

# Beverage technologies

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Machines for fruit juice production



# Technologies for modern fruit juice production

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For many decades, Bucher Unipektin has been a market leader in the development, manufacture and installation of technically sophisticated individual machines and turn-key lines for fruit juice production.

We are committed to our customers, both as a partner and reliable supplier of fruit reception, solid-liquid separation, juice filtration, juice processing and the concentrate production from pomaceous fruit, stone fruit, berries, and vegetables.

The key products of what we offer:

- Reception lines, sorting tables, elevators, grinding mills, crushing mills and mash heaters
- Hydraulic presses and extractors
- Membrane filtration systems, pasteurisers and aseptic filtration units, adsorbers and ion exchangers, evaporators, and aroma columns
- Tank farms, storage and processing tanks
- Mixing and dosing stations

Our plants are based on many years of technical expertise and practical experience and range from customer consultation and advice, basic engineering, plant construction, assembly, and installation, right through to commissioning worldwide. Bucher Unipektin's engineers and technicians from are masters of the process technology of modern fruit juice production. This know-how forms the basis of our acknowledged world market leadership.

**Bucher Unipektin –  
always there when you need us!**

These are not empty words. Going the extra mile in the interests of our customers is something our people take for granted. Branches and representation offices around the world, we can adapt to local circumstances and specific needs and requirements as they arise.



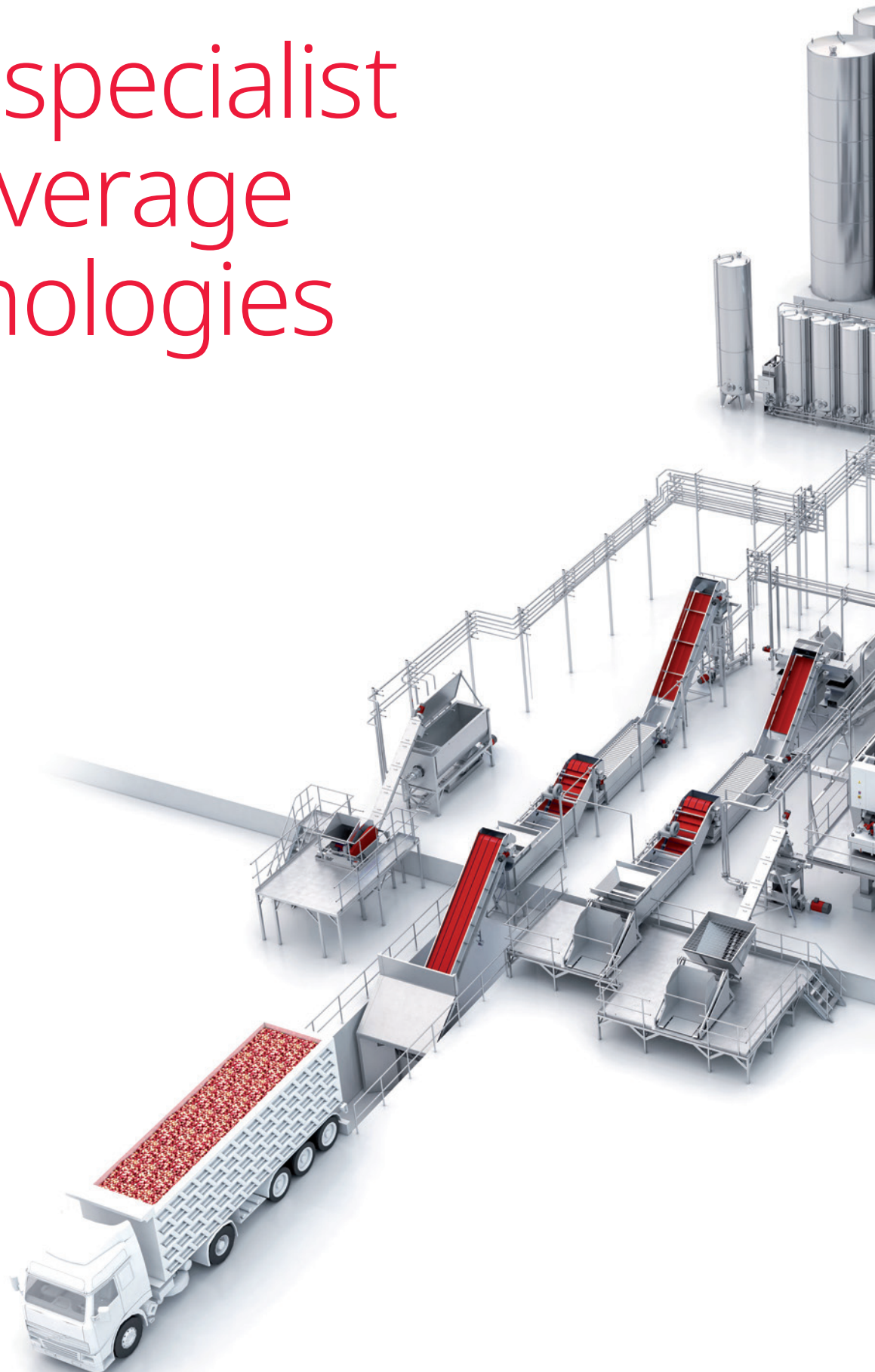




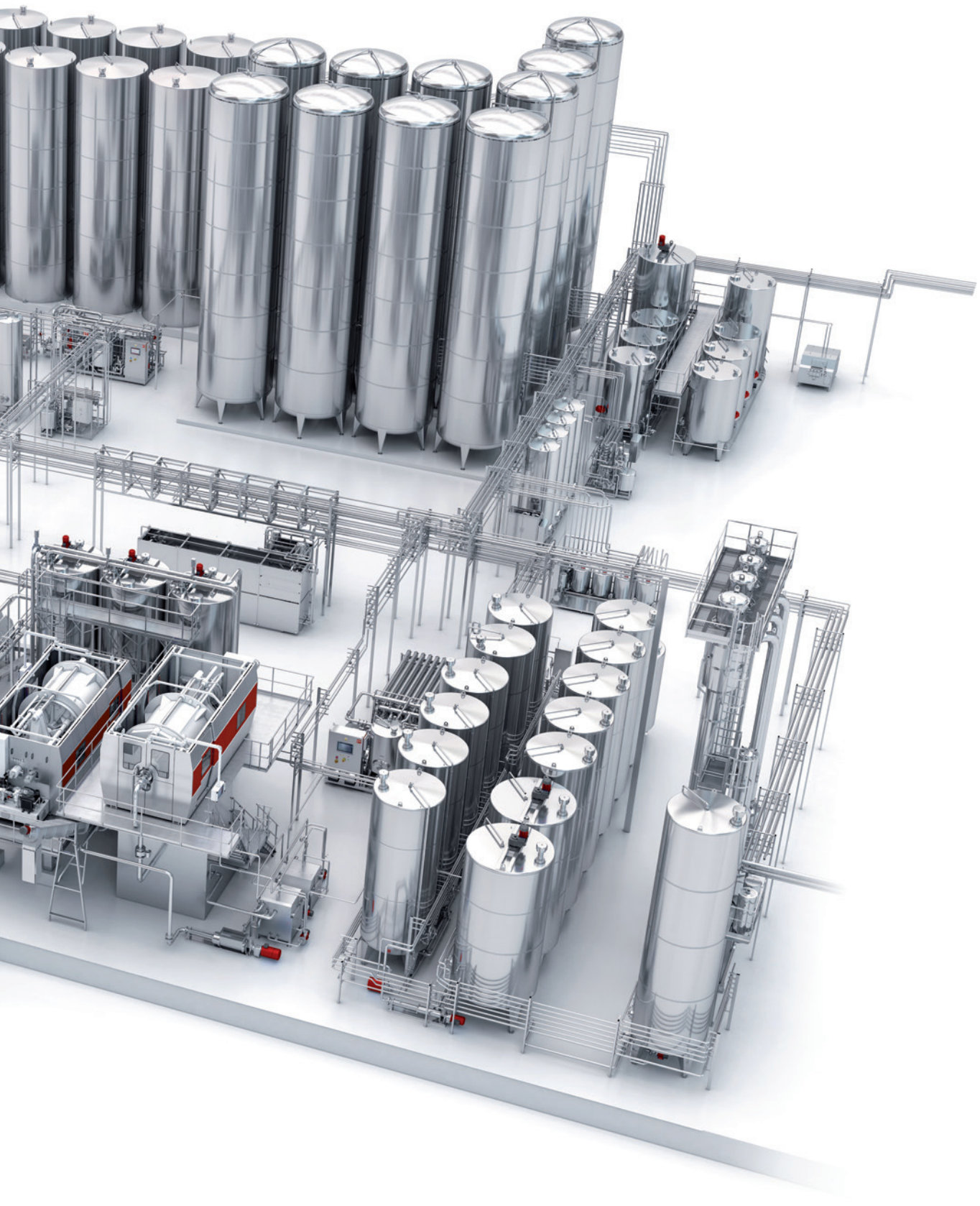
# Your specialist in beverage technologies

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Schematic drawing of  
a fruit juice concen-  
trates production line







# Fruit reception line: Efficient and gentle on the products

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Raw materials form the basis for a high-quality fruit juice. The correct and careful processing is decisive for juice quality, beside of the quality of the fruit.

Fruit reception lines from Bucher Unipektin meet the highest requirements for conveying and cleaning the raw materials.

Apples and pears: The fruit is unloaded, typically into deep silos. The fruit is treated very gently by being conveyed through flushing channels, and dirt and multi-stage process in specially designed systems.

Stone fruits, berries, grapes: Bucher Unipektin developed special hoppers and silos for stone and berry fruits. The subsequent transport takes place via systems specially designed for these raw materials.

All fruit reception lines can be customised to meet the specific requirements of each situation. This is usually done in close co-operation with the customer's own planning engineers.

Our reception lines have proven themselves worldwide for the industrial production of high-quality fruit juices.





# Grinding systems for optimal juicing

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Mechanical fruit disintegration for optimum juice extraction: Our milling systems guarantee optimum fruit pulping, which allows for efficient mash treatment and economical juice extraction.

The milling systems are easy to operate and maintain. In addition to their use in fruit juice production, crushing mills are also used very successfully for the grinding of vegetables and other organic materials.

For stone fruit, berries and grapes, special crushing mills with toothed steel rollers are used to ensure that the best possible results.

The mash heaters are designed to preheat various fruit mashes. The mash heater is installed between the mill and the mash buffer tank. The extraction yield and pressing performance can be improved by enzymatic polymer degradation in the fruit mash. Mashing of stone fruit, berries and grapes mashes of stone fruit, berries and grapes are enzymatised and heated to achieve efficient colour extraction and yield. Our mash heaters, which are tailored to customer requirements, fulfill this purpose with optimum energy utilisation.



# HPX filter press for juice extraction

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The performance and efficiency of the extraction system used in fruit processing lines contributes significantly to the economic success of a company.

The unique separation system used in the Bucher hydraulic presses guarantees the highest quality fruit juices, and with a low lees content. The closed design ensures completely hygienic operation and allows the fruit to be processed as gently and carefully as possible. The semi-continuous process also facilitates the multiple post-watering and thus the extraction of additional valuable ingredients in the same system.

Bucher HPX presses have self-optimising control systems and are extremely maintenance friendly. They are particularly suitable for use in industrial fruit juice plants.

The proven and established separation technology of Bucher HPX presses enables a wide range of applications.

This includes the processing of apples, pears, stone fruit and berries into naturally cloudy or clear juices and concentrates. The extraction of special extracts from plant and animal products such as colorants, the production of pectin as well as the extraction of special extracts from plant and animal substances.







# Citric fruits juices: Reception and extraction

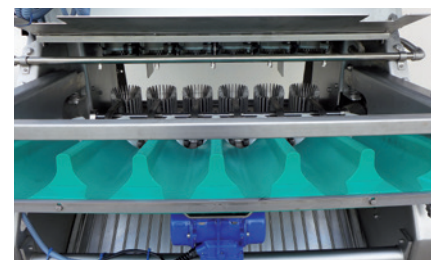
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The inline EXZEL citrus juice extractors produce juice and essential oil completely separately in a single operation.

Bucher Exzel, a Bucher Unipektin company, plans, designs and installs machines and systems for the extraction and processing of citrus juice. With the development of our extractor, we have raised the processing of citrus fruit to a new level. Our machines are proven, reliable and safe. Through continuous innovation, our experience and the integration of new materials and technologies, our machines and systems are adapted to customer requirements.

The inline EXZEL citrus juice extractors produce juice and essential oil completely separately in a single operation.

This preserves the pure taste of the juice and maintains the quality of both products. Our extraction principle maximises the juice yield and minimises the use of resources, and impresses with its high economic efficiency.









# Membrane filtration systems

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Membrane filtration systems are mainly used for the filtration of fruit juices and other aqueous solutions. The fully automated systems with their modular design guarantee economical operation at all performance levels.

For customised solutions, ultrafiltration or microfiltration membranes can be selected for customer-specific solutions via situational adaptation to the individual product requirements. We guarantee maximum production reliability and performance thanks to our technological experience in fruit juices, gained during many decades and the right choice of separation membranes. Bucher Unipektin offers filtration systems with economic polymeric membranes, versatile ceramic membranes, and robust stainless-steel membranes.

The membrane filtration system can be integrated into a wide range of operational processes as a replacement for conventional filter systems. We will be happy to consult and advise you on various aspects.

Traditional applications: Filtration of fruit juices from apples, pears, stone fruit and berries as well as cider and fruit wine filtration.

Related applications: Recovery of valuable substances from beverage sediments (sediments from fruit juice, beer and wine) or the filtration of fermentation broths as well as tea and other plant extracts.









# For the refinement: Adsorbers and ion exchangers

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These technologies can be used to standardise the colour of clear fruit juices without fining agents and stabilise them to prevent clouding.

Adsorbers from Bucher Unipektin operate with maximum efficiency and optimum product care. Adsorption technology is based on purely physical effects.

Natural fruit sugar can be produced from fruit juices and fruit residues thanks to the targeted use of selected ion exchange resins. These can be used in a variety of applications in the food industry.

In the citrus industry, this technology is mainly used for debittering of juices and correcting the sugar/acid ratio.

Bucher Unipektin Ion Exchange Systems make use of weak anion exchange resins to adjust the sugar/acid ratio of fruit juices (also known as fruit acid reduction). If cation and anion exchange resins are applied, it is possible to completely de-ionise juices and by-products for recovering the fruit sugars. By adding an additional polishing step with adsorption resins, colourless fructose solutions can be produced.





# Dealcoholisation of beer, cider and wine

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Bucher Unipektin (cider and wine) and Bucher Denwel (beer) can supply dealcoholisation plants based on thermal technology or reverse osmosis.

With our many years of experience in the design and manufacture of evaporators and membrane systems, we can offer an appropriate economic and/or technological dealcoholisation solution for craft brewers and cider producers as well as for large companies.

Our two technologies are able to partially or completely dealcoholise products to any desired alcohol level while maintaining product quality.

Using the reverse osmosis technology has the benefit of a low energy consumption, an operating temperature of  $<10^{\circ}\text{C}$  which maintains the product characteristics and the investment costs are low. On the other hand, the thermal dealcoholisation allows to produce any desired alcohol content as far down as  $<0.02\%$  alcohol. And additionally with one run through in one machine it is possible to rectify the alcohol to 80 % as well as to recover the aroma.



# Evaporators: Concentrate production

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Tubular falling film evaporator system for the production of concentrated fruit juices and aroma essences.

Bucher Unipektin falling vacuum film evaporators are designed to produce high-quality juice concentrates and aroma essences. They typically combine the process steps of: pasteurisation, aroma-stripping and concentration in one system. Short processing time, low heat impact and sophisticated hygienic design make our evaporators ideal for the concentration of all kinds of fruit juices, i.e. from apples, pears, berries, grapes and stone fruits. Due to the uniquely designed liquid distributors they can handle juices with high suspended solids contents and with tartrate.

Bucher Unipektin evaporators are always designed to the individual customer requirements. The multi-stage design and optional use of mechanical or thermal vapour recompressors ensure maximum energy efficiency.

The systems are equipped with user-friendly automation and visualisation systems.







# Hygiene is key: Shelf life and CIP

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In the beverage industry, maintaining a high level of hygiene is of central importance. At Bucher, we know how important safe and and hygienic production is.

That is why our state-of-the-art pasteurisers, aseptic filtration systems and CIP stations help us to achieve the highest standards of cleanliness and product safety throughout the entire production process.

The pasteurisers are designed to heat food for as short and high a time as necessary to kill harmful microorganisms such as bacteria and yeast cells without compromising the taste, quality and nutritional value of the beverage. Microorganisms are literally removed in the MONA aseptic filtration system and the product can be aseptically packed.

This allows you to offer your customers safe and healthy products to your customers.

To further improve cleanliness, the CIP stations from Bucher offer automatic cleaning solutions for production facilities. Our systems ensure that residues, biofilms and contaminants are removed and the machines remain in pristine condition.

We would be happy to advise you and prepare a customised offer tailored to your specific needs. We customise our systems to your product and your operational planning. Reliability and low maintenance costs will have a very positive impact on product safety and cost-effectiveness.





# Automated aseptic storage for concentrate and NFC juices

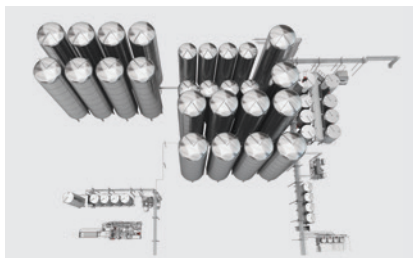
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As a specialist in the beverage industry, we offer automated and worry-free storage for sensitive products such as fruit juices.

We can manufacture, supply and commission individual tanks or complete production lines.

The use of technological solutions that minimise the loss of raw materials and media in the production process is crucial for profitability in beverage production. Our experience and innovative development ensure that you have access to state-of-the-art control and automation systems. Based on your requirements, we draw up a specification sheet and propose optimum solutions.

The tank farm control system is based on the Siemens S7 PLC with visualisation on a SIEMENS Comfort Panel. The system enables the complete monitoring of all processes as well as the cleaning of the desired system components.



# Production of tanks and vessels

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Not only do we have efficient and flexible production facilities, we also know what the requirements are for a wide range of industries.

Whether storage, fermentation or process tanks with very specific requirements: The many years of experience and references from a wide range of industries enable us to optimally respond to your needs. Whether beverage industry, breweries, juice processors or dairy industry, we know your standards and are a partner who speaks the same language.

Our systems are not only characterised by the highest quality of workmanship, but above all by a well designed system that more than meets production and hygiene requirements and can be integrated into the most up-to-date operating and process sequences. We develop solutions that are tailored to your applications and thus minimise operating and maintenance costs.

Our specialists are familiar with the specific production standards of a wide range of industries. We implement these by manufacturing tanks with modern welding technology on the most modern and automated tank production lines in Europe.









# Integration of tank-farms

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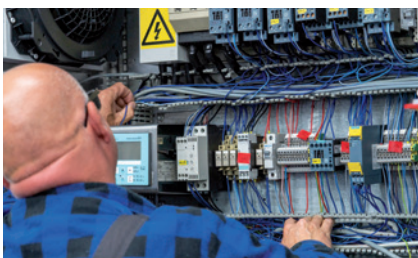
We integrate and automate your tank farm and other equipment into a complete line.

We design the process with you, manufacture and install pipework, cabling and control cabinets. We programme and commission the lines.

The aim of automation processes is to enable both simple and advanced industrial equipment to work autonomously. We create automation systems ranging from simple systems to complex lines. Our employees are at home in a wide range of industries and are therefore able to respond to specific requests with experience.

Our visualisations provide a good overview of entire processes, actual and target values of all necessary parameters. The visualisation systems are installed on touch panels or PCs. This enables not only the display of operating parameters, process control and rapid intervention, but also data archiving for analyses and optimisation of processes.

With us, you get top-level hygienic integration, well thought-out and created by beverage experts, customised to your needs. We not only accompany you during the project, but also continue to support you.





# Energy and sustainability

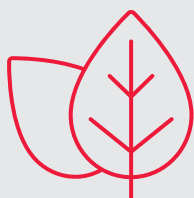
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In coordination with Bucher Industries, we base our sustainability strategy on four pillars: customers, employees, environment, compliance.

Bucher Industries' corporate strategy has been geared towards the long term for over 200 years and forms the basis for our success. The Group develops and manufactures products that are technologically, economically and ecologically convincing. Through the sustainability strategy, which rests on four thematic pillars, long-term orientation is lived and continued in the core business of Bucher Industries. The sustainability strategy incorporates environmental, social and governance considerations. Within these, we consider eleven topics to be material for us. We have defined corresponding ambitions, set key indicators and, where meaningful and possible, quantitative targets.

With the annual report we have moved to combined reporting that provides information on finance, environment, social affairs and ethics. Using facts and figures as well as stories, the report shows how Bucher Industries implements its sustainability strategy.

The report is written in accordance with the standards of the Global Reporting Initiative.



# Service: We take care of units

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Our services are based on many years of specialist technical expertise and practical experience, and range from customer consultation and advice, basic engineering, plant construction, assembly, and installation.

Our centralised spare parts warehouse is well stocked and we can quickly supply spare parts for almost any of our machines, whether new or old.

We take care of the installation and commissioning of your machines and systems. Our well-trained technicians and engineers will provide you with advice and support for many years to ensure that your Bucher Unipektin systems do not suffer any technical breakdowns. To this end, we have developed and tested customised maintenance packages worldwide. And all of this is based on our personal experience with our own production lines.

The key points of our maintenance concept are simple: predictability instead of nasty surprises and prevention instead of costly repairs.

Thanks to decades of experience and continuous development of our technical expertise, we create process systems that meet the highest standards of product quality and reliability while keeping an eye on the economic efficiency of the processes. The key to success is the harmonisation and integration of all individual process steps and machines. We build our systems with PLC controls and industrial PC controls.





# Bucher Academy: An investment that pays off

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Practical training for your employees. Through the highly qualified understanding of our machines, downtimes can be avoided, and optimum availability ensured.

Our offer includes theory and practice and is aimed at plant managers, service/maintenance managers and operators of your machines and systems.

We support your employees in getting to know our products and build up specialist knowledge. We pass on our expert knowledge from which your company will benefit, because your employees are a decisive factor for the efficiency and quality of your products.

The requirements for consistently high food product quality are high and can only be guaranteed by well-maintained and functioning individual machines. A prerequisite for this is a basic understanding of the machines to be able to carry out minor maintenance work or problem solving independently. We offer targeted training for this purpose.

Contact us to discuss further training opportunities in your company or for your employees. We will be happy to prepare an individual training offer for you.



# Test centers

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We assist you: In our Test Centers we can perform various process engineering trials for new applications of our products and development of new technologies.

Bucher Unipektin and its subsidiaries has a wide range of rental machines and plants for processing fruits, vegetables, and other foods. From disintegration, pressing, filtration, refining and concentration, to vacuum and freeze drying, almost everything is possible.

Many pilot plants are available as mobile units and can be tested on site at the customer's request. For the evaluation of products and processes, our laboratory offers numerous possibilities for analytical investigations.

Our services range from initial application tests to the production of samples for market evaluation by our customers.

## Test Center Locations:

Bucher Unipektin, Niederweningen, Switzerland  
Bucher Merk, Laufenburg, Germany  
Bucher Denwel, Prague, Czech Republic  
Bucher Alimentech, New Zealand







[bucherunipektin.com](http://bucherunipektin.com)

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