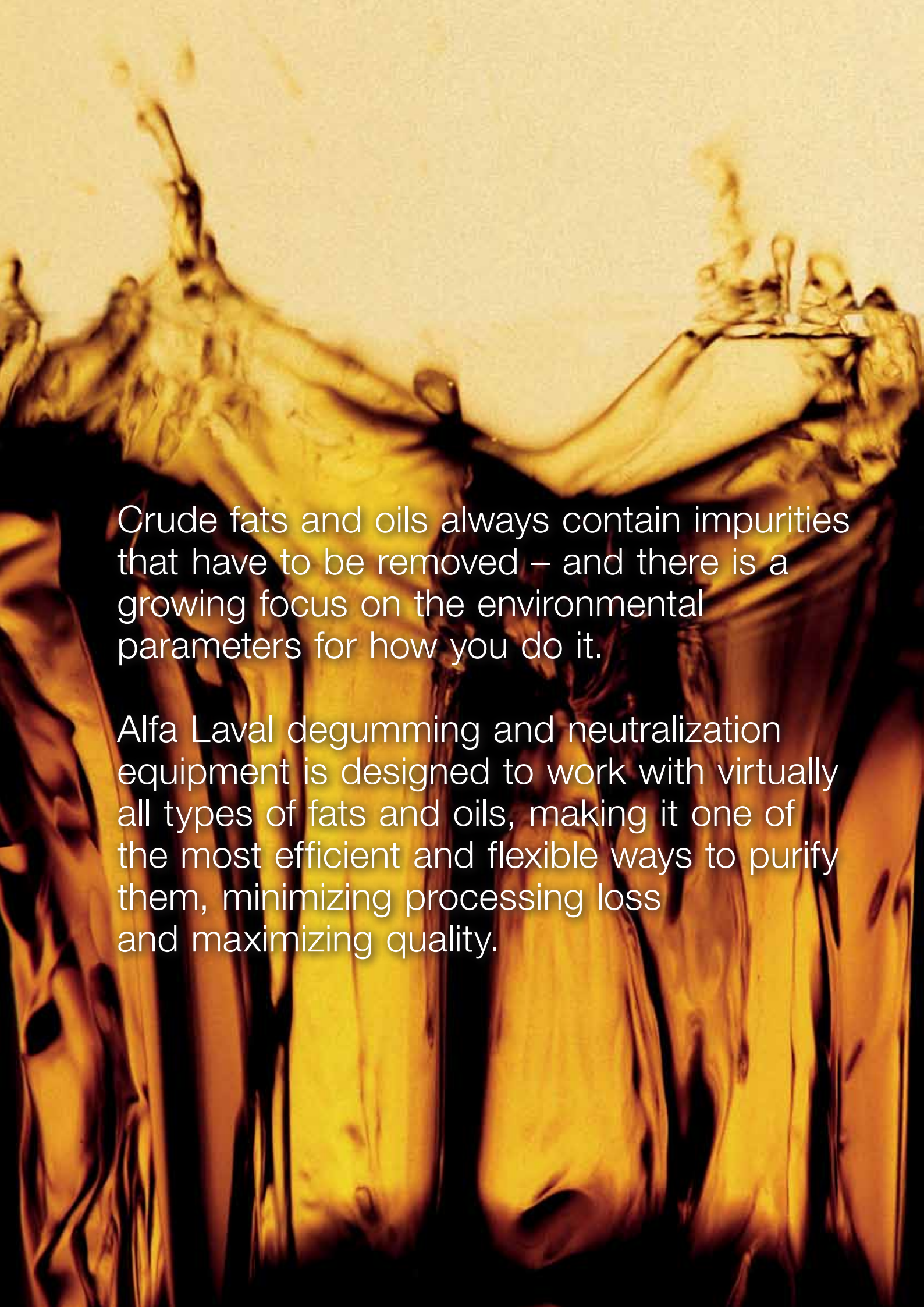




Multiple choice for fats and oils refining

Alfa Laval degumming and neutralization solutions





Crude fats and oils always contain impurities that have to be removed – and there is a growing focus on the environmental parameters for how you do it.

Alfa Laval degumming and neutralization equipment is designed to work with virtually all types of fats and oils, making it one of the most efficient and flexible ways to purify them, minimizing processing loss and maximizing quality.

Make the best start

Dealing with impurities

Most crude fats and oils contain impurities that must be removed early on so that further processing can take place.

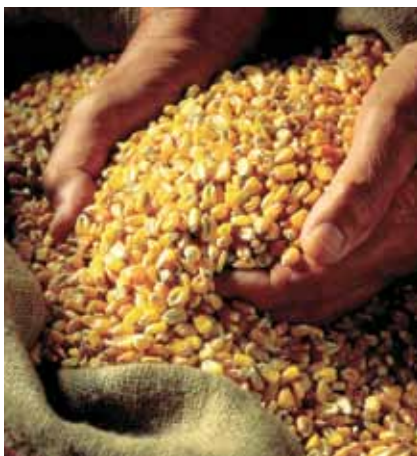
These impurities can include:

- solid particles (such as dirt)
- gums
- free fatty acids
- pigments
- substances that affect smell and taste.

The one single technology that plays the most important role in removing such impurities from both animal and vegetable fats and oils is separation.

Separation is crucial in ensuring the desired product quality, and the way it is done must comply with increasingly stringent environmental regulations throughout the world.

Your advantage here is that Alfa Laval is one of the world's leading suppliers of separation equipment of virtually all kinds, with more than a century of experience in this field.



Flexible response

Alfa Laval degumming and neutralization equipment is designed to ensure you maximum flexibility in your fats and oils processing and refining operations.

We can provide an extensive range of high-efficiency disc stack centrifuges, plate heat exchangers and mixers, specially developed for use in refining fats and oils. All such equipment is available either as stand-alone items, as modular installations or as part of a complete processing system.

The modular design of Alfa Laval fats and oils processing equipment also makes it ideal regardless of whether you are retrofitting or expanding existing installations, or setting up a new processing operation.



The raw materials

Alfa Laval equipment is widely used for processing and refining fats and oils of all kinds.

The most common raw materials are:

- soybean
- rapeseed/canola
- oil palm
- sunflower seed
- maize/corn
- cottonseed
- peanut/groundnut
- animal fats (including fish oil, tallow, etc.).

Many paths to purification

The initial stages

Once the initial stages of pre-treatment, pressing and extraction are complete, the process of refining the raw material begins. This normally consists of four stages – or five, if the feed contains waxes:

- degumming
- neutralization
- bleaching
- dewaxing/winterization (only for oils containing waxes)
- deodorization.

Physical or chemical?

Two basic types of refining are normally used to process fats and oils – physical and chemical. Each approach has its own specific advantages, and the use of one or the other depends heavily on the quality and the type of oil involved.

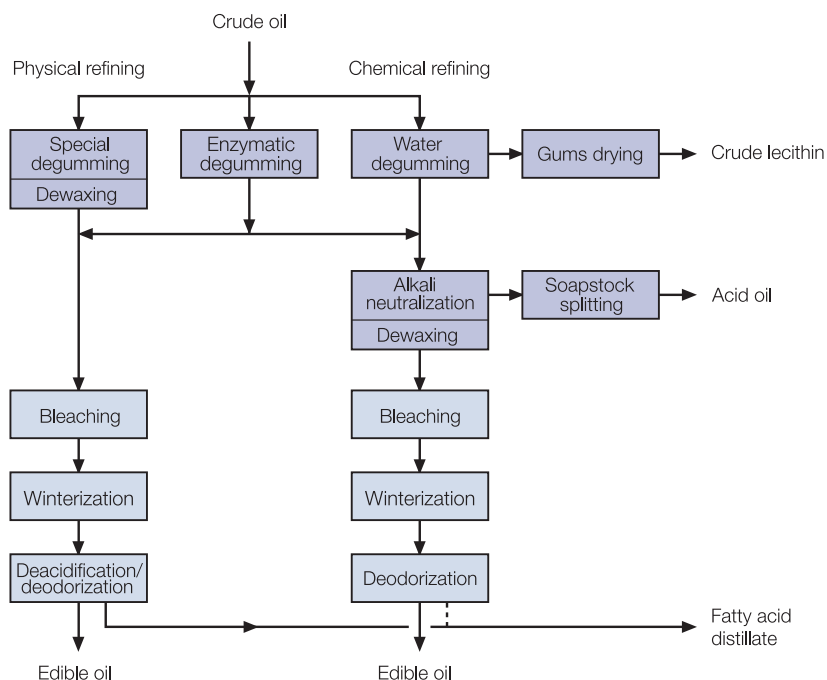
In physical refining, the free fatty acids in the oil are removed using multi-stage stripping during the deodorization process. Physical refining normally has the following general characteristics:

- can only be used with certain, limited types of crude oils – for example palm oil, but not cottonseed oil or fish oil
- depends on efficient degumming prior to refining
- is largely effluent-free, providing a better environmental profile
- avoids producing soapstock requiring subsequent treatment, and thus involves relatively low production costs.

In chemical refining, caustic soda is used to neutralize the free fatty acids in the oil, in a chemical reaction. This more traditional kind of refining normally has the following characteristics:

- can be used with a wider variety of crude oils, including soybean, sunflower seed and rapeseed oil
- results in a product that is more chemically stable and therefore has a longer shelf life
- results in the production of soapstock that needs expensive subsequent treatment and disposal, and thus involves relatively high production costs.

Based on both operating costs and environmental priorities, a gradual transition is currently taking place from chemical refining to physical refining, as and when technology permits.



Pretreatment for both edible oils and biodiesel

The processes used to refine edible fats and oils are very similar to the pretreatments that remove impurities from the feedstocks used to manufacture biodiesel.

This means such pretreatment process lines can be suitable for both edible oil feedstock and biodiesel. There are two alternative pretreatment processes:

- degumming for use when the removal of free fatty acids is not required
 - alkali neutralization for removing free fatty acids and gums.
- Dewaxing/winterization can be added if needed.

The power behind the processes

Benefit from experience

One of the key advantages of working with Alfa Laval to install, update and extend your fats and oils refining equipment is our wide-ranging practical experience.

You benefit from our vast body of accumulated know-how, with constant access to the most recent technologies and solutions implemented by Alfa Laval all over the world.

The automation advantage

The automation of key plant operating processes – either wholly or in part – means you can undertake rapid, reliable re-settings and adjustments to meet new specifications. This enables you to achieve new levels of flexibility and profitability.

Alfa Laval supplies a wide range of easy-to-operate control and monitoring systems that are also easy to integrate into existing plant control systems. We can provide you with the exact degree of automation you need to meet your particular requirements.

Engineering services

We also provide a wide range of supplementary engineering services that can help you make sure your new installation comes on line as quickly and efficiently as possible – with considerable savings. This includes ensuring full compliance with the relevant national and international

regulations for design codes, safety procedures and best engineering practice.

Alfa Laval engineering services include:

- installation design to comply with both national and international standards
- effective installation supervision
- commissioning and start-up
- operator training
- comprehensive documentation
- carefully planned spare parts packages
- quick-response operational, maintenance and service support.



Equipment that makes the difference



Disc stack centrifuges

The Alfa Laval range of disc stack centrifuges consists of units with capacities ranging from 50 t/day up to 1,500 t/day.

For example, the extensive PX range of disc stack centrifuges features semi-hermetic technology and is equipped with the unique Alfa Laval Centrizeom™ adjustable paring disc. This enables you to deal with a wide range of gums and soapstocks, and undertake rapid, variable adjustment via remote control. It also reduces energy consumption dramatically.

A solid bowl range of disc stack centrifuges is also available, featuring a hermetically sealed design. This protects the product against oxidation, which helps ensure high quality.



The hermetically sealed, bottom-fed inlet ensures gentle, non-destructive acceleration of the feed up to full bowl speed. This improves separation efficiency and minimizes power consumption.

Alfa Laval supplies disc stack centrifuges with a range of different drive systems:

- traditional gear-drive and belt-drive systems that provide well-proven reliability and efficiency
- innovative eDrive™ direct drive system. Compared with traditional solutions, this provides additional energy savings and longer service intervals.

Mixers

Adding the correct types of reagents in the right quantities is important, but correct mixing is crucial for the efficiency of the subsequent refining processes.

Alfa Laval has long-term practical experience in dealing with a wide range of mixing requirements, from the gentle “hydration” mixing in the degumming process to the high-intensity mixing required in the Alfa Laval Multi Mix process.



The MX range of mixers is designed on the basis of the MicroMerge™ concept. This features separate chambers for dispersion and mixing to ensure effective mixing and the most efficient utilization of additives. Combined with a frequency control drive, this gives you unparalleled flexibility in all mixing duties.



Plate heat exchangers

Alfa Laval plate heat exchangers are designed to make heat transfer more energy-efficient. The corrugated plates provide the largest possible surface area through which the heat can pass from one gas or liquid to another medium. This substantial heat transfer area is available within a relatively compact footprint.

The design of the channels also provides maximum turbulence, which ensures peak efficiency in transferring thermal energy from one medium to the other.

Alfa Laval plate heat exchangers have the added advantage that completely standard units are normally fully capable of handling all requirements within the fats and oils industry.



Evaporators and condensers

All the technical advantages of Alfa Laval plate heat exchangers are also available in AlfaVap and AlfaCond semi-welded units, specially designed for evaporation and condensation duties, respectively.

AlfaVap evaporators are especially efficient at high concentrations and viscosities, and can work with temperature differences of as little as 3–4°C (37–39°F). This is a big advantage in mechanical or thermal vapour recompression systems (such as wastewater evaporation systems).

AlfaCond condensers are tailored to achieve the most efficient vacuum condensation under all conditions. Their unique configuration and plate pattern make it possible to maximize heat transfer efficiency and minimize fouling as well as maintaining a low load on the vacuum system.



Scraped-surface heat exchangers

Convap evaporators and Contherm® scraped-surface heat exchangers are specially designed for concentrating and cooling particularly viscous, heat-sensitive products such as lecithin.

The unique construction of these heat exchangers, in which the product is continuously scraped off the wall, ensures constant transfer of heat and uniform distribution. This prevents any burn-on effects and helps ensure a product of consistently high quality.

Degumming – every which way

Removal is necessary

All fats and oils contain gums, or gum-like material. These consist largely of different carbohydrates, proteins and nitrogen compounds, and can be divided into hydratable and non-hydratable gums.

If these are not removed before the fat or oil is exposed to the high temperatures used in deodorization or deacidification/deodorization, quality problems can well emerge. This is because the gum can give rise to problematic emulsions that in turn result in a significant waste of oil that could otherwise provide revenue.

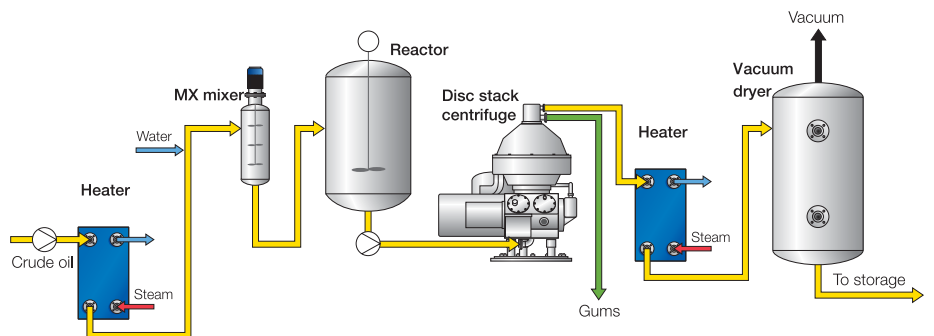
Water, chemicals or enzymes

These gums can be removed using either water degumming, other specialist degumming and special degumming processes.

Hydratable gums can be removed using water, because they absorb water and then become insoluble in oil. They are then removed using centrifugation.

Non-hydratable gums, on the other hand, are normally removed using a form of acid hydrolysis or caustic soda neutralization – phosphoric acid is the most common because it is the most cost-effective. Adding such acids also helps remove any trace metals by making them form insoluble complexes.

Water degumming



Alternatively, both hydratable and non-hydratable gums can be removed using enzymes. The enzyme that reacts specifically with phospholipids in oil is called phospholipase.

Water degumming

All seed oils contain hydratable gums, but oil derived from soybeans contains most.

Because soybean oil has a high content of hydratable gums, this is where water degumming is most commonly used. The gums removed with this process are normally dried to form lecithin, which is a valuable by-product. If preferred, the gums can instead be returned to the meal in the extraction plant.

Water degumming has an important additional advantage that also makes it attractive in many other contexts. Using this relatively simple, cheap process to remove as much gum as possible in the initial stages, less material needs to be removed later on using neutralization. This also means there is less soapstock for treatment or disposal.

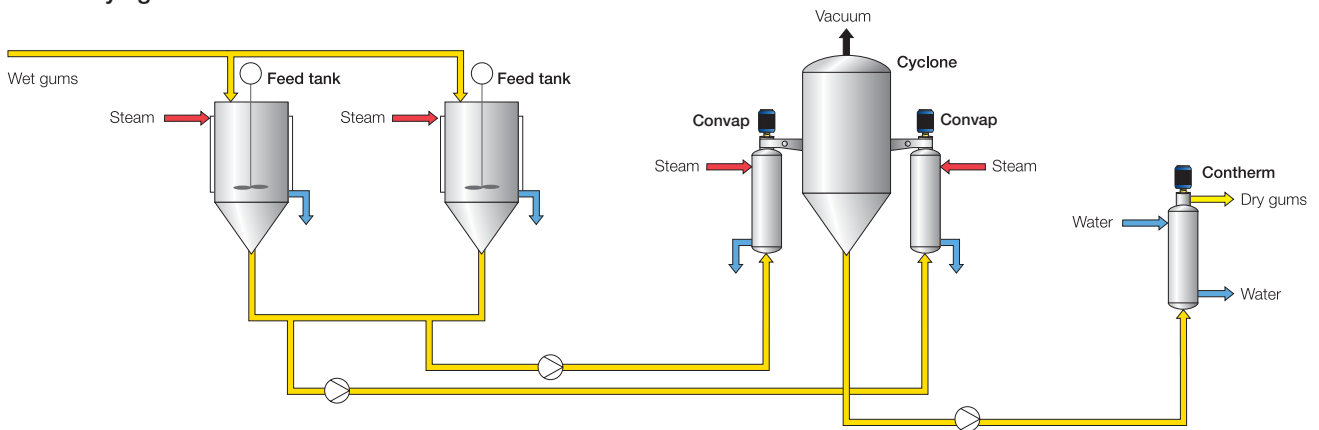
The Alfa Laval advantage

Using Alfa Laval equipment and technologies enables you to:

- ensure a lower gum content
- reduce losses of neutral oil
- increase oil yield
- cut down on operating costs.

Boosting the value of by-products

Gums drying



Lecithin – valuable by-product

When gums are removed from edible oils (such as soybean, rapeseed or sunflower seed oil) during the degumming stage, they are in the form of wet gums with a moisture content of 40–50%.

When dried, these gums become liquid lecithin, which can provide an important source of additional revenue.

Drying the gums

These wet gums are homogenized and then fed to Convap evaporator units. Here the moisture is evaporated using steam injected into the Convap jacket.

The lecithin is then separated from the vapours in a large cyclone, under vacuum, before being sent to Contherm heat exchanger(s) for cooling with water.

Quality benefits

The Convap evaporator and the Contherm cooler are both scraped-surface heat exchangers that are specially designed for concentrating and cooling viscous, heat-sensitive products such as lecithin.

As the lecithin only remains within the Convap evaporator for a very short time, it undergoes a very brief period of heat treatment, thus helping maintain product quality.

In contrast to thin-film evaporators, the heat transfer surface of a Convap unit is scraped thoroughly to prevent the product sticking and causing burn-on.

The unique construction of these Alfa Laval scraped-surface exchangers makes sure the product is uniformly distributed within the evaporator and the cooler, resulting in a product yield of consistently high quality.

Flexible operation

To reach the desired capacity, Convap and Contherm units are often installed with 2 or 4 units in parallel.

Any reductions in throughput, whether temporary or not, mean the extra units can be turned off, thereby reducing operating costs while maintaining stable product quality.

The Alfa Laval advantage

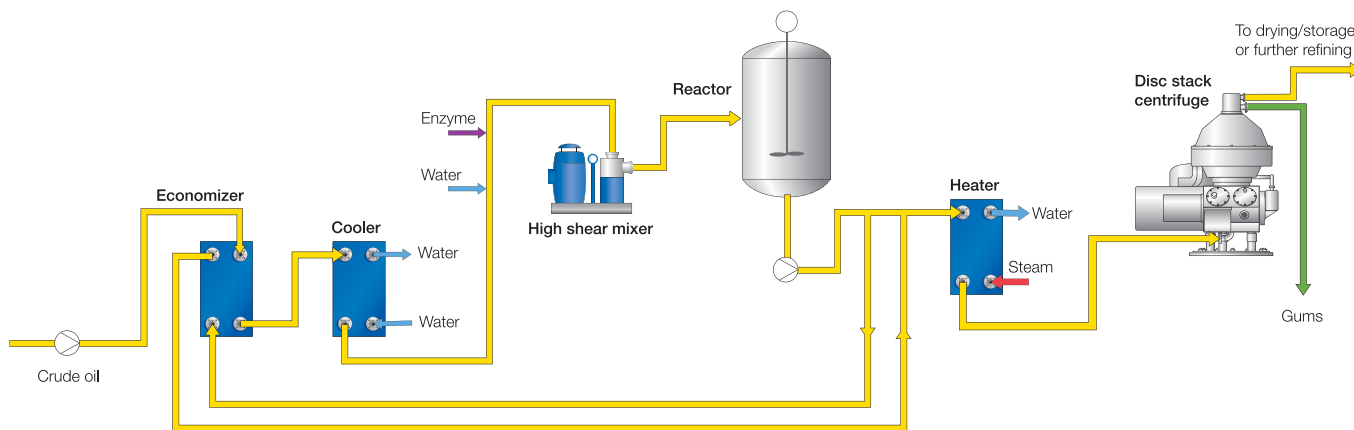
Using Alfa Laval equipment and technologies enables you to:

- ensure uniform heat distribution
- reduce thermal impact on oil products
- increase operating flexibility
- make operation and maintenance easier.



Enzymatic treatments

Enzymatic water degumming



Biological catalysts

Any gums present in the oil can also be removed by using enzymes. Enzymes are biological catalysts that react specifically with target substrates, with the added advantage that they yield few by-products.

Phospholipase is the enzyme that reacts specifically with the phospholipids in oil. It converts gums into distinct fractions that are soluble in oil and water, respectively. The phospholipases most commonly used in oil degumming are phospholipase A (PLA) and phospholipase C (PLC).

Enzymatic water degumming

Phospholipids are emulsifiers that cause losses of oil during the traditional water degumming process. Phosphatidylcholine (PC) is the most hydratable phospholipid and has the highest emulsification strength.

The PLC enzyme reacts with PC and phosphatidylethanolamine (PE), forming diacylglycerols and a water-soluble phosphate-bearing ester fragment, thus reducing the final emulsion. This results in cleaner separation during centrifugation, and also reduces losses of the neutral oil. In addition, the diacylglycerols produced by PLC degumming provide a bonus oil yield that is retained throughout the refining process.

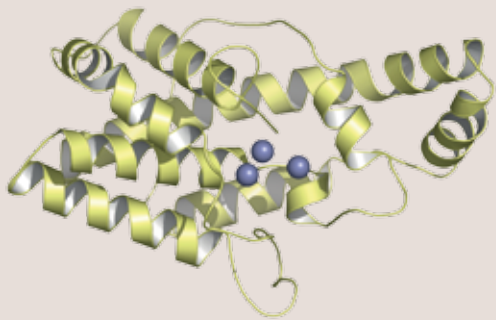
Since PE is a non-hydratable gum, the oil usually has a lower gum content after PLC degumming compared with the water degumming process. This means less material that requires removal in subsequent processes.

Keeping options open

Alfa Laval provides an optimized degumming solution that focuses on increasing the oil yield and reducing utilities consumption.

The Alfa Laval enzymatic water degumming process has the added advantage that it can always be switched back to the traditional water degumming process if changing market conditions make lecithin production a more commercially attractive option.



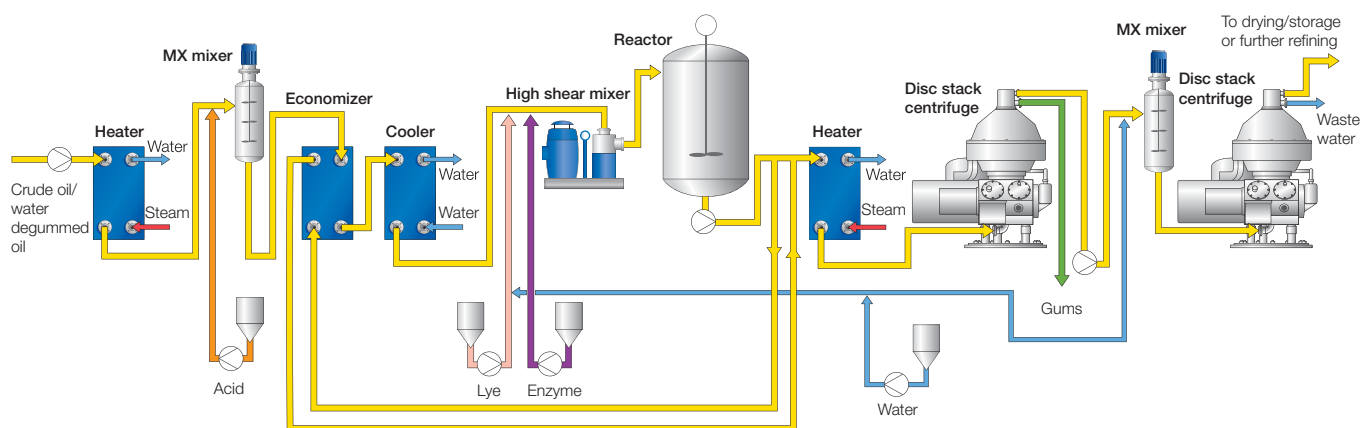


Conversion yields greater benefits

DSM's Purifine PLC enzyme (previously Verenium) is the first commercialized PLC enzyme available today. "Verenium is pleased to be working with Alfa Laval," said Janet Roemer, Executive Vice President, Verenium. "Implementing Purifine enzymatic degumming via Alfa Laval gives companies the security of dependable performance guarantees along with proven technology and know-how focused on edible oils and biofuels."

Molinos Río de la Plata, Argentina's leading soybean and sunflower seed processor, selected Alfa Laval to convert its San Lorenzo facility to the Purifine PLC degumming process. "Due to this innovative step, we've seen a significant increase in oil yields and processing margins, enabling our facility to exploit its potential even better," said Luis Palacios, Molinos' Industrial Manager.

Enzymatic deep degumming



Enzymatic deep degumming

Enzymatic deep degumming has also been developed for the physical refining of seed oils. To remove the gums to a level low enough to allow further processing, the crude oil has to be pre-treated with a small amount of acid. The pH is then adjusted with diluted lye before an appropriate enzyme is added.

For deep degumming of high-phosphorus crude oils, a PLC enzyme is used. PC and PE are converted into diacylglycerols and water soluble phosphate esters, which are separated from the oil during centrifugation, along with un-reacted gums.

If a PLA enzyme is used, the enzyme converts both hydratable and non-hydratable gums into lyso-gums and free fatty acids. The lyso-gums are more hydrophilic, which makes them easier to remove from the oil during centrifugation.

Alfa Laval provides enzymatic deep degumming solutions that employ either PLC or PLA enzymes, depending on the oil treated.

Versatile process

Depending on the oil type and oil quality, enzymatic deep degumming is not always the most effective processing option.

That is why the Alfa Laval enzymatic deep degumming process provides the versatility that enables you to carry out:

- enzymatic deep degumming
 - special degumming
 - neutralization
- using the same equipment.

The process is well suited for refining edible oil as well as pre-treating other oils as part of biodiesel production.

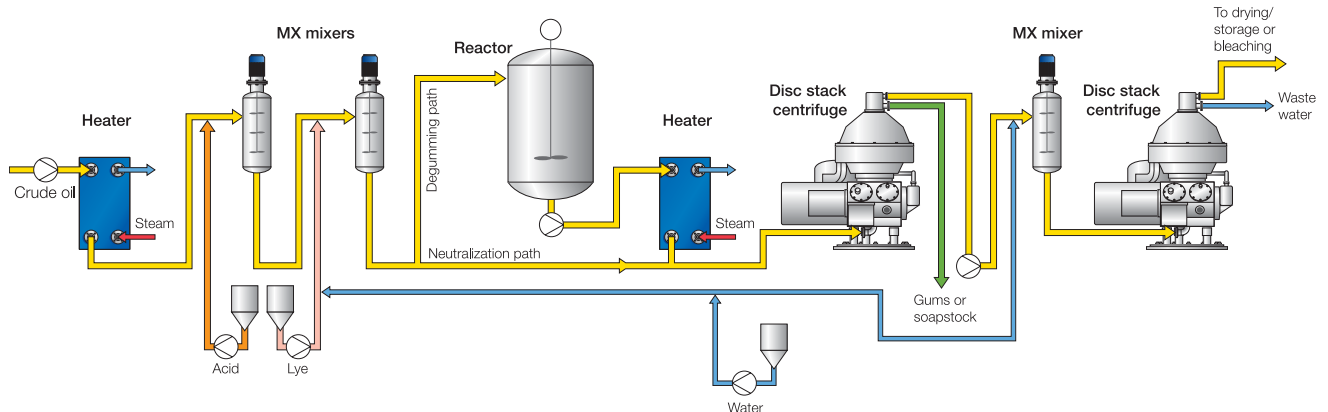
The Alfa Laval advantage

Using Alfa Laval equipment and technologies enables you to:

- produce degummed oil of better quality
- reduce losses of neutral oil
- increase oil yield
- cut down on operating costs.

Processes to suit all your needs

Combi Mix



Special degumming

Special degumming has been developed for the physical refining of seed oils. By adding a small amount of a suitable acid and diluted lye, at carefully controlled temperatures, you can separate both hydratable and non-hydratable gums from selected oils, right down to a level where these oils have a quality that is acceptable for further processing.

The gums that are removed at this stage are very sticky. This makes Alfa Laval self-cleaning disc stack centrifuges with a special Centrizeum paring disc outlet ideal for this separation task.

The Combi Mix process

In the case of low-quality seed oils, however, special degumming is not always possible. To maintain the quality of the final product, you have to give these oils the full caustic neutralization treatment.

If you want to carry out special degumming on as much oil as possible, but also know that you may well have to use caustic refining at a later stage anyway, the Alfa Laval Combi Mix process system is the ideal solution.

This two-stage process provides the flexibility you need to process good-quality seed oils that require physical refining as well as any lower-quality oils for which neutralization using caustic soda is the only viable way to remove impurities.

Everything you need

Alfa Laval can provide all the processing equipment you need to remove hydratable gums with water degumming, side by side with removing both non-hydratable and hydratable gums from seed oils using special degumming.

The Alfa Laval Combi Mix process system also provides opportunities for flexible switching back and forth between special degumming and neutralization operations, depending on the type and quality of the oil.

The Alfa Laval advantage

Using Alfa Laval equipment and technologies enables you to:

- ensure efficient mixing and separation
- implement plant control systems that increase efficiency
- pare down operating costs.



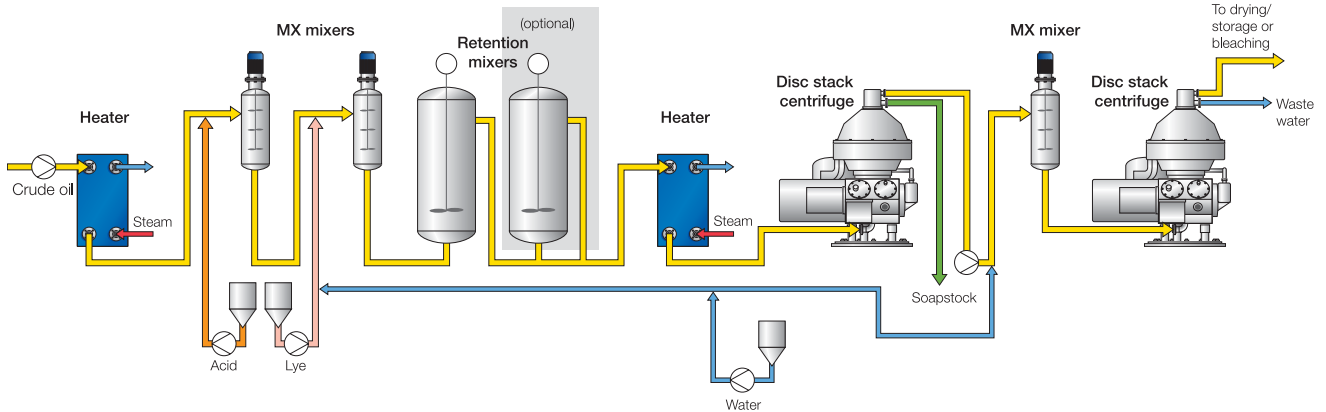
Not just a supplier

Odessa Maslozhircombinat (fats and oils plant in Odessa) is one of the leading producers of margarine, mayonnaise and bottled sunflower oil in Ukraine, with operations that include a sunflower oil refinery.

When the company ran into quality problems with its existing degumming process, it turned to Alfa Laval for assistance. The outcome was the installation of an Alfa Laval special degumming process line that helped the plant produce oil of a better quality, while also enabling it to reduce losses.

“Alfa Laval is not only a supplier to us but also a partner, guide and friend,” says Valeriy Fedorenko, technical director.

Long Mix



Neutralization using caustic soda

The impurities you most often have to deal with in conjunction with fats and oils are the free fatty acids. These normally stem from lower-quality raw materials and/or inappropriate storage. The greater the free fatty acid content, the more challenging the purification process and the stronger the caustic soda concentration needed to neutralize and remove it.

Neutralization using caustic soda is widely recognized as an effective way to purify crude oils, and has the advantage that the soapstock formed by this process also encapsulates many other impurities. These include sugars, pigments and trace metals.

Neutralization of fats and oils using caustic soda refining is normally carried out continuously using disc stack centrifuges.

Once neutralization is complete, the oil is washed. The wash water is then removed using disc stack centrifuges, and the oil is dried in a vacuum dryer.

Two different approaches

Alfa Laval gives you the option of two different basic ways of neutralizing fats and oils.

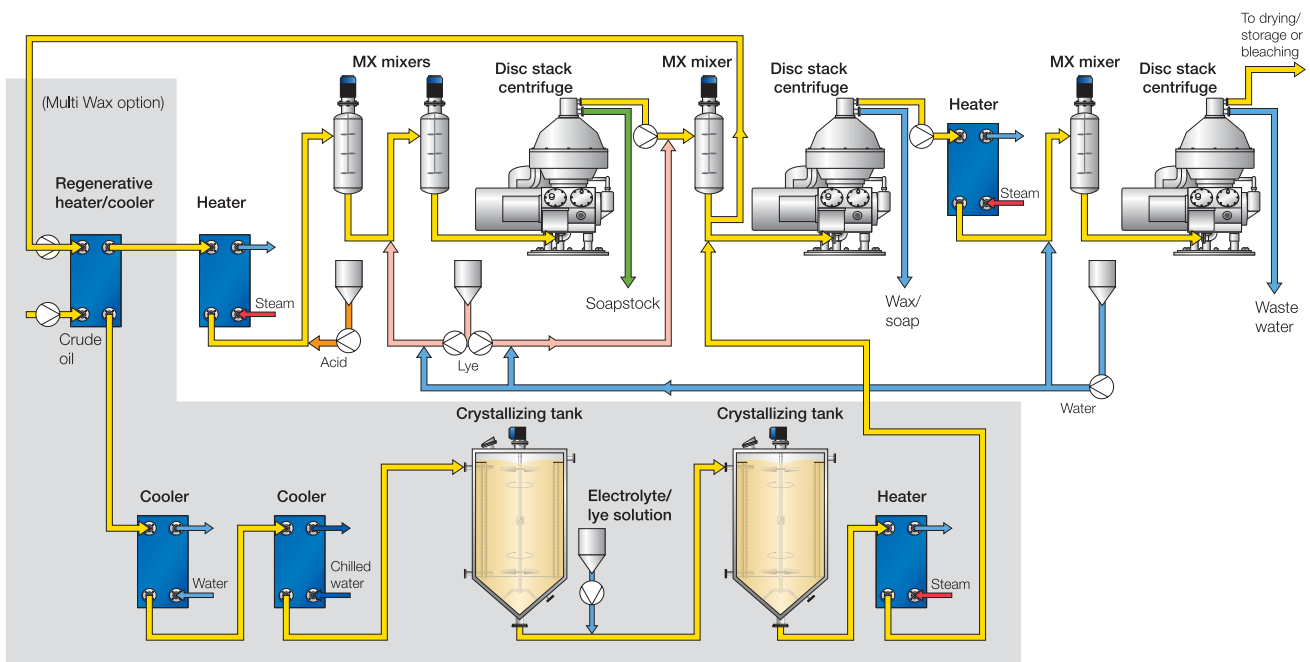
The so-called Long Mix process is best suited for refining crude soybean or rapeseed oil. It features extended contact time in special retention mixers. Disc stack centrifuges are used to separate the soapstock and wash water from the refined oil, in one single washing stage.

The other main refining method is known as the Multi Mix process. This features a short contact time, which enables you to refine virtually any oil, using either one or two washing stages. However, if you intend to process cottonseed oil or crude fats and oils of low quality, a second lye treatment – commonly known as re-refining – will be necessary.



Mixing the way you want

Multi Mix



Removing wax

Certain vegetable oils, such as sunflower seed oil and maize/corn oil, contain waxes. Such oils have to be dewaxed to make them commercially acceptable.

The only way to completely remove all traces of waxes is to use cold filtration. However, if you can remove the bulk of these waxes prior to such filtration, you will be able to reap notable benefits in terms of reduced product losses, fewer filter aids used and more rapid processing.

Combined neutralization and dewaxing/winterization

This can either be done during the initial degumming process, or carried out more completely in a subsequent combined neutralizing and dewaxing/

winterization process – such as the Alfa Laval Multi Wax process.

This uses the high-efficiency refining techniques of the Multi Mix process, combined with wax crystal separation and removal techniques that Alfa Laval originally developed for fractionating palm oil. This combination results in a well-refined oil with hardly any wax content.

The Multi Wax option provides you with an efficient way to remove waxes from oils with a high wax content, by extending the average interval between winterizing filter changes.

If your cold test requirements are relatively modest, it may then not even be necessary to undertake cold filtration at all.

Cold refining

An alternative to the Multi Wax process is cold refining, which combines dewaxing/winterization and neutralization. In this process, neutralization is carried out at low temperature, which ensures that the waxes are removed along with the soapstock.

The Alfa Laval advantage

Using Alfa Laval equipment and technologies enables you to:

- implement plant control systems that increase efficiency
- benefit from unique Alfa Laval Centrizoom paring disc technology
- extend the average interval between winterizing filter changes
- reduce production costs.

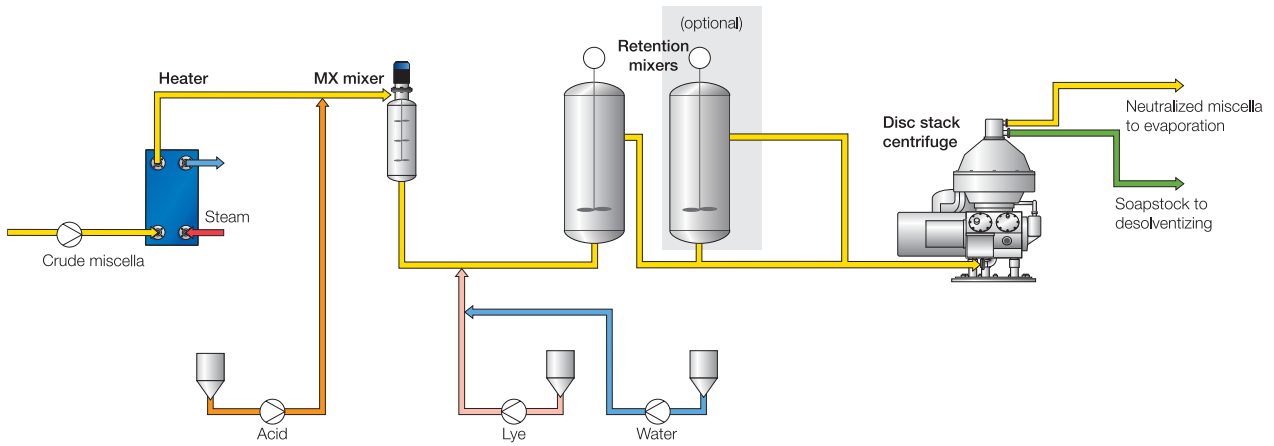


Market leader in Morocco

Aïcha is the leading producer of marmalade, olive oils and tomato paste in Morocco. The company operates a refinery that uses 100% Alfa Laval equipment, including a SoftColumn deodorizing plant, disc stack centrifuges and heat transfer equipment.

“It’s not an exaggeration to say this is the most sophisticated edible oil refinery in the country,” says David Devico, managing director. “We are at least 10 years ahead of our Moroccan competitors.”

Miscella refining



Removing gossypol

Crude cottonseed oil contains gossypol, which – amongst other things – gives the oil a dark colour and therefore has to be removed in order to make the oil commercially acceptable.

A particularly effective way of doing this is to neutralize the oil while it is in the midst of the extraction process. The oil and solvent mixture after the first evaporation, commonly called miscella, is reacted with caustic soda in specially designed retention mixers. The resulting soapstock is then removed in a special design of disc stack centrifuge.

Differences in density

The large difference between the densities of the neutralized miscella and the soapstock results in a very efficient separation in the disc stack centrifuge, which means it is not

usually necessary to wash the oil afterwards. The soapstock is normally added to the cottonseed meal in the desolventizer/toaster while the neutralized miscella goes to final evaporation, where the remaining solvent is removed.

Dealing with solvents

The presence of solvents in the oil means that the disc stack centrifuge must be purged using inert gases, and all electrical equipment must comply with the appropriate explosion-proof regulations.



The Alfa Laval advantage

Using Alfa Laval equipment and technologies enables you to:

- achieve exceptionally efficient mixing and separation
- reduce operating costs
- eliminate by-product wastes, because soapstock is added to the meal.

Towards sustainable processes

Dealing with soapstock

The neutralization process results in a by-product known as soapstock, consisting of the sodium soaps of the free fatty acids present within the oil. Soapstock always requires subsequent treatment.

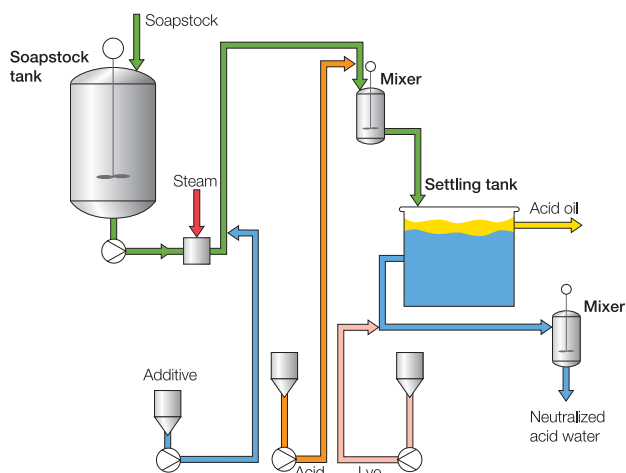
The traditional method of treating soapstock is known as splitting. The soapstock is split into fatty acids and water by acidification with strong acids – usually sulphuric acid. This is often considered an attractive solution because it is relatively simple.

However, such a soapstock splitting process takes a relatively long time, and the equipment takes up a relatively large space. Furthermore, large amounts of sulphuric acid are required, and disposal is a challenge within current regulatory frameworks.

Less space, less time

To provide customers with a better alternative, Alfa Laval has developed a continuous processing system that is much faster and takes up substantially

Soapstock splitting



less space. It also reduces sulphuric acid consumption by as much as 50% and cuts down on effluent – with resultant environmental advantages.

If you process crude oils that have a high gum content, Alfa Laval can also provide you with a special processing solution for the soapstocks that result from this.

The Alfa Laval advantage

Using Alfa Laval equipment and technologies enables you to:

- achieve fully continuous processing that gives you efficient mixing
- produce acid oil of better quality
- reduce the effluent load from your factory.





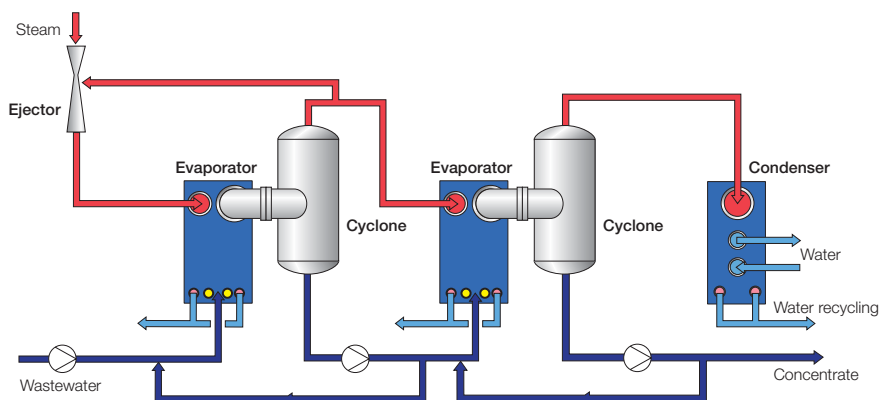
Wastewater evaporation

Within the typical edible oil processing refinery, water comes into direct contact with the oil in the course of numerous different processes.

Wash water, for example, normally results in an effluent with a water content higher than 97%, with only a small amount of organics such as neutral oil, free fatty acids, soaps and phosphatides. This provides conditions that are nearly ideal for recovery of the water component via evaporation.

Using steam to evaporate the water makes it possible to concentrate the waste product by at least a factor of 10, while at the same time recovering the condensate – which can be recycled as process water.

Two-stage wastewater evaporation



Recovering water helps eliminate several routine operating costs, including those associated with additional fresh water supplies, heating water to the desired temperature, and treating the effluent.

Effective heat transfer

Alfa Laval solutions for wastewater evaporation are based on the use of compact, thermally efficient plate heat exchangers.

Plate-type Alfa Laval evaporators and condensers are specially designed to handle large vapour volume flows under vacuum conditions. These make it possible to substantially reduce the physical size of the entire plant, on account of the exceptional heat transfer efficiency provided by this core Alfa Laval technology.



The Alfa Laval advantage

Using Alfa Laval equipment and technologies enables you to:

- recycle water once used
- reduce the effluent load
- save space.

Support that makes big differences to your bottom line

Supplying service

Alfa Laval is committed to providing you with the best possible service and help throughout the lifetime of any product or system we supply. We aim to help ensure that your process always achieves peak performance, with maximum reliability and a minimum of downtime. This makes a big difference to your bottom line.

The Alfa Laval Nonstop Performance concept is based on our worldwide network of service and spare parts distribution centres in more than fifty countries.

Prompt response

These regional centres mean we can deliver standard parts anywhere in the world within 24–48 hours, with the added advantage of lower freight costs. Alfa Laval expertise makes sure any service work is carried out with the absolute minimum of disturbance to your operations.

Full control over the entire supply chain associated with the company's equipment means we can provide you with prompt responses, excellent availability and lead times that are second to none.

The choice is yours

Alfa Laval service is based on knowledge and expertise obtained from years of experience working with customers whose focus is on processing edible fats and oils.

This means we see each unit and component within the context of your specific process, and understand the role they play within your business.

That's why we will work closely with you to tailor a service package that matches your individual requirements for optimizing performance, streamlining costs and reducing downtime. Whether it is on an "as needed" basis, via a standardized Performance Agreement, or as a customized service package, the choice is yours.

Hands-on help

Alfa Laval service experts are on hand to work with you as needed, right from removing old or defect units to installing and running in new ones.

The service packages reduce unplanned downtime, extend equipment life and ensure rapid turnarounds. The aim is to relieve you of maintenance and service burdens, so you can focus on the details of your processes and your business.



At your disposal

Alfa Laval has the worldwide resources to help you throughout the service life of your fats and oils refining set-up. In addition to helping you tend to complete installations, we provide comprehensive service support for all individual items of equipment, including Alfa Laval heat exchangers, fluid handling equipment, decanter centrifuges and disc stack centrifuges.

Our customer service consultants are on call 24/7 to provide you with technical expertise, Alfa Laval genuine spare parts and service, operator training and field service – or just general information.

We can also provide exchange assemblies and upgrade your set-up as and when your requirements change and expand.

The know-how is there – and at your disposal right when you need it.



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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