

FRUIT PROCESSING



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Automation
Digitalisation
Filtration
Flavours & Ingredients
Labelling
Market Price Report

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INTERNATIONAL JOURNAL FOR THE FRUIT PROCESSING, JUICE AND SOFT DRINKS PRODUCING INDUSTRY



Consumers are looking for healthy, sustainable and natural food and beverages

„Advertising. In good times people want to advertise; in bad times they have to.“

Bruce Barton

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EDITORIAL

Dear Readers,

Consumers are more at home and take time for their meals. They are researching more and are also increasingly purchasing their food and beverages online. What trends can be expected with regard to the food and beverage industry in 2021 – both in stationary retail shops and online – and how can manufacturers successfully meet the changing market requirements? Please learn more on page 78 ff.

Liquid sugar is the sweetener of choice for many beverages. The challenge of one of the largest producers in the sugar industry was to reduce cost and downtime of filter bag maintenance and improve operator safety in both batch and continuous processing operations. Please explore more on page 82 ff.

A Siemens study on the food and beverage industry expects that, for the next five years, digitalisation investments will reach \$ 567 billion¹. But where can the beverage industry use these new digitalization tools? And how can its processes and offerings be reformatted for the future? Please discover more on page 86 ff.

Henkel has launched a new range of sustainable packaging hot melt adhesives with bio-based polymers. The range includes two grades with up to 98 % bio-based content and provides a way to optimise the carbon footprint of end products and packaging. Read more on page 90 f.

Global data volumes are growing exponentially as a result of digitalisation. More and more industrial processes are being monitored, analysed, and automated using sensors. Please find out more about technology for the digital age on page 92 f.

Yours



A handwritten signature in black ink that reads "M. Brennich".

marco.brennich@fruit-processing.com

¹ Siemens, Whitepaper „KI in der Nahrungsmittel- und Getränkeindustrie“ <https://new.siemens.com/global/de/branchen/nahrungs-genussmittel/exklusive-inhalte/whitepaper-ki.html>

FLAVOURS & INGREDIENTS

Healthy, sustainable and natural: these are the trends for the food and beverage industry in 2021. 78

More than ever before, the past few months have brought about an increased level of environmental and health consciousness amongst consumers. Plant-based products, produced and processed in a sustainable manner, as well as those with health-promoting benefits, are the main focus here. This development has been in the works for years and has only been accelerated through the events of the past year. Consumers are more at home and take time for their meals. If fruit bars were particularly popular in the past as snacks on the go, we are currently experiencing a significant increase in the consumption of breakfast cereals, for example. Beverages which people would otherwise consume in bars have now become a staple at home (in smaller packaging sizes), while ready-to-drink products are in demand. Consumers are researching more and are also increasingly purchasing their food and beverages online. What trends can be expected with regard to the food and beverage industry in 2021 ...



FILTRATION

Eaton HAYFLOW filter elements are a sweet success in improving both the safety and performance of liquid sugar processing operations 82



One of the largest producers in the sugar industry traces its roots all the way back to 1799 when Louis and Fredrick Havemeyer went into the sugar business in New York. Today the company descended from that enterprise produces 6.5 million tons of sugar annually from plants in the Americas and Europe. Of course, the granulated sugar used to sweeten a morning coffee is only one of many sugar-based products included in that 6.5 million tons. Liquid sugar is the sweetener of choice for many foods and beverages and it's produced ...

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DIGITALISATION

Four winners – digital solutions for the beverage industry 86

The future looks very promising. A joint study by VDMA and the management consulting company McKinsey & Company investigates just how far product and service portfolio digitalisation has advanced in mechanical engineering. They state that the revenue share for digital platforms and value-added services is only around 0.7 percent (about 6 billion euros) of the total European mechanical engineering revenue (around 850 billion euros) ...



LABELLING

Henkel introduces Technomelt Supra ECO to offer greater sustainability without any compromise in performance 90

Henkel has launched Technomelt Supra ECO – a new range of hot melt adhesives that delivers greater sustainability and lower CO₂ emissions while maintaining the performance of the Supra range. The innovative products are the result of a successful partnership with Dow, which developed a bio-based polyolefin elastomer that can effectively substitute fossil-based materials. The International Sustainability & Carbon Certification (ISCC)-process will guarantee traceable sourcing so packaging manufacturers will have a dependable way to advance their sustainability goals ...

AUTOMATION

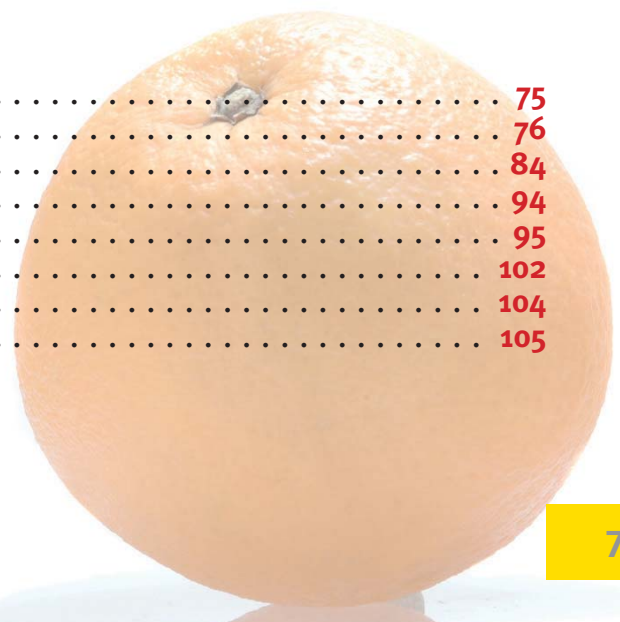
JUMO Technology for the Digital Age. 92



Global data volumes are growing exponentially as a result of digitalisation. More and more industrial processes are being monitored, analysed, and automated using sensors. The new JUMO Cloud and the JUMO smartWARE SCADA make an important contribution to the development of the intelligent factory of the future. For many years, JUMO has been evolving into a supplier of industry-specific complete solutions for which JUMO also produces the complete hardware. The JUMO portfolio stretches from sensors for various physical measurands to controllers, paperless recorders, and powerful automation systems ...

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Healthy, sustainable and natural: these are the trends for the food and beverage industry in 2021

| Alcohol-free | Labelling | Multi-Sensory Experiences® | Plant-based | Reduced Sugar | Smoothies | Sustainability |

More than ever before, the past few months have brought about an increased level of environmental and health consciousness amongst consumers. Plant-based products, produced and processed in a sustainable manner, as well as those with health-promoting benefits, are the main focus here. This development has been in the works for years and has only been accelerated through the events of the past year. Consumers are more at home and take time for their meals. If fruit bars were particularly popular in the past as snacks on the go, we are currently experiencing a significant increase in the consumption of breakfast cereals, for example. Beverages which people would otherwise consume in bars have now become a staple at home (in smaller packaging sizes), while ready-to-drink products are in demand. Consumers are researching more and are also increasingly purchasing their food and beverages online. What trends can be expected with regard to the food and beverage industry in 2021 – both in stationary retail shops and online – and how can manufacturers successfully meet the changing market requirements?

Health – the next generation of pioneering products

60 % of consumers worldwide proactively look for products which improve their health.¹ Many consumers are aware that a healthy diet is vital for their general well-being, as well as for preventing illnesses. As such, the demand for products which contribute to a healthy diet has been increasing for years. Alongside foods and beverages with balanced nutritional values in terms of macro-nutrients such as sugars, fats or proteins, consumers are also increasingly looking for products which boost certain bodily functions or provide health benefits, such as the immune system, intestinal health, or the body's energy resources.

In light of the current situation surrounding COVID-19, boosting the immune system has become more important than ever. In order to contribute to the development of market-oriented and functional products, Doehler combines the latest findings from nutritional science, regulatory

aspects and consumer findings with current trends involving health, naturalness, plant-based nutrition and sustainability.

Natural, plant-based ingredients, such as tea infusions, botanical extracts, Optifine Powders, cereals, nuts and pulses, juices and purées, functional fruit powders and vitamins & mineral mixtures, can be used in a wide range of applications. These ingredients are used to create healthy and refreshing smoothies, energising teas, delicious and creamy dairy substitutes or functional powders as nutritional supplements – Doehler's comprehensive portfolio of functional ingredients allows a multitude of positionings for products with healthy added value.

“Superfruits”, such as baobab, elderberry and co., are perceived to have health-promoting properties and are used in a wide variety of foods and beverages, primarily due to their inherently high content of secondary plant substances and vitamins. The acerola cherry is another superfruit and a true vitamin C blast, with 100 g of the fruit containing an average of 1,700 mg of natural vitamin C, making it the fruit with the highest vitamin C content in the world. When adhering to specific dosages, this completely



Fig. 1: Smoothies

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natural trend ingredient allows you to make claims in line with the Health Claims Regulation.

Possible applications include using acerola cherries as a nutritional supplement, for example in tablets or powders. The superfruit can also provide an added value in other products such as protein shakes as well as in confectionery or cereal bars. Over the last two years, the number of new products containing acerola launched in the food sector has risen by 23 %.²

Probiotics also contain numerous health-promoting properties, including the maintenance and restoration of a healthy intestinal flora. This in turn has a positive effect on the human immune system. Doehler offers probiotics in form of probiotic fruit granulates. These crunchy and colourful ingredients impress with their authentic fruit taste, while containing living probiotic cultures. The granulates can easily be processed in numerous foods, such as muesli, yoghurt or cereal bars, without requiring the powder to be dissolved. Alongside the health aspects, consumers are primarily focussing on plant-based and sustainable foods and beverages – three aspects which are closely linked to each other and for which Doehler has the fitting products and concepts.

Plant-based – healthy, delicious, sustainable

The market share for plant-based products has recently displayed double-digit growth, while forecasts project further growth of up to 14 % in this product category until 2024.³ A growing number of people have turned to vegetarian diets, or are avoiding animal ingredients completely. As part of a modern and healthy lifestyle, consumers are also adapting their nutrition to ensure it is sustainable. Doehler has a pioneering portfolio of sustainably produced raw materials, certified by Fairtrade, Rainforest Alliance and UTZ, as well SAI/FSA, among others. The close collaboration with local farmers when it comes to procurement of raw materials is equally as important to Doehler as is the development and establishment of sustainable and fair cultivation conditions for the local workers.

With the global population forecast to grow to 10 billion by the year 2050, plant-based food and beverages are the sustainable sources of nutrition from which both humans and the planet can benefit. Consumption of these products is not only sustainable and generates less CO₂ which can harm the climate, but the cultivation areas can be used more effectively and provide greater yield than fields used for animal grazing areas.

Although many consumers are interested in plant-based foods and state that sustainable nutrition is important to them, the majority of them prefer plant-based products



Fig. 2: Plant-based dairy alternatives are in greater demand than ever.

which correspond as closely as possible to the known categories of desserts and cheese from a sensory standpoint, while providing added functional value. The demands on foods and beverages are becoming ever more complex, as alongside sustainable procurement and processing, health promotion and support, the products should also generate an excellent taste sensation.

Doehler has developed a wide range of concepts based on almond, nut, seed, cashew or coconut, which are used to supply fats and to create a creamy mouthfeel. These products are particularly well-suited for use in desserts and chocolate, as well as dairy-free products. In addition, the selection also comprises cereals, such as oats, rice and malt. Along with their authentic taste, they create a natural sweetness and healthy nutritional profiles, and are therefore ideal components for current trends such as reduced sugar and clean labels.

Doehler also has alcohol-stable and dairy-free coconut, almond and soy ingredients to create creamy and indulgent plant-based alternatives to cream liqueurs and cocktails. The combination of plant-based ingredients with traditional flavours, such as chocolate and coffee, or with exotic fruit flavours and juices, allows a wide range of different product variants and positioning options which can be tailored to meet the taste demands of the respective target group.

Plant-based proteins from chickpeas, beans or peas replace animal proteins and are therefore added as protein sources. They also provide a pleasant mouthfeel, a creamy texture and an optimum nutrient composition. Protein enrichment is one of the most important claims during the development of plant-based alternative products. Plant-based dairy alternatives in particular are in greater demand than ever. However, compared to animal milk, they contain fewer proteins, vitamins and minerals. Enrichment with high-quality plant-based protein mixtures is an advantage of these alternative products. The compre-

hensive portfolio of plant-based proteins by Doehler, produced at the company's own production sites, impresses with its excellent quality, as well as the option of creating custom solutions for every customer requirement. The wide spectrum comprises plant-based protein mixtures and solutions with optimised nutritional values and improved taste profiles. The solutions contain a natural starch content for a high natural functionality. In addition, they are characterised by excellent sensory properties (no bitterness/no astringency) thanks to Doehler's flavour technology and the unique production process. As such, we have a large selection of functional and health-promoting ingredients which form the optimal basis for the development of innovative, plant-based foods and beverages.

Labelling – greater packaging transparency

Although a large number of consumers focus on purchasing sustainable foods and beverages, 60 % state that it is difficult to determine whether a product is actually sustainable based solely on the packaging or label.⁴ This factor makes it particularly clear, just how important the transparent positioning of foods and beverages is. Clean labelling plays a significant role in this regard. The ingredients list on clean label products is reduced to the lowest possible amount, and the ingredients themselves should be processed as little as possible, while the natural source is to be made clear. Consumers can therefore make the conscious decision to select a product and its ingredients and source. Doehler also uses natural ingredients, such as fruit seeds, in the production of clean label products with healthy added value, while natural flavours from citrus and other fruits enable the creation of tasty foods and beverages with a transparent ingredients list.

One of the consumer labels developed to simplify product classification and increasingly being used today is the Nutri-Score. The label is already well established in some European countries, such as France and Belgium, while its use in Germany is voluntary since the end of 2020. As such, some large food producers and retail chains have decided to print the label on their packaging. The label consists of the letters A to E and a 5-step traffic light colour scale. A dark green A designates products with a good nutritional profile, while a red E is assigned to products that do not contribute as strongly to a healthy diet. The Nutri-Score is calculated from the energy content, as well as the content in terms of beneficial or less beneficial nutrients.

Doehler is supporting its customers in optimising their recipes and achieving a better Nutri-Score. The company provides various options for this, ranging from fruit and vegetable ingredients, which are suited for use in snacks or smoothies, up to innovative solutions which can help

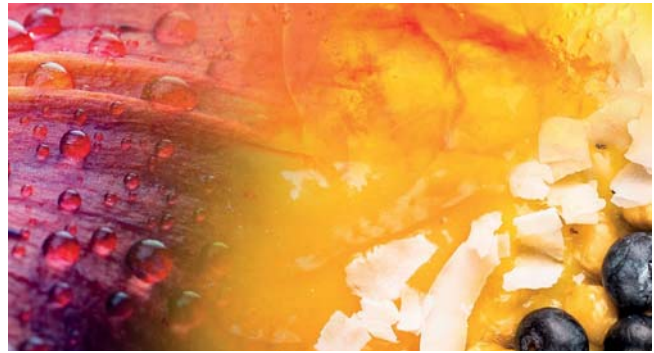


Fig. 3: The colour of a food determines much more than just its appearance.

reduce sugar and calories in beverages. The focus is always on natural ingredients which provide the product with additional sensory benefits and are also increasingly viewed as “healthy” by consumers. As such, products optimised with regard to their Nutri-Score can still promise absolute indulgence and be successful on the market.

Multi-Sensory Experiences® – a delight for all the senses

Today's consumers expect food and beverages to do more than simply taste good. Hear, see, taste, feel and smell – enjoyment with all the senses is the idea here. Only when the appearance, smell, taste, sound and mouthfeel are in harmony is the result a perfect multi-sensory experience. To create this, all ingredients must be selected carefully and used to develop a product that meets all these expectations.

The taste should be surprising and stand out from the mainstream. Consumers are also paying more attention on the source and naturalness of the ingredients, which is why botanical products are growing in popularity for example. Herbs, spices, blossoms and roots are key elements in creating exciting and authentic taste sensations, such as in herb, water plus or beer-mix beverages.

When it comes to authenticity, infusions, such as cold-extracted cocoa or cold-brew herbal teas are becoming ever more popular, as is their combination with fruits. Tea and hops or hemp are also great combinations and harbour great potential for the introduction of innovative beverage applications. Doehler has a comprehensive portfolio of natural taste solutions comprising natural flavours, essences, extracts, distillates and infusions which transform foods and beverages into authentic and unique taste sensations.

The colour of a food determines much more than just its appearance. It not only evokes associations, creates expectations and thus influences the purchasing decision – it even has an effect on how the taste is actually perceived! Colourful ideas are particularly suitable for implementation

in baked goods, which are not just healthy, but also eye-catching. The appearance of food and whether it is a suitable subject for a social media post is of more relevance than ever. Food should not only taste good and be healthy, but also look the part. Red burger buns, green pizza dough or black bread are just a few examples of special visual highlights.

White is also in great demand in food and beverage applications, as it provides confectionery applications, such as hard caramels or chewing gum with a vibrant and glossy appearance. Opacity, created by white colouring in originally transparent products or beverages, creates a natural and fresh appearance.



Fig. 4: Sugar reduced beverages

Healthy bonus – natural and reduced sugar

The general trend towards a healthy lifestyle has been further solidified due to the coronavirus pandemic. Alongside health-promoting products, solutions which impress thanks to naturalness and reduced sugar content are also in demand. Natural and sustainable foods and beverages with less sugar and clean label positioning are particularly popular, while still ensuring full enjoyment!

Doehler has a comprehensive portfolio of sweetening solutions for reduced sugar products in the food and beverage industry for every customer request. HIS, natural flavours or natural infusions and extracts create excellent taste profiles.

Refreshing lemonades, light fruit splashes and many other exciting food and beverage concepts, either with reduced sugar content or sugar-free, are currently booming on the market and are taking over supermarket shelves. Even alcoholic beverages with reduced sugar, such as Hard Sparkling Seltzer, are also popular amongst consumers. With around 100 kcal per can, the trendy drink is enjoying market success and offers incomparable taste and excellent mouthfeel thanks to the MultiSense® Flavours. The

company's portfolio contains only natural flavours for a refreshing and authentic fruity taste profile.

Alcohol-free – refreshing enjoyment at 0.0 %

Naturalness, high-quality ingredients and extraordinary taste sensations: for the majority of consumers, these are the decisive criteria when it comes to purchasing food and beverages. And in 2020, consumers paid more attention than ever before when deciding on what to eat and drink and what is good for their bodies. Alongside reduced sugar and sugar-free products, consumers often take care to reduce their consumption of alcohol, or cut it out completely.

In particular beverages with a convincing “adult” taste profile, but without alcohol, are becoming more popular. Innovative concepts, such as brewed soda or crafted lemonades are just as popular as rum and whiskey without alcohol.

And non-alcoholic beer-mix drinks are also growing in popularity. The manufacturing process here means that the authentic beer taste and mouthfeel are often lost when producing non-alcoholic and 0.0% beers. Although flavours are able to close the gap to real alcoholic beers, this option means a clean label declaration is not possible. Doehler has developed an innovative extraction technology that enables a clean label declaration and 0.0 % beer to be created with authentic taste for the first time. This option covers diverse consumer requirements at the same time.

With its comprehensive portfolio of natural ingredients and product solutions, Doehler is supporting a healthy, plant-based and sustainable future for our planet. In line with the company slogan “We bring ideas to life.”, and as a provider of complete ingredient systems and integrated solutions, Doehler therefore develops innovative and sustainable concepts with its customers – from the idea, to implementation, to the shelf.

¹Global Data, 2020

²Source: GNPD 2020

³<https://www.statista.com/statistics/1092536/global-plant-based-food-and-beverage-market-value-growth-by-region/#:~:text=North%20America's%20plant%2Dbased%20of%20food,rate%20of%20about%2011.62%20percent.>

⁴<https://www.foodnavigator-usa.com/Article/2019/06/24/Most-consumers-want-and-will-pay-more-for-sustainable-options-but-struggle-to-easily-find-them>

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Eaton HAYFLOW filter elements are a sweet success in improving both the safety and performance of liquid sugar processing operations

| Filtration | Filter Housing | HAYFLOW Filter Elements | Liquid Sugar |

Background

One of the largest producers in the sugar industry traces its roots all the way back to 1799 when Louis and Fredrick Havemeyer went into the sugar business in New York. Today the company descended from that enterprise produces 6.5 million tons of sugar annually from plants in the Americas and Europe.

Of course, the granulated sugar used to sweeten a morning coffee is only one of many sugar-based products included in that 6.5 million tons. Liquid sugar is the sweetener of choice for many foods and beverages and it's produced on an industrial scale in a Baltimore, MD plant that has been in continuous operation for about 100 years.

“Liquid sugar is produced by dissolving dry sugar in water at temperatures up to 160 °F (70 °C) with occasional excursions as high as 200 °F (90 °C) to produce a thicker syrup,” explained Wim Callaert, senior product manager at Eaton’s Filtration Division. “Undissolved solids, called “Fish Eyes” and other contaminants have to be filtered out

of the liquid at midstream and again just prior to packaging for delivery to meet strict quality and purity standards.”

The plant initially installed Eaton strainers in the mid-stream and finishing areas of the process and as the demand grew upgraded to large Eaton MAXILINE™ 12-bag filter housings. The standard needle felt filter bags they initially chose required a filter change once per shift. This was difficult, time-consuming and potentially dangerous due to the hot, viscous liquid being filtered and the confined locations of the filter housings.

Eaton was invited to evaluate the situation and develop a solution to reduce the maintenance cycles and make maintenance easier and safer for operators and maintenance personnel.

Challenge

Before changing the filter bags, the bag filter housing is first isolated and then drained. Then the clogged filter bags and the displacement balloons, which reduce the internal volume of the filter bag in order to minimize product losses when draining the housing, are removed. The housing is rinsed and the effluent is drained before new filter bags and displacement balloons are inserted. Then the housing is closed, filled and put back in service.

The liquid sugar production line uses three large 12-bag MAXILINE housings and this process was repeated for every shift generating significant downtime. In addition, some of the MAXILINE housings are located in areas of the plant that are not easily accessible. As a result, the standard filter bags were not always placed correctly causing potential



Eaton HAYFLOW filter elements combine the benefits of a filter bag and a filter cartridge to increase filter area by up to 65 percent compared to standard filter bags and deliver extended service life, longer filter change intervals and reduced operating costs.

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FILTRATION

damage to the filter bag and leading to other possible filtration problems.

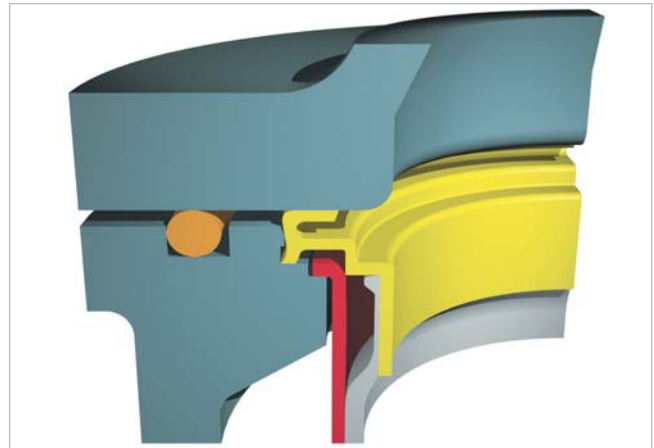
“The filtration system actually was undersized for the volume of product being filtered,” Callaert noted. “The standard solution would be to extend filtration capacity by adding more bag filter housings, but that would require a significant capital investment and consume additional floorspace without reducing maintenance time.”

Instead, the Eaton team focused on improving the performance of the filter bags and began testing a variety of different options.

Solution

The solution was to equip the existing 12-bag MAXILINE housings with high-performance HAYFLOW filter elements. Eaton recommended 25-micron polyester HAYFLOW filter elements using SENTINEL™ seal rings for both the mid-stream and final filtration applications to handle the high temperatures involved.

“HAYFLOW filter elements combine the best features of filter bags and filter cartridges in a single, compact, high-performance element,” Callaert said. “They use fully-



Eaton SENTINEL seal ring lip rings provide a flexible, chemical resistant seal that's adaptable to any filter housing. The pressure activated sealing lip ensures bypass-free filtration over all ranges of pressure, temperature and micron rating and the design simplifies installation and removal.

welded, nominal rated polypropylene or polyester needle felt media with approximately 2.5 times longer service that provides a 65-percent increase in filter surface compared to standard filter bags. In addition, the compact HAYFLOW filter elements minimize the amount of product lost during maintenance and eliminate the need for heavy displacement balloons while the SENTINEL seal rings simplify installation and reduce bypass losses.”

Experts in Beverage Processing



Leading process technology for the beverage and food industry

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BUCHER
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Eaton MAXILINE VMBF multi-bag filter housings are designed for high-volume applications requiring frequent filter bag changes including batch processes and high-dirt load applications. Their QIC-LOCK opening mechanism facilitates fast and easy filter bag changes to improve productivity and reduce operating costs.

Result

The filtration process was able to change from a time-based maintenance schedule to a differential pressure (Δp) based schedule that allowed the filter elements to load up to optimal saturation levels and use their full capacity. The HAYFLOW filter elements increased filter

surface area by 65 percent in effect turning each 12-bag housing into the equivalent of a 20-bag housing.

“The HAYFLOW filter element is made of high capacity media vs. the standard media previously used,” Callaert added. “This change increased the filtration capacity up to five-fold. This, along with the significantly increased capacity of the HAYFLOW solution reduced filter maintenance requirements from once per shift to once every three days on average with a commensurate reduction in downtime and increased process productivity.”

In just one step, the compact HAYFLOW filter element is much easier to install and remove compared to the previously used two-piece combination of filter bag and displacement balloon. Its 75 percent smaller internal volume reduces product loss and its weight when removed. The SENTINEL seal ring provides a seal that virtually eliminates bypass losses and ensures proper alignment to help prevent damage to the element during installation.

“However,” Callaert said, “the most important benefit is the improvement in operator safety resulting from both the longer maintenance cycles and the much easier maintenance procedures made possible by the upgrade to premium HAYFLOW filter elements. Less operator exposure to a hot, viscous product substantially reduces the possibility of accident or injury.”

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The Publication for Practitioners!

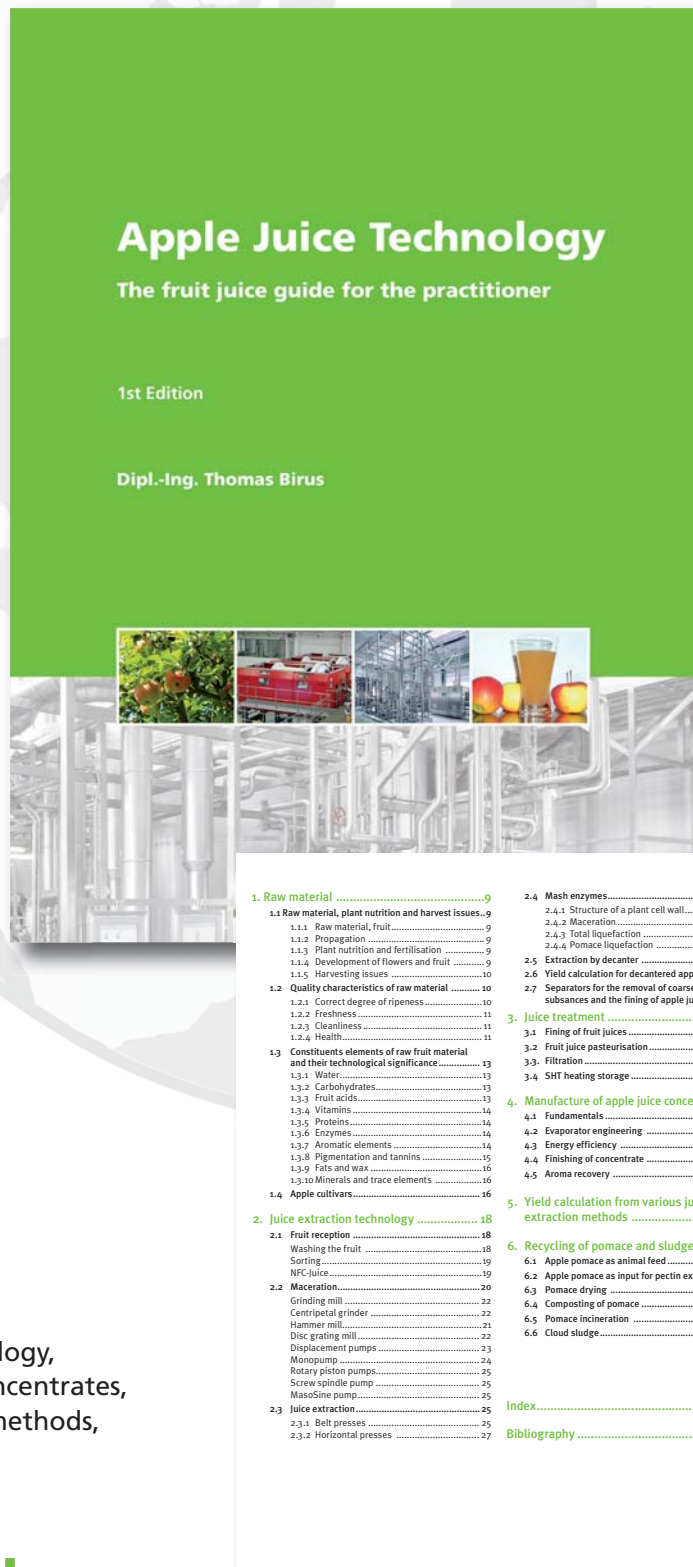
The production of apple juice is a carefully engineered sequence of technological measures aimed at extracting the valuable, flavoursome, enjoyable and desired contents from apples and presenting them to the consumer in the very best packaging.

With this book, up-to-date information is now available to practitioners keen to learn what's new in the increasingly automated production. The book sheds light on the back-ground to modern apple juice technology without delving too deeply into scientific detail.

This book is intended to be of service to school and college students, skilled and master craftsmen and engineers.

It will help to answer the many questions about "How does that work?", "Is there an alternative to this method?" and "Can I do something better in my operation?".

Content: raw material, juice extraction technology, juice treatment, manufacture of apple juice concentrates, yield calculation from various juice extraction methods, recycling of pomace and sludge.



Apple Juice Technology

The fruit juice guide for the practitioner

1st Edition

Dipl.-Ing. Thomas Birus

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Four winners – digital solutions for the beverage industry

| Artificial Intelligence | Blockchain Technology | Cleaning Robotics | Data Processing | Digitalisation | Digital Twin |

The future looks very promising. A joint study by VDMA and the management consulting company McKinsey & Company investigates just how far product and service portfolio digitalisation has advanced in mechanical engineering. They state that the revenue share for digital platforms and value-added services is only around 0.7 percent (about 6 billion euros) of the total European mechanical engineering revenue (around 850 billion euros¹).

The beverage industry shows a similar trend, where the advantages of digital twins, blockchain solutions, artificial intelligence and robotic technology are being steadily implemented. A Siemens study on the food and beverage industry expects that, for the next five years, digitalisation investments will reach \$567 billion². But where can the beverage industry use these new digitalisation tools? And how can its processes and offerings be reformatted for the

future? Many fields in the industry could be solid options for this digital leap:

- the production of drinks and liquid foods
- the construction of beverage machinery
- contact with users and the after-sales service
- financing concepts and financial services
- creating contacts between beverage manufacturers and customers.

Digital twin

Several of the digitalisation tools are particularly well suited for the beverage industry. For example, take the digital twin. By digitally simulating a beverage machine and integrating its data into software tools, functions can be tested in real-time before the machine is built. The digital twin also helps the ongoing machine operations by avoiding



The Blockchain technology combines data in unchangeable lists via a forgery-proof method (distributed ledger) and can comprehend the entire supply chain of products.

© Anheuser-Busch InBev

downtimes. Moreover, the process data can be shared with others – even beyond one’s company. Before maintenance, the manufacturer can simulate real production conditions and adjust the maintenance intervals to the actual machine load. However, the company providing the data always remains in control of the use of its data³.

Krones is one example of a company currently utilizing digital twin solutions. This packaging machine manufacturer simulates and calculates the positioning performance of three-armed robots in the packaging process via digital twin programs⁴. This allows for status diagnostics improvements to be conducted during ongoing operation, even without access to the physical device.

Blockchain technology

Connection forms the basic principle behind another digital technology that could help evolve the beverage industry: Blockchain. This software system combines data in unchangeable lists via a forgery-proof method (distributed ledger) and can comprehend the entire supply chain of products. Blockchain solutions are already utilised today, particularly for verifying product authenticity. Industry experts predict this could generate savings of \$31 billion by 2024⁵ – all by improving supply chain traceability, reducing the time required and simplifying the recall process.

Blockchain technology is particularly useful for raw malt. The Beer Group AB InBev, Belgium, recently reported to Leffe beer consumers in France that, from 2021, they could use a QR code to discover the origin of the malting barley and its manufacturing process⁶. It was initially intended to connect grain farmers in the North of France with the malthouses in Antwerp, Belgium, and the Stella Artois brewery in Leuven, Belgium. AB InBev expects the technology will benefit not only consumers, but also the agricultural industry and its environmental footprint.

Blockchain solutions will also soon provide comprehensive product information for Sake, the traditional Japanese rice wine. Distributed ledger technology for the Sake blockchain⁷ will gather information regarding the ingredients, brewing process and control measures into the supply chain. The consultants for this project expect that this will lead to a higher price for the product.

Artificial intelligence

Artificial intelligence (AI) can also play an impressive role in the continued development of digital solutions for the beverage industry. A cross-industry study by Fraunhofer Institute for Industrial Engineering IAO of over 309 companies shows that 75 percent of the surveyed companies are

currently engaged with AI and 16 percent already utilise AI.

For example, AI has already generated 70 million recipes for whiskey manufacturing. Mackmyra, a Swedish whisky distillery, utilises it to automate the challenging aspect of recipe generation. The distillery combines machine learning models and calculation algorithms via a data cloud to calculate new recipe component combinations. Thereby, the company hopes to offer consumers innovative whiskey flavours⁸. In fact, the first whiskey based on these calculations has already been created: It was awarded “Gold” by the American Distilling Institute.

Artificial intelligence can also help prevent food waste. A sponsored project currently utilises AI to research methods for reducing food waste by up to 90 percent. Two supply chain points are crucial here: minimising overproduction and avoiding wastage. This allows for consumer demands to be more accurately predicted and for production infrastructure to be able to react quickly to both fluctuating demand and differences in the quality of raw materials.

Robots – cleaning the plant

Robotics, digital twins and artificial intelligence have been combined in the intelligent cleaning robotics for interiors and exteriors. A research team from the Fraunhofer Institute for Process Engineering and Packaging IVV in Dresden has developed two types of modular cleaning robots: One drives through the production plant via conveyor belt and cleans it from the inside, the second cleans the floors, ceilings and walls of rooms, as well as production machine exteriors. An extendable robotic arm with a jet cleaner also reaches the higher-up areas. This mobile, modular device drives autonomously through the production hall. Installed sensors determine the level of dirt and adapt the cleaning parameters, such as the pressure and amount of cleaning foam.

This is also possible with a self-learning AI system: It selects the appropriate cleaning parameters and specifies the process steps. The process data are displayed via simula-



Mackmyra, a Swedish whisky distillery, combines machine learning models and calculation algorithms via a data cloud to calculate new recipe component combinations.

© Mackmyra



A mobile cleaning robot drives autonomously through the production hall.

© Fraunhofer IVV

tion in a virtual twin. The level of dirt is then transmitted to the 3D model of the plant. Depending on the distance of the cleaning device from the surface in question, the spray pressure can be adjusted as necessary.

The intelligent factory is within reach

The networked, adaptive and real-time production simulations are not far off. Moreover, the benefits are also quantifiable. But one thing should not be forgotten: People need to be able to interpret and handle the data. Data scientists are acting as the domain experts to develop the data usage in the process. A project under the consortium leadership of the Bitburger Brewery Group, Bitburg, with the Augustiner brewery, Munich, is currently developing a data-based method for predicting the malt processability, lautering time and the yeast processing yield.

However, all things considered, questions of approach remain relevant in the industry: For digital projects, the industry association VDMA⁹ recommends mechanical engineers start with manageable project sizes to gain initial experience.

⁸McKinsey & Company, Customer centricity as key for the digital breakthrough (See download section in right-hand column)

²Siemens, Whitepaper “AI in the food and beverage industry” <https://new.siemens.com/global/en/markets/food-beverage/exclusive-area/whitepaper-ai.html>

³Fraunhofer ISST, press release https://www.isst.fraunhofer.de/en/news/press_releases/2020/PI_LogiMAT2020.html

⁴MathWorks, Krones Develops Package-Handling Robot Digital Twin https://de.mathworks.com/company/user_stories/krones-develops-package-handling-robot-digital-twin.html

⁵foodbev, Blockchain ‘could save food industry \$31bn’ by 2024 – research <https://www.foodbev.com/news/blockchain-could-save-food-industry-31bn-by-2024-research>

⁶ABInBev, From barley to bar: AB InBev trials blockchain with farmers to bring supply chain transparency all the way to beer drinkers <https://ab-inbev.eu/news/from-barley-to-bar-ab-inbev-trials-blockchain-with-farmers-to-bring-supply-chain-transparency-all-the-way-to-beer-drinkers/>

⁷AIPIA, Japanese Sake to get Blockchain security as exports boom <https://www.aipia.info/news-Japanese-Sake-to-get-Blockchain-security-as-exports-boom-1170.php>

⁸Cision, Mackmyra Intelligens, The world’s first whisky created by AI wins gold <https://news.cision.com/mackmyra-svensk-whisky/r/the-worlds-first-whisky-created-by-ai-wins-gold,c3112197>

⁹VDMA Guidelines for artificial intelligence <https://bayern.vdma.org/viewer/-/v2article/render/49875406>

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Henkel introduces Technomelt Supra ECO to offer greater sustainability without any compromise in performance

| Bio-based Polymers | Carbon Footprint | Hot Melt Adhesives | ISCC | Sustainability |

Henkel launches sustainable packaging hot melt adhesives with bio-based polymers

Henkel has launched Technomelt Supra ECO – a new range of hot melt adhesives that delivers greater sustainability and lower CO₂ emissions while maintaining the performance of the Supra range. The innovative products are the result of a successful partnership with Dow, which developed a bio-based polyolefin elastomer that can effectively substitute fossil-based materials. The International Sustainability & Carbon Certification (ISCC)-process will guarantee traceable sourcing so packaging manufacturers will have a dependable way to advance their sustainability goals.

The new Technomelt Supra ECO range was developed using the most innovative raw material toolbox available. One key element is Affinity RE from Dow – the first bio-based, high performing polyolefin elastomers on the market. Made with Tall Oil – a by-product created by the paper-milling industry and ultimately sourced from sustainably managed forests, Affinity RE allows for the substitution of fossil fuel and the creation of breakthrough products such as the Henkel Technomelt Supra ECO. As a result, these new ECO products deliver the same adhesion, set and open time, and heat resistance performance of the existing Technomelt Supra range, while providing a sustainable and low carbon alternative for consumer goods and packaging applications. These



Henkel's ECO range is one of the key pillars for the company to drive sustainability in packaging and labelling adhesives.

© all Henkel

properties directly play into customer expectations and current market needs.

“Our new ECO range has been developed to enable our customers reaching their sustainability goals. The expectations of consumers, brand owners, regulators are changing, and with this also the industry demand changes. The use of bio-based material in consumer goods and packaging is an important driver for sustainable sourcing and a lever to reduce environmental footprint,” explains Jenna Koenneke, Global Head of Market Strategy for Consumer Good Adhesives at Henkel. “Through our commitment to pioneer industry change, we have worked with key partners such as Dow to identify and take on this challenge. The Technomelt Supra ECO range demonstrates the importance of collaboration across the value chain and is the product of the experience and innovative drive of both companies. Together, we have created a unique solution that helps our customers develop packaging with the lowest environmental impact.”

The new high-performance hot melt adhesive range includes two grades with up to 98 % bio-based content and provides a way to optimise the carbon footprint of end products and packaging. As well as consuming fewer sustainable raw materials to produce, they enable more sustainable production processes and are compatible with paper recycling streams.

“Consumers expect more sustainability from the products they use, and packaging is no exception. We want to support the industry to not just meet consumer expectations but to proactively set ever higher sustainability ambitions,” said Imran Munshi, Dow P&SP EMEA Consumer Marketing Manager. “At Dow we’re proud to be embarking on a journey towards greater sustainability alongside innovative partners such as Henkel.”

Innovating a more sustainable future with Henkel’s Mass Balance concept

Henkel’s ECO program is one of the key pillars for the company to drive sustainability in packaging and labelling adhesives. The concept revolves around improving the environmental footprint through carbon, water and energy process optimisation and through alternative material choices, for example, bio-based materials and recycled substrates. Technomelt Supra ECO brings the concept of how adhesives can enable sustainability by optimising the footprint of the total packaging to live. When products set a new benchmark in the market, ECO becomes part of the product name for easy identification.



The new high-performance hot melt adhesive range includes two grades with up to 98 % bio-based content and provides a way to optimise the carbon footprint of end products and packaging.

The new ECO adhesives deliver sustainability benefits thanks to the value chain’s adoption of Henkel’s mass balance approach to ensure a higher proportion of bio-based content. Mass balance represents a significant advance towards a more circular economy and sustainable process for the chemical industry. It enables existing production process to flexibly shift from fossil-based to renewable sourcing by combining bio-based and non-biobased feedstocks. However, by tracking renewable content and allocating this to the ECO range the products’ CO₂ footprint is demonstrably reduced.

The implementation of the mass balance concept at Henkel’s and all partner’s manufacturing plants is getting certified by ISCC. This guarantees traceability of bio-content throughout supply chain and assures its sustainable sourcing. These responsible raw material choices ensure that the Technomelt Supra ECO range can offer a very high carbon footprint reduction leading to the lowest possible environmental impact.

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Automation 4.0 with the JUMO Cloud and JUMO smartWARE SCADA

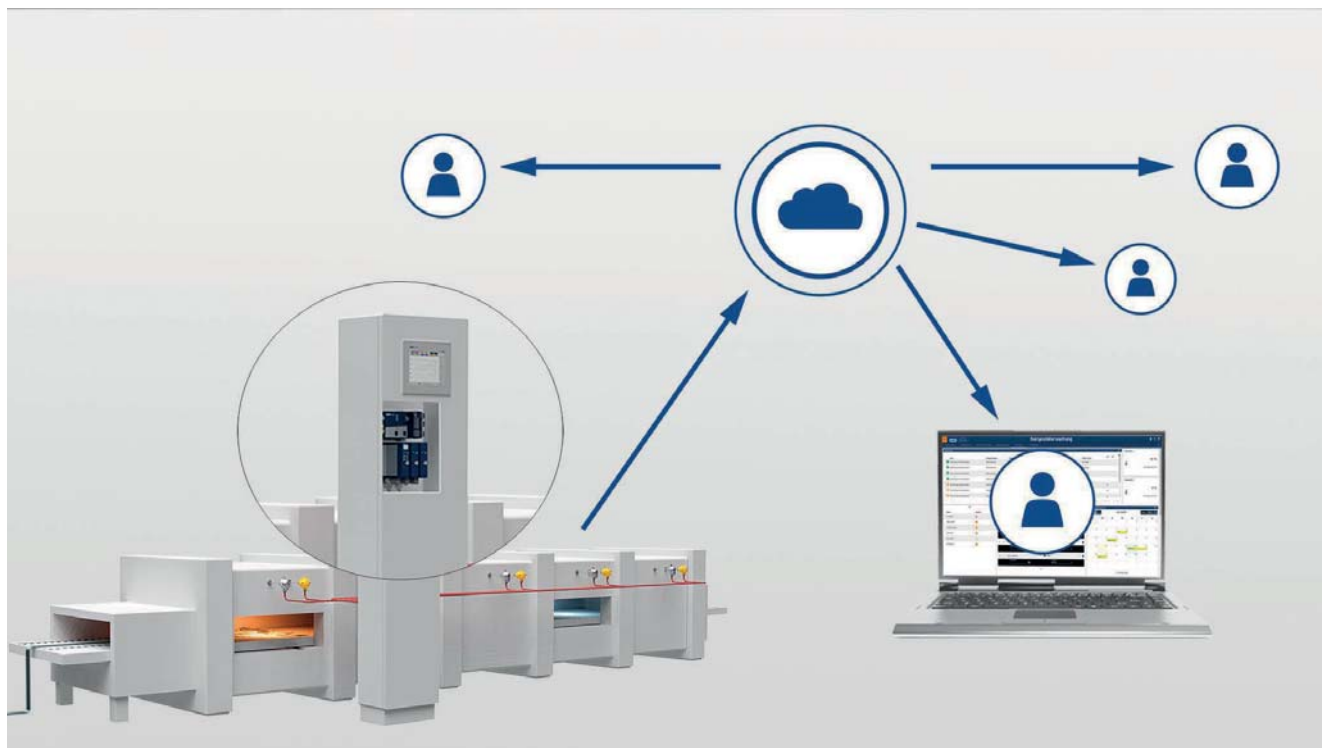
Global data volumes are growing exponentially as a result of digitalisation. More and more industrial processes are being monitored, analysed, and automated using sensors. The new JUMO Cloud and the JUMO smartWARE SCADA make an important contribution to the development of the intelligent factory of the future.

For many years, JUMO has been evolving into a supplier of industry-specific complete solutions for which JUMO also produces the complete hardware. The JUMO portfolio stretches from sensors for various physical measurands to controllers, paperless recorders, and powerful automation systems.

The JUMO Cloud is the next logical step in this development. It is based on the “Software as a Service” (SaaS) model, which is a cloud-based application software with a predefined user interface.

As an IoT platform for process visualisation as well as collecting, acquiring, analysing, and archiving data, the JUMO Cloud provides a global access point to measurement data using conventional web browsers. It is characterised by a high degree of security as well as valuable visualisation, alarm, and planning functions. Customers can use the JUMO Cloud to monitor several distributed plants, processes, or sites in one dashboard, which, in turn, increases process reliability.

JUMO uses a redundant and certified infrastructure for data storage, as a result of which users save a significant



JUMO opens up completely new automation possibilities with the JUMO Cloud and JUMO smartWARE SCADA.

© JUMO

amount of time. Professional reporting and export functions considerably reduce the effort required for data acquisition requiring proof. JUMO works exclusively with European data centers, which means users can rest assured that all GDPR standards are met.

The possibilities provided by the JUMO Cloud span from simple alarm messages through to condition monitoring and complete plant control. The Cloud has been configured to integrate seamlessly with the new hardware and software platform JUMO JUPITER, which is the key component in the equally new automation system JUMO variTRON.

JUMO smartWARE SCADA was developed along with the cloud solution. This software solution based on the JUMO Cloud is located in the automation pyramid at the control level. JUMO smartWARE SCADA provides easy access to measurement data using conventional web browsers. It offers functions for process visualisation as well as for evaluation and archiving the acquired data. Visualisation occurs through an editor that has an integrated animation and test tool as well as vector-based, self-scaling process screens.

As a result, JUMO smartWARE SCADA is a highly scalable and high-performance digitalisation platform that supports manufacturing as well as work processes with efficient visualisation, alarm, and planning functions. Thanks to its modern web-based interface, customers can access it without having to install any software. As a system that supports multiple clients, user rights can be configured on an individual basis. Security is guaranteed by end-to-end encryption with possible two-factor authentication using the latest technology.

When paying for the JUMO Cloud the customer can choose between a flat rate and a pay-per-use model. The cloud memory can be flexibly expanded and adapted to the respective customer's individual requirements. JUMO

About JUMO

The JUMO corporate group, headquartered in Fulda, Germany employs around 2 400 people worldwide and is one of the leading manufacturers in the field of industrial sensor and automation technology. JUMO products are used around the globe in industries such as heating and air conditioning, food and beverage, renewable energies, water and wastewater, and industrial furnace construction. The corporate group encompasses 5 branch offices in Germany, 25 subsidiaries in Germany and abroad, and more than 40 agencies around the world. The company posted a turnover of 253 million euro in 2019.

smartWARE SCADA allows variable and customer-specific pricing.

The JUMO Engineering team with its many years of expertise assists in the implementation of industry as well as project-specific cloud and SCADA applications. By combining high-quality JUMO hardware, a modern cloud-based environment, and innovative Engineering services, JUMO is able to offer a "comprehensive carefree package" for users from a diverse range of industries.

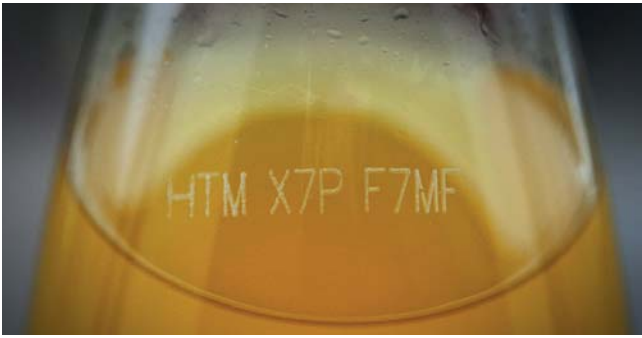
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JBT acquires AutoCoding Systems Ltd, a leading provider of label inspection and verification systems



AutoCoding's software solution automates and integrates in-line packaging systems, such as labelers, scanners, coders and checkweighers
© JBT Corporation

JBT Corporation, a global technology solutions provider to high-value segments of the food and beverage industry, has announced the acquisition of AutoCoding Systems Ltd, a leading provider of software solutions for the automated set-up and control of end-of-line packaging devices. AutoCoding extends JBT's capabilities in packaging line equipment and associated devices, including coding and label inspection and verification. The company is headquartered near Runcorn, UK, with additional operations in the US and Australia, and generates approximately \$7 million in annual revenue.

AutoCoding's central command software solution integrates and automates the use of in-line packaging

devices, such as coders, scanners, labelers, and checkweighers, reducing manual inspection and downtime for line configuration. While AutoCoding is scalable across JBT FoodTech's diverse end markets, it provides a particularly strategic fit with JBT's Proseal business where its tray sealing equipment begins the end-of-line process.

"AutoCoding's offering embodies JBT's broader mission to make better use of the world's precious resources by providing a solution that substantially enhances our customers' success. AutoCoding helps its customers reduce food waste, ensure complete and accurate food packaging information, and facilitate traceability and food safety," said Brian Deck, JBT's President and Chief Executive Officer. "The acquisition also expands our capabilities in the large and growing global market for in-line coding and inspection solutions, which includes hardware and software for food & beverage, pharmaceutical, and nutritional customers."

JBT is a leading global technology solutions provider to the food & beverage industry with focus on proteins, liquid foods and automated system solutions. JBT designs, produces and services sophisticated products and systems for multi-national and regional customers through its FoodTech segment. JBT employs approximately 6,200 people worldwide and operates sales, service, manufacturing and sourcing operations in over 25 countries.

European Flexible Packaging manufacturers concerned about polymer shortage and price development

The members of Flexible Packaging Europe (FPE) are very concerned about the recent developments of the polymer markets in Europe. In very short period the manufacturers of flexible packaging were confronted with an increased number of 'force majeure' declarations or 'maintenance' announcements by the leading polymer manufacturers in Europe creating sudden and significant shortages along with price increases in the supply chain.

The effect on converters means they may have difficulties in supplying finished products to meet their customers order requirements, particularly in the food and beverage sectors. Those have an increased demand to serve the European population during the pandemic with its many lockdowns. During times when canteens and restaurants are mostly closed, and more adults and children are working and studying from home European consumers depend on a safe and stable supply of food and beverage products. Almost half of the Fast-Moving Consumer Goods (FMCG) excluding beverages in the European Union are

packed with flexible packaging. Examples are all kind of packaged foods, pet food, personal and household care products.

Both small and medium sized manufacturers and multinational companies of flexible packaging are suffering from this situation of the insufficient raw material supply causing increased complexity in the production schedules of FPE's member companies.

Guido Aufdemkamp, FPE's Executive Director, commented on the recent developments: "We are concerned about this unfortunate situation which appears like a repetition of the first half in 2015. The shortening of production capacity with different reasons and arguments in such a short period seems either the test or use of market power. In particular after 2015 our members would have expected continuous investment in and regular maintenance of the ageing European polymer production facilities."

Steinecker GmbH as an autonomous company within the Krones Group

All over the world, Steinecker has for more than 145 years now been known as a strong brand synonymous with brewing technology. By combining technology from Steinecker with its own portfolio, Krones has meanwhile positioned itself on the market as a one-stop supplier in the brewing and beverage industry for over 25 years.

Krones wants to be there for its clients as a partner they can rely on whenever they need help and to this end locate areas of untapped optimisation potential on a continuous basis. In order to see this aspiration rigorously through to achievement, it is necessary to review the relevant processes and render them more efficient and customer-responsive. As part of this thrust, Krones has now decided to focus even more meaningfully in future on plant and equipment construction in process technology.

Beginning in April 2021, the newly founded Steinecker GmbH will therefore offer all of the solutions and

equipment required in a brewery, from raw materials reception right through to the finished product. The company's portfolio will be supplemented by appropriate after-sales and service concepts. Dirk Hämling will take over as Managing Director. He has since last summer been in charge of the Breweries Business Line at Freising (Germany). Dirk Hämling has spent more than 20 years gaining valuable international experience and during that time held various managerial positions at plant and machinery manufacturers whose focus is on process technology.

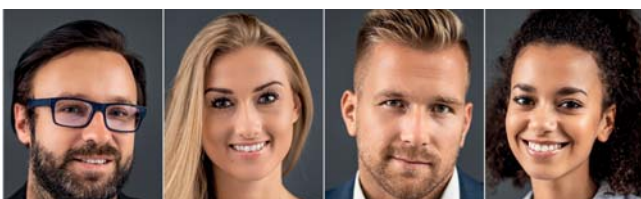


Krones will in future synergise all its operations to do with brewery business under a single roof: Steinecker GmbH.

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Nestlé acquires Essentia, expands presence in premium functional water segment

Nestlé USA announced that it has acquired Essentia Water (“Essentia”), a premium functional water brand headquartered in Bothell, Washington. Essentia pioneered ionized alkaline water more than twenty years ago and is the leading brand in that space in the U.S. Essentia’s 2020 sales were USD 192 million. This transaction is part of Nestlé’s continued transformation of its global water business, which

was announced in June 2020. The company is sharpening its portfolio to focus on international premium and mineral water brands and healthy hydration products, such as functional water. This follows the agreement to sell Nestlé’s U.S. and Canadian regional spring water brands, purified water business and beverage delivery service announced in February.

Scholle IPN acquires flexible packaging equipment company, Bossar

Scholle IPN, a leading global supplier of flexible packaging solutions, announced today that they have completed the purchase of Bossar, a global supplier of flexible horizontal form-fill-seal packaging equipment. The new business combination will leverage the combined capabilities of both businesses to provide one stop shopping for vertically integrated, sustainable solutions for the global flexible packaging market.

The company will retain the Bossar brand and will continue to utilize Bossar’s operational headquarters in Barcelona, Spain, and their manufacturing facility in India. The combined business has operations across Europe, Russia, China, India, Australia, Brazil, Chile, Canada and the United States.

SIG joins AIM-Progress to collaborate for positive impact through responsible sourcing



Sourcing responsibly is central to SIG’s Way Beyond Good ambition to deliver positive impacts for people and the planet. © SIG

SIG announced it is the first in the beverage carton industry to become a member of AIM-Progress, a global forum of leading fast moving consumer goods (FMCG) manufacturers and common suppliers, assembled to enable and promote responsible sourcing practices and sustainable supply chains.

Collaborating for positive impact

Responsible sourcing has been a key pillar of SIG’s net positive ambition to go Way Beyond Good for society and the environment since the outset. This commitment is closely aligned with AIM-Progress’ focus on collaborating for positive impact through responsible sourcing, making membership a natural fit.

The goal of AIM-Progress is to positively impact people’s lives and ensure respect for human rights, while delivering value to its members and their supply chains. A priority is to build members’ and suppliers’ capability to adopt and implement the UN Guiding Principles for Business and Human Rights.

As the first beverage carton provider to join the organisation, SIG has an excellent opportunity to build strong partnerships with other members. The aim is to work together to co-create solutions and share best practices that can positively impact people’s lives and ensure human rights are respected through the supply chain.

Helping customers meet demand for responsible sourcing

FMCG brands are seeing increasing demand from consumers, investors and other stakeholders to demonstrate that they meet high ethical, environmental, labour and human rights standards – not only in their own operations, but throughout their products’ supply chain.

SIG’s solutions enable customers to clearly demonstrate that their packaging comes from responsible sources. The company has led the industry in the development and adoption of certifications for responsible sourcing for over a decade.

Mass flow controllers and mass flow meters for high-level dynamics in the field

Bürkert is expanding its portfolio of mass flow meters (MFMs) and mass flow controllers (MFCs), Types 8742 and 8746, for gases to include variants with a standard signal and PROFIBUS-DP interface. The new generation enables simple device replacement or plant modernisation, while ensuring the usual high measuring accuracy and low-maintenance operation. Further, the robust housing allows unprotected field use, even in Ex Zone 2.

Measuring and controlling gases poses challenges for operators of plants with a long operational life. On the one hand, they want to use the latest measurement technology and, on the other hand, this technology must communicate via existing interfaces. The fluid specialists at Bürkert Fluid Control Systems therefore now offer their proven MFCs/MFMs, Types 8742 and 8746, as versions with an analogue or PROFIBUS-DP interface.

The thermal MEMS sensor is located directly in the gas flow and achieves very fast response times for highly dynamic measurements or gas control, for example in metal and glass production and processing, fermentation processes or filling and packaging machines. The MFMs/MFCs conform to FDA and USP Class VI and can be used in the pharmaceutical and food industries as well. A robust electronics housing with optional conformity to ATEX/IEC Ex Zone 2 Cat. 3G/D ensures safety in the field. As a result of the interface extension, even existing plants with established data acquisition can be easily upgraded to the

latest generation of devices. High-level dynamics and measuring accuracy with very short response or setting times do not depend on the state of interface technology. Nevertheless, the latest MFCs/MFMs, Types 8742 and 8746, offer extended pressure and flow ranges as well as additional, application-specific software functions.



MFCs/MFMs, Types 8742 and 8746
© Bürkert

Flexible technology

The MFCs/MFMs operate in the nominal flow rate range of 0.010 lN/min to 160 lN/min (Type 8742) or 20 lN/min to 2500 lN/min (Type 8746). Optionally, up to four real gas calibrations for various gases and mixtures can be stored in the device. Gas changeovers, for example for fermenters or molten metal treatment, are thus possible without any problems.

The entire range of new generation devices feature uniform M12 standard connectors for communication, ensuring easy installation and a reliable supply of spare parts. Thanks to the integrated configuration memory, devices can be exchanged quickly and easily via plug & play.

Natural extracts for active life and healthy ageing

There is growing evidence that a Mediterranean diet can help alleviate cognitive decline in advanced age, strengthen heart health and thus support performance and overall well-being. Inspired by this dietary approach, Euromed offers a new line of Mediterranean fruit and vegetable concentrates containing some of the key antioxidant and health-supporting properties found in the Mediterranean diet, in practical and versatile formats. All Mediterranean fruit and vegetable concentrates are obtained via water-only Pure-Hydro Process™ technology and are suitable for use in dietary supplements, functional foods, beverages, nutraceuticals, cosmetics and pharmaceuticals.

Pomanox® is made from pomegranates cultivated in the Mediterranean region of Spain through sustainable farming, with strict quality control of the raw material and an eco-friendly proprietary concentration technology. Several published studies support its health-promoting properties – from skin beauty, to cardiovascular health, cognitive performance and sports nutrition.

Mediteanox® is a natural olive concentrate with a precise content of hydroxytyrosol – a powerful antioxidant polyphenol – and other polyphenols that occur naturally in olives. It offers the documented cardiovascular benefits of olive oil, without the additional calories. It is clinically proven to reduce LDL cholesterol oxidation levels, support a healthy cardiovascular system and help control blood pressure. Other investigated health properties indicate a huge potential for counteracting the damaging effects of free radicals, such as premature skin ageing and excessive exposure to toxins.

Published clinical data indicate that Mediteanox® and Pomanox® may work synergistically to improve endothelial function, promote healthy blood lipid levels and reduce LDL cholesterol oxidation in middle-aged, apparently healthy people.

SweeGen announces successful scale-up of Bestevia® Reb N



SweeGen's Reb N for spirits and beverages © SweeGen

SweeGen is making possible a healthier, more guilt-free, and sweeter world with the commercialization of Bestevia® Rebaudioside N (Reb N), a special zero-calorie, highly sought-after natural stevia sweetener.

Reb N is a naturally occurring sweetener found in stevia leaves. The unique sensory profile of Bestevia Reb N makes it especially attractive for beverage applications, which is an application space that has already been exclusively licensed out. With its unique functionality, Reb N also works very well in a variety of foods.

Following SweeGen's commercial announcements of Bestevia Rebs B and I this year, and with the addition of

Reb N, the company's portfolio of sugar reduction solutions is the broadest available in the industry for tackling sugar reduction challenges.

"Bestevia Reb N has a unique sweet profile that helps us create solutions that have a taste profile closer to both full-calorie and high intensity sweeteners," said Shari Mahon, SVP of global application technology. "Our solutions are one of the most unique and tailored in the industry because of our access to the widest range of Rebs for sugar reduction."

SweeGen's entire proprietary portfolio of natural stevia sweeteners are classified as next generation non-GMO, high-purity, and clean tasting. The Bestevia portfolio includes Rebs B, D, E, I, M, and now Reb N. These Rebs translate to highly-relevant, clean-label, sustainable, natural sweeteners that consumers are seeking in finished products.

Much like Bestevia Rebs M, E and I, Reb N is found in trace quantities in the stevia leaf, which historically made it difficult and expensive to isolate. SweeGen's Bestevia Reb N is now accessible because it is produced by a patented bioconversion technology, which starts with sustainably-sourced stevia leaf, and results in great tasting, pure molecules that are found in nature. This process was developed by Conagen, a biotech innovator of sustainable ingredients.

PepsiCo's latest innovation Neon Zebra™ is primed to disrupt the cocktail mixer category

PepsiCo is shaking up the cocktail mixer category with the launch of Neon Zebra, a new line of non-alcoholic cocktail mixers with a vibrant personality that offers a shortcut to great-tasting-cocktails in seconds. A modern alternative to complicated cocktail recipes or large format cocktail mixers, each 7.5oz mini-can of Neon Zebra mixed with your spirit of choice, makes two tasty cocktails without the fuss. Made with real juice and no artificial sweeteners, Neon Zebra mixers don't compromise on taste. These non-alcoholic cocktail mixers come in four flavours: Margarita Mix, Strawberry Daiquiri Mix, Mojito Mix and Whiskey Sour Mix.



PepsiCo's latest innovation Neon Zebra™ © PepsiCo

As a leader in beverage innovation, PepsiCo is entering the growing cocktail mixers category at a time when today's

homebound consumers are looking for easy-to-make cocktails. In fact, the cocktail mixers category (including total mixers, ginger beer, club soda, and tonics) saw 28 % growth in 2020 and is worth more than \$858MM.¹ Cocktail culture is taking hold at home, and people are looking for innovations that fit their life-style.

Neon Zebra launches in sustainable, recyclable packaging via aluminum cans and paperboard 6-packs. Neon Zebra started to roll out in the US across retail and online stores in March for an MSRP of \$6.99-\$7.99 for six 7.5FL oz cans.

¹MULOC, 52 weeks, 2020; includes Total Mixers, Ginger Beer, Club Soda and Tonics

New four-year study shows 100 % orange juice not associated with weight gain in older children

New research shows no adverse association between change in Body Mass Index (BMI) and consumption of 100 % orange juice among older children adding to a growing list of studies suggesting children and teens can benefit from regularly drinking 100 % orange juice without concerns about weight gain. The four-year longitudinal study published in *Pediatric Obesity* found that drinking 100 % orange juice was associated with smaller changes in BMI over time in girls, with no significant effect on BMI in boys.



© FDOC

The analysis by researchers at the University of Connecticut and Harvard’s School of Public Health and Medical School included children ages 9 to 16 who were followed from 2004 through 2008.¹ The analysis showed there was a clear lack of a connection between orange juice and increased BMI in this age group. One hundred percent orange juice contributed, on average, between 40 to 50 calories to the daily diet while milk contributed almost four times that amount, from 150 to 180 calories. This amount of orange juice represents under 4 ounces per day on average, which falls well below the recommendations of the American Academy of Pediatrics, which suggests limits for 100 % fruit juice consumption of 8 oz. daily for children over 7. The 2020-2025 Dietary Guidelines for Americans counts 100 % fruit juice as a fruit serving and recommends that primary beverages either be calorie free – especially water – or contribute beneficial nutrients, such as fat-free and low-fat milk and 100 % fruit juice.²

“Children in this age group fail to consume adequate amounts of fruit and certain micronutrients such as vitamin C and potassium,” said Dr. Rosa Walsh, Director of Scientific Research at the Florida Department of Citrus. “Although the preferred choice is whole fruit, this research supports that moderate consumption of 100 % orange juice can be a beneficial addition to the diet to help meet fruit intake recommendations and is unlikely to contribute to childhood obesity.”

This longitudinal study, funded by an unrestricted grant by the Florida Department of Citrus, adds to the growing body of scientific research supporting the role of 100 % orange juice in adults’ and children’s diets.

- Another data analysis of nearly 14,000 Americans, ages 4 and older, concluded that people who drink 100 % orange juice have lower BMI and healthier lifestyle behaviors than people who don’t drink orange juice.³
- A longitudinal analysis of more than 7,300 children and adolescents in the GUTSII cohort concluded that 100 %

fruit juice or OJ intake was not associated with negative effects on body weight, BMI or BMI percentile. In fact, higher OJ intake was associated with greater changes (positive) in height for girls.⁴

- A trend analysis for children reported that despite higher energy intakes, there was no significant difference in physical activity levels, percent overweight or obese, or BMI z-score when comparing kids who consume 100 % orange juice versus those who don’t.⁵

A comprehensive review performed by the Academy of Nutrition and Dietetics for their Evidence Analysis Library examined the association between 100 % fruit juice intake and weight in children and concluded that the evidence does not support an association between 100 % fruit juice consumption and weight status or adiposity in children ages 2 to 18 years of age.⁶

Every glass of 100 % orange juice supports overall health and can help adults and children meet intake recommendations for key nutrients they may be lacking in their diets. An 8-oz. serving size contains vital vitamins and antioxidants, including vitamin C, potassium, folate, hesperidin and more, with no added sugar. From helping improve diet quality to providing key nutrients that can help support a healthy immune system, 100 % orange juice offers a number of health benefits and can also easily be incorporated into simple, great-tasting recipes.

¹Sakaki JR *et al.* *Pediatric Obesity*. 2021;Mar 1:e12781.
²USDA and USDHHS. *Dietary Guidelines for Americans, 2020-2025*. 9th Edition. December 2020. Available at [DietaryGuidelines.gov](https://www.dietaryguidelines.gov).
³Wang *et al.* *Pub Health Nutr*. 2012;15(12):2220-2227.
⁴Sakaki *et al.* *Public Health Nutr*. 2020 Oct 7;1-8.
⁵Nicklas *et al.* *International Journal of Child Health and Nutrition*. 2020;9(3):100-114.
⁶Evidence Analysis Library (EAL), Academy of Nutrition and Dietetics. *Dietary and Metabolic Impact of Fruit Juice Consumption Evidence Analysis Project*.

Pectin Market size to reach USD 1.87 billion by 2026 – CAGR 6.4 %

The global pectin market is estimated to reach USD 1.87 billion by 2026 and is anticipated to grow at a CAGR of 6.4 % from 2018 to 2026. Pectin market is projected to witness significant growth over the forecast period. Increasing health consciousness among consumers and various health benefits of pectin products is expected to drive the global market over the forecast period.

Pectin are plant-derived compounds, a structural heteropoly saccharide that is contained in primary cell walls of the terrestrial plants. It is mainly extracted from citrus fruits, apples, apricots, cherries, oranges, and carrots. Commercially, it is available in the form of white to light brown powder. The industry is characterized by companies characterized by medium level of integration in the value chain. Packaging and shipping play an important role in integrating the value chain. This helps the companies to incorporate their businesses in a cost-effective way.

Suppliers include companies which are involved in the production & distribution of processes raw materials such as apple, citrus, and others. The rising shortage of raw materials and increased import for Brazil and European countries is resulting in high bargaining power to the suppliers. In addition, low threat of backward integration from manufacturers, except some of the major and giant market players is also resulting in high bargaining power of suppliers.

The pectin market witnesses an external threat of substitution from natural gum and Citri-fi. Citri-fi is natural functional fibers, which are derived from citrus fruits. They offer hydrocolloidal properties, which is significant for high water holding capabilities. There are also some synthetic alternatives such as polyurethane, but these are usually

not considered suitable for skin contact applications. However, the various advantages of pectin over these products are expected to lower the threat.

Pectin extracted from this raw material are used for high cholesterol high blood pressure, & blood sugar, joint pain, weight loss, prevent colon & prostate cancer, high triglycerides, gastroesophageal reflux disease (GERD) and diabetes. In addition, some people also use pectin to prevent poisoning caused by strontium, and other heavy metals.

Despite the shortage in the supply of raw material, some of the major players are also trying to increase their production capacity to meet the demand. For instance, Cargill acquired FMC's plant to boost their pectin production capacity. The market is highly fragmented and competitive. In addition, it also experiences the presence of small-scale as well as giant players. The key and major companies are investing in R&D activities and frequently involved in merger and acquisition to increase their market share and product portfolio. Some of the companies that have a significant influence in the industry include DuPont Nutrition & Health, FMC Corporation, CPKelco, Herbstreith & Fox, Devson Impex Private Limited, Cargill Incorporated, B&V srl. and Yantai Andre Pectin Co. Ltd.

Growth in food & beverage industries, in emerging economies, is expected to drive the Asia Pacific market. The market is projected to grow rapidly in the Asia Pacific region, owing to the changing lifestyle of consumers in emerging economies including, China and India. The rising health consciousness among consumers and the presence of major players in North America is projected to positively drive the growth of the market over the forecast period.

The date for interpack 2023 is set!

The next interpack will take place from 04 to 10 May 2023 at the Düsseldorf Trade Fair Centre. Messe Düsseldorf set this date in agreement with its partners and committees. Interested companies from the packaging sector and the associated processing industry will be able to register online at www.interpack.com from the end of March/

beginning of April provided all goes to plan. Exhibitors who were approved for interpack 2021, which was cancelled due to the pandemic, have already been able to reserve their stand positions for 2023 and will now be able to rebook when they register.

Please provide your press releases or news alerts to editorial@fruit-processing.com.

2020 Freshfel Europe Consumption Monitor shows strong positive 4 % increase in EU fresh fruit and vegetable consumption

Freshfel Europe published its 2020 Consumption Monitor, the Association's analysis for fresh fruit and vegetables production, trade and consumption trends in the EU-28. This latest and highly anticipated edition of Freshfel Europe's Consumption Monitor shows that in 2018 daily fresh fruit and vegetable consumption per capita has increased by 4 % from 2017 levels to 363.76 g per capita per day. While still below the WHO recommended minimum daily consumption of 400 g, this represents a 5.1 % increase compared to the previous five years (2013-2017) and halts previous consumption stagnation.

Freshfel Europe released its much-anticipated 2020 Consumption Monitor. Analysing fresh fruit and vegetable production, trade and consumption trends for the EU-28, Freshfel Europe's 2020 Consumption Monitor examines the latest sector data from 2018. While aggregate consumption remained below the WHO recommended minimum daily consumption of 400 g, fresh produce consumption in the EU showed a strong positive increase of 4 % compared to 2017 levels. Representing a 5.1 % increase compared to the previous five years (2013-2017), this significant improvement can be attributed to a 9.5 % rise in fresh fruit consumption to 211.82 g per capita per day, which also compensated for a slight overall decrease in vegetable consumption to 151.94 g per capita per day.

This indication of a strong positive increase in EU consumption has coincided with increased sector efforts to raise awareness of the importance of fresh produce consumption over the last few years. Freshfel Europe General Delegate Philippe Binard commented on the publication emphasizing, "The findings of Freshfel Europe's 2020 Consumption Monitor are highly encouraging and clearly

illustrate that the sector's heightened efforts to boost consumption above the WHO recommended minimum of 400 g per capita per day are being paid off. While we will continue to observe the stability of this recovery, we need to investigate this new discrepancy between fruit and vegetable consumption". Mr Binard encouraged the sector to continue its efforts adding, "The fresh fruit and vegetable sector must capitalize on 2021 being the UN International Year of Fruits and Vegetables. Continued reinforcement of the important role of fresh produce in a balanced healthy and sustainable diet is essential to maintain and boost this latest positive consumption trend". Freshfel Europe is active in consumption promotion activities at EU-level. Freshfel Europe's 'Follow me to be healthy with Europe' EU promotion campaign is now in its third year, and alongside its longstanding online #FruitVeg4You campaign this year Freshfel Europe is conducting a specific campaign, #SpeakUp4FruitVeg, to encourage support for the sector by EU policy-makers and boost consumption to celebrate the International Year of Fruits and Vegetables 2021.

The 143-page Freshfel Europe 2020 Consumption Monitor consists of three parts: 1) total gross supply of fruit and vegetables in the EU-28, including trends in production, exports and imports of fruit and vegetables (2013-2018), 2) a comparative review of consumption trends across the EU-28 (2013-2018), and 3) a review of the total net supply and trends exports and imports of fruit and vegetables in the EU-28 (2013-2018). Freshfel Europe members receive the full report free of charge. The 2020 Consumption Monitor is also available for purchase for non-members at a rate of 1000 EUR. All information about the Freshfel Europe Consumption Monitor is available via the Freshfel website (www.freshfel.org).

drinktec postponed until September 2022

The drinktec advisory board and Messe München have taken a joint decision today to postpone the world's leading trade fair for the beverage and liquid food industry until the fall of 2022. The new dates are September 12 to 16, 2022. This action was prompted by the international nature of the drinktec event. The decision could not be delayed given that industrial goods trade fairs involve extensive planning and complex high-tech construction work.

Despite the coronavirus crisis, drinktec is registering high demand for floorspace from customers both in Germany and abroad. Three quarters of the available exhibition floorspace has already been booked. "This confidence in the brand and drinktec's reputation as the world's leading

trade fair in its field are precisely why we need to ensure that we meet our customers' expectations," says Dr. Reinhard Pfeiffer, Deputy Chairman of the Board of Messe München. "Until recently, we assumed that the pandemic situation would improve, making international travel possible. The latest developments have quashed these expectations. Two thirds of all drinktec visitors come from abroad. Of these, half come from other continents. This means we cannot deliver the benefits of a leading global trade fair this year."

Preparations and plans currently underway for drinktec 2021 and the integrated oils+fats event will now be seamlessly transferred to the new 2022 dates.

NEW PRODUCT LAUNCHES



PLANTLY DEFENCE ENHANCED WATER + JUICE WITH CITRUS AND ELDERFLOWER FLAVOUR



Juices & Nectars



February
2021



3.93 USD
3.24 EUR



Australia

Company: Plantly

Description: Citrus and elderflower flavoured enhanced water with juice. With echinacea extract. Fruit drink held in a 1.25 litre PET bottle. We take the goodness from plants and create utterly delicious products.

Claims: Source of vitamin C, low calorie. Health star rating: 2.5. Powered by plants. Recyclable bottle. No refined white sugar. 40 % juice. No artificial colours and flavours. No artificial sweetener. A source of vitamin C to help support your immune system.

Ingredients: Water, sweet potato*, apple*, carrot concentrate, vitamin C, natural flavours, food acid (citric acid), echinacea extract, natural sweetener (monk fruit extract).
*reconstituted juice.



OSUN SPARKLING LAVENDER WATER



Bottled Water
- Flavoured



January
2021



3.54 USD
2.91 EUR



Australia

Company: Osun Sparkling

Description: Lightly sparkling lavender water with amethyst crystal immersion, in a 330 ml glass bottle. This particular drink has been made during a peak moon phase with 24-hour immersion of amethyst to balance energy, raise vibration and bring action to intentions.

Claims: Sugar free. Botanically infused. Positively charged. Amethyst invites balance, passion, creativity and a deeper connection with your intuition. Lavender is also used to relieve stress, reduce inflammation and help hydrate the skin. Naturally sourced plant based colors give Osun Sparkling its beautiful hue. With a refreshing carbonated taste. Contains no artificial colours or sweeteners and no preservatives. Suitable for vegans and gluten free. Recyclable packaging.

Ingredients: Carbonated filtered water, lavender water and natural colours.



ORIGINAL TASTE HAWTHORN WITH APPLE AND COIX SEED DRINK



Iced Tea



February
2021



2.97 USD
2.44 EUR



Hong Kong

Company: Taste

Description: Hawthorn with apple and coix seed drink in a 500 ml plastic bottle.

Claims: No added preservatives and artificial colourings. Hong Kong top brand. Recyclable packaging.

Ingredients: Water, cane sugar, apple, hawthorn, coix seed, brown rice.

Analysis Insight: Drink with ingredients that are not often tracked in Europe. The beverage contains hawthorn and coix seed.

Extra Notes: Consume immediately after opening. Keep refrigerated between 0 to 4 degrees Celsius. Shake well before drinking.

NEW PRODUCT LAUNCHES



RITE N LITE PLUS CALAMANSI, GINGER, AND HONEY CARBONATED FLAVOURED DRINK



Company:	Arc Refreshments Corporation
Description:	Carbonated flavoured drink with calamansi, ginger, and honey, in a 250 ml easy-to-open aluminum can.
Claims:	Indulge yourself with exciting new tasty flavors, now with even better no-guilt ingredients. Contains MK7 which helps keep your bones healthy plus with a blend of stevia, lets you have peace of mind that you're drinking the Rite stuff.
Ingredients:	Carbonated water, acidity regulators (citric acid, malic acid, sodium citrate), flavours (natural, nature-identical and artificial), preservative (sodium benzoate), sweeteners (steviol glycosides, sucralose), antioxidants (ascorbic acid, EDTA), caramel colour, artificial colours (FD and C yellow 5 and 6), vitamin K2 as MK7 (menaquinone-7).



BAYANI BREW LEMONGRASS TURMERIC FARM FRESH TEA



Company:	Bayani Brew
Description:	Ready-to-drink farm fresh tea with lemongrass and turmeric, in a 350 ml PET bottle. Drink purposefully. Lemongrass and turmeric with kalamansi is naturally brewed from freshly harvested leaves directly sourced from farming communities and agrarian reform beneficiaries in Central Luzon at up to five times (5x) farm gate price.
Claims:	Grown sustainably. Bayani Brew is a social enterprise supporting Gawad Kalinga Enchanted Farm communities and Bulacan agrarian reform beneficiaries. Together GK EF and Bayani Brew nourish your soul with the best craft teas brewed with love and purpose. Turmeric is a flowering plant, Curcuma Longa of the ginger family, Zingiberaceae, the root of which are used in cooking. The plant is native to the Indian subcontinent and Southeast Asia. Some 34 essential oils are present in turmeric, among which turmerone, germacrone, atlantone, and zingiberene are major constituents which give its distinctive flavour!
Ingredients:	Water, premium sugar, turmeric puree, calamansi puree, brews from lemongrass, ascorbic acid as antioxidant, potassium sorbate as preservative.



In cooperation with Innova Market Insights we are happy to publish new product launches on a global scale. Innova Market Insights is a world leading provider of knowledge solutions for the food and beverage industries. They serve their clients around the world with a full spectrum of solutions built around the professional needs of their individual roles.

The Innova Database is an online, cutting-edge food and beverage product database – created by a dedicated team of industry-leading food and beverage experts that collect the latest data from more than 70 countries. This allows you to instantly track trends and innovations across all food and beverage categories with just the click of a mouse. At Innova, their goal is simple – help you stay ahead of the curve.

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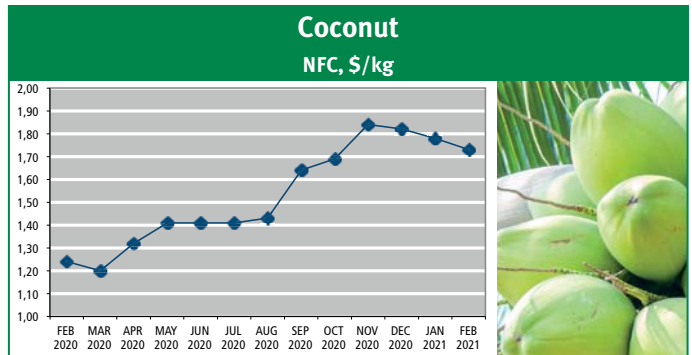
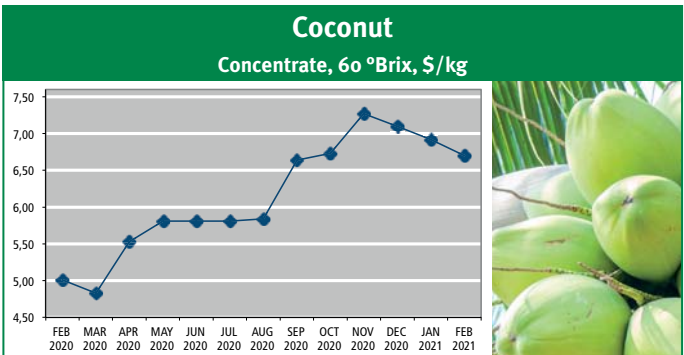
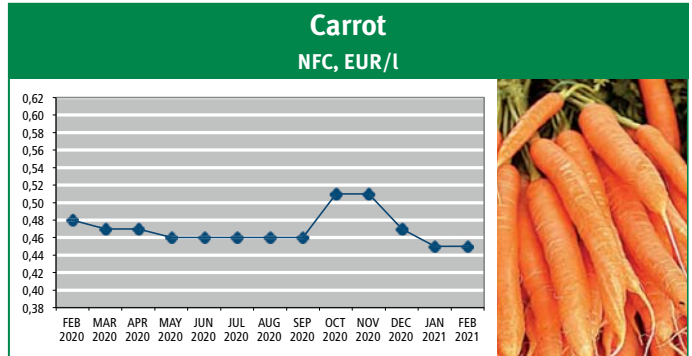
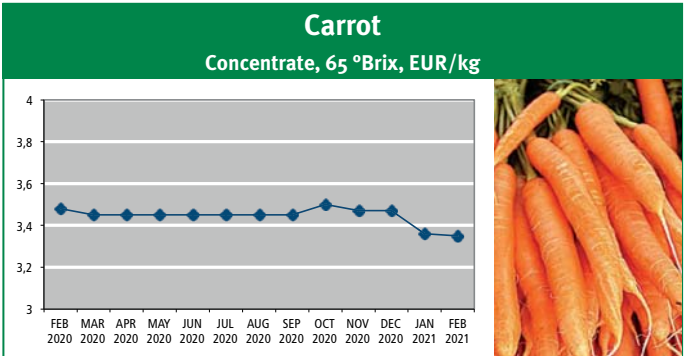
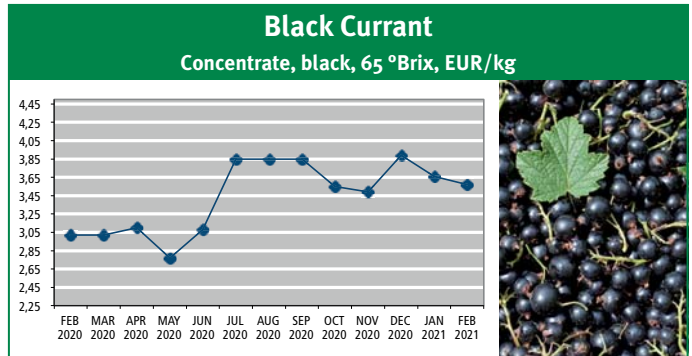
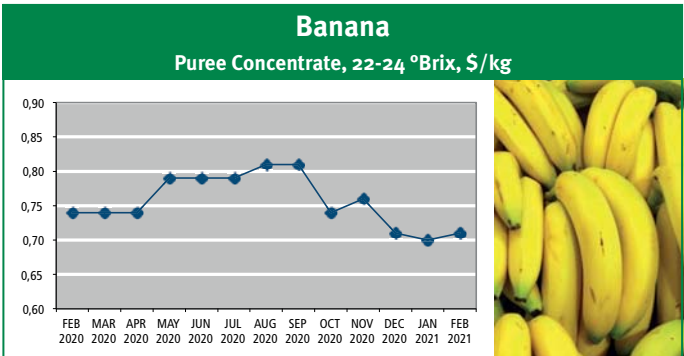
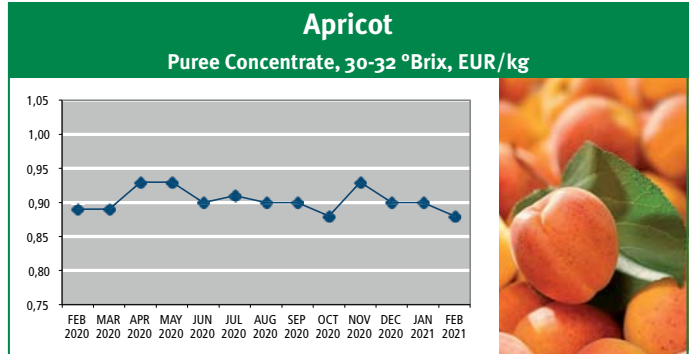
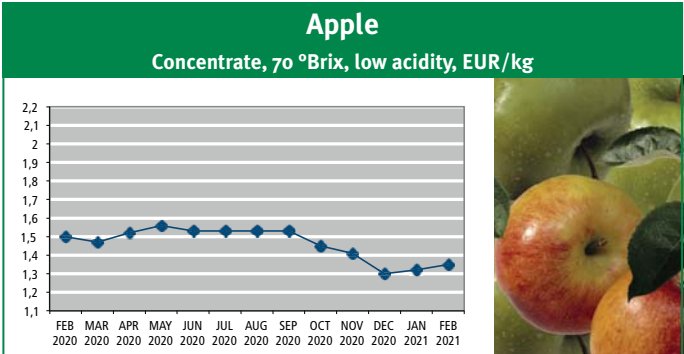
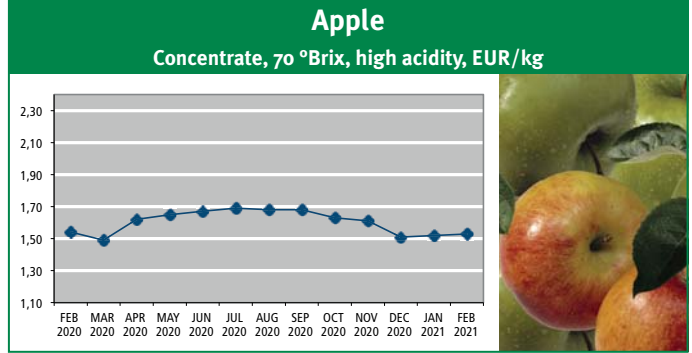
Source: Survey by confructa medien GmbH, from a minimum group of 5 marketers and 5 juice purchasers for each product. Since its first publication in 1991, more than 30 industry partners – manufacturers, traders, processors, bottlers, packers, bankers – have been contributing data.

Your price quotation data, too, is much appreciated. Please forward your contributing input directly to the editorial team c/o christian.friedel@confructa-medien.com

Prices: The price range is calculated for juice or puree of different proveniences, traded in drum or bulk; \$/kg = cif Rotterdam; EUR/kg = DDP

Custom Duties: The range encompasses preferential duties up to 30 %

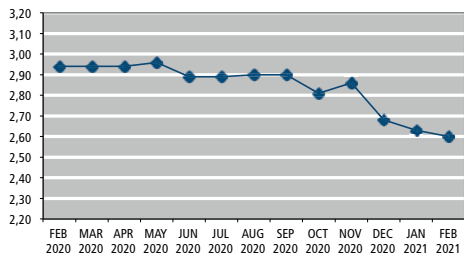
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MARKET PRICE REPORT

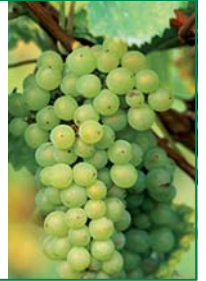
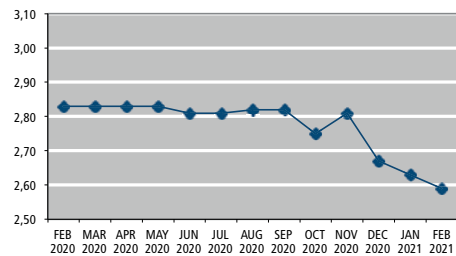
Grape

Concentrate, red, 65 °Brix, EUR/kg



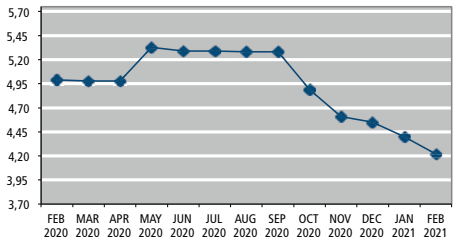
Grape

Concentrate, white, 65 °Brix, EUR/kg



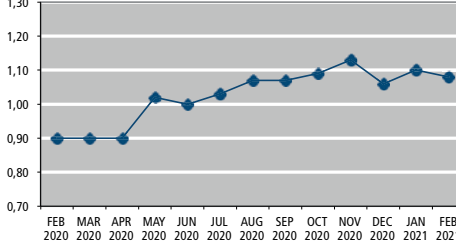
Grapefruit

Concentrate, 58 °Brix, \$/kg



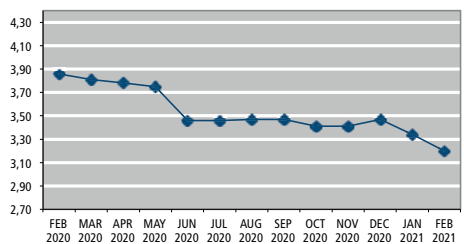
Guava

Puree Concentrate, pink, 8-10 °Brix, \$/kg



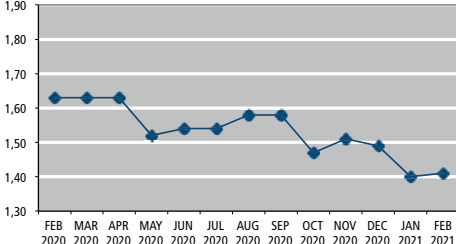
Lemon

Concentrate, cloudy, 400 g/l acid, \$/kg



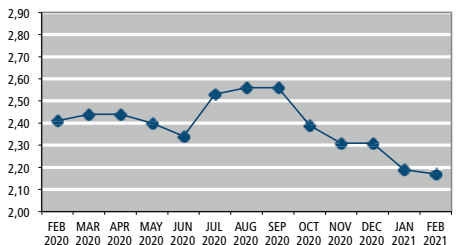
Mango

Puree Concentrate, 15 °Brix, \$/kg



Orange

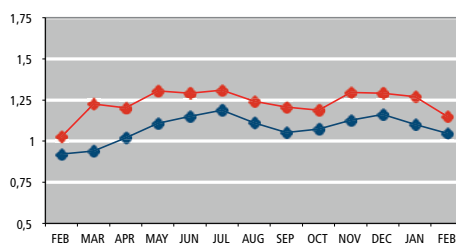
Concentrate, 66 °Brix, \$/kg



Orange

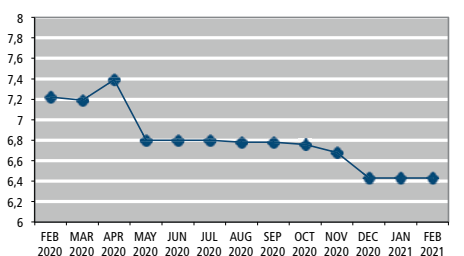
Concentrate, Future Markets \$/lb.

◆ = highest values
◆ = lowest values



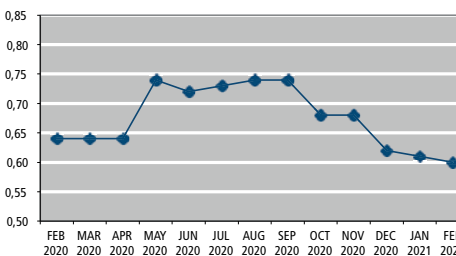
Passion Fruit

Concentrate, 50 °Brix, \$/kg

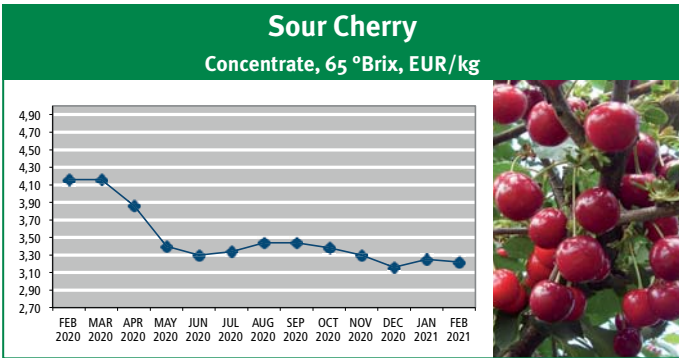
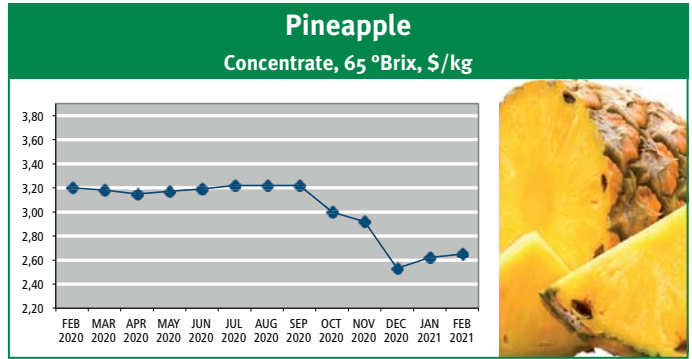
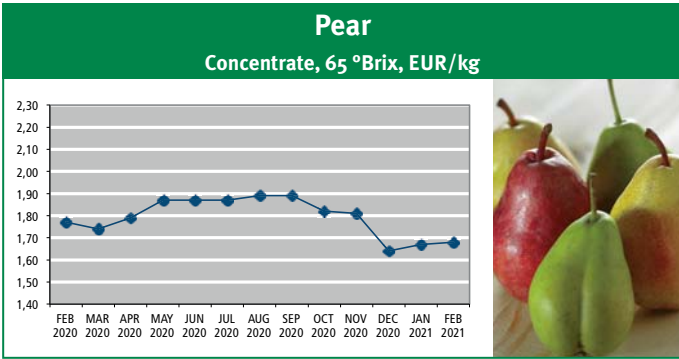


Peach

Puree Concentrate, EUR/kg



MARKET PRICE REPORT



green coco europe

coconut water

Reduce sugar in your juices by 30% ...
Coconut water in the mix with juices can achieve Nutri-Score B while maintaining 100% juice claims.
We supply all qualities:

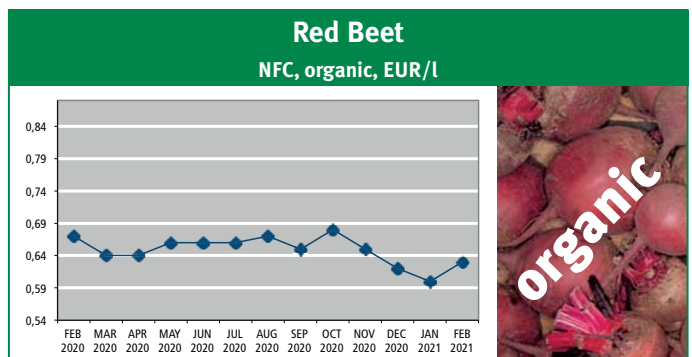
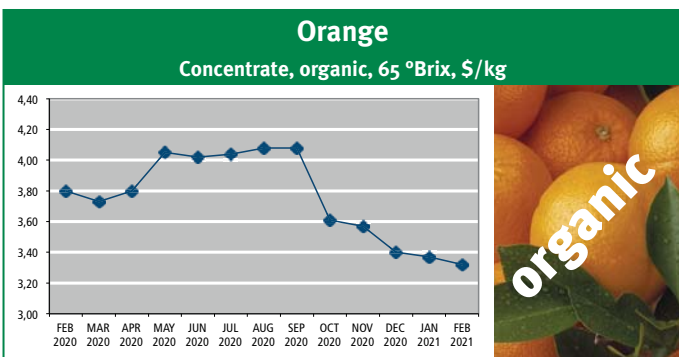
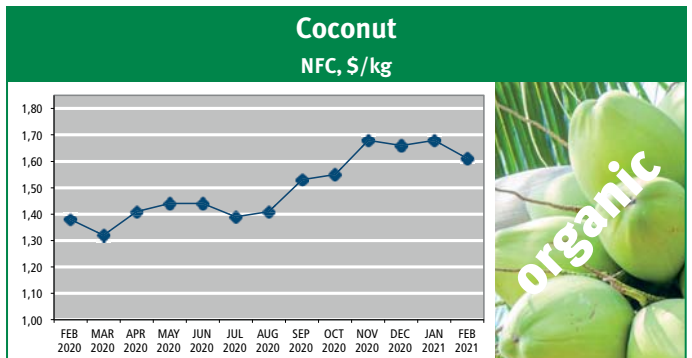
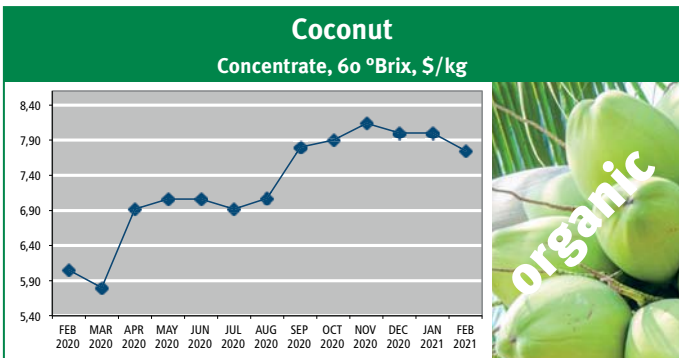
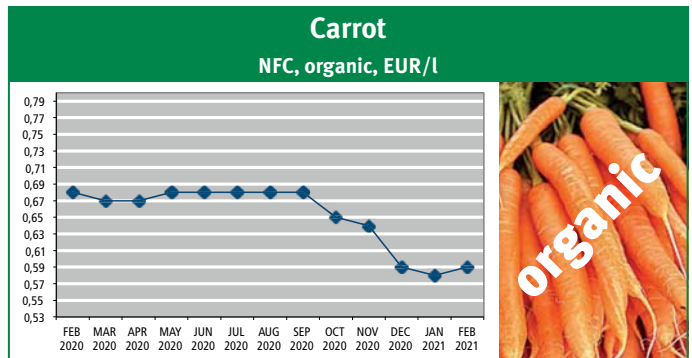
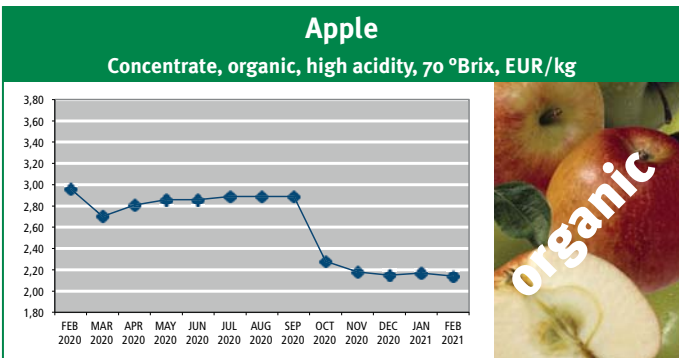
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commodity@green-coco.com

Delivery program

Single Strength Concentrate Aseptic Raw Organic Fairtrade

Drum
IBC
Tank truck
Container

dr-martins.com



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