



Technologies and Products

**From nature to taste...**

## Process technology for modern fruit juice production

Bucher Unipektin have been market leaders in the development, manufacture and installation of technically sophisticated individual machines and turn-key lines for fruit juice production for many decades. We are completely committed to our customers, both as a partner and as a reliable supplier for fruit reception, solid-liquid separation, filtration, juice processing and the production of concentrate from pomaceous fruit, stone fruit, berries and vegetables.

A summary of our product range follows below:

Reception lines, sorting tables, elevators, grinding mills, crushing mills and mash heaters

Hydraulic presses, pneumatic presses

Cross-flow filtration systems, adsorbers and ion exchangers, evaporators and aroma columns

Our services are based on many years of specialist technical competence, in practical experience and range from customer consultation and advice, basic engineering, plant construction, assembly and installation, right through to commissioning on a world-wide scale. Engineers and technicians from Bucher Unipektin are masters of process technology in modern fruit juice production. This know-how forms the foundation 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 which our staff regards as perfectly normal. Branches and representation offices all over the globe allow us to adapt to local circumstances and special needs and requirements every time they arise.



**From nature...**

## Milling systems and mash treatment

**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 characterised by their ease of operation and straightforward maintenance procedures.

As well as their use in fruit juice production, crushing mills are also used very successfully for the grinding of vegetables and other organic materials. Special crushing mills with toothed steel rollers are used for stone fruit, berries and grapes to ensure that the best possible results are obtained.

We supply mills with throughput range from 5 to 50 t/h.

**Industrial processing with thermal mash treatment** The individual fruits' specific pectin substances impede mechanical juice extraction. The extraction yield and press performance can be improved by enzymatic polymer degradation in the fruit mash. This enzymatic process ideally requires a temperature of at least 20°C.

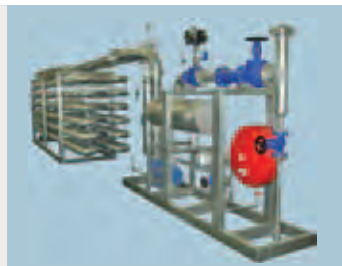
Mash of stone fruits, berries and grapes are usually heated to between 50 and 60°C in order to achieve efficient colour extraction. Bucher Unipektin mash heaters and mash pasteurizers designed to meet customers' specific needs fulfil this purpose with optimum energy utilisation.



CM 50 grinding mill



Grinding mill C 25



Mash heater

## Bucher HP presses

**Juice extraction – the profitable way** The performance and efficiency of the extraction system used in fruit processing lines contributes considerably to a company's economic success. Yield-related losses are irretrievable and cannot be recovered during the following process stages.

The unique separation system used in the Bucher hydraulic presses guarantees that fruit juices of the highest quality are obtained, which contain very low proportions of suspended solids. The enclosed design guarantees completely sanitary operation and allows the fruit to be processed as gently and carefully as possible. The semi-continuous process also facilitates the multiple leaching out of valuable ingredients within the same system.

Bucher HP presses operate with self-optimising control systems and are extremely maintenance-friendly. They are particularly well-suited for use in industrial fruit juice plants.



Hydraulic HP press



Industrial juice production

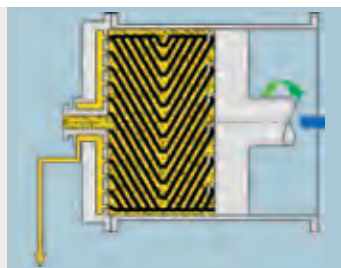


Process control

**Broad scope of application** The proven and established separation technology of Bucher HP presses enables diverse range of applications:

#### Applications

- Processing of apples, pears, stone fruits and berries to produce naturally cloudy or clear juices and concentrates
- Recovery of special extract from plant and animal materials (e.g. colouring agents)
- Pectin production
- Obtaining special extracts from plant and animal materials
- Extraction of plant material (e.g. citrus peel)
- Dewatering of sludge with separation problems



Schematic diagram



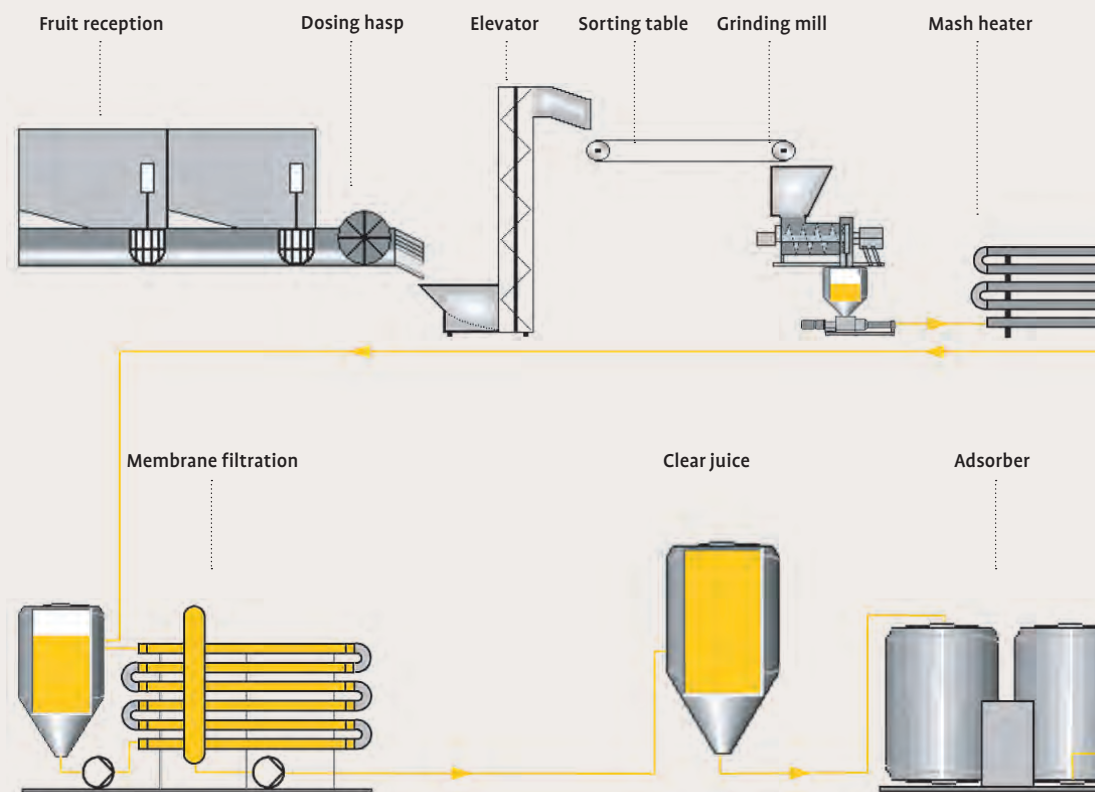
HP separation system



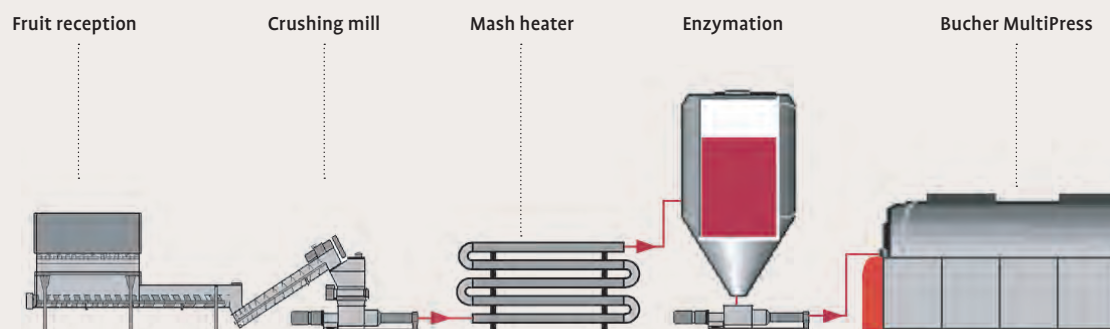
Drainage element

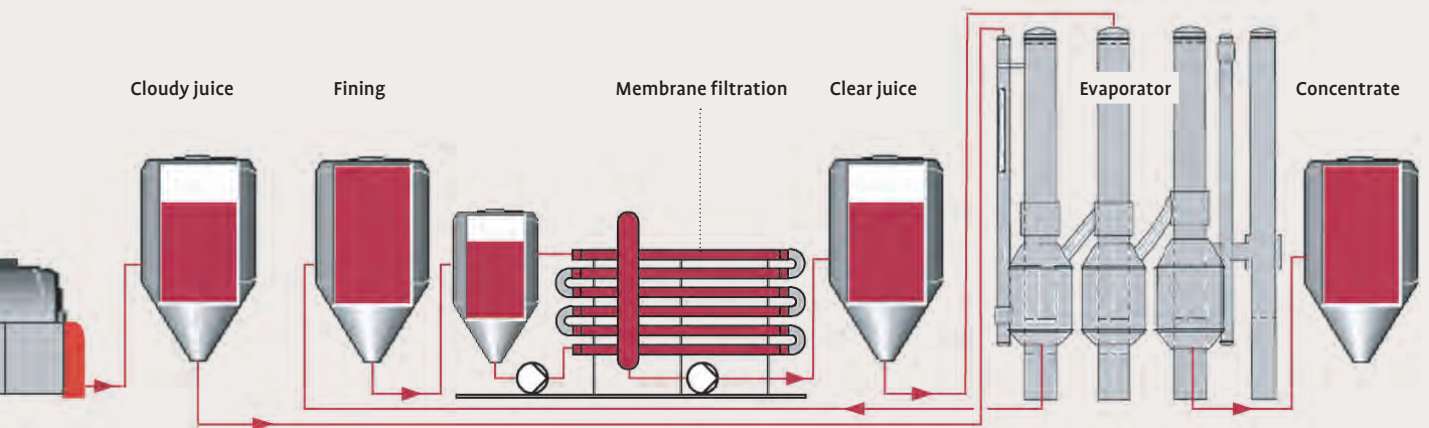
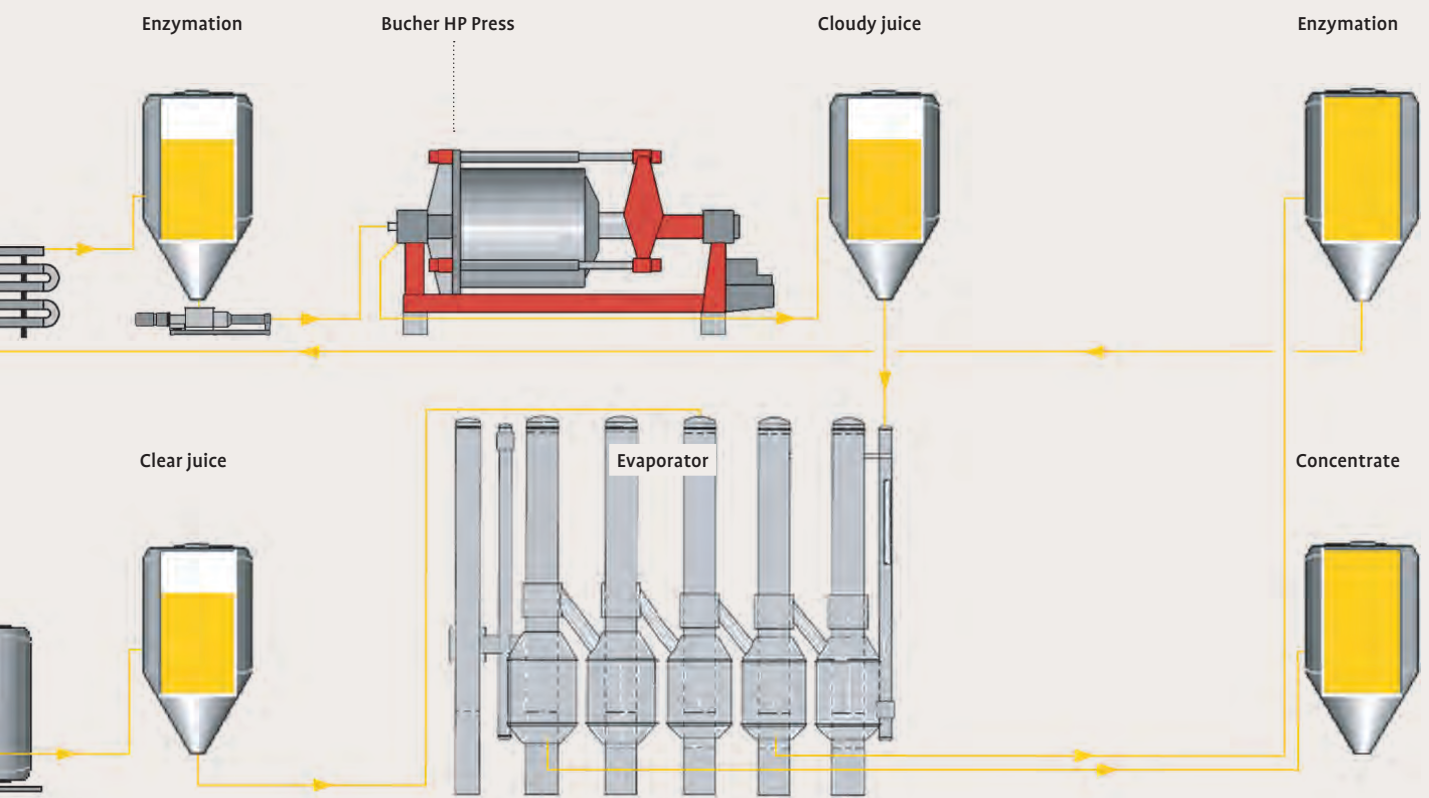
## From nature to taste... your specialist in fruit juice technology

Schematic drawing of a  
fruit juice concentrate  
production line for  
apples and pears



Schematic drawing of a  
fruit juice concentrate  
production line for  
stone fruits and berries





## Bucher MultiPress

**Proven pneumatic universal press** The press concept is based on the combination of the pneumatic grape press and the approved drainage system of the Bucher hydraulic press.

The MultiPress' enclosed design is ideally suited for leaching out valuable substances to increase the yield. It can even be used as an enzymation tank.

The MultiPress is the ideal press system for smaller- and medium-scale fruit processing operations. Pressing is gentle and careful, regardless of the mash quantity loaded. This means that even small volumes, in particular stone fruit and berries, can be pressed effortlessly.

The extraction line MultiLine includes the MultiPress press system and all the necessary upstream and downstream equipment. Depending on the fruits to be processed the MultiLine can be equipped with units for fruit reception, mash preparation and juice treatment.



Multipress XPro 8



Separation system



Multipress XPlus 40 M

## Membrane filtration systems

**It's clear** Membrane filtration systems are used mainly for the filtration of fruit juices and other aqueous solutions. The fully automated systems with their modular design guarantee economic operation in all performance areas.

Ultra filtration or micro filtration 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 the course of many decades and the right choice of separation membranes. Bucher Unipektin offers filtration systems with economic polymeric membranes, versatile ceramic membranes and rugged stainless steel membranes.

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

### Traditional applications

- Filtration of fruit juices from apples, pears, stone fruits and berries
- Filtration of ciders and fruit wines

### Related applications

- Recovery of valuable substances from beverage sediments (deposits from fruit juices, beer and wine)
- Filtration of fermentation broths
- Filtration of tea and other plant extracts



UltraStar XL - plant



Module rack



Ceramic filtration plant

## Adsorbers and ion exchangers

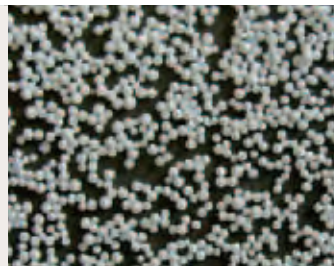
**Refinement of natural products** Adsorption technology is based on purely physical effects. By applying this technique, clear fruit juices and concentrates can be colour-standardised gently and carefully and stabilised against post hazing without the use of fining agents. Adsorbers from Bucher Unipektin operate with maximum efficiency and optimum product care.

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

Within the citrus industry, this technology is predominantly used to debitter citrus juices and to correct the sugar/acid ratio.



Adsorber for fruit juice



Adsorber resin



Adsorber for citrus juice

## Fruit reception line

**Efficient and gentle on the products** The raw material forms the basis for high quality fruit juice. Both the fruit's quality and its correct, careful handling are the two vital elements here. Fruit reception lines from Bucher Unipektin meet the very highest demands when it comes to conveying and cleaning the raw materials.

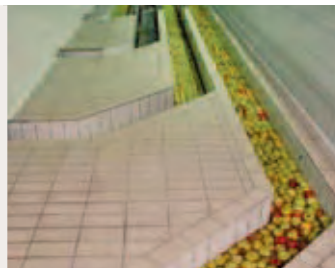
**Apples and pears** The fruits are offloaded, typically into deep silos. Onward transport via flushing channels is a very gentle way of handling the fruit and the removal of dirt and impurities takes place over several stages in systems designed specifically for this purpose.

**Stone fruits, berries, grapes** Bucher Unipektin developed dedicated hoppers and silos for stone and berry fruits. Subsequent transportation takes place via systems specially designed for these raw materials.

All fruit reception lines can be individually adapted to the particular requirements of the situation in question. This is usually done in close co-operation with the customer's own planning engineers.



Fruit unloading



Flushing line



Washing

## Evaporators

**Concentrate production** Fruit juices often undergo further processing to high-quality concentrates in order to increase their shelf life and predominantly for logistical reasons. For this purpose mainly thermal evaporation plants are used.

Since decades Bucher Unipektin evaporators have an outstanding reputation in the fruit juice industry. Water evaporation typically takes place in multiple stages and under vacuum. Low temperatures and short residence times assure that the valuable fruit ingredients are preserved to the greatest possible extent.

The volatile aromatic substances are not lost during the evaporation process either. They are recovered in a separate aroma column via condensation and distillation from the evaporated product vapours and stored as aroma concentrates.

Bucher Unipektin evaporators are always designed to the individual customer's needs. Due to the multi-stage design and optional implementation of mechanical or thermal vapour re-compressors highest energy efficiency is achieved. The plants comprise user-friendly automation and visualisation systems.



Evaporator systems with aroma recovery columns



**...to taste**

**Innovation** With the development of the HP system, Bucher has succeeded in revolutionising press technology in the fruit juice production sector – long-term. The falling film evaporators with aroma recovery developed by Unipektin are the reference technology in juice industry. Bucher Unipektin presses and evaporators are hard at work day in, day out in most plants that produce fruit juices and concentrates.

Today we have a whole team of experienced development engineers working on the press technology of tomorrow – for the benefit of our customers. Our customers' needs and wishes are always at the forefront of our activities.

We are able to simulate authentic practical conditions and test a whole range of different process engineering techniques at our internal technical test centre. Bucher Unipektin has a number of different testing systems available for specific tests and trials which can be carried out on the premises of customers and other prospects. A scale-up can be carried out at any time.

**Quality** Bucher Unipektin processes all orders with due care and attention, regardless of whether they concern individual system components, complete processing lines, or spare parts and replacements.

Bucher Unipektin systems are famous for their high availability and long service life coupled with minimal maintenance expenditure and effort.

We are ISO 9001 certified.

**Worldwide service** In order to guarantee that our customers' installations fulfil their performance potential at all times our commissioning engineers intensively train and instruct your operating personnel on-site.

The support team in our customer service and after-sales department consists of experienced experts. Our central spare parts depot guarantees that spares will be available for years to come, as well as ensuring rapid and reliable delivery to anywhere in the world.

Our service offer is completed with the supporting tool Bucher NetService which is based on remote access to control systems.

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**Bucher Specials** Winemaking equipment, fruit juice processing equipment, food drying and sludge dewatering technologies, and the Swiss distributorship for tractors and agricultural machinery.

**Bucher Municipal** Compact and truck mounted sweepers, airport cleaning and snow cleaning equipment, spreaders, refuse collection vehicles and multi purpose vehicles.

**Bucher Hydraulics** Customized hydraulic drive and control technologies for vehicles and machinery.

**Kuhn Group** Agricultural machinery for fodder harvesting, feed mixing, tilling, seeding, fertilizing and straying.

**Emhart Glass** Glass forming equipment, inspection systems, machinery and controls for the container glass industry.