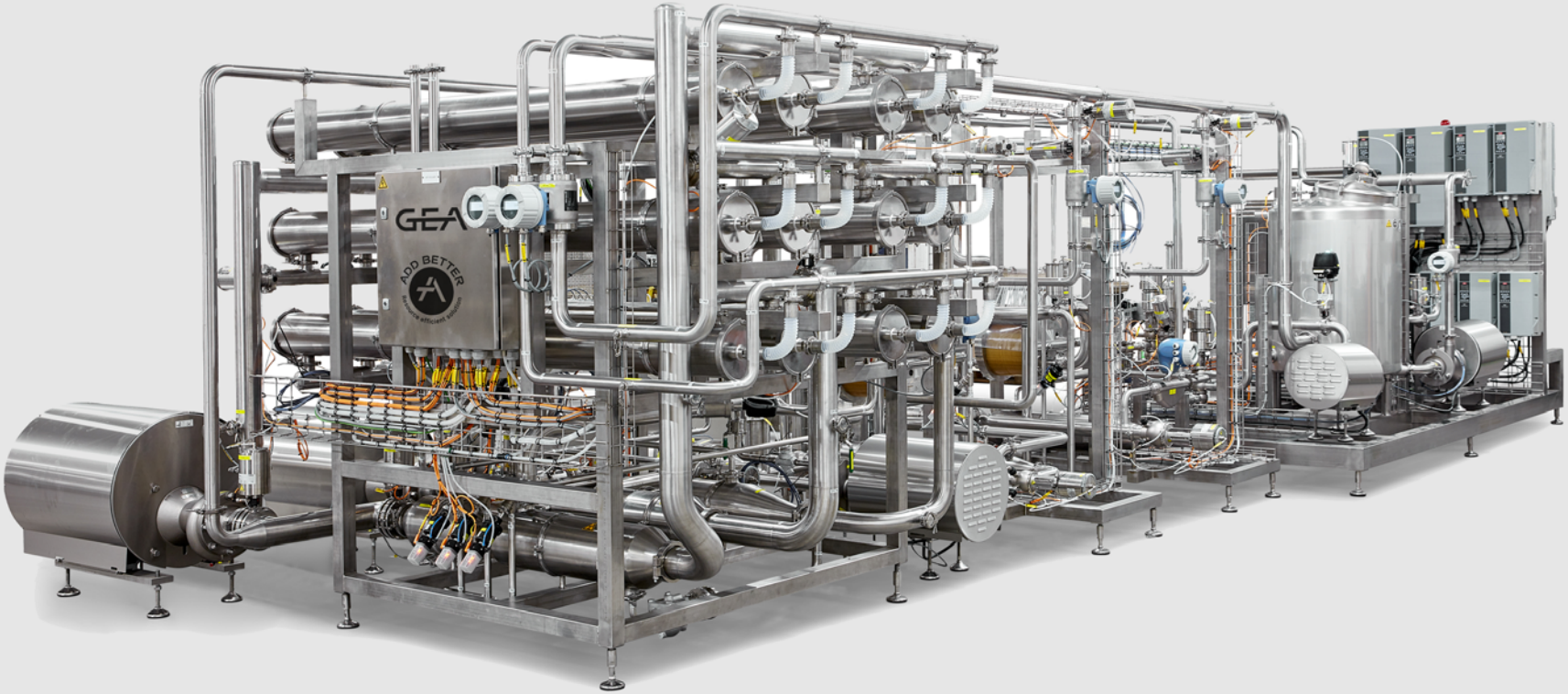

MEMBRANE FILTRATION IN THE DAIRY INDUSTRY

Working with GEA means partnering with a dedicated global team of experienced engineers and process experts. We always aim at exceeding our customers' expectations.

GEA Engineering for a better world.

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GEA.com

Solutions to support your business
GEA designs and engineers customer-orientated membrane filtration solutions for the dairy industry. GEA is a leader in filtration technology providing membrane filtration plants for microfiltration, ultrafiltration, nanofiltration and reverse osmosis, and known worldwide for its design of the most advanced cross-flow membrane filtration systems available. GEA is uniquely positioned to provide both customized membrane filtration plants as well as complete process lines, specifically tailored to the dairy industry and to your requirements.

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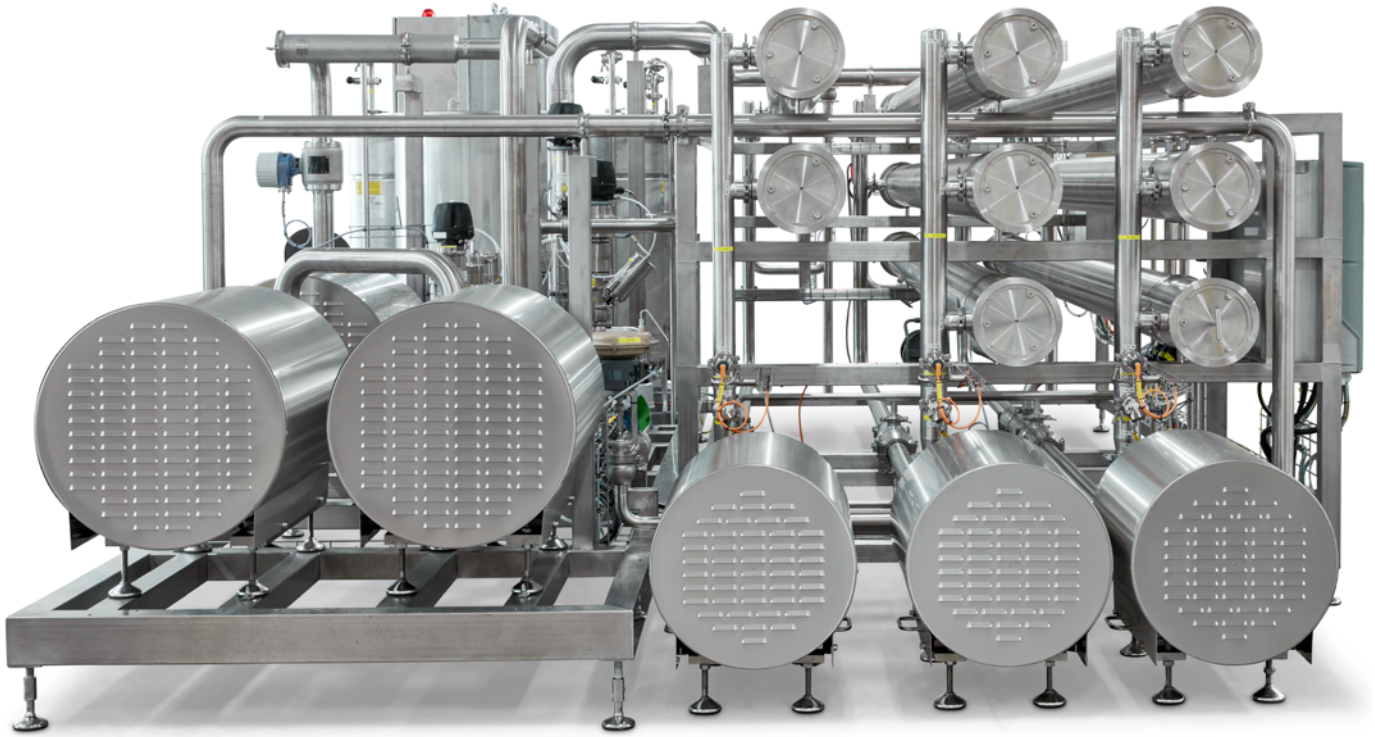
Membrane technology overview



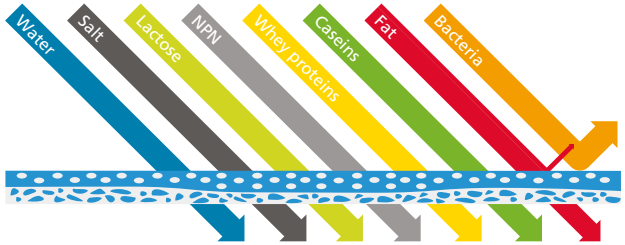
Membrane filtration is a separation process which separates a liquid into two streams by means of a semi-permeable membrane.

The two streams are referred to as retentate and permeate. By using membranes with different pore sizes, it is possible to separate specific components of milk and whey. Depending on the application in question, the specified components are either concentrated or removed/reduced.

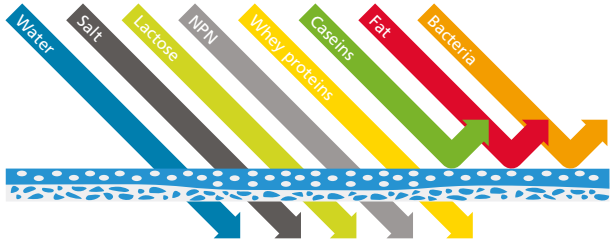
Membrane filtration can basically be divided into four main technologies

Microfiltration (MF)
Microfiltration is a low pressure-driven membrane filtration process based on a membrane with an open structure. It allows dissolved components to pass, while most non-dissolved components are rejected by the membrane. In the dairy industry, microfiltration is widely used for bacteria and spore reduction and fat removal in milk and whey, as well as for protein and casein standardization.

Microfiltration (open)

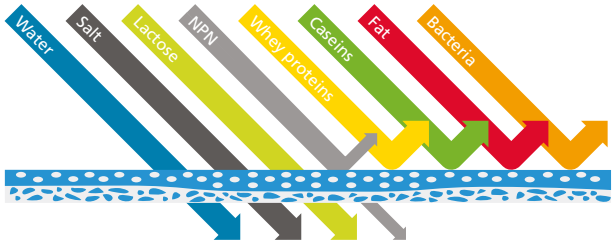


Microfiltration (tight)



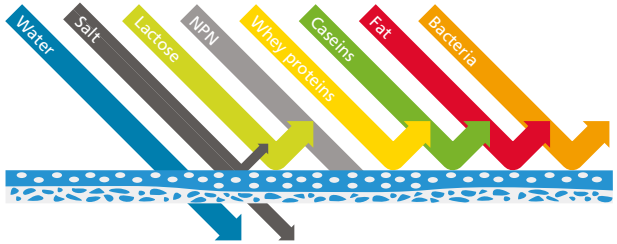
Ultrafiltration (UF)
Ultrafiltration is a medium pressure-driven membrane filtration process. Ultrafiltration is based on a membrane with a mediumopen structure allowing most dissolved components and some non-dissolved components to pass, while larger components are rejected by the membrane. In the dairy industry UF is widely used in concentration of whey protein concentration and milk protein concentration and/or standardization.

Ultrafiltration



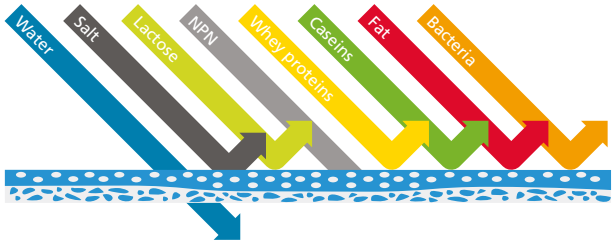
Nanofiltration (NF)
Nanofiltration is a medium to high pressure-driven membrane filtration process. Generally speaking, nanofiltration is another type of reverse osmosis where the membrane has a slightly more open structure allowing predominantly monovalent ions to pass through the membrane. Divalent ions are - to a large extent - rejected by the membrane. In the dairy industry, nanofiltration is mainly used for special applications such as partial demineralization of whey, lactose-free milk or volume reduction of whey.

Nanofiltration



Reverse osmosis (RO)
Reverse osmosis is a high pressure-driven membrane filtration process which is based on a very dense membrane. In principle, only water passes through the membrane layer. In the dairy industry, reverse osmosis is normally used for concentration or volume reduction of milk and whey, milk solids recovery and water reclamation.

Reverse osmosis



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Microfiltration (MF)

Bacteria reduction

ESL (extended shelf life) milk
Microfiltration is widely used in the production of high-quality market milk and ESL milk. Traditional heat treatment inactivates microorganisms, but also denatures whey proteins and some vitamins and impacts taste. With microfiltration, there is physical removal of bacteria, spores, dead cells and other impurities, protecting the composition of the milk and its natural taste.

Cheese milk
Improvement of cheese milk can be achieved using microfiltration. The natural content of anaerobic spores in milk - such as clostridia - which can survive normal pasteurization and cause undesired gas formation in the cheese, can be reduced by means of microfiltration. Furthermore, microfiltration can avoid or significantly reduce the addition of normal inhibitors (e.g., nitrate), thereby achieving preservative-free cheese and whey.

Milk and whey ingredients
Microfiltration can considerably improve the quality of milk and whey powder and high value dairy ingredients through a gentle reduction of bacteria and spores. As a consequence, heat treatment can be kept at an absolute minimum which - among other things - contributes to a preservation of the functional properties of the whey proteins in the powder.

Cheese brine sanitation
The chemical and microbiological quality of the cheese brine used for salting cheese products is critical to the final quality of the cheese. Since brine may contain undesirable microorganisms, it has traditionally been subjected to different types of treatment, such as heat treatment, kieselguhr filtration, UV treatment or even addition of preservatives. Microfiltration can easily replace any of these processes avoiding the downsides involved. Please see page 18 for more information about the GEA COLDSAN® concept.

Ceramic microfiltration unit

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Milk protein fractionation

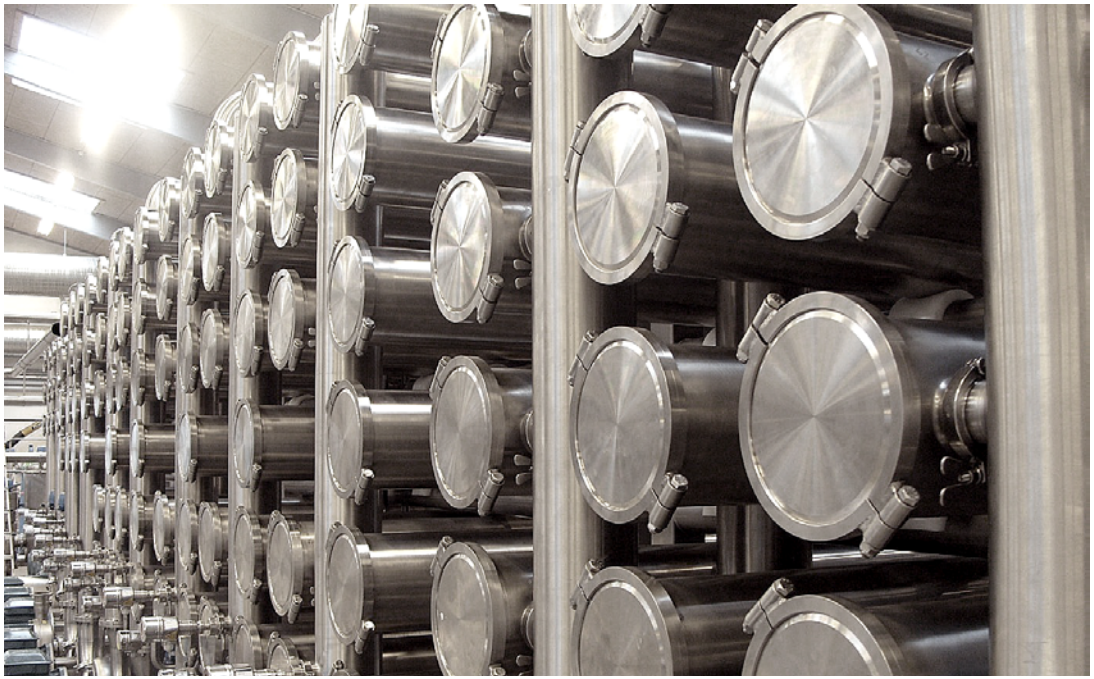
Casein standardization of cheese milk
When it comes to obtaining process control and quality, a uniform and stable production process is of the highest importance. By using microfiltration, it is possible to fractionate casein and whey proteins. Thereby it is possible to standardize the concentration of casein in the cheese milk to obtain the correct ratio between casein and fat.

Micellar casein (MCI) and native whey production
Microfiltration can fractionate milk proteins into casein and whey proteins. The fractionated casein can be used in the production of high-quality casein or caseinate or in the production of micellar casein for casein-rich milk products. The native whey fraction (permeate) contains whey proteins in their natural form which are unaffected by heat treatment, enzymes (rennet) or bacteria (starter cultures). This product is especially suited for the production of high-quality liquid stabilizer, whey protein concentrate (WPC) and whey protein isolate (WPI). the highest sensitivity at each point.

Fat removel - Protein isolate
In the production of protein isolate - e.g., milk protein isolate (MPI) or whey protein isolate (WPI) - where a protein level of more than 90% in total solids is required, the fat content constitutes a limiting factor. The residual fat is concentrated to a very high level, and in order to achieve the final protein concentration, removal of the milk fat is required. Microfiltration is the obvious solution for performing this fat removal.

Lactose reduction - Lactose-free milk
In the production of lactose-reduced and lactose-free milk, different filtration technologies play an important role in achieving a sensory experience similar to that of fresh milk. Before the milk undergoes an enzymatic process (hydrolysis), the lactose level is adjusted to achieve the right sweetness level in the final product and at the same time the composition of the other components are kept as close to the original as possible.

Ultrafiltration (UF)



Protein concentration

Cheese milk
Ultrafiltration followed by a standard cheese production process can be used for pre-concentration of cheese milk. In this way, the protein level of the cheese milk is raised and kept constant, which contributes to optimization and increased throughput of the cheese making equipment. The by-product of the ultrafiltration process (permeate) is perfectly suited for lowering the protein content of other products, such as skim milk powder.

Milk protein concentrate
Ultrafiltration is commonly used in the production of milk protein concentrate (MPC) where it can lead to an increase in the protein content of the total solids. The co-product (permeate) is perfectly suited for lowering the protein content of other products such as skim milk.

Whey protein concentrate
Whey protein concentrate (WPC) is obtained using ultrafiltration on different whey types (sweet, acid or casein) or different types of permeates from microfiltration of milk. Depending on the required protein concentration level, different ultrafiltration techniques can be applied (e.g., dilution with water also known as diafiltration). The final composition of the WPC depends on several factors, such as the original composition, the level of concentration, the membrane itself and the processing parameters. The by-product (permeate) - mainly containing lactose - is suitable for further valuable processes.

Protein standardization - Milk
Ultrafiltration can be used to standardize and increase the protein content of milk without the use of additives such as milk powder. Protein-enriched milk has additional health benefits and improved taste, and is also very suitable for the production of fermented milk products (yogurt, crème fraîche, kefir, etc.). To optimize the protein utilization in the dairy, the ultrafiltration permeate can be used for lowering the protein content of the milk.

Protein standardization - Cheese milk
As the protein content of milk varies significantly depending on the season and the breed of cow in question, it can be difficult to maintain a constant protein level. Protein standardization using ultrafiltration can eliminate these protein variations, providing a more uniform cheese product.

Ultrafiltration unit housings

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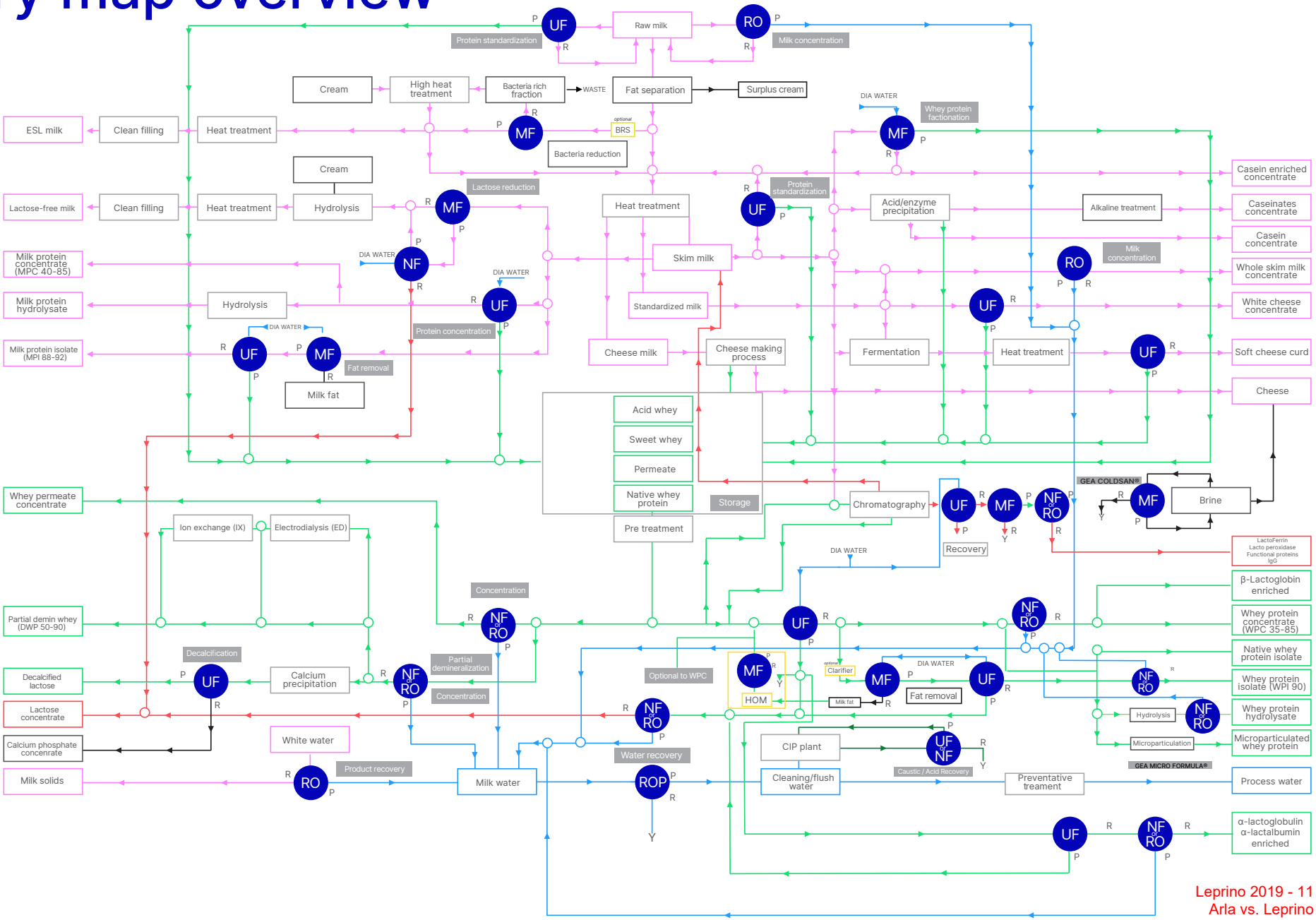
Protein standardization

High-grade lactose by decalcification (calcium removal)
In the production of lactose, ultrafiltration can be used as a separation process for the decalcification of pre-concentrated permeates (by RO or preferably NF), resulting in a very pure lactose solution. As calcium-phosphate is highly insoluble, it can be easily removed by means of UF following a thermal precipitation process. Applying this technology will, in general, result in high-quality lactose, where the reduction of calciumphosphate will lead to a higher lactose yield and lower mineral content in the final lactose product as well as improved evaporator running times. Depending on the UF separation unit's concentration degree, calcium can be refined into a natural calcium-phosphate product.

Yield increase - White cheese
Ultrafiltration is widely used in the production of white cheese where whole milk is concentrated to 34-40% total solids by means of ultrafiltration. The retentate (concentrate) from the ultrafiltration process is pasteurized and mixed with starter culture, rennet and salt and subsequently filled directly into the packaging, where the entire cheese production process then takes place. The process increases the yield by more than 20% compared to traditional production methods.

Yield increase - Fermented products
Fermented products is a term used for fresh cheese products like quark, cottage cheese, fromage frais, cream cheese and many more. By including ultrafiltration in the production of fermented cheese, it is possible to adjust the product in order to achieve the exact combination of consistency, texture and flavor. A standardization of the protein level prior to fermentation for these types of products will result in several benefits such as yield increase and a reduction in the amount of acid whey.

Dairy map overview



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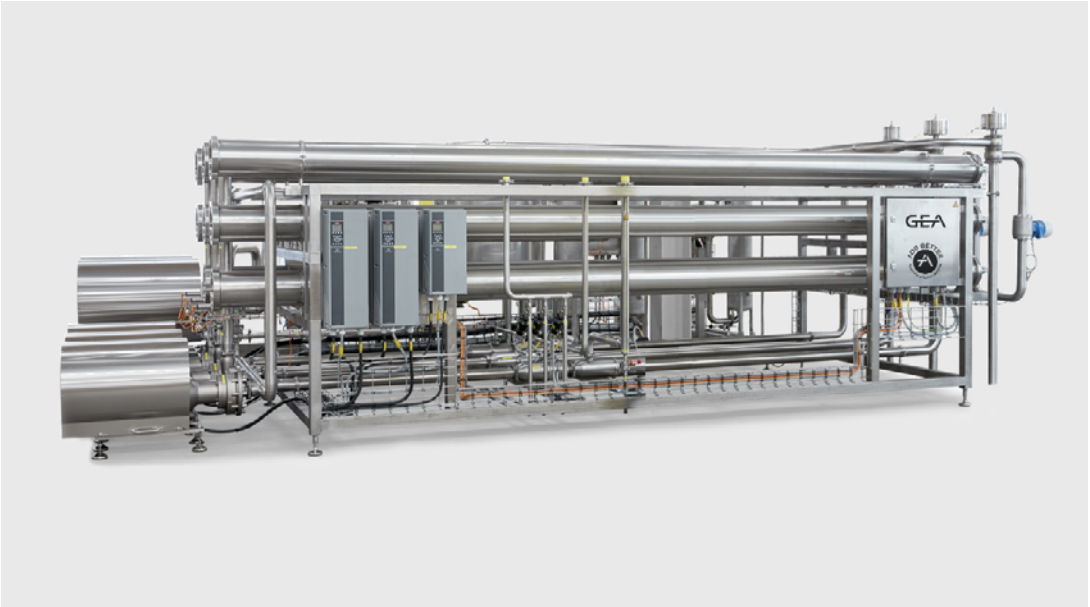
Nanofiltration (NF)

Nanofiltration is a cost-effective technology for partial demineralization of whey



Concentration

Whey and permeate
Nanofiltration of whey and permeates will reduce the mineral content – especially sodium and potassium chlorides (monovalent ions) – in these products, and since both whey and permeates in most cases need to pass through a concentration step prior to further processing, nanofiltration becomes a very attractive technology, as it combines volume reduction with partial demineralization in the same process step.

Volume reduction
In order to achieve savings on transportation costs, it is possible to apply nanofiltration for volume reduction (concentration) of whey and permeates. With nanofiltration technology higher flux rates can be achieved, making nanofiltration a financially attractive alternative compared to other technologies, e.g., reverse osmosis.

Lactose
Lactose is mainly produced from whey and permeates, and nanofiltration plays an important role in a modern lactose production facility. By applying nanofiltration, lactose can be concentrated before further processing, i.e., evaporation and crystallization. Further, nanofiltration will reduce the mineral content which, in turn, will provide a more efficient crystallization process and will consequently result in a lactose product with a higher degree of purity.

Final concentration of WPC or WPI
Nanofiltration can be used for the final concentration after ultrafiltration processing of WPC. In this way, the energy costs for spray drying can be significantly reduced and the capacity increased.

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Partial demineralization

Demineralized whey
When producing demineralized or non-hygroscopic whey powder where low lactose and mineral contents are required, nanofiltration can be applied as an economically attractive supplement to electrodialysis and ion-exchange technologies. Depending on the type of whey, the demineralization degree can reach more than 30%, making the electrodialysis and ionexchange processes more efficient.

Demineralized whey powders
Demineralized whey powders (DWP D35, D50, D70, D90) intended for use in the production of baby food, can - depending on the degree of demineralization - be manufactured by means of nanofiltration, and combinations of ultrafiltration and nanofiltration as well as nanofiltration combined with electrodialysis (ED) before evaporation and spray drying.

Lactose reduction - Lactose free milk
Nanofiltration can be used in conjunction with microfiltration for the production of high-quality lactose-free milk products. The combination of microfiltration and nanofiltration technologies produces a milk with most of the original composition and a sensory experience which is almost similar to that of fresh milk.

Acid and caustic recovery - Purification of CIP (Cleaning-In-Place) solutions
In processing plants where the acid and caustic consumption is high, nanofiltration can be applied in order to achieve purification of the CIP solutions used (e.g., NaOH and HNO3). Removal of impurities and reduction of the COD level enable a very long recycling period, where the loss of acid and caustic is reduced to a minimum. In order to maintain a constant concentration level, priming will still be required.

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Reverse osmosis (RO)

Reverse osmosis unit

Pre-concentration

Supplement to evaporation
Reverse osmosis can be applied as a supplement to evaporation. If a new evaporation line is required or an existing line is to be extended, substantial savings can be obtained by joining the two technologies. Reverse osmosis is a very efficient way of removing water from the milk or whey prior to the evaporation stage. By installing a reverse osmosis plant upstream to an existing evaporator, the capacity of the evaporator can be increased considerably.

Concentration - Total solids increase
Reverse osmosis can be used to concentrate skim milk or whole milk in order to increase the total solids content. This is also relevant for fermented products. As reverse osmosis practically removes only water, the technology can be applied as an energy efficient alternative to evaporation or the addition of milk powder, which are the most common ways of increasing the total solids content of milk.

Concentration - Volume reduction
Reverse osmosis can be applied to reduce the volume of milk or whey, e.g., for saving transportation costs. Volume reduction based on reverse osmosis is an alternative to nanofiltration.

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Permeate outlet

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Concentration

Product recovery
In order for a modern dairy production facility to be able to meet the economical and environmental demands put forward by the surrounding society, waste recovery has become increasingly important. From the first cleaning flush, “white water” is collected in a dedicated collection tank. The sweet “white water” is concentrated to the required total solids content by applying reverse osmosis, and the recovered solids can subsequently be returned to the production process, e.g., to increase the total solids in yogurt milk. The by-product of this concentration process (water) can also be utilized as described in the following section.

Water recovery - Water recovery and “polishing”
Permeates originating from reverse osmosis or nanofiltration processes as well as condensates from evaporators are practically water. With an additional reverse osmosis treatment normally referred to as “polishing,” this water can be purified and re-used for cleaning purposes. With further heat treatment or UV light treatment, it is even possible to use the water as process water.

Water recovery - Effluent control
Some production facilities, such as large whey processing sites, have an excess amount of water which must be discharged. As water disposal is normally connected with emission taxes subjecting the water to a reverse osmosis process can lower the COD level and reduce these taxes.

Processing units for each application

GEA provides membrane filtration units specifically tailored to meet your needs and requirements.

With our extensive theoretical and practical experience within membrane filtration along with our well-defined standard modules, we are able to design membrane filtration units for all membrane filtration applications within the dairy industry.

Our breadth of membrane filtration equipment means that we can be with you from initial testing on pilot units to small standardized units and, ultimately, custom-designed full-scale production, while meeting local regulations. Our unique plant sizing software works to identify the optimal plant configuration.

The “Plug-and-Produce” unit philosophy provides our customers with several benefits such as space-saving designs, seamless integration and short installation time. We are able to deliver membrane filtration solutions with low energy consumption and noise emission and reduced product and detergent waste.

GEA membrane filtration units have a compact, hygienic design for easy cleaning. They are designed to process your products safely. Our cross-flow membrane filtration pilot units are available to test any application, including clarification, bacteria and spore removal, fractionation, concentration and/or separation including diafiltration, in the food and beverage, dairy, chemical, biotechnology and fermentation industries, on-site or at our test centers.

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Membrane types

Membranes are selected to meet the specific requirements of the application in question. The range of membranes can be split into two main groups - polymeric (organic) and ceramic (inorganic).

Polymeric
Polymeric membranes include a range of different membrane types such as spiral wound, hollow fiber and flat sheet (plate-and frame) membranes - all of which are made from organic materials. Polymeric spiral wound membranes provide a high membrane area per element, leading to a reduced footprint and cost-efficient plant designs.

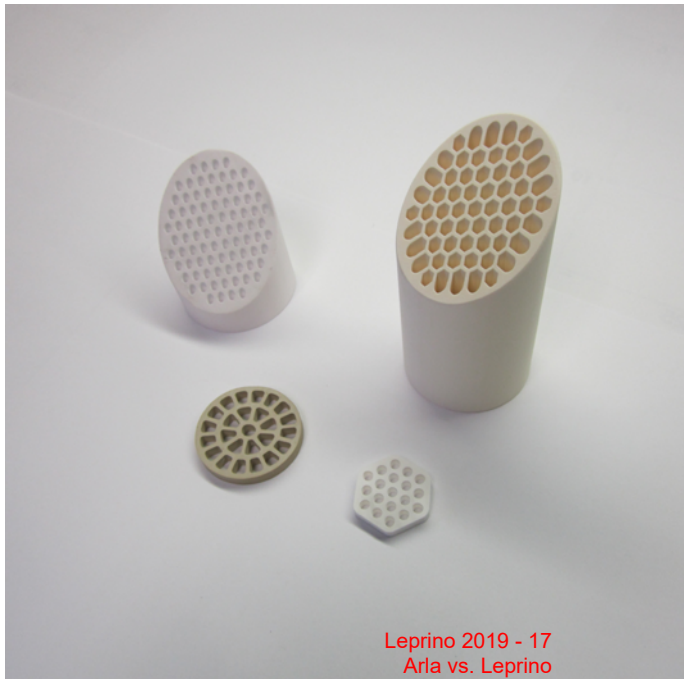
Cleaning of these types of membranes requires specially formulated cleaning detergents to extend their lifetime. As polymeric membranes come in a wide range of pore sizes, they can be used for a large number of dairy filtration applications from RO to MF.

Ceramic
Ceramic membranes include a number of membranes which are all made from inorganic materials. As ceramic membranes are very resistant to temperature and chemicals, they are easy to clean. The lifetime of ceramic membranes is longer than that of polymeric membranes. Compared to polymeric membranes, ceramic membranes have a much higher flux, but to due their tubular design, they have less membrane area per element.

Ceramic membranes come in a limited range of pore sizes, and are normally used for microfiltration and in some cases ultrafiltration processes.

Polymeric membranes

Cerameric membranes



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GEA COLDSAN®

Minimizing the loss of salt and water and reducing the microbiological content by more than 99.5%, while maintaining the chemical balance in brine.

Securing first-class cheese brine

Dumping of cheese brine is normally very costly, and in some countries it is prohibited due to the high salt content of the brine. Purification and recycling of the brine is therefore preferable and can provide several advantages, such as reduced operating costs and improved cheese quality. Cheese brine, if not treated properly, can contain large amounts of undesireable microorganisms, such as gas-producing lactobacilli, pigment-producing micrococcus, pathogenic bacteria, yeast and mold which all affect the final cheese quality.

Unlike traditional brine treatment methods such as heat treatment, kieselguhr filtration or the addition of preservatives, microfiltration physically removes the undesired microorganisms, dead cells and physical contaminants from the brine without causing any significant change to its chemical composition. GEA has developed the brine sanitation unit COLDSAN®, which is simple to operate and easy to install in connection with existing brine systems.

The COLDSAN® unit is fitted with polymeric microfiltration membrane elements which are widely recognized as the most effective method of cheese brine sanitation. GEA COLDSAN® works to help produce high-quality cheese and preserves flavor and textures.

Brine cages in a cheese brine pool

Feta cheese - white cheese

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GEA EasyCon filtration unit

A compact membrane filtration system

The compact and standardized “plug and play” EasyCon is available for small-to-medium feed rates and can concentrate a feedstock to provide a solution with a total solids (TS) content of up to 25%.

Cost-effective EasyCon
Designed to concentrate solids by nanofiltration (NF) or reverse osmosis (RO) membrane filtration technology, the EasyCon is the right choice for concentrating solids when cost is key and improved return on investment (ROI) is of great importance. GEA cross-flow filtration technology with nanofiltration or reverse osmosis spiral-wound membranes can be used to concentrate the solids content of various feedstocks. For concentration applications, reverse osmosis membranes should be used. If a partial demineralization is required, nanofiltration membranes are recommended. Operating at temperatures of approximately 10–15 °C, the filtration unit eliminates the risk of thermally stressing the product.

EasyCon - easy to install and operate
Frame-mounted and ready for installation, the EasyCon unit includes filtration modules, pumps, instruments, a clean-in-place(CIP) dosing unit and control technology for automatic and easy operation.

EasyCon at-a-glance
- Plug & play design for fast installation and commissioning
- Compact system design for small footprint
- No assembly on site as all components are frame mounted
- Automatic control and visualization with touchscreen for easy operation
- Processing of multiple products possible
- Spiral-wound nanofiltration or reverse osmosis membranes
- Standardized modular design to reduce investment costs and improve the return on investment

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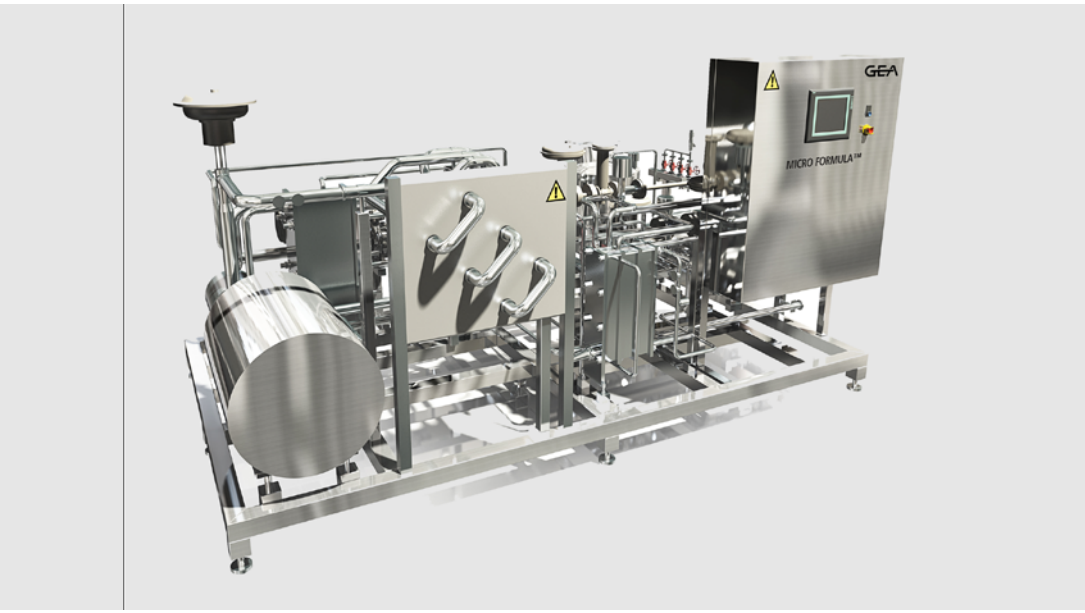
GEA MICRO FORMULA®

A highly efficient, reproducible microparticulation technology that can help you to increase your yield of high-quality whey protein concentrates, while reducing CAPEX, OPEX, service and maintenance costs



GEA MICRO FORMULA® for precisely defined whey protein particles

The global dairy industry uses microparticulation technology to further process whey protein concentrates (WPCs) that are generated using ultrafiltration technology into microparticulated liquid and powder WPCs that display precisely defined particle sizes and functional properties.

Microparticulation combines heat to denature the protein, with a controlled mechanical treatment that results in the formation of a very exact protein particle size.

Microparticulated whey proteins can be used as natural liquid stabilizers, and can also make ideal substitutes for proteins and fats in a variety of diary foods, including cheeses, ice creams, yogurt, sauces and dressings, and mayonnaise.

The GEA MICRO FORMULA® technology offers unique features, such as our proprietary temperature, time, shear (TTS) unit, which utilizes only standard flow components, set up in a special configuration. Available in different sizes to match your capacity requirements, the units enable complete control of protein denaturation, particle size and distribution and, most importantly, functionality of the resulting microparticulated WPCs.

The MICRO FORMULA® unit is easy to operate, and is relatively low cost to maintain. The simplified process, combined with long run times between clean-in-place (CIP) cycles helps to reduce both operating costs, and the use of water and chemicals for cleaning.

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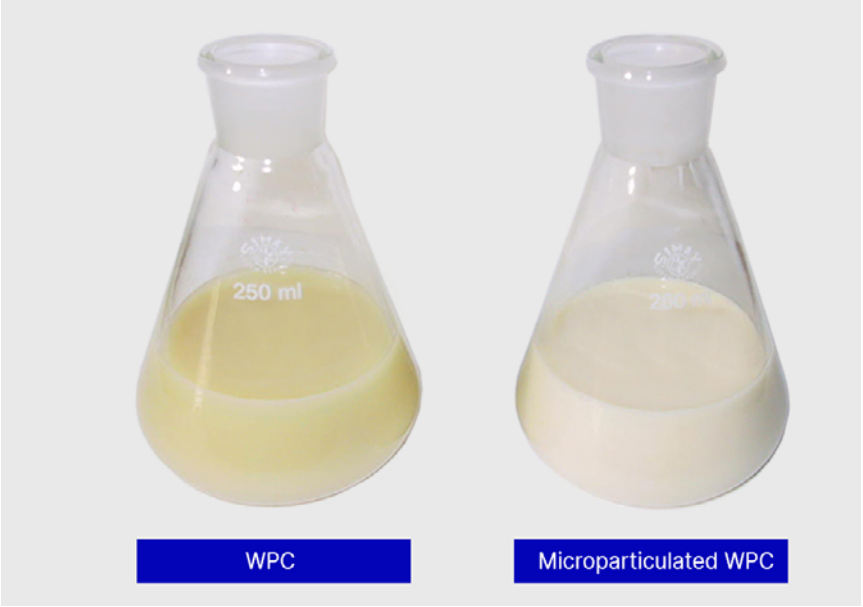
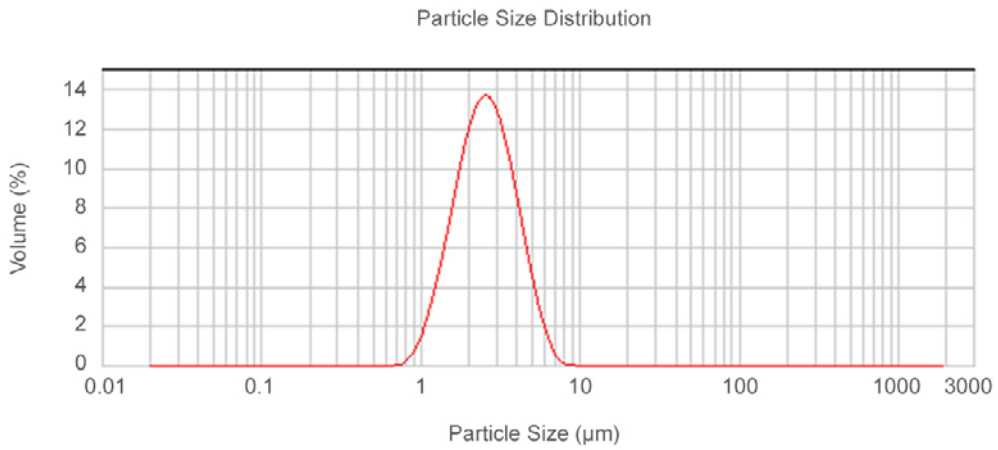
All of our GEA pilot units can be shipped globally, and we can even send our GEA experts to work with you, if you'd like that extra support.

Our GEA MICRO FORMULA® system offers a technology for formulating microparticulated whey protein concentrates (WPC) that display excellent functional characteristics, from highly reproducible emulsification and improved water binding, to optimized stabilizing properties, high interactivity with dairy and food matrixes, and a highly reproducible particle size of 1-10 µm. Using GEA MICRO FORMULA® will help you to generate products with high viscosity - similar to that of cream or drinking yogurts - great mouthfeel, and desired near-white color.

Microparticulation is ideal for generating whey products that can replace fat or milk protein in a wide variety of dairy and food applications. These whey proteins aren't just inactive ingredients, their functional properties can improve the properties and yield of the final food product, and result in a great taste and texture.





Our technology, for making your whey.

For example, microparticulated WPC is commonly used to replace fats, generating lower-fat, great tasting products. These include:

- Most cheese types (also yield increase)
- Ice cream
- Yoghurt and milk desserts
- Dressing and sauces
- Mayonnaise and fat emulsions
- Other fat containing food products

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Membrane replacement and process performance service

A unique and individual membrane replacement service to optimize the total cost ownership (TCO) of your plant.

Membrane replacement service
To help avoid the risk of a breakdown, GEA focuses on preventive maintenance and regular service to keep your plant and equipment running, saving you from potentially expensive downtime.

GEA supports and supplies replacement membranes and parts for all known membrane filtration technologies including microfiltration, ultrafiltration, nanofiltration and reverse osmosis.

Organic membranes have a limited life span and typically need replacement once or twice per year (depending on the processing rates and conditions) to maintain consistent performance of the unit. The most significant factor affecting the performance of membrane processing systems is membrane fouling. It is the result of insoluble materials coating the membrane surface and causing a reduction in product quality.

Membrane formula
GEA stocks replacement membranes and works with each servicetechnician to maintain a service replacement history and predictwhen new membranes will be needed. With GEA, you can counton dedicated service specialists to make service optimizationvisits on request, carry out a follow-up of the installation and itsparameters, or provide staff training.

Membrane and process performance service
Where membrane filtration is a part of a processing plant, its role is key to the efficiency of the plant. It is therefore essential to maintain membranes diligently to maximize profits and keep them in top operating condition.

GEA offers an innovative membrane lifetime extension program Perform'Up. Perform'Up is a performance program with regular process, hygiene and quality checks. By analyzing the specific membrane fouling compensation, we are able to recommend a customized clean-in-place (CIP) program to improve overall production performance and reduce TCO.

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Become future-proof with the Add Better ecolabel.

Get an idea of what the sustainability pipeline of the near future looks like. The Add Better label is our overall holistic approach to signal greener times ahead in specific cases.

ADD BETTER
Resource efficient solution

Discover more at gea.com

Our Green Label process step by step
In order to systematically generate awareness for our "Better Product" branding, GEA rolled out the Add Better ecolabel for a variety of solutions. The cornerstones for qualification are:

1. Recognized proof of performance
GEA's Add Better label process meets ISO requirements for self-declared environmental claims, ensuring sustainable solutions that are more resource-efficient than their predecessors.

2. Meaningful documentation protocol
GEA defines the technical, geographical, and temporal scope of the solution and its assessment. On this basis, relevant data about the technology and its predecessor is collected and verified.

3. Independent verification
A high level of certainty and authenticity is achieved through validation by TÜV, a global leader in independent testing, inspection, and certification services.

Add Better helps to reduce greenhouse gas emissions
Every day, our purpose "Engineering for a better world" drives us to develop solutions that use less energy, water, and raw materials and produce less waste. The Add Better label identifies the most significant advances we are making in this area.

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YOUR SUSTAINABILITY DEVELOPMENT PLAN FOR YOUR MEMBRANE FILTRATION EQUIPMENT.

ADD BETTER
Resource efficient solution

Smart Filtration CIP

Smart Filtration CIP is a software-based patent pending method that regulates cleaning efficiency. It causes the pumps to operate in a pulsating manner as opposed to running continuously. It works at the same concentration, time, and temperature as a conventional CIP but with lower electrical power consumption. The benefits are:

- Up to 46% less electrical energy consumed;
- Less cooling water needed to maintain a steady temperature;
- Suitable for use in all applications in all industries, such as: dairy, beverage and food (new food);
- Optimizes energy consumption without compromising the quality of the CIP.

Smart Filtration Flush

Smart Filtration Flush is a software-based patent pending solution combined with modern sensor technology. This intelligent method of flushing filtration equipment using inline measurements of product properties determines when the individual process streams have been flushed sufficiently. The system:

- Reduces water consumption by up to 50%;
- Minimizes total CIP time due to a shorter, more efficient flush;
- Creates less wastewater to be discharged into the treatment plant;
- Reduces the overall water installation costs of the membrane filtration plant.

InsightPartner Filtration

Get full access to production data anywhere and anytime in your membrane unit. InsightPartner Filtration is a digital service product implementing IIoT in membrane filtration to leverage the power of cloud connectivity. It offers data visualization enabling fast and accurate decisions. The system:

- Monitors your membrane filtration systems status in real wtime;
- Displays your data and system KPIs on a digital dashboard;
- Provides an overview list of production processes;
- Follows historical trends to maximize productivity.

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With the help of better products in many use cases.

Our membrane technology offers cost-effective processing solutions, supporting dairies in reaching their sustainability goals in a cost-effective way. Membrane filtration technology offers several options for achieving more sustainable processes in the dairy industry, which imply reductions in production costs.

Pure Innovation, Saving Every Drop of Water with GEA Membrane Filtration

Traditional methods of water treatment often involve substantial wastage due to the need for excessive flushing, backwashing, and chemical treatments. GEA Membrane Filtration disrupts this cycle by optimizing each stage of the process.

Unleash Efficiency, Preserve Every Drop with GEA

With GEA Automation as your ally, the vision of conserving every precious drop of water becomes an achievable reality. Together, let's pave the way for a greener, more efficient tomorrow.

Better products from our business unit, reduces your carbon footprint and your energy and water consumption.

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State-of-the-art automation

GEA is dedicated to continuously improve the automation system of GEA processing units, making your process more cost-efficient. The system provides many features, which can optimize your individual production process.

GEA Codex®
All Membrane Filtration Units are equipped with a standard software based on GEA Codex® Technology.

The software enables:
- Intuitive and user-friendly HMI
- High productivity and consistency
- Efficient Service

Connectivity and integration
For other integration, the unit comes with predefined signal exchange in- and outputs which allows the unit to be lightly controlled or control other surrounding equipment. A profinet connection can be used for full feedback on all the equipment and instruments for a Scada implementation or other similar systems. All Units are delivered with modem for remote connection for fast and efficient service.

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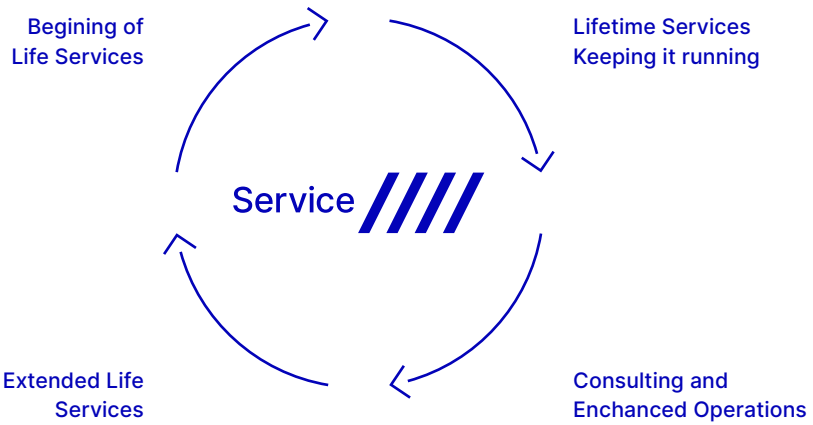
GEA SERVICE - FOR YOUR CONTINUED SUCCESS.

Working with GEA Service means partnering with a dedicated team of service experts.



Our focus is to build, maintain, and improve customer performance throughout the entire life cycle of the plant and its equipment.

Begining of Life Services
Getting you started with seamless support for instant productivity and performance.

Lifetime Services
Keeping it running with the cost-efficient way of ensuring safety and reliability.

Extended Life Services
Constantly improving by sharing our knowledge to safeguard your investment

Consulting & Enhanced Operations
Together with you by enduring commitment to you and your business.

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Engineering for a better world.

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