

# Juice processing

Fruit juices from concentrates





## Your partner for concentrate processing

In recent years, juice and nectar consumption worldwide has been increasing and their variety has expanded. Nowadays, almost any kind of fruits can be processed into a beverage, from the smallest to the most exotic ones.

Thanks to fruit concentrate, nectar and fruit beverages processing can be done all year round, independently of harvest season.

We work to fulfil both: our clients' requirements and all other different factors such as the local industrial legislation, production capacity, budget and other requirements. Our lines are manufactured following the latest market trends.

Aseptic storage and packaging can be required in some plants. MachinePoint Food Technologies specializes in and commits to aseptic projects. Due to the economic losses that could result as a failure or technical glitch in the installations, many companies refuse to take responsibility over these projects. Our commitment to complex aseptic projects demonstrates our confidence, and it is backed by our reputation as professional equipment providers in the industry.

MachinePoint Food Technologies has a reputable experience in helping manufacturers develop plants for the production of:

- Juice and juice enriched with additives
- Nectar and sugar free nectar
- Other beverages with fruit content

MachinePoint Food Technologies manages the juice processing lines as well as the filling & packaging lines into different packages such as: tetrapak carton packaging, pet bottle, pouches, glass, etc.

The equipment and units we supply are the following:

- Ingredient reception
- Water filtration
- Sugar dissolution unit
- Juice reconstitution & Mixing technologies, mixing

process

- Sterilization, UHT, pasteurizers and sterilizers
- Aseptic storage & Storage systems
- Filling and packaging lines in aseptic or other packaging technologies, aseptic filling, hot-fill technologies
- Ancillary equipment and services: cooling tower, water filtration and CIP 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

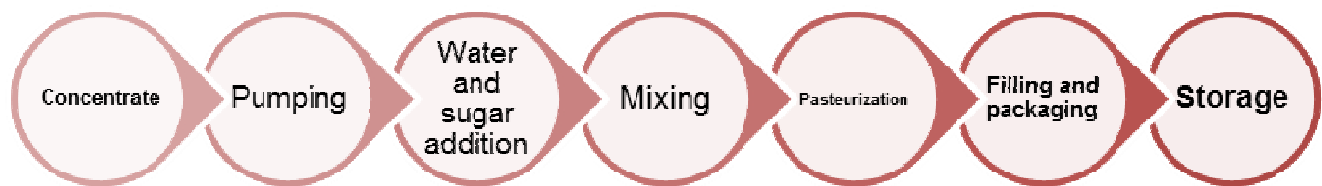
We are aware that keeping ahead with technological innovations is key to being competitive; in order to satisfy our customers' requirements MachinePoint Food Technologies R&D department is always looking for new technologies, developing processes and equipment alternatives.

Our range of brand new equipment includes mixing units, homogenizers, product recovery system to reduce product losses during production, aseptic product storage systems, and more.





## Juices, nectars and fruit beverages



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

The process of making juice varies from factory to factory. Juice can be made out of fresh fruit, concentrate, frozen fruit paste or aseptic mix. If produced from fresh fruit an extraction processing line for fresh fruit is required (fruit storage, selection, cleaning and extraction, etc.). As most fruit beverage producers process juice from concentrate, we will focus on this process along this catalogue

### Juice processing from concentrate

Juices, nectars and fruit beverages are mainly processed from juice concentrate. They vary upon the amount of water and sugar added. National standards have been established to define each category and they could vary from country to country. The concentrate viscosity depends on the fruit, and therefore the process and equipment has to be adapted to each product and concentrate characteristics.

Concentrate mostly comes packed in aseptic bags or drums, refrigerated or frozen aseptic drums. Beverage processing starts with the emptying of these drums into the mixing units. MachinePoint Food Technologies has developed a drum aspiration system using automatic roller systems and vacuum aspiration pumps or ground-thaw that allows for efficient concentrate unloading.

Most juice producers use batch mixing technology. In batch mixing the concentrate is then led to mixing batches and water is added to reach the right dilution degree, according to client's recipe and each country standards for juice. Other additives, such as vitamins, can be added at this stage as well to obtain a vitamin enriched juice for example.

After it has been mixed and blended, the juice is pasteurized or sterilized. Then it is conveyed to the filling and packaging lines before its storage or distribution. Filling technologies can vary from aseptic filling, ultra clean and hot filling systems. Final packaging could be done in glass, PET, brick, and many other packaging types.

### Nectar processing

As said before, the difference between juice, nectars and fruit beverages could vary from country to country. Nectar has to contain a certain amount of fruit following national standards to be considered as nectar and not as beverage.

Just as in JFC (juice from concentrate) processing, nectar elaboration starts by emptying the concentrate from the drums. The drum aspiration system pipes suck the concentrate up to the mixing batches where it is mixed with distilled sugar in water or syrup, and water following each client's recipe. A syrup unit, including a sugar feeding group, pumps, a mixing batch, a pasteurizer and various aseptic storage tanks for syrup storage, can be integrated into the line. For sugar free nectar, sugar can be replaced by sweetener. Preservative and other additives, such as colorants or vitamins, can be added at this stage to the batch mixing units. The nectar is then sent to thermal treatment, followed by the filling and packaging process.

### Fruit beverages processing

By fruit beverages we understand those beverages with less proportion of fruit concentrate. The processing of fruit beverages is very similar to the nectar one, but the dilution stage is more thorough as more sugar or sweetener is added. The main differences between juice, nectars and fruit beverages are the percentage of fruit content and the addition of flavors, aromas and other additives.



Mixing tanks



Mixing valves

## Defining the right manufacturing process

### Drums Aspiration and Frozen Drums

#### emptying

Concentrate is usually packed in aseptic, refrigerated or frozen drums. MachinePoint Food Technologies has developed a drum aspiration system to empty drums in record times, which increases efficiency and it is easy to integrate into blending lines.

The containers are emptied by high-vacuum suction which is generated by vacuum pump systems. The concentrate then flows into a mixing tank, and from this tank the product is extracted by pumping.

When the concentrate is frozen, the system contains a tunnel that pre heats the drums defrosting the drums outside. The drums follow into a high efficiency ice crusher that minces the ice. Once the ice has been minced it is pumped through a heat exchanger to melt it and get the concentrate in liquid phase, ready to be pumped into the mixing tanks.

#### Water filtration

Water is a main component in the production of juice and beverages. Most beverages factories have to develop a water processing line so that water can be used for the production of beverages. Water quality is a high priority in the production of beverages as it makes a big difference to the end product. MachinePoint Food Technologies has a wide experience in developing water processing lines both for the production of beverages and bottled water itself. We use the following technologies for water treatment: sand filtration, micro filtration, nano filtration, active carbon filtration, reverse osmosis, de-ionisation, ultraviolet sterilization, distillation, ozonation, chlorination.

#### Sugar dissolution

The sugar dissolution unit dissolves a certain amount of sugar in water, heated or not. Water enters a tank and rotating blades blend the water into the sugar. A smooth mixture is obtained to be further integrated into the concentrate.

Our sugar dissolution unit includes a sugar feeding group with sugar deposit hopper and solid transport screw conveyor, a mixing tank and rotating stainless steel blades.

### Mixing

These are the units used for the blending of juices, nectars and any other fruit beverages. MachinePoint Food Technologies supplies different batch, continuous mixing and blending systems.

Our mixing technology focuses on achieving an optimal blending and dosification of the different ingredients. This reduces production losses and guarantees the same recipe over time.

In batch mixing, the product is mixed in a large batch and all the other ingredients are added time after time. In continuous mixing: the ingredients are blended directly in line and tubes, it includes dosification pumps, and in-tube mixing dispositive for product homogeneity.

Depending on the volume to be processed one or the other system will be chosen. Batch mixing 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. Continuous mixing is recommended for high volumes, where blending in the ingredients for the production of beverages is done directly in line, and more complex and automatized technology is required.

### Intermediate storing units and Aseptic Storage

MachinePoint Food Technologies builds customized intermediate storing units that can be completely integrated along the production line. MachinePoint Food Technologies also builds and supplies aseptic storage tanks when required.

Our intermediate storage systems range from ambient tanks with manual interconnection, mixing tanks, ultraclean storage tanks with automatic level and temperature control, to fully automatic tanks. For the final processing stages, we can supply aseptic tanks, to store under aseptic conditions the final sterilized juice ready to be filled in aseptic filling.

Each storage solution has its advantages and these are designed for specific stages along the transformation process.





Drum emptying and crushing



Reverse osmosis unit

In order to guaranty the product and process quality, as a standard for our storage system, we can provide the interconnection capability for an external CIP system, so it is easy to clean all the tanks and interconnections.

When aseptic storage is required, our aseptic tanks have different alternatives for sterilization and control that could be customized.

In aseptic storing we can provide with Tanks (from 1000 litres to 4millones litres), Drums (up to 200 litres), Bins (1000 kg capacity) and Canteens or aseptic farms (from 25,000 litres to 4 million litres)

## Homogenization

Homogenization is sometimes necessary to get the juice totally smooth, as not ices require homogenization. The process consists in fractioning the suspended particles in the product into very small sizes, increasing its viscosity and preventing concentrate sedimentation.

Homogenization is accomplished by mixing amounts, then forcing the liquid product at high pressure through small holes (homogenization valve) to prevent creating various levels of flavor and fat concentration, so that various constituents do not separate out during storage or distribution.

## Juice Pasteurization

One of most important stages is the juice thermic treatment, as this process highly influences the quality and characteristics of the final product.

Flash pasteurization consists in heating the product for a few seconds to preserve its organoleptic characteristics. During pasteurization, the juice is heated up between 60 to 85 °C and then cooled down very fast. Pasteurization temperature and holding time have to be defined.

HTST (High Temperature, Short Time) is a thermic treatment that has been used for decades in the food industry. It extends juice shelf life while maintaining its organoleptic qualities. It consists in heating the juice up to the prescribed pasteurization temperature and holding it for a short time in a "holding tube".

Our indirect pasteurizer or HTST system uses plate or tubular heat exchangers to transfer the heat. This pasteurizer has a high heat recovery value, has a compact design and does not need special culinary quality steam. We produce our own tubular heat exchangers, using stainless steel and the latest orbital welding technology, to guaranty quality operation and performance.

Our indirect tubular or plate juice pasteurizers are modular, aiming to get maximum flexibility. They also feature automatic control of the pasteurization temperature, holding time, flow and temperature control by stages, and include a heat recovery system to reduce operational cost.

Available in capacities range from 2,000 to 30,000 l/h. Our tubular juice pasteurizer is first assembled and tested with water in our factory to ensure that will work perfectly at our client premises.

## Filling technologies: aseptic, hot fill, ultra clean, and other fillings

There are currently many different technologies for the filling and packaging of juices. Most common are hot and cool technologies. We also have an extensive experience in aseptic filling technologies.

MachinePoint Food Technologies installs filling & packing lines of the best brands and has access, thanks to MachinePoint Used Machinery, to used filling & packing lines for more adjusted budgets.

**Hot fill**, traditionally restricted to glass packaging, it is nowadays also available for PET containers with special characteristics. Hot filling consists in filling the product in previously sterilized bottles while the product is still hot, sealing it with a sterilized cap. The filled recipient then passes through a refrigerated tunnel (or pasteurization tunnel) on a conveyer belt to cool down. The heat can be used again on a heat exchanger process. This technology results in a long pasteurization time to products, and therefore generates vitamin losses and some organoleptic changes.

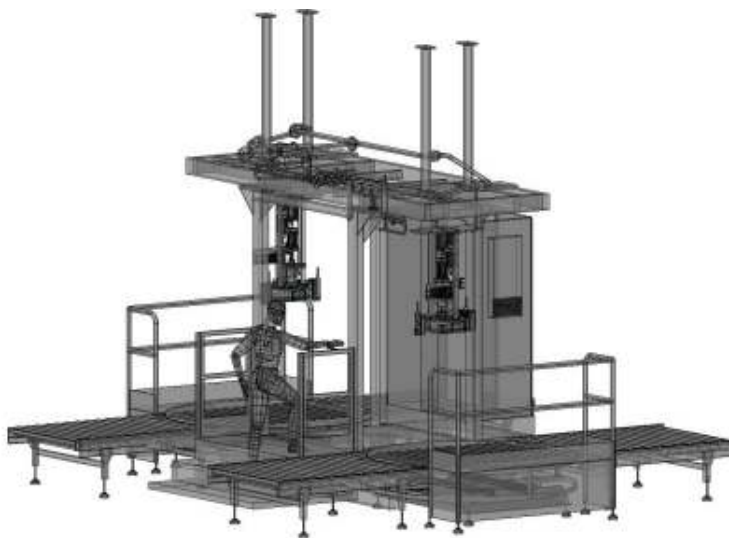


Aseptic storage tank



Pasteurizer

**Aseptic filling**, is slowly replacing the traditional hot filling systems as it better preserves the processed products' qualities. Our experience in aseptic packaging is extensive. We can do aseptic filling and packaging in Brick packing and PET packaging.



MachinePoint Food Technologies integrates preform, blow and filling and packaging lines from best brands with the product processing lines developed by us. Thanks to MachinePoint Used Machinery, that controls 80% of the used machinery for sale in Europe, access to used packaging machinery is possible for tighter budgets.

## 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 if a recovery cleaning solution is necessary or not, or if an additional disinfection solution is needed.

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

## Technology

Machine Point 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.

Our process equipments built in conjunction with our partner comply with European standards and the highest quality requirements on the industry. We invest in our people and in our managing and construction resource in order to provide our clients with the most affordable and reliable technology to promote knowledge in the area of technical development, research and production. Our clients can be sure that MachinePoint Food Technologies will respond in a quick and reliable way to their specific needs.







Storage and mixing tanks

MachinePoint Food Technologies guarantees that 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**

As MachinePoint Food Technologies aims at achieving complete customers satisfactions, we are involved during every single steps of your project, from the product design to production start, including after-sales services. Because we want to be your technical partner and support time after time, our services involve project concept, production start and the required technical support to continue with the production, improve the products characteristics and capacities during the following years.

Our after-sales program includes a permanent support service with service and maintenance that takes effect directly after your plant has been set. Customer support also includes defined maintenance and individual inspection agreements to ensure fault-free, reliable operation, and to keep your plant running efficiently for years. A comprehensive range of services are available throughout the entire service life of your plants, all designed to achieve maximum productivity and economic efficiency. We act as procurement office for spare parts and undertake everything needed for successful operation of dairy plants.

In order to contribute with our client's production continuity, we organize staff training.

### **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 latest 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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