

Dairy processing

From fresh milk to UHT milk, pasteurized milk, yogurt, butter, and other products





Your partner for dairy processing

MachinePoint Food Technologies supplies integral processing and packaging solutions for the dairy industry, from milk reception and transformation processes to filling and packaging solutions.

With over 25 years' experience in building, assembling, commissioning and executing turnkey projects for dairy manufacturers, we have a reputation for the way in which we customize the approach and quality of our installations. We can supply our customers from a single piece of equipment to a complete turnkey plant project. We can take projects from a new "greenfield" plant, to the modification of an existing installation, including an extension, conversion or modernization of an existing process plant.

MachinePoint Food Technologies covers the entire process and manages each stage, including product design, process definition, line layout, machinery selection, installation, commissioning and production accompaniment during the start-up period.

MachinePoint Food Technologies has the know-how and technical expertise for the design, integration and manufacture of production plants to transform fresh milk into a wide variety of dairy products:

- Pasteurized, sterilized and UHT milk, with different fat content
- Cream: raw, pasteurized and prepared creams
- Butter
- Cultured milk products: yogurt, kefir, others
- Others such as casein, whey

Our Processing technologies include:

- Fresh milk reception units & Tank farm equipment
- Aseptic technologies, UHT plants, Pasteurization and sterilization technologies
- Product recovery systems
- Product deaeration technology
- Separators
- Homogenization units

- Mixing, weighing, dosification and control technology
- Powder dissolution units
- Tanks and storage tanks
- Evaporators (falling film, forced recirculation, other.)
- Filtration systems
- Filling and packaging lines
- CIP & SIP systems

International standards for design and quality

Our equipment designs and construction follow the best manufacturing practices and hygienic design principles, achieving strict standards, following EU and international regulations for equipment design and fabrication, including CE-approval and 3-A SSI Certification.

Also our equipment and process design comply with production and energy efficient requirements.

Great quality / price relationship

We have a unique business model where our clients can get a complete production solution with a great price / quality relationship, thanks to our capacity to integrate used machinery into our projects. Supported by our sister company MachinePoint Used Machinery, we can include in our projects reliable and affordable top brand and high quality second hand machinery.

Leadership in innovation

We are aware that keeping ahead with technological innovations is key to being competitive; in order to satisfy our customers' requirements MachinePoint Food Technologies R&D department is always looking for new technologies, developing processes and equipment alternatives.

Our range of brand new equipment includes pasteurizers, sterilizers and UHT units, milk reception, milk standardization, degasser, milk heater and cooling systems, product recovery system to reduce product losses during production, aseptic product storage systems, and more.



Defining the right manufacturing process

“A correct definition of the manufacturing process will lead to a competitive advantage. Choose well not only the equipment but the process too.”

Milk processing and dairy products

MachinePoint Food Technologies supplies equipment and process engineering for the processing of fresh milk into various dairy processed products.

During the last decades, milk has been considered as one of the most complete food and alimentary complement in many countries worldwide, being part of the diet of millions of people.

At MachinePoint Food Technologies, we work to bring to our customers' process design and production alternatives to get a ready to use, affordable and safe for distribution end product.

Milk

Once fresh milk has been standardized to the right fat content, it is important to further process that milk to guaranty the quality and extend its shelf life. Depending on the kind of final product wanted, two main different thermal treatments and processes can be used: pasteurization and sterilization. Each process offers different advantages. Pasteurized milk expires approximately 7 days after its processing, while UHT sterilized milk can be stored longer.

Cream

Cream is a milk derivative mainly composed by butterfat. As cream rises to the top after a while in un-homogenized milk, traditionally cream has been separated from raw milk by removing the higher-butterfat layer from the top of the milk container. Nowadays, cream production has been industrialized and this process is accelerated by using centrifuges separators that dissociates the cream from the skimmed milk.

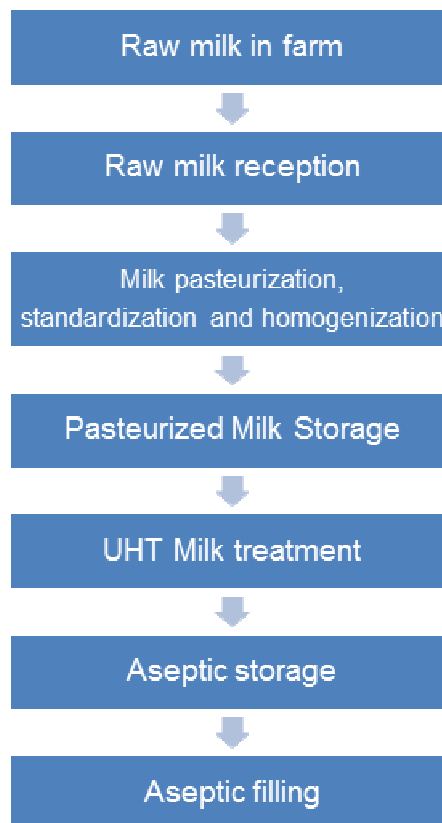
Cream processing includes pasteurization, separation, standardization and homogenization.

Yogurt and cultured products

Yogurt is obtained when lactic acids and milk protein interact during milk fermentation. Yogurt processing starts with milk standardization, to get the required total solids and fat content in the milk. This fat / milk blend is then pasteurized to kill the pathogens bacteria and after that is homogenized to get a more stable solution.

After those two steps, the milk is cooled down to add the fermentation culture. The incubation process takes place for 3 to 4 hours and can be done in large tanks, or in each of the individual packages.

Depending on the type of final product wanted, fruit, flavors or others can be added to



the yogurt during the manufacturing process.

Examples of fermented milk products are traditional sour milk like kefir and laban.

Flavored Milk

Flavored milk drinks are beverages made out of mixing milk with sugar and flavorings. Much appreciated in some markets where they add some other components as vitamins, etc.

Milk is standardized, then pasteurized and homogenized. Milk & components are mixed using a batch or continuous process, then filled and packed.



Plate Pasteurizer



Dissolution and mixing unit

Selecting the right equipment for each process

Milk reception area

The milk reception area is the first equipment unit in a dairy processing plant. Our milk reception units receive the milk from the collecting trucks and cool it down to a desirable temperature. Then the milk undergoes a quality control analysis.

Our milk reception station includes a reception pump, a plate heat exchanger to reduce milk temperature, a degasser to remove foreign dissolved gas and foam and a flow-meter control to monitor the input of fresh milk in the production line.

All our units include sanitary connection, first quality components, connection with the CIP system, and have available a wide range of automation level and control components.

A high demand for refrigeration is required during the milk delivery times. For those plants that do not have large-scale refrigeration equipment, we install ice brine ponds or ice ships.

Milk storage

Milk will need to be stored in several occasions along its processing. This storage has to guarantee milk quality, so storage has to be safe and secure to reduce product waste and losses.

MachinePoint Food Technologies supplies milk storage systems that can vary from a very basic system that is manually handled, to another completely automatic and combined with the plant CIP system and other production components.



We design and supply a range of storage tanks and silos according with the product characteristics and requirements. Our systems include a wide range of automation level for the interconnection and management of the tanks, including mix proof valves, PLC controls, weight, temperature, pressure and level controls with different levels of automation and interconnection.

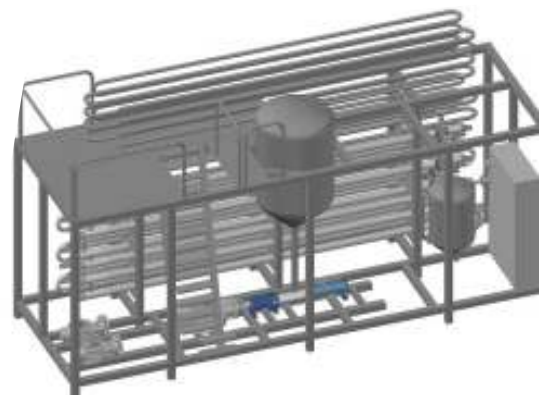
Milk standardization and cream separation

The fat content of raw or fresh milk varies depending on several factors, but each producer must guaranty a certain fat content in order to comply with very specific rules and standards.

Standardization process is where the excess of fat is removed from the milk by centrifugal separators or de-creamers, in order to obtain a specific fat content range in the final product. The excess or remaining fat is then removed and processed as milk cream to produce other dairy products like cream, butter and others.

Milk pasteurization

Once the milk has been standardized, it needs to be pasteurized in order to guaranty its quality and that it will be free of pathogens.



Our equipment reduces significantly the amount of bacteria. We offer a wide range of pasteurizers with capacities from 5,000 l/h to 50,000 l/h, designed to reach a heating temperature from 72° C to 85° C, with a heat recovery over 85%. Other capacities and/or higher pasteurization temperatures can be developed when required for a specific process.



Storage tanks



Pasteurizer, UHT system

Dissolution and mixing systems

Sometimes it is necessary to include ingredients to customize the final product and bring extra value: vitamins, additives, or flavors, etc. A specific mixing system is necessary to guaranty an appropriate proportion of these extra ingredients, reduce production loses and bring the appropriated mixing rate.



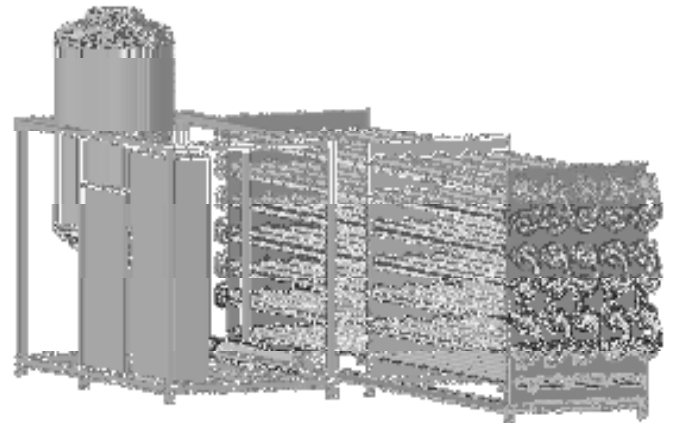
According with the production type and rate, we classify mixing systems in two main types:

The first one is the batch mixing, where the product is mixed in a large batch and all the other ingredients are added. It is more recommended for companies that need to do a lot of product transformation, or where the products to be mixed come out of small packages, or are dry substances.

The second one is known as continuous mixing: this process blends in the ingredients for the production of beverages directly in line, including dosification pumps and in-tube mixing dispositive for product homogeneity.

UHT treatments

UHT, or Ultra High Temperature, is the sterilization of food or any other liquid by heating it for a short period of time, around 1–2 seconds, at a temperature range exceeding 135°C. Mainly used for products with high PH.



Indirect UHT Systems

The indirect UHT system consists in heating the product by an indirect contact with the heating media via a heat exchange surfaces.

MachinePoint Food Technologies' indirect UHT systems consist of tubular heat exchangers or corrugated pipes. They can reach temperatures of up to 145°C within a very short space of time. The product only needs to stay at such temperatures for 3-4 seconds, and then it will be immediately cooled to a temperature below 30°C.

Direct UHT systems

The product is heated by direct contact with steam of culinary quality. The main advantage of direct heating is that the product is held at high temperature for a shorter period of time. MachinePoint Food Technologies manufactures injection direct heating systems where high pressure steam is injected into pre-heated liquid by a steam injector leading to a rapid rise in temperature between 80 and 145 °C for 0,5 seconds. Following the product is flash-cooled in a vacuum to remove water equivalent to amount of condensed steam used, until we reach the 80°C. Then temperature keeps being reduced by a heat exchanger.



Heat exchanger



Heat exchanger

Evaporators

For products such as evaporated milk, condensed milk or yogurt bases, milk has to be evaporated to reduce its moisture content and get a thicker product.

Falling film evaporators are the best one to concentrate dairy products, as milk has low solid content and is heat sensitive.

After entering the evaporator at the head, a thin film of the product to be evaporated flows down the side of the heat exchanging tubes. Steam condenses on the outside of the tubes supplying the required energy to the inside of the tubes.

Another system is the multi-effect evaporator where the pressure is incrementally lowered in each stage, pushing the boiling point lower gradually. Our evaporators can have between one and five effects.

The equipment consists of a vacuum chamber, liquid-ring vacuum pump, plate heat exchanger for hot water heated milk, plate heat exchanger for water cooling, and a PID and PLC automatic control system. The machine is operated through an easy-to-use interface.

CIP Systems

CIP (Clean in Place) units come in a wide range of capacities and automation level according with the system design and process requirements. Our units could include from 3 to 7 tanks depending on whether a recovery cleaning solution is necessary or not, or whether an additional disinfection solution is needed.

They will be designed and customized according to the production line, since the CIP must fit perfectly the line configuration, its production capacity, product characteristics and requirements.

Our CIP system could include a full automated system, that provides continuous monitoring and control of cleaning parameters, including flow rates, chemical concentration, temperatures, cleaning time, and all the variables required for full process validation.

Filling & packaging

MachinePoint Food Technologies has a great knowledge of different package technologies and brands, being able to assess our clients on the best options available on the market upon their needs. We can also supply second hand packaging equipment through our sister company, MachinePoint Used Machinery, and integrate them into an existing or new production line.

This offer is unique in the market, as it makes top brand packaging and filling equipment available for lower budgets. Also it means, that for urgent projects the waiting time is shorter.

Technology

MachinePoint Food Technologies is constantly looking for new alternatives and developing proposals to bring to our clients the best manufacturing practices and equipment with high efficiency and performance standards.





CIP unit



Valve panel

Our Gemina branded equipment complies with all European standards and the highest quality requirements on the industry. All matters related to your project will be taken into consideration to ensure a tailor-made solution exactly suited to your needs.

As part of the engineering and automation system configuration we supply:

Project design and layout, equipment selection, drawings and list of material, maintenance and operation manuals.

Installation, configuration and PLC logic programming of the global automated system, Siemens touch screens, electrical panels and cabinets, control wiring, main computer (PC) and control software license.

After-sales services

Our aim is to achieve our customers' satisfaction. For this reason we get involved along every single steps of your project, from the product design till production start, including the after-sales services. We aim at being your technical and support partner for a long time, building a strong business relationship. Our services involve project concept development, production start-up and all required technical support to guaranty the continuation of production. We hope to help you improve your products characteristics by improving your production capacity over the following years.

Our After-sales program includes a permanent service and maintenance and it starts straight after your plant has been set. Our after-sales services include pre-defined maintenance and follow up inspections to ensure a fault-free system, reliable operations, and to help keeping your plant running efficiently for years. A wide range of services are available throughout the entire service life of your plants, all designed to achieve maximum productivity and economic efficiency. We will also sell you spare parts and provide you with future upgrades and requests for your production line.

We organize staff training and coaching.

Easy to use operation and control system

One of the driving forces of our designers is to make the operation and control of our equipment simple and reliable. For this purpose, we follow in our designs ergonomic and functional standards and our equipment are being continuously updated with the last manufacturing developments.

We use high-quality components and equipment from the market top brands, contributing to reach high reliability, high performance and low maintenance in our systems.

In order to bring additional confidence or guaranty, our units are designed, manufactured and pre-tested in our facilities in Spain before being shipped to our clients. We offer on-the-job training for our clients' personnel during the installation, set-up and commissioning.

24/7 Technical assistance to our clients

Our 24/7 technical assistance team is focused on helping our clients when it is most important, when it is needed! Our systems include an automated control system with the possibility to be connected to internet at your request, allowing our technical team to have access to the system via internet, directly from our technical service office and helping to solve the situation. This way most problems can be solved immediately, reducing shutdown time and trouble-solving costs.

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