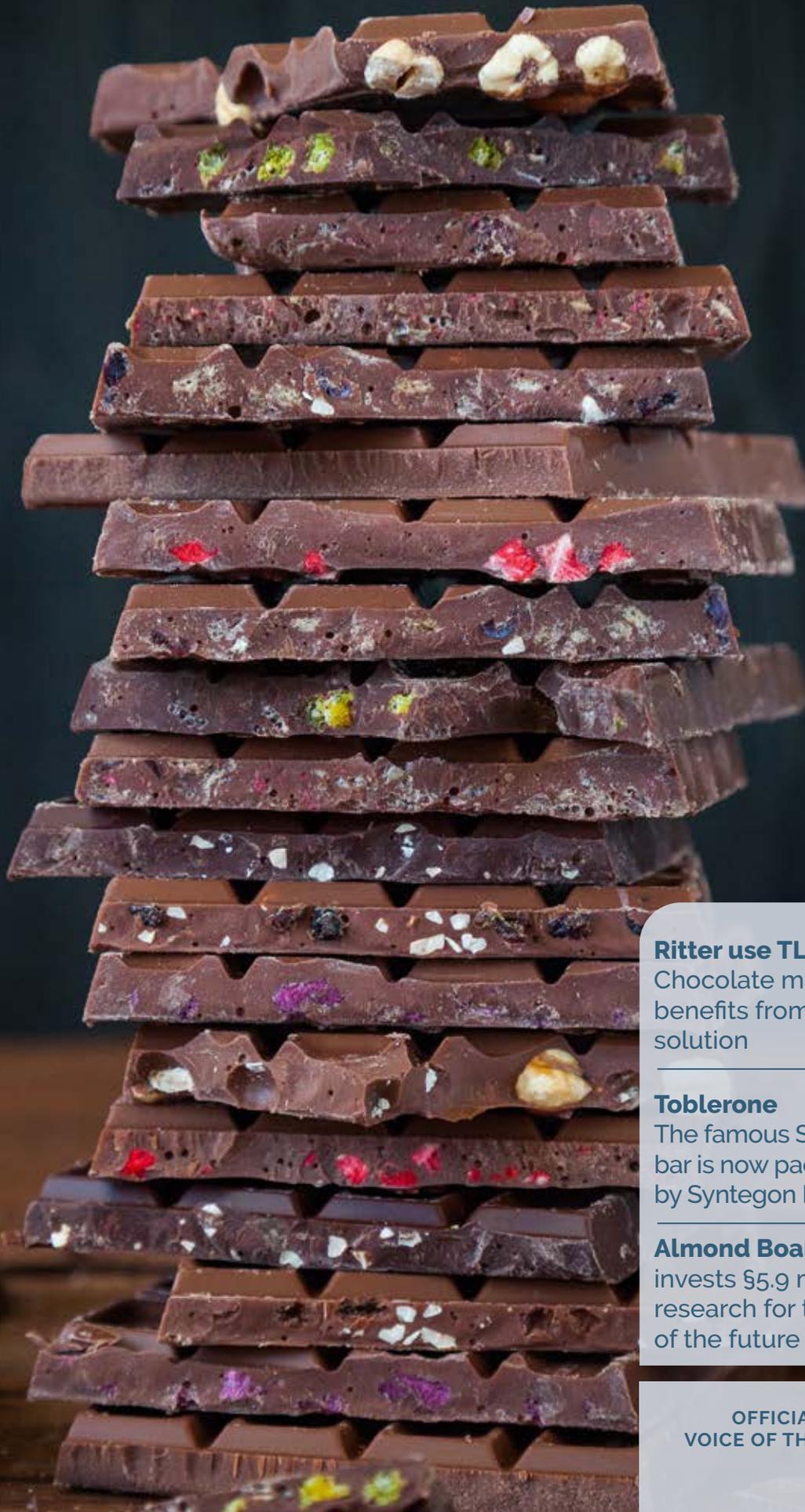


sweet vision



Ritter use TLM
Chocolate manufacturer benefits from Schubert solution

Toblerone
The famous Swiss bar is now packed by Syntegon Elematic

Almond Board
invests \$5.9 million in research for the farm of the future

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COVID-19 in the chocolate business

Dear readers and friends of sweet vision,

I suppose most of us don't want to hear or read about it and can't stand it anymore. We have been overwhelmed with information about the COVID-19 crisis but I think it might still not be enough. While the European region seems to be dealing with the situation quite efficiently, other countries are still at the beginning of having to contain what we call the biggest and worst pandemic disease that this planet has seen in the last over 100 years.

Especially the West African region is facing major issues handling the situation since the infrastructure is not comparable to European standards and under such conditions we would not have been able to handle all the problems that COVID-19 brought along either. That is one of the reasons why the German chocolate industry supports the initiative of the World Cocoa Foundation (WCF) that called for support. Until now the industry donated more than 900,000 USD to help cocoa farmers in Côte d'Ivoire and Ghana but that is just the proverbial drop in the ocean.

The industry's effort is an additional initiative adding to the support from associations around the globe such as CAOBISCO, ECA, FCC and the German BDSI. The Ghana Cocoa Board chief executive Joseph Boahen Aidoo welcomed the support and Yves Brahima Koné, director-general of the Café-Cacao Council in Cote d'Ivoire said: "Since the arrival of COVID-19 in Cote d'Ivoire on March 11 we have seen the interest of the chocolate and cocoa industry to support the government's actions to stop the spread of the virus".

Now, the governments in these countries are working to support and protect their people but is that enough? Donating money is just the first step of support. In countries like Ghana and the Cote d'Ivoire soap, clean water and sanitizers, supposedly easily attainable, are as important as spreading the message of how to use these things. Over 30 chocolate producing companies around the world are supporting the collaboration between the governments and the humanitarian organisations to take the next step. Hopefully, there will be more to come!

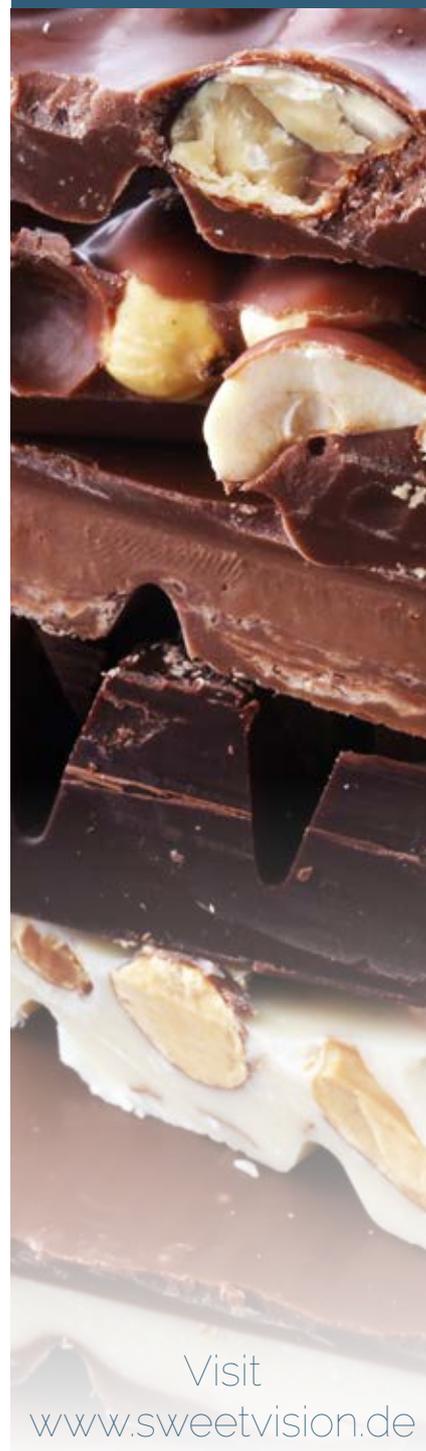
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Stephan Musiol

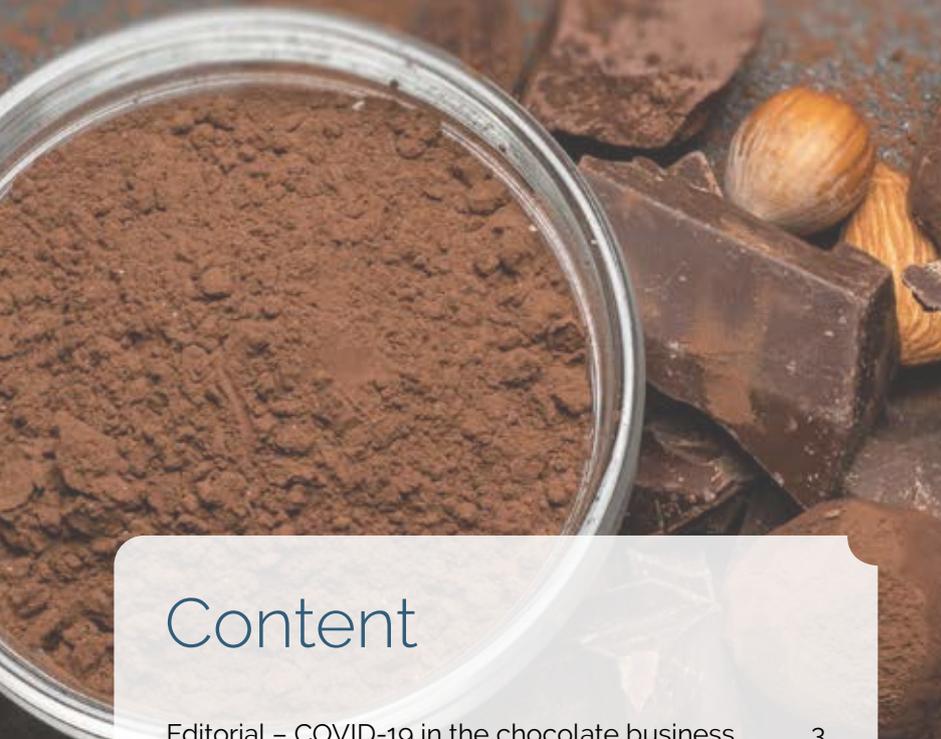


Stephan Musiol
Coordination

Contact
phone
+ 49 40 76 97 92 50
mail
musiol@sweetvision.de



Visit
www.sweetvision.de



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Ritter Sport use Schubert's TLM

German chocolate manufacturer Ritter Sport use Schubert's TLM packaging system to save space and cardboard packaging in their 100g format chocolate bars. Therefore Schubert delivered the new compact TLM case packer!

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Mondelēz use Syntegons Elematic for Toblerone

Swiss chocolate bar manufacturer expands its packaging line by the Elematic 1001 SL sideload case packer from Syntegon, formerly Bosch Packaging Technology, after successful field tests.

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Almond Board fueling farm of the future

California almond farmers continue long history of using research as the catalyst to evolve their practices, continuously challenging themselves to do more.

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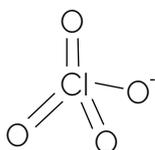


Chlorate in Food

Occurrence, toxicity, maximum levels, analysis

A. What is Chlorate and what it is used for?

Chlorates (ClO_3^-) are salts of chloric acid (HClO_3) and are strong oxidizing agents. They are used, for example, for bleaching paper or tanning leather. Chlorates also have herbicidal properties and were approved in Germany until 1992 in the form of sodium Chlorate as an active ingredient in plant protection products.



Structural formula of Chlorate

Since 2010, the use of plant protection products or biocidal products containing Chlorate as an active ingredient has been prohibited in all European Member States.

However, chlorate can be formed as a by-product when cleaning or disinfecting drinking water with chlorine-containing solutions such as sodium hypochlorite.

B. Chlorate and perchlorate

Similar to Chlorate, Perchlorate (ClO_4^-) – salt of perchloric acid (HClO_4) – also has oxidative capabilities. Perchlorate is used primarily in industrial chemicals, as a pharmaceutical and rocket fuel. Perchlorates are not approved as crop protection agents or as biocidal active ingredients, but they can be formed by disproportionation from the hypochlorites, chlorites and chlorates used for disinfection purposes and have been detected in numerous fruit and vegetable products.

C. Which foods contain Chlorate and why?

Chlorate was often found in frozen vegetables, fruit juices and salads/

herbs. The occurrence of Chlorate in these products can have processes reasons such as glazing of frozen foods, diluting juice concentrates or washing herbs and salads with water containing Chlorate.

Investigations were carried out at the Chemisches und Veterinäruntersuchungsamt Stuttgart, known as CVUA Stuttgart, which is the official surveillance laboratory of Baden-Wuerttemberg. They showed that plant-based foods (different types of fruit and vegetables) might contain Chlorate. Chlorate contents mainly resulted below 0.01 mg/kg (about 76% of the samples), but in some samples, also chlorate contents up to 2.7 mg/kg (e.g. coriander from Cambodia) were found. The causes or sources of the residues have not yet been finally clarified. The treatment of drinking water with chlorine-containing agents has been identified as one source of contamination. The CVUA Stuttgart also describes a possible further input path via chlorinated water, which was used for washing vegetables and fruit.

D. Is Chlorate harmful to health?

Depending on the dose, Chlorate can have a high acute toxicity to humans, especially on the oral pathway. This is primarily manifested by damage to the erythrocytes (red blood cells), resulting in methaemoglobin formation and haemolysis. In addition, the chronic intake of Chlorate can result in a reversible inhibition of iodide in the thyroid gland, which at higher doses can possibly lead to changes in thyroid hormone levels, especially in sensitive groups of people such as children, pregnant women or people with thyroid dysfunction. In a risk assessment from 2015, the EFSA (European Food Safety Authority) and the BfR (German Federal Insti-

tute for Risk Assessment) conclude that long-term exposure to Chlorate in food is potentially harmful to health, especially in children with mild to moderate iodine deficiency. However, it is unlikely that the total intake of a single day – even in the range of the highest estimated intake levels – will exceed the recommended safety level for consumers of all age groups. The new risk assessment for chlorate has therefore established a tolerable daily intake (TDI) of 3 µg/kg body weight per day for chronic exposure and an acute reference dose (ARfD) of 36 µg/kg body weight for acute exposure.

E. Are there maximum levels for Chlorate in food?

As an former active ingredient in plant protection products, chlorates are generally subject to the regulations of Regulation (EC) No. 396/2005 (Pesticide Regulation), which sets the maximum pesticide residues that may be present in animal and plant food and feed. These MRLs include specific MRLs for certain food and feed products and a general maximum residue level which applies where no specific MRL is set. As chlorates are no longer authorized as active substances since 2010 and no specific MRLs have been set, a maximum level of 0.01 mg/kg applies throughout the EU.

Since autumn 2018, discussions have been underway at EU level on setting specific maximum residue levels for Chlorate under Regulation (EC) No. 396/2005. Currently (as of February 2020) a draft regulation SANTE/10684/2015 in the version 8th revision is available. This draft regulation has been accepted by the Standing Committee (SC PAFF) on Plant Protection Residues at its last meeting on 17./18.02.2020.



Chlorate was often found in frozen vegetables, fruit juices and salads/herbs.

Specifically, the MRLs for fruit and vegetables, among other things, are to apply not only to fresh but also to frozen products (irrespective of whether there are new Chlorate entries between the fresh and frozen state). The MRLs for cocoa in the draft apply to cocoa beans (0.05 mg/kg).

The draft regulation in its 8th revision contains a so-called burden of proof for the legal assessment of processed foods; according to this, the burden of proof of additional Chlorate inputs in the context of food production or processing lies with the food manufacturer.

The regulation is expected to be published in the Official Journal of the European Union in autumn and will enter into force 20 days later without any transition periods (approx. September/October 2020).

F. How is chlorate analysed?

For the qualitative and quantitative determination of Chlorate in plant-based foods a single determination analysis method published by the European Reference Laboratories is available (EU Reference Laboratories for Residues of Pesticides – EURL-SRM, CVUA Stuttgart). In this method, the chlorates are extracted from the food sample with water and acidified methanol solution. The extract is then centrifuged, filtered and analysed by liquid chromatography coupled with mass spectrometry (LC-MS/MS).

G. Conclusion

Due to its high toxicity and the resulting negative effects on human health, Chlorate is undesirable in food. At the LCI, a method for the analysis of Chlorate and Perchlorate was recently developed and validated. This

analysis can now be commissioned at our sister institute, the Institute for Quality Promotion in the Confectionery Industry in Cologne, IQ.Köln (contact: iq-koeln@iq-koeln.de).



**Food Chemistry Institute of the
Association of the German
Confectionery Industry**

Institute Director:
Dr. Frank Heckel
Adamsstraße 52-54
51063 Köln

phone: +49 221 62 30 61
fax: +49 221 61 04 77
web: www.lci-koeln.de

A TLM System from Schubert Saves Ritter Sport Storage Space and Cardboard Packaging

Colourful variety – this is what the most famous chocolate bar in the 100g format from Ritter Sport stands for. Its dimensions are just as varied as the many different types of chocolate on offer.

Even a difference of three millimetres in thickness between products represents a real challenge when it comes to 'shelf-ready' packaging, a process that has so far only been solved by hand in a time-consuming and costly manner. Ritter Sport were therefore looking for a system that would pack the 100g bars directly in the correct formation and reliably recognise how many bars had to be sorted into the carton, depending on the thickness of the variety. The new compact TLM case packer now handles this process fully automatically and directly on site within the production chain. Thanks to a specially developed single-piece carton, Ritter are able to save an additional 30 per cent of storage space.

The first ALRiKa Krem-Schokolade chocolate brand from the chocolate and confectionery factory founded

by Clara and Alfred E. Ritter in Cannstatt, Stuttgart, was launched as early as in 1912. Nevertheless, the worldwide breakthrough came 20 years later with the Ritter's Sport Schokolade brand (today Ritter Sport Schokolade), which was introduced in 1932. With the slogan "Square. Practical. Good.", the square chocolate bar from Germany has secured an eternal place in the best-selling list of popular brands and enjoys unbroken international popularity today.

One reason for the company's ongoing success story is the fact that sustainability has always been a top priority at Ritter Sport. Current projects from Waldenbuch, where Ritter Sport call home, show that there is always room for improvement. There, Ritter Sport are extensively testing a new type of special paper packaging and checking its suitability for everyday use as part of a major campaign with 500 loyal chocolate fans.

A three-millimetre challenge

The packaging process for the 100g bars was also recently put to the test from a sustainability perspective. Due to the different dimensions of the individual varieties, sorting and 'shelf-ready' packaging previously had to be done manually in an outsourced logistics process. The existing system could not automatically cope with differences of up to three millimetres in thickness for product types such as nougat and whole nuts. "We wanted to optimise this complex process in a cost-efficient and sustainable manner. That's why we were looking for a system as an in-house solution that would pack our 100g bars directly in the right formation and reliably detect whether ten, eleven, twelve or thirteen bars, depending on the thickness of the variety, needed to be sorted into the carton," explains Ivo Bůncůga, Head of Technology at Ritter Sport. This was the specific

Compact, flexible and efficient: Each and every function of the new TLM system is combined into a single frame. A height-adjustable pivot belt allows connection to an existing packaging machine for packaging into alternative cartons.





Using pre-formatted grouping tables, which can be exchanged quickly and easily with just one tool, the 100g bars are sorted according to their thickness in the exact number required.



An F2 filling robot takes the products from the grouping chain and places them upside down into the lid of the carton.

question with which he approached packaging machine manufacturer Schubert. Ritter Sport and Schubert have enjoyed a long-standing, close partnership – seven TLM systems in Waldenbuch were sourced from Crailsheim. Jonas Müller, project manager at Schubert, took on the challenging task and developed a compact, flexible and cost-effective machine solution for the company within a very short time.

Intelligent technology for individual packaging sizes

The new machine combines a collating device, three F2 robots to erect, fill and close the cartons and a downstream turning unit in a single frame. It is also flexibly designed enough to allow the option, depending on the production order, to connect it to the existing packaging machine for packaging in alternative cartons via an additional height-adjustable pivoting conveyor. As a rule, the 100g bars are fed directly from a flow-wrapping machine to the Schubert system on a single track at a speed of 400 bars per minute. The bars are then sorted by thickness via a pre-formatted grouping chain into the right numbers to fit inside the carton.

New TLM system turns everything upside down

However, before the cartons are filled with chocolate bars, they must first be erected from one-piece blanks

stored flat in a magazine. "The fact that the cartons no longer consist of two parts – the bottom and the lid – means we can simplify and speed up the packaging process many times over," says Jonas Müller. The flat blanks are taken from the magazine, glued and pressed through a folding frame by an F2 robot. The erected carton is then placed onto a vacuum conveyor virtually upside down. This transports the boxes through the system to the grouping table. There, an F2 loading robot takes the products and inserts them upside down into

the carton lid. Then another F2 robot closes the attached base part and places the carton in the turning unit which turns the cartons 180 degrees and places them on the discharge belt.

Excellent and sustainable

Thanks to the new system, no time-consuming format changes are required during operation; only the grouping tables vary due to the different thicknesses of the bars and they can be changed quickly and easily using just one tool. Asmus



An F2 robot closes the carton with the attached bottom part of the one-piece carton specially developed for Ritter Sport and then places the carton in the turning unit.

TECHNOLOGY – SCHUBERT

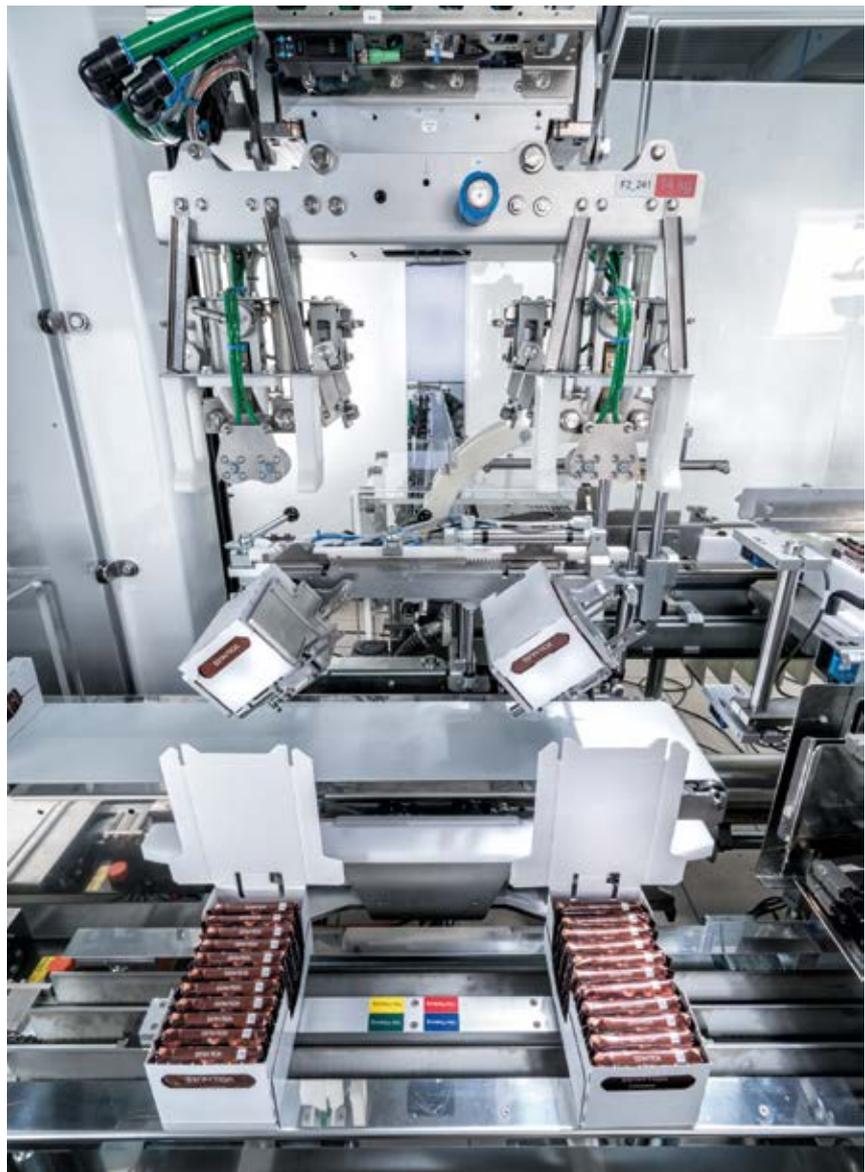
Wolff, Managing Director and Supply Chain Manager at Ritter Sport, is clearly impressed: "This really is a fantastic 'toy' that Mr Müller and his team built for us, and it meets our precise requirements as an innovative and sustainable company that sets new standards." In fact, thanks to the new system, Ritter Sport is saving 30 per cent on storage space and carton packaging. This is potential that can now be used to implement even more demanding sustainability standards. The family business has already received several awards for its extraordinary commitment in this area. The matter is also very close to the heart of the family's head and retired Managing Director Alfred Theodor Ritter, who radically modernised the company in 2004 and has been intensively involved with environmental issues and employees for decades. The 66-year-old was honoured with the 2019 German Entrepreneur Award (Deutscher Gründerpreis 2019) in the Lifetime Achievement category.

Facts and figures

- Compact machine with 3 F2 robots and turning unit
- Single-lane infeed at 400 bars per minute
- NC grouping table for the pre-formatting of 10 to 13 bars per carton
- Overhead packaging of the products in the carton lid
- Turning by 180° in the turning unit ready for output

Ritter Sport – colourful variety in a square shape

This treat from Baden-Württemberg, which has been so popular among chocolate lovers for more than 100 years, was not originally square and in fact was not even called Ritter Sport. First sold in 1912, it owes its unmistakable branding to a ground-breaking idea by Clara Ritter in the 1930s. She developed a chocolate square with the same weight as a long chocolate bar, but which could fit perfectly inside the pockets of football fans' sports jackets without breaking. This marked the birth of the Ritter Sport brand, which is still conquering the world from Waldenbuch with more than 22 delicious varieties.



In the turning unit, the 'shelf-ready' Ritter Sport cartons are turned by 180 degrees and placed on the outfeed conveyor.

About Gerhard Schubert GmbH

Gerhard Schubert GmbH is a globally recognised market leader in top-loading packaging machines (TLM). For its digital, robot-based packaging machines, the family-owned company based in Crailsheim (Baden-Württemberg, Germany) builds on an interplay of simple mechanics, intelligent control technology and high modularity. With this philosophy and a highly developed culture of innovation, the company has been pursuing an entirely independent technological path for more than 50 years.

With its TLM technology, the machine manufacturer provides its customers with future-proof packaging machine solutions that are easy to operate, flexible in terms of format conversion, high-performance and stable in function. The TLM packaging machines pack products of all types and from all sectors – from food, confectionery, beverages, pharmaceuticals and cosmetics to technical products – into trays, cartons, boxes or into flow-wrap bags.

Well-known brands such as Ferrero, Nestlé, Unilever and Roche rely on Schubert's automation solutions, as do numerous small, medium-sized and family-owned companies. Founded in 1966, the second generation of the company now employs 1,400 people.

What does 2020 taste like?

Like apple. Say esarom, the Austrian producer of flavours and compounds and make us curious to get to know more about the trendy taste for 2020.

Esarom have created an extensive apple portfolio which goes beyond the actual fruit: On the one hand there is the delicate apple blossom, on the other hand the harvested and already processed apple in the form of cider, apple spirit, apple pie or baked apple.

Enquire for different profiles

There are flavours where the character of individual apple varieties like Gala, Golden Delicious or Granny Smith is in the foreground, but you can also enquire for profiles like juicy-sweet, crispy-fresh or sour-tangy.

It is astonishing how diverse in taste a fruit can be which has become for us an everyday product.

Apple is trend

Originating from real fruit and apple juice of different apple varieties nature identical flavours have been created orientating on those taste profiles. The flavour profile depends on the wishes of the confectionery or fine pastries producer.

Considering the current food trends esarom have been right to choose the apple as trendy fruit. Being at home in more than 100 countries of the world, the apple has been the cosmopolitan among fruits and at the same time almost everywhere a local fruit – thus the taste of the apple fits perfectly to concepts which focus on local fruits. Every child is familiar with the saying “an apple a day...” and it also reflects the healthy image of the apple. Consistent: products which focus on the trendy topic Health & Wellbeing and taste like apple. The taste of apple has been a timeless taste which has always been there



and still is a top taste. Among the world-wide product launches in the segment of confectionery and fine pastries apple is among the top 10 fruity flavours.

Adventurous consumer

The curious consumer who likes to try out new things – the trend scouts of Innova speak of Adventurous Consumer, top Trend Number One 2019 – would like to be surprised and rewards interesting concepts with a Like which combine familiar and popular aspects and are enriched by unexpected flavour notes.

The apple is a sociable fruit and goes well with many fruits like with the popular botanicals. This results in classical products with a trendy twist which have potential that they

are liked by many – consumers and producers alike.

A flavour for every season

The esarom apple portfolio enables to offer with the fruit apple alone a diversity of seasonal products for an entire year: in spring candies with apple blossom flavour awaken the spirits of life, apple cookies playing with different types of apple flavours like Braeburn or Fuji can sweeten the summer months. Autumn is the time of the cider – there could be cider notes from sweet to tangy in “grown-up” fruit gums for the Young Urbans. When winter begins Hygge is the motto and baked apple is the taste of the season.

So then: let's look forward to a tasty apple year 2020.

Toblerone: Famous Chocolate from Berne on Trip Around the World

Swiss chocolate bar manufacturer expands its packaging line by the Elematic 1001 SL sideload case packer from Syntegon, formerly Bosch Packaging Technology, after successful field tests.

Their recognition value is incredible: at every airport, Toblerone's striking packaging lures travellers into duty-free shops. Since its

invention in 1909, the coveted chocolate with nougat crunch has been produced in the Swiss capital Berne, and nowhere else. Here, a staggering 97 percent of all bars are produced and packaged, and then distributed all over the world. Bosch Packaging Technology, now operating as Syntegon Technology GmbH, have supported the brand with their comprehensive portfolio of secondary packaging technology since the Berne-Brunnen plant in Switzerland was opened in 1985. The Toblerone plant in Berne proved to be the ideal test environment for the newly developed, standardized Elematic 1001 SL sideload case packer.

The Toblerone packaging has hardly changed at all over the years: The crispy chocolate bar has been packed in the light yellow, triangular folding carton for over 100 years. The Matterhorn was first depicted in 1970; a bear, the symbol of Berne, has been hiding in the new logo since 2000. The Swiss capital is still the only Toblerone production site in the world. In 1985, a new production plant was built in the west of Berne to meet the increasing global demand.

Triangular chocolate indulgence packed with high recognition value

Today, Toblerone are available in different sizes and flavours, some of which are only available seasonally or in specialist shops, such as the 4.5 kg XXL bar. During the primary and secondary packaging process, the 100



Its small footprint, easy maintenance and user-friendliness characterise the Elematic 1001 SL.

g, 360 g and 4.5 kg bars are wrapped in aluminium foil and packed in the distinctive folding cartons. The Tiny Toblerone – individually packed in mini flow wraps – are available as a variety pack in stand-up pouches or as a special edition in a dispenser folding carton.

Primary and secondary packaging link up with tertiary packaging into shipping cases. For over 40 years, the Elematic case packers from Bosch Packaging Technology, now Syntegon, have ensured that Toblerone reach distribution partners and end consumers all over the world – undamaged and safely packaged. "We have been collaborating with the Toblerone plant in terms of out packaging since the opening of the Berne-Brunnen site. They bought the first Elematic case packer as early as 1986," Bernhard Vaihinger, Product Manager at Syntegon, recalls. "For the most part, the Elematic machines from back then are still in use today. Over the years, we have expanded our machine park for the Toblerone product family by nine more Elematic case packers," continues Juerg Adam,

engineer at the parent company, Mondelēz International.

Field test partners – searched and found

The different product sizes, seasonal offers and special formats for the duty-free market result in different packaging requirements. When Toblerone started looking for a new case packer for the plant, they turned to their partner Bosch Packaging Technology, now Syntegon. Driven by global market needs, the packaging technology experts were already working intensively on the development of the new Elematic 1001 SL sideload case packer for Regular Slotted Cases and were looking for a field test cooperation partner. As soon as Toblerone heard this, they agreed to put the new machine to the test in December 2016. "Our decision to test the Elematic 1001 SL is evidence of our confidence in Bosch Packaging. Field trials always involve an element of risk, but after working together for years, we knew we could rely on Bosch Packaging," Juerg Adam explains.



Elematic 1001 SL operators have to replenish blanks less frequently thanks to the extended blank magazine and ergonomic prefeeder height.

Putting machines through their paces is nothing new at Toblerone: To ensure the machine met the requirements in full, a Failure Mode and Effects Analysis (FMEA) lasting several days was conducted together with the Bosch development team. "During the FMEA assessment we worked closely with Mondelez International's global and local teams and adjusted the development in some points. At the end of the analysis, it turned out that the intended machine design was already very close to Mondelez International's expectations. This was partly due to the numerous customer meetings and interviews we held in advance in order to incorporate as much user experience as possible into the development," Philipp Goos, Area Sales Manager at Syntegon, explains.

Elematic 1001 SL on the test bench

In the summer of 2017, Toblerone examined whether the Elematic 1001 SL could really deliver what the technical brochure promised during demanding continuous multi-shift production tests. The Elematic 1001 SL is designed for the medium output rate. It stands out for its small footprint, easy maintenance and user-friendliness. Thanks to the extended blank magazine and ergonomic prefeeder height, operators have to replenish the blanks less frequently. The Elematic click

system enables toolless and fully reproducible format changes within ten minutes. A clearly audible click indicates when the parts have locked in place successfully. This eliminates the need for adjustments. In addition, errors are minimised and planned downtimes are reduced.

The side-load case packer was integrated into the production line at Toblerone's factory within a few days and put into operation by Bosch Packaging Technology's technicians. Apart from a few details that needed to be adjusted, the field test went smoothly under normal production conditions. Since then, the case packer has been packing individual Toblerone bars and multipacks of Toblerone bars in Regular Slotted Cases, a simple folding carton with top and bottom flaps that meet in

The Toblerone packaging has hardly changed over the years: The crispy chocolate bar has been packed in the light yellow, triangular folding carton for over 100 years.

the middle. "The Elematic 1001 SL impressed us with its format flexibility and performance: following the pilot project, we ordered a second side-load case packer and two Elematic 2000 WA case packers for full wrap-around cartons," Adam explains.

The large format range offers a high degree of flexibility: the Elematic 1001 SL side-load case packer groups the Toblerone bars or bags into multi-layer rows depending on the desired constellation. These are then loaded laterally into packaging cases made of corrugated or solid board. The Elematic 1001 SL can produce up to 20 cases per minute. "At our Toblerone plant, we aligned the output rate of the Elematic 1001 SL with the speeds of the preceding primary and secondary packaging machines. The side-load case packer currently produces seven cases per minute. In any case, there is still room for improvement so that we are prepared for future performance increases. We have mastered numerous changes with Bosch at our side and know that we can count on the Elematic machines from Remshalden in the future", Adam summarises the cooperation.

The history of Toblerone

The Swiss chocolatier Jean Tobler began creating chocolate products in Berne in 1867 – initially from semi-finished products, later with chocolate from his own production. In 1899, Tobler and his sons founded the chocolate factory Fabrique de Chocolat Berne. Motivated by rising demand, they rang in the era of industrial chocolate production. Nine years later, his son Theodor and his cousin Emil Baumann invented the Toblerone, the name of which is composed of "Tobler" and "Torrone" (Italian: honey-almond nougat).

The merger with the chocolatier Philippe Suchard in 1970 created the company Interfood. Twelve years later, the merger with the renowned coffee roasting company resulted in Jacobs Suchard SA. In 1990, the US food group Kraft Foods Inc. acquired a majority stake in Jacobs Suchard and founded Mondelez International in 2012, which now manages the confectionery and snack brands, including Toblerone.

Solutions for Homogenisation, Conching and Coating

Sweets and snacks are very popular worldwide. In Germany alone, for example, each person eats 30 kilograms per year. Regardless of whether protein bars or classic milk chocolate, the taste and texture must be perfect in order to keep customers buying. The production process technology of these products plays an important role in achieving this. In particular, Ploughshare Mixers are extremely flexible in their applications and thus ideally suited for the various requirements of the confectionery industry.

Some of the key processes involved in the production of sweets and snacks are homogenisation, conching and coating. The use of Ploughshare Mixers has proven successful in all three processes. These mixers operate based on the mechanically generated fluid bed, which Lödige introduced to industrial mixing technology.

The operating principle can be described briefly as follows: Ploughshare Shovels arranged on a shaft in a special system rotate as mixing elements in a horizontally fitted, cylindrical drum. These create a three-dimensional movement of the components intended for mixing. The resulting mechanically generated fluidised bed ensures fast, gentle and precise mixing. The separation of the particles in the fluidised bed makes adding liquids and coating the particles very easy. If needed, the mixing process can also be supported by high-speed rotating choppers. Thanks to their flexibility, Ploughshare Mixers are very versatile in their range of applications. Three examples perfectly showcase the possibilities these machines bring to the confectionery industry.

Creamy smooth chocolate with the single-shaft Ploughshare Conche

In the production process of chocolate, conching is understood as the transformation of a crumbly rolled material into a free-flowing suspen-

sion with clearly defined rheological and sensory properties – with as little dilution as possible through the addition of cocoa butter.

The process engineering for conching basically functions as follows:

- Dry conching
- Plasticising
- Liquefying

The conche invented by Rudolphe Lindt in 1879 required 72 hours in order for the chocolate to achieve its creamy smooth consistency. Today, chocolate manufacturers are looking for more cost-effective, and above all, quicker alternatives to the traditional conche. An effective conching tool is, for instance, a Ploughshare Mixer with appropriately modified shovels.

Lödige Ploughshare Conche, model FKM 3000 with temperature control jacket.



The design of the side walls ensures formation of large product surfaces during the drying phase. Because the particles are separated in the fluidised bed, they come into contact with air more vigorously and more frequently. The design and adjustment of the base plate in relation to the tempered mixing drum wall allows the introduction of high frictional energy. Due to the shape of the tools and their systematic arrangement on the mixer shaft the mass is continuously, entirely and vigorously mixed, so that a lump-free, homogeneous end product results.

Control of the process is dependent on output and time, and the rotational speed is regulated by the power consumption of the motor. Targeted temperature equalisation of the mass takes place via the application of warm or cold water running through the double jacket of the drum wall. Larger mixers require scrapers on

the endplates. Additional nozzles are installed on the endplates for the injection of purified compressed air. This supports the discharge of vapours that arise during the conching process. With comparable product quality, this system is capable of significantly reducing processing time.

**The perfect crunchy topping:
Coating of crispies**

Many products only obtain their specific shape and property once they are coated. The procedure is always used when surface properties of raw products need to be modified for instance when the raw products must be protected or the taste is to be enhanced in some way. Coating processes are mainly performed on drum coaters, fluidised bed machines or mixers.

The selection of the right process technology essentially depends on the size of the particle and the structure of the product. Another deciding factor is the investment and operating cost, which depends on the added value of the product on the market. For instance, the acquisition cost for fluidised bed machines is roughly five times higher than for a mixer. However, ambitious coating tasks can also be realised with a Ploughshare Mixer that is comparatively more cost-effective.

A solution that Lödige developed for coating grain extrudates – so-called crispies – demonstrates the possibil-

ities of using a Ploughshare Mixer for coating solutions in the confectionery sector.

Specifically, a number of requirements had to be taken into consideration in the development of the machine: the product to be coated has an almost round shape and a porous surface. The size of the particle varies according to the grain type. Likewise dependent on the type, up to tenfold the amount of liquid chocolate and/or fat can be applied. The crunchy properties of the crispies must be preserved. The finished product is then packaged separately as e.g. a crunchy topping for yoghurt.

The coating process in the Ploughshare Mixer takes place as follows: the raw crispies are put into the mixing drum at room temperature. An expanding fill level for the weighted sample must be ensured. The rotational speed of the mixer is adjusted to form a moderate, yet vigorous fluidised bed. The liquid chocolate and fat masses are applied to the bed via open tubes. A pump is used for dosing.

The vigorous movement of the product as well as the frequent rubbing together of the individual crispies in the fluidised bed ensures uniform distribution of the liquid mass onto the surface of the crispies. The first layer coats the porous surface and creates a better bonding surface for further coating layers. So that the

crispies don't stick together (twinning or forming blackberry shapes), liquid nitrogen is continually injected directly into the product bed, in order to uniformly crystallise the applied coating mass. The process and the surface appearance can also be influenced by temperature equalisation of the mixing drum below the melting temperature of the liquid mass.

The process parameters such as rotational speed, temperatures, quantity of molten chocolate and fat added, as well as the amount of nitrogen per unit of time must be adapted to the respective recipe. The batch reproducibility is ensured by adhering to the predetermined parameters.

Icing sugar: Coating of powders

Whether fruit tart or cream cake, fruit loaf or strudel: "Icing sugar", also called "snow sugar", is used for decorating and dusting and puts the final appealing touch on baked goods. Unlike conventional powdered sugar, the fine sugar crystals are coated with a layer of fat. This keeps it from melting even at higher temperatures. And the icing sugar doesn't dissolve even when it comes into contact with greasy surfaces.

The physical and sensory product properties of icing sugar are rated as standard for the trade when the following criteria are met:

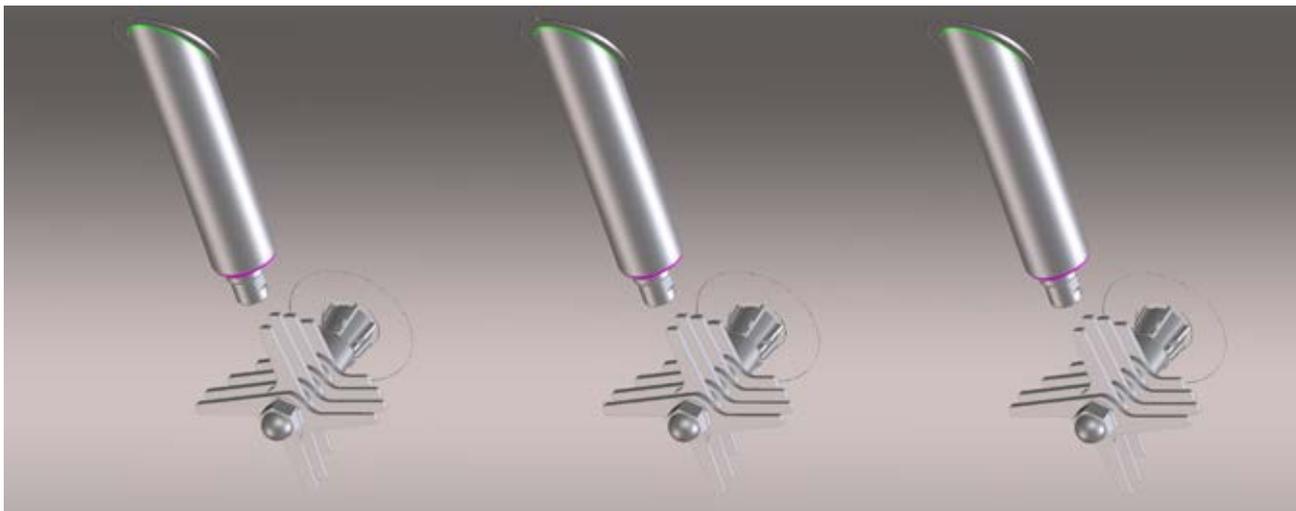
- Appealing and natural white colour
- Full coverage adhesion
- Good flowability of the powder (no lumping or caking)
- Doesn't dissolve at an ambient or baked goods temperature of up to 45 °C



Lödige vacuum shovel dryer, model VT 2000 with heating jacket and additional nozzles for cooling with liquid nitrogen.



Lödige Ploughshare Mixer, model FKM 600D with heating jacket for controlling the temperature of the product in hygienic design (Washing in place).



Fat supply lances and choppers for quick and uniform distribution.

- Forms a lasting sugar coating on baked goods with greasy surfaces

To manufacture icing sugar, first, a uniform premix is created from all the powdered raw ingredients (sucrose, dextrose, other sugar-based powders and aromas). A temperature control jacket is used to heat this premix to a temperature in the range of the melting point of the fat which will be dosed in later. Ideally, the double jacket is then heated to a temperature above the melting point of the fat, in order to prevent sticking product at the mixing drum walls. Subsequently, the fat is dosed directly into the rotating choppers. Thus, the melted fat coats the powder. This also creates a granulate texture, which has a positive effect on the flowability of the powder. In the final step of the process, liquid nitrogen is injected into the mixer interior and the product is thus cooled to approx. 20 °C. This accelerated fat crystallisation prevents the product from lumping and caking.

**For optimal shape and colour:
Homogenisation of fondant and sugar icing**

Both professional and hobby bakers count on sugar icing and fondant to turn their baked goods into real show-pieces. The fondants are available in different colour variations. Both products can be economically manufactured in the Ploughshare Mixer. While liquid sugar icing — which is comprised of powdered sugar and water (or fruit

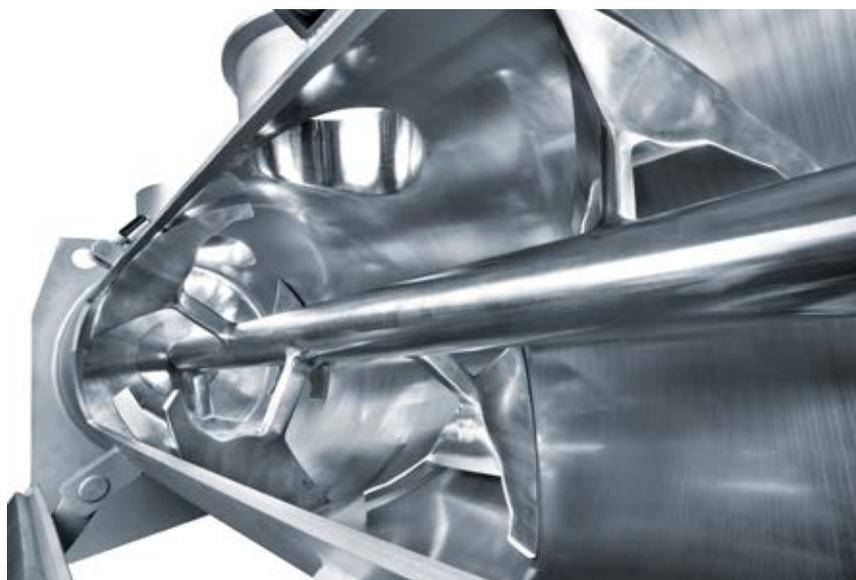
juices) — should harden after processing, fondant is characterised by a soft or pasty — and thus mouldable — consistency. Which is why glucose syrup and other ingredients such as coloured food dyes, sugar substitutes or gelling agents are added in fondant manufacture. The homogeneous sugar-glucose syrup mixture is heated in the mixer and the introduction of mechanical energy converts it to a mouldable mass. The remaining recipe components are then added.

Fondant can be manufactured in mixers for both batch operation and continuous operation. The use of choppers is not necessary for this application. The rotational speed of

the mixing tools is adjusted to the respective recipe. This can be infinitely adjusted via a frequency converter.

Conclusion

Some of the key processes involved in the production of sweets and snacks are homogenisation, conching and coating. The use of Ploughshare Mixers has proven successful in all three processes. This proven technology can be flexibly adapted to the requirements of the respective application. A multitude of equipment options is available for this purpose, such as, for example, choppers, modified shovels, temperature control jackets or additive feeding systems for the most varied recipe components.



Lödige Ploughshare Mixer for continuous operation, model KM 150 for production of fondant.

Wrapping Chewable Mass Products as Required with Cut-and-Wrap Machines Still Chewing it over

With the proven cut-and-wrap machines from Theegarten-Pactec, chewy sweets and chewing gums can be flexibly packed in a variety of wrapping types – even one and the same chewable mass, and sometimes on one machine.

Strawberry or raspberry, orange, lemon or cola: there are no limits to taste, shapes and formats on the market for chewable mass products. Almost everyone has their favourite chewy sweet. And advertising loves these sweets, too, from caramels and gumdrops to jelly products, and asks “...what do you want?” and targets children and adults alike. This diversity at the POS requires a high degree of flexibility in the primary packaging. Cut-and-wrap machines from Theegarten-Pactec are therefore available for all common types of wrapping – whether bottom folding (U1, F1), double twist (U1-I, U1-III) or tubular bags (FPW5).

Whichever type of packaging is chosen: with the cutting and wrapping machines, chewable mass can be packed not only efficiently but also in different styles. This is because the machines are so flexible that they can be equipped for several folding types. Conversion is possible between different product formats, as well as partly between different folding types.

Booming market and important segment for Theegarten-Pactec

This flexibility is important for the manufacturers of chewy sweets and chewing gums, who are particularly looking for innovative packaging combined with strong marketing campaigns, as well as new flavours and shapes. According to a recent study (Hexaresearch, 2019), the market for chewing gum in particular

will experience significant growth as a result of these innovations. Having achieved a turnover of 29 billion US dollars in 2017, the global chewing gum market is expected to reach almost 49 billion US dollars by 2025. In the USA, 165 million people chew gum.

Theegarten-Pactec have been established in this market for many years and are the world market leader for small-piece confectionery. For the machine manufacturer from Dresden, the packaging of chewable mass is and remains an important segment: 20 percent of the machines are cut-and-wrap machines (with the most important target markets being Africa and Asia). And even the Federal Association of the German Confectionery Industry sees the potential of chewable mass products on demand as far from being exhausted.

Fit for Industry 4.0

At Theegarten-Pactec, this segment also benefits from innovations from other product areas, such as chocolate or hard sugar. This is because the company integrates corresponding further developments into its cut-and-wrap machines. Keyword Industry 4.0: today, the self-analysis functions of the machines enable predictive maintenance. This also includes further development in terms of instructions for troubleshooting and cleaning via touch panels and the graphic representation on the display. With such innovative and future-orientated solutions Theegarten-Pactec are aiming to occupy their niche in the best possible way. According to other companies, there



With the proven cut-and-wrap machines from Theegarten-Pactec, chewy sweets and chewing gums can be flexibly packed in a variety of wrapping types – even one and the same chewable mass, and sometimes on one machine.

is no other manufacturer of cut-and-wrap machines up to now that has so consistently kept them at the cutting edge of technology.

Theegarten-Pactec are one of the few companies that offer not only a large number of different folding types, but also machines with a wide range of performance. Up to 2,000 products per minute can be packaged at high speed with high-performance machines. At the same time, the company is an innovation leader, as it puts a lot of capacity into research and development work: currently 90 of a total of 400 employees work exclusively in this area. Whatever the chewing gum and chewy sweet manufacturers come up with in terms of taste, shape and packaging – Theegarten-Pactec's cut-and-wrap machines are ideally positioned for innovation.

Barry Callebaut with strong growth in volume and profitability

"We delivered strong profitable growth in the first six months of fiscal year 2019/20. All Regions continued to materially outperform the global chocolate confectionery market", Antoine de Saint-Affrique, CEO of the Barry Callebaut Group.

The Barry Callebaut Group, the world's leading manufacturer of high-quality chocolate and cocoa products, increased its sales volume by +5.4% to 1,103,728 tonnes in the first six months of fiscal year 2019/20 (ended on February 29, 2020). Sales volume in the chocolate business grew by +5.2%, well above the flat global chocolate confectionery market (-0.0%)⁵ according to Nielsen. Growth was supported by all Regions and key growth drivers: Outsourcing (+1.8%), Emerging Markets (+10.6%) and Gourmet & Specialties (excluding Beverage, +3.6%). Sales volume in Global Cocoa grew +6.5%. Excluding the first-time contribution from the consolidation of Inforum, organic growth was +4.0%. Sales revenue increased by +5.8% in local currencies (+2.4% in CHF) to CHF 3,761.8 million. Gross profit amounted to CHF 607.4 million, up +6.1% in local currencies

(+3.2% in CHF) compared to prior-year pro-forma IFRS 166. The increase above volume growth was supported by an improved product mix. Operating profit (EBIT) recurring⁷ increased by +6.7% in local currencies (+3.1% in CHF) to CHF 311.5 million, compared to prior-year pro-forma IFRS 166. Currencies had a negative translation effect of CHF -10.9 million. The costs for the closure of the cocoa factory in Makassar, Indonesia, had a negative impact of CHF -8.0 million. As a result, the reported EBIT amounted to CHF 303.5 million, up +4.0% in local currencies (+0.5% in CHF) compared to prior-year pro-forma IFRS 166. The recurring EBIT per tonne was about stable at CHF 282. Net profit for the period recurring⁷ grew by +11.6% in local currencies (+7.1% in CHF) to CHF 211.7 million. The reported Net profit amounted to CHF

203.7 million, up +7.5% in local currencies (+3.1% in CHF) compared to prior-year pro-forma IFRS 166. The increase was supported by the lower net financing cost, while income tax expenses remained roughly flat at CHF -49.6 million, compared to CHF -47.5 million in the prior-year period. Net working capital slightly increased to CHF 1,838.3 million, compared to CHF 1,762.1 million in the prior-year period. The higher inventories, driven by increased cocoa bean prices, was largely offset by lower receivables and net derivative financial liabilities and structural improvements in payables. Net debt remained stable at CHF 1,981.0 million compared to CHF 1,974.8 million in prior-year pro-forma IFRS 167. Taking into consideration the cocoa bean inventories as readily marketable inventories (RMI), adjusted net debt decreased to CHF 882.0 million compared to CHF 1,042.9 million in prior-year pro-forma IFRS 166. Free cash flow for the first six months in the period under review amounted to CHF -359.2 million, compared to CHF



CHOCOLATE ACADEMY Center in Banbury



Dark chocolate nuts fillings

–119.1 million in prior-year pro-forma IFRS 166. Adjusted for the effect of cocoa beans considered as readily marketable inventories (RMI), the adjusted Free cash flow was about flat and amounted to CHF –17.9 million (February 28, 2019 pro-forma IFRS 166: CHF –9.9 million).

COVID-19 update

As a leader and trusted partner in the global food supply chain, Barry Callebaut play a critical role in contributing to the availability of food products during the COVID-19 pandemic. To do so, the Group has put in place precautionary measures to provide safe working environments for its people and maintain business continuity. Barry Callebaut have – early on – created dedicated teams at global and regional levels who are monitoring the situation as it develops and will adjust any measures based on the guidance of governments and other relevant authorities. Barry Callebaut have to date not experienced any major disruption to their production operations. While Food Manufacturers and Global Cocoa are less affected, Gourmet sales volumes are impacted by government restrictions on the access to shops and restaurants. In China there are signals of strong demand recovery, but the

overall progression of the COVID-19 pandemic remains volatile and difficult to predict.

Due to the uncertainty in the financial markets, Barry Callebaut took the precautionary decision to draw the full amount of their Revolving Credit Facility (RCF), in total EUR 1 billion with a tenor of six months, to create an alternative to the Group's Commercial Paper Program (equivalent to around EUR 450 million) and to increase access to liquidity. Barry Callebaut have had the RCF in place for many years, as a fallback option in case the commercial paper market ceases to offer the required liquidity. CEO Antoine de Saint-Affrique said: "In the context of the COVID-19 pandemic, we are taking all necessary measures to protect the health of our employees and their families. We keep contributing every day to the continuity of the global food supply chain. I would like to thank all our employees, as well as our suppliers and our customers, who are as committed, engaged and passionate as ever to produce and distribute food during this challenging time."

Outlook – Committed to mid-term guidance

Looking ahead, CEO Antoine de Saint-Affrique said: "COVID-19 is a

major unforeseen event. While we have put in place precautionary measures to support the continuation of our operations, its impact on business growth and profitability cannot be quantified at this stage as it depends on the duration and severity of the pandemic. In the meantime, we remain committed to our mid-term guidance for the period ending with fiscal year 2021/22. Our global footprint, a strong innovation pipeline, diversity in customers and channels, in combination with the diligent execution of our proven 'smart growth' strategy, give us a sound basis to overcome the COVID-19 pandemic."

Strategic milestones achieved in the first six months of fiscal year 2019/20

In March 2020, Barry Callebaut commenced the construction of their first chocolate factory in Southeastern Europe. The state-of-the-art facility will be located in Novi Sad, Serbia, close to the country's capital Belgrade. The factory, with an initial annual production capacity of over 50,000 tonnes, will serve as a regional hub from which Barry Callebaut can address the rapidly growing chocolate markets of Southeastern Europe. In January 2020, Barry Callebaut inaugurated their revamped CHOCOLATE ACADEMY™ Center in Banbury, UK. The Center is part of a global network of 23 CHOCOLATE ACADEMY™ Centers and will help to meet the growing demand for innovative and high-quality chocolate products in the UK and better serve one of the largest chocolate markets in the world.

In February 2020, Barry Callebaut introduced at ISM in Cologne, Germany, the world's leading trade fair for confectionery and snacks, the 100% dairy-free 'Milk Chocolate'. The new chocolate satisfies the growing demand of consumers for plant-based products, particularly among millennials and centennials. Dairy-free 'Milk Chocolate' is part of Barry Callebaut's growing portfolio of 'Plant Craft' prod-



Mona Lisa 3D Studio

ucts ranging from chocolate, cocoa, nuts, fillings and decorations.

Also in February 2020, the Group's Gourmet brand Mona Lisa launched 'Mona Lisa 3D Studio', the world's first personalized 3D printed chocolate at scale, made from Belgian chocolate. The launch revolutionizes the world of chocolate craft by combining industry-leading production technology, bespoke design and Barry Callebaut's chocolate expertise – allowing chefs to craft their own unique creations and reproduce them rapidly and affordably, no matter how intricate or specific the design.

In 2020, Ruby – the fourth type of chocolate – continued its success and entered the product category of ice cream with launches of 'Magnum Ruby' and 'Häagen-Dazs Ruby Cacao'.

Cost leadership

In Lokeren, Belgium, Barry Callebaut celebrated in February 2020 the groundbreaking of their new Global Distribution Center (GDC). By bundling its warehousing and distribution activities at a single site, the GDC will allow Barry Callebaut to better serve their customers, optimize efficiency and improve the cost-effectiveness of their operations. In January, as part of the

Group's ongoing efforts to optimize its cost structure and in the light of the declining Indonesian cocoa crop, Barry Callebaut closed their cocoa factory in Makassar, Indonesia. The closure led to a cost of CHF –8.0 million. The Group's growth in Region Asia Pacific will be well supported by its other factories in the region.

Sustainability

In February 2020, Barry Callebaut were awarded two "edie" Sustainability Leaders Awards, the most prestigious sustainability awards in the UK. For their plan to make sustainable chocolate the norm by 2025, 'Forever Chocolate', Barry Callebaut were recognized as "Business of the Year". Barry Callebaut's 'Seeds for Change' program received the "edie" award for the leading employee engagement program.

Barry Callebaut are proud to have been awarded an A-score on their activities to reduce their carbon footprint in the CDP 2019 assessment. CDP, formerly the Carbon Disclosure Project, is an independent organization which assesses the carbon reduction plans of over 7,000 companies every year and scores them on a scale of A, being the pioneers, to F.

Region EMEA – Good growth and profitability

Sales volume of Barry Callebaut in Region EMEA (Europe, Middle East and Africa) increased by +5.5% to 507,177 tonnes. Excluding the first-time consolidation of Inforum as of February 2019, organic growth was +2.4%, again well above the growth of the underlying chocolate confectionery market (+0.4%).⁸ Food Manufacturers continued its solid growth in Western Europe and EEMEA.

Gourmet growth accelerated in the second quarter. Beverage volume was negative, but measures have been implemented to get it back on a growth trajectory. Overall sales revenue increased by +6.8% in local currencies (+2.8% in CHF) to CHF 1,584.9 million. Operating profit (EBIT) was up +7.2% in local currencies (+3.1% in CHF) to CHF 183.8 million, outpacing volume growth.

Region Americas – Steady growth with strong profitability

Region Americas grew its sales volume by +2.2% to 287,482 tonnes. This steady growth was achieved in an overall declining chocolate confectionery market according to Nielsen (-3.0%).⁸ Volume growth was supported by Food Manufacturers in North America, and by Gourmet posting solid growth in South America. Sales revenue increased by +4.5% in local currencies (+3.2% in CHF) and amounted to CHF 938.0 million. Operating profit (EBIT) grew by +7.4% in local currencies (+5.0% in CHF), more than twice as fast as volume, as the result of an improved product mix and amounted to CHF 94.9 million.

Region Asia Pacific – Accelerating momentum

Sales volume in Region Asia-Pacific continued its strong growth, despite the impact of COVID-19 in the Chinese market in the second quarter. Volume growth was double-digit in the first six months, up +16.7% to 66,754 tonnes. Due to the COVID-19 pandemic, the Nielsen data on the underlying market growth in Region Asia Pacific was incomplete.⁹ Food Manufacturers continued its double-digit growth, mainly supported by regional accounts. Sales revenue increased by



Plant craft coins

+6.0% in local currencies (+5.5% in CHF) to CHF 215.4 million. Gourmet & Specialties achieved high single-digit volume growth in the first six months of the current fiscal year. China was the first country to be impacted by the COVID-19 pandemic and this led to a sharp slowdown in Gourmet in February 2020, particularly in the high-end segment. This impacted Operating profit (EBIT), which grew by +4.4% in local currencies (+3.0% in CHF), less than the volume growth, and amounted to CHF 27.7 million.

Global Cocoa – Normalizing volume growth

In line with expectations, Global Cocoa showed normalized volume growth in the second quarter, resulting in an increase of +6.5% to 242,315 tonnes in the first six months of the fiscal year. Sales revenue increased by +5.5% in local currencies (+0.5% in CHF) to CHF 1,023.5 million. Operating profit (EBIT) recurring¹⁰ amounted to CHF 55.3 million, compared to CHF 54.6 million in the prior-year period, reflecting the more challenging environment.

Price developments of the most important raw materials

During the first six months of the current fiscal year cocoa bean prices

fluctuated between GBP 1,734 and GBP 2,045 per tonne and closed at GBP 1,955 per tonne on February 29, 2020. On average, cocoa bean prices increased by +13.6% versus the prior-year period. Global bean supply and demand remained balanced. Côte d'Ivoire and Ghana announced in July 2019 a living income differential (LID) of USD 400 per tonne of cocoa beans, effective as of the 2020/21 crop. Sugar prices in Europe increased on average by +18.4% compared to the prior-year period mainly due to a poor crop. World sugar prices on average increased by +3.0%. Dairy prices increased on average by +43.0% compared to the same prior-year period on the back of weak milk supply and ongoing strong demand.

1 Operating profit (EBIT) recurring and Net profit recurring exclude the cost of CHF -8.0 million for the closure of the Makassar (Indonesia) cocoa factory.
 2 Prior-year comparatives have been calculated on a pro-forma basis to reflect the estimated impact of IFRS 16 had it been adopted at the time (for the current year impact see Half-Year Report, pages 17-21).
 3 On average for the 3-year period 2019/20 to 2021/22: +4-6% volume growth and EBIT above volume growth in local currencies, barring any major unforeseen events.
 4 Free cash flow adjusted for the cash flow impact of cocoa bean inventories regarded by the Group as readily marketable inventories (RMI).

5 Source: Nielsen volume growth excluding e-commerce – 23 countries (excluding China and Indonesia), August 2019 to January/February 2020, data subject to adjustment to match Barry Callebaut's reporting period.
 6 Prior-year comparatives have been calculated on a pro-forma basis to reflect the estimated impact of IFRS 16 had it been adopted at the time (for the current year impact see Half-Year Report, pages 17-21).
 7 Operating profit (EBIT) recurring and Net profit recurring exclude the cost of CHF -8.0 million for the closure of the Makassar (Indonesia) cocoa factory.
 8 Source: Nielsen volume growth excluding e-commerce, August 2019 to January/February 2020, data subject to adjustment to match Barry Callebaut's reporting period.
 9 Source: Nielsen volume growth for Region APAC +7.7%, excluding e-commerce, August 2019 to January/February 2020, only consisting of South Korea, India and Australia, excluding China and Indonesia.
 10 Operating profit (EBIT) recurring excludes the cost of CHF -8.0 million for the closure of the Makassar (Indonesia) cocoa factory.
 11 Financial performance measures, not defined by IFRS, are defined in the Annual Report 2018/19 on page 181.
 12 Prior-year comparatives have been calculated on a pro-forma basis to reflect the estimated impact of IFRS 16 had it been adopted at the time (for the current year impact see Half-Year Report, pages 17-21).
 13 Operating profit (EBIT) recurring and Net profit recurring exclude the cost of CHF -8.0 million for the closure of the Makassar (Indonesia) cocoa factory
 14 Free cash flow adjusted for the cash flow impact of cocoa bean inventories regarded by the Group as readily marketable inventories (RMI).

Almond Board Fueling Farm of the Future with \$5.9 Million Research Investment

California almond farmers continue long history of using research as the catalyst to evolve their practices, continuously challenging themselves to do more.

The Almond Board of California (ABC) today announced an investment of \$5.9 million dollars in 85 independent research projects exploring next-generation farming practices. With this commitment, the California almond community has invested \$89 million in research since 1973 to build a foundation of knowledge on responsible farming practices, food quality and safety and almonds' impact on human health.



A tangible example of the almond community's commitment to continuous improvement, the Almond Orchard 2025 Goals, launched in January 2019, will leverage this research as farmers strive to meet measurable objectives with the goal of growing almonds in better, safer and healthier ways. The Almond Orchard 2025 Goals Roadmap, released today, outlines the almond community's sustainability journey in four goal areas, as well as the metrics that the industry's progress will be measured against.

"The California almond community takes a long-term view of success based on respect for the land and local communities. Earlier this year, the California almond community set four ambitious goals aligning with our vision to make life better by what we grow and how we grow," says Holly King, chair of the Almond Board of California. "The Almond Orchard 2025 Goals build on decades of progress, fueled by research. Fulfilling these commitments will require hard work, dedication and resources, including funding independent research to test new technologies and sharing the results as these approaches are proven."

Further reducing the water used to grow almonds

Of this year's projects, ten focus on water with an investment of \$678,000. Since 1982, California almond farmers have committed \$8.1 million dollars to 221 different water research projects spanning irrigation efficiency, groundwater recharge and water quality. Together this investment has helped reduce the amount of water needed to grow each pound of almonds by 33 percent over the past 20 years. By 2025, the California almond community commits to reducing the amount of water used to grow a pound of almonds by an additional 20 percent.

Progress towards this goal is being measured against almond farmers' annual irrigation water applied per unit of crop yield. While 77 percent of almond farms utilize efficient microirrigation, nearly double the 42 percent average for California farms, further improvements are underway. ABC is working with farmers to support their progress up the Almond Irrigation Improvement Continuum, a roadmap created by irrigation experts

that outlines key irrigation management practices and how to achieve increasing levels of precision in each area.

Achieving zero waste by using everything the orchard grows

Almonds grow in a shell, protected by a hull, on a tree, and the California almond community ensures that each of these coproducts is put to beneficial use. Since 1977, ABC has funded 79 research projects totaling \$3.5 million exploring the best ways to utilize these materials, establishing traditional uses such as dairy feed, livestock bedding, and electricity generation. Thirteen new studies have been funded this year with a commitment of \$607,000 dollars to determine how almond coproducts may address needs in other sectors, with promising leads in strengthening recycled plastics, creating biofuel and more. By 2025, the California almond community commits to achieving zero waste in orchards by putting everything grown to optimal use.

Given that almond coproducts are widely utilized already, progress

toward this goal focuses on reducing the industry's environmental footprint and adding value – economically and environmentally – via three key measures. These include: 1) significant increases in recycling trees into the soil when an orchard is removed, using the trees' woody biomass to build healthier soils and address climate change via increased carbon sequestration, 2) diversifying applications for hulls and shells beyond current uses in the California dairy industry and 3) the effective elimination of open burning as a means to dispose of woody biomass.



Additional Opportunities for Innovation

In addition to water sustainability and coproduct utilization, investing in research has also resulted in significant advancements in the areas of nutrient management, air quality and honey bee health. For example, farmers work closely with beekeepers and follow research-based best practices to ensure the safety of honey bees, essential to pollinating almonds. ABC has funded more research related to honey bee health than any other crop group, with 125 projects funded to date. This year, California almond farmers have added to that investment with five new research projects totaling \$336,000.

"I often think of us as surfers," said ABC chair, Holly King. "Surfers are strategic about where to catch a wave, and we've done that over the years with our research investments, catching the wave that will bring the greatest return. Today's investment will not only help farmers grow almonds more efficiently, but also ensures we're solidly riding the wave to a more sustainable farm of the future."

ABC research projects are funded through an assessment placed on each pound of almonds grown in California. After review by third-party research advisors and workgroups focused on distinct almond farming topics, projects are selected by a committee of almond farmers and

processors based on strategic alignment to industry needs and anticipated impact of the research.

For more information about ABC's 46 years of almond farming and environmental research, and to explore how this research supports the California almond community in growing the farm of the future, visit Almonds.com/GrowingGood.

About the Almond Board of California

California almonds make life better by what we grow and how we grow. The Almond Board of California promotes natural, wholesome and quality almonds through leadership in strategic market development, innovative research, and accelerated adoption of industry best practices on behalf of the more than 7,600 almond farmers and processors in California, most of whom are multi-generational family operations. Established in 1950 and based in Modesto, California, the Almond Board of California is a non-profit organization that administers a grower-enacted Federal Marketing Order under the supervision of the United States Department of Agriculture. For more information on the Almond Board of California or almonds, visit Almonds.com or check out California Almonds on Facebook, Twitter, Pinterest, Instagram and the California Almonds blog.



Syntegon Technology Services at the Virtual Show 2020: digital and sustainable services throughout the machine life cycle

Syntegon Technology are far more than a machine manufacturer: Syntegon support customers with solutions and services throughout the entire machine life cycle, as the specialist for processing and packaging technology demonstrates at the Virtual Show 2020 from 7–13 May. The virtual event emphasizes Syntegon's focus on their service portfolio. Amongst others, visitors will see how Syntegon will support them even better with intelligent and sustainable services in the future.

Remote Services for secure access from afar

Considering the current circumstances, Syntegon not only offer a virtual event, but also provide services from afar. Right now, many customers use Remote Services when they need assistance with machine settings or troubleshooting. Visitors of the Virtual Show can look forward to an exclusive offer for this specific service.

Syntegon also provide further services and consulting offers, for which a Syntegon Technology employee would usually travel to the customer's site, via digital channels. For example, customers can order spare parts via the E-portal, Syntegon's online shop.

Operator training courses are also held virtually. Participants can choose the format according to their individual needs: Syntegon offer web-based and virtual reality training, as well as virtual classroom training on the online platform.

Digital services for trouble-free operations

Digitisation also plays a major role in the production environment: pharmaceutical manufacturers benefit from the long-standing experience of Syntegon experts in developing and implementing software solutions. The Pharma i 4.0 Solution Platform, for example, provides plant operators with important OEE data and monitors the status of machines and processes. It also supplies real-time information about events such as alarms or machine downtimes.

In addition to preventive maintenance, predictive maintenance will become increasingly important in the future: "Predictive maintenance makes downtimes foreseeable and ensures trouble-free production," explains Muhammed Ali Turac, product manager for digital services at Syntegon Technology. At the Virtual Show, the company presents MIRA (Machine Intelligence Reporting & Analytics) for the first time: thanks to intelligent algorithms, the modular software solution detects wear and tear on process-critical components such as fans. Up to six weeks before a potential failure, it announces that a component needs replacing. "The decisive advantage of this system is that it does not intervene with the machine controls. This means that retrofitted systems do not have to be re-qualified and validated," says Turac.

Syntegon Technology ensure trouble-free operations for pharmaceutical manufacturers with the patented Smart



Skin Quantifeel™ system. It reduces downtimes by optimising the transport of glass containers. Which points in the machine indicate particularly high stress on glass containers due to impact, pressure or rotation? Sensors identify critical processes, which can then be eliminated reliably. This results in fewer downtimes and less waste due to reduced glass breakage.

Efficient maintenance and optimised production with cloud platform

Thanks to the new, cloud-based Digital Shopfloor Platform, paper-based processes and unnecessary loss of time for maintenance work are a thing of the past in the food industry. "Technicians have their task planning as well as all manuals and documentations virtually in their pocket," says Sven Scharnitzki, product manager at Syntegon Technology. Using the interactive Performance Board with its intuitive interface, employees can see critical manufacturing data such as production time, losses and stops at a glance. They recognise optimisation potential faster and can avoid downtimes. In addition, QR codes on the machines make sure that relevant data is displayed promptly and easily. This saves time and resources – and makes daily work easier.

Upgrade on sustainability

Sustainability is a particularly important topic in the food packaging industry. With the new PHS 2.0 sealing jaw technology, Syntegon now offer a retrofit kit for vertical bagging machines, which reduces film consumption while increasing production speed by up to 25 percent. Food manufacturers looking to test sustainable alternatives for their existing lines can now use Syntegon's material testing service. The service experts carry out tests on their own equipment so that customers do not have to interrupt their production. Detailed reports and recordings are then analysed together with the customer.

Find out more about Syntegon Technology's services at the Virtual Show from 7–13 May, 2020. Further details to follow.

Mondelēz International complete acquisition of Give & Go

Mondelēz International, Inc. announced they have completed their previously announced agreement to acquire a significant majority interest in Give & Go, a North American leader in fully-finished sweet baked goods and owners of the famous two-bite brand of brownies and the Create-A-Treat brand, known for cookie and gingerbread house decorating kits.

"As we continue to establish foundations in fast-growing snacking adjacencies, this is an important acquisition for our company that supports our ambition to lead the future of snacking," said Glen Walter, Executive Vice President and President, North America for Mondelēz International. "We look forward to working with the Give & Go management team as they build on their leading position in the large and fast-growing in-store bakery channel."

"This is a unique opportunity for Give & Go to join the Mondelēz International family and benefit from their capabilities to accelerate innovation, consumer engagement and strategic retail partnerships. We had a very successful partnership with THL and thank them for their support over the last three-and-a-half years," said Joel Flatt, President and CEO, Give & Go.

As with other recent acquisitions including Perfect Snacks and Tate's Bake Shop, Mondelēz International will operate Give & Go separately in order to nurture their innovative and entrepreneurial spirit. Give & Go will benefit from access to Mondelēz International's consumer and channel insights, procurement, marketing and sales resources to expand the reach of their famous brands to more consumers. Give & Go's senior leadership team will retain a minority interest in the com-

pany and continue to run the business from their existing headquarters.

About Give & Go

Give & Go Prepared Foods Corp is the leader in mini treats within the in-store bakery of retailers across North America. Give & Go produces fully-finished, sweet baked goods for every key season and across four key consumer consumption occasions: Celebration Solutions, Breakfast Solutions, Everyday Treats and Better For You Snacking. Give & Go market their solutions under their proprietary brands: two-bite, Create-A-Treat, Mason St. Bakehouse, and The Worthy Crumb Pastry Co.. The Company strives to remain at the forefront of innovation, both in product development and retailer solutions, based on consumer research and a deep understanding of their retail partners' needs.

Low-temperature proximity switches for easy direct connection in Ex zones 0/20

EGE provide IGEX20Pa-type proximity switches that withstand low temperatures down to -60°C. ATEX- and IECEx-certified for use in Ex zones 0 and 20, these sensors can be used in hazardous areas with gas or dust atmospheres, for example in filling stations and facilities with gas pipelines etc. EGE now also offer easy-installation variants of these Polar-series proximity switches. Featuring the ignition protection type Ex m (encapsulation), these IGEX20Pa

models can be employed in Ex zones 0 and 20 by themselves, without the need for additional switching amplifiers. EGE supply the sensors with IP67 and IP68 ingress protection and in M12, M18, and M30 designs. Given a flush installation, the nominal switching distances are 2 mm, 5 mm, and 10 mm, depending on the design. The proximity switches are connected via a 2-m FEP cable. EGE supply them with different cable lengths on request.



Free from functional & health ingredients

The organisers of the Free From Functional & Health Ingredients (FFFHI) and Free From Packaging (FFP) have confirmed today that the events, which were planned to take place at the RAI Amsterdam from 24-25 June, will be postponed to 24-25 November 2020, following the global escalation of COVID-19.

Ronald Holman, Event Director, said: "The health and safety of our growing Free From community is our number one priority. While it is disappointing to postpone, we believe it is in the best interests of all involved – from our exhibitors and visitors to our staff, show sponsors and partners. This is not a decision we have made lightly,

but with careful consideration of the needs of the wider community that make this event such a success. "We understand that Free From Functional & Health Ingredients is an important event in the Free From community and we want to extend our thanks for the support and understanding shown during this challenging time.

Market and innovation leader Sappi present their future-oriented solutions at their virtual interpack 2020

The new products have been fully developed, the trade fair stand is planned and the teams are looking forward to meeting customers and other interested parties – occasions enough for Sappi to put into practice a virtual trade fair instead of the real interpack 2020. On www.sappi-interpack.com the globally active company will present a wide range of new products and its comprehensive existing portfolio of packaging and speciality papers to the audience from 6 to 31 May.

As the whole world is still talking about sustainable packaging solutions and looking for alternatives to fossil-based materials, the innovation leader Sappi has more products on the market than anyone else. The company will demonstrate this in style at its virtual interpack 2020. Based on the motto "Pro Planet Paper Packaging – welcome to the new pack-age", the market leader in functional paper packaging will present numerous opportunities for its customers to package food or non-food products in sustainable, premium packaging. In doing so, the company is contributing to the UN's sustainability development goals. Based on these 17 goals, the global community is committed to a better future and integrates economic, environmental and social factors.

High product protection thanks to perfectly coordinated papers

Sappi's expertise is particularly significant in the functional paper packaging sector. With the Sappi Guard range, the market leader will present barrier papers that render additional special coatings or laminations superfluous, resulting in materials that can be recycled in the paper stream. Featuring integrated barriers, they ensure that the product quality of foods and other goods is preserved. The second generation of the barrier papers will make its premiere at virtual interpack: These barrier papers are even more environmentally friendly,



making them the smart choice for a wide range of applications in the future.

Sappi Seal is perfect for packaging solutions where the priority is sealability. It offers integrated heat sealability, a moisture barrier against water vapour and is produced with 95 per cent renewable materials. The single side coated paper can be printed via offset or flexo printing. For gravure printing applications, the visionary manufacturer also offers the new version Sappi Seal G, which will be presented for the first time at the trade fair and offers even greater printing results.

Sappi's virtual exhibition stand also provides a wealth of additional information from the Functional Paper Packaging sector, such as selected examples from practice. This illustrates how different and manifold the barrier papers can be used.

A Sappi solution for every occasion

With its flexible packaging papers, the innovation leader offers an enormous range of solutions for various types of flexible packaging, applicable for food

and non-food products. Sappi will put the spotlight on Carcoat Repella Flex at the virtual fair. Thanks to its grease resistance, the semi-gloss, single side coated paper is perfect for packaging greasy foods with direct product contact, such as butter, cheese and meat.

As a home-compostable paper, Algro Nature meets the current demand for fully recyclable packaging. So Sappi remain true to their commitment of presenting their customers with even more environmentally friendly solutions for the benefit of people and the environment.

Label papers from Sappi are ideally suited for customers from the beverages industry looking to make their products stand out in a crowded market. Sappi will present their new wet-glue label Parade Label 4 at the trade fair. This paper has excellent machine runnability properties. Sappi also offer special grease resistance papers for the labelling of oil bottles. The label papers are very resistant and of course, recyclable.

Even more possibilities in the paperboard range

In advance of the virtual fair, Sappi have added a new grammage option to their Algro Design Advanced paperboard portfolio. The lighter 160 g/m² version expands the premium solid bleached board range, that previously ran from 220 to 380 g/m². The Algro Design Advanced product itself is a relatively recent development, featuring a lightly coated reverse side that balances enhanced ink lift with a natural tactile feel. "Algro Design Advanced enables our customers to be extremely flexible in the design choices they make for their intended product. Its lightly coated reverse side offers considerably more potential for projects with higher ink coverage, more brilliance, greater contrast and more diverse finishing options," explains Matthew Campbell, Product Group Manager Paperboard at Sappi Europe.

The folding box board, Atelier, which was successfully launched in 2019 will also be showcased. With its market leading whiteness and brightness combination, aligned with exemplary surface consistency, this paperboard enables branded goods to be presented very effectively at the point of sale.

Atelier also benefits from a range extension, as Sappi will present the new 220 g/m² version at virtual interpack for the first time.

"Our virtual interpack is the perfect solution for us to inform our customers and interested parties before this year end about the range and quality of our solutions and our successful

applications. We are continuing to set new standards with our products. In spring 2021 we are looking forward to the personal contacts in Düsseldorf," says Thomas Kratochwill, Vice President Sales & Marketing Packaging and Speciality Papers at Sappi Europe, in preparation for the two upcoming trade fairs.

Olam Cocoa introduce the first professionalised child labour monitoring and remediation to Cameroon

Child labour monitoring and remediation is set to be rolled out across Cameroon in the first programme of its kind by a cocoa company. The move forms part of Olam Cocoa's global commitment to put children first by tackling child labour and helping more children attend school across their entire direct supply chain. The company is working in partnership with the Fair Labor Association (FLA) and local cocoa farming cooperatives to digitally register its nearly 7,000 farmer suppliers in Cameroon and their households, introduce rigorous traceability and reporting systems, educate local communities about child labour, and set up dedicated child labour monitoring and remediation systems (CLMRS) – the first time these measures have been introduced professionally and at scale in Cameroon.

To facilitate this process, Olam Cocoa are introducing a new app to their Olam and Farmers Information System (OFIS) technology. After providing training to community leads and equipping them with a smartphone, they can begin collecting social data. This means that it is possible to identify children who are at high risk and take action much more quickly. These data insights will then feed directly into Olam's AtSource, a digi-

tal platform that gives its customers unprecedented visibility of the supply chain of their products.

It is estimated that around 20% of school-aged children in Cameroon do not attend school. The reasons for this are complex. The majority of smallholder cocoa farmers have small plots with low yields, which makes it difficult to earn a living income. When parents cannot afford to pay for labour to help on their farms, they may keep children at home to work the land rather than attend school.

Beyond Cameroon, the app will be used to cover nearly 223,000 farmers in 3 countries across West Africa, prioritising those countries where the risk is highest. Last year the company launched Cocoa Compass, its sustainability ambition for the future of the cocoa sector, which aims to tackle child labour and help children access education, support cocoa farmers to achieve a living income, protect forests through an increase in tree carbon stock and lower its natural capital costs.

Richa Mittal, Director, Supply Chain Innovation & Partnerships at the Fair Labor Association, said: "Olam Cocoa proactively partnered with

the FLA to map the working conditions in its smallholder cocoa supply chain in Cameroon in 2019. The FLA team alongside Olam Cocoa's local team engaged government stakeholders, civil society organisations, local community leaders, farmers, workers, and their families to understand the root causes of child labour. The findings informed Olam Cocoa's development of CLMRS in Cameroon. The FLA will continue to independently monitor and then publicly report on the company's efforts to improve the conditions for the cocoa farmers and their families in the country."

Billie Elmqvist Thurén, Regional Child Labour Analyst at Olam Cocoa, said: "Access to education and freedom from child labour are basic human rights. We're focused on making this a reality for every child and parent we work directly with in cocoa communities around the world. It's a big task, especially in countries like Cameroon that are struggling with ongoing political uncertainty. But we need to act now to ensure we have full traceability of the cocoa in our direct supply chain, and most important of all, improve the lives of children and give them the opportunities their parents may not have had."

Lindt & Sprüngli increase group sales and gain market shares

In the financial year 2019, Lindt & Sprüngli achieved very solid sales growth, gained substantial market shares and once again grew faster than the overall chocolate market. Group sales increased by +4.5% in Swiss francs to reach CHF 4.51 billion. Organic sales growth amounted to +6.1%, which is within the set target range. All three regions – “Europe”, “North America” and “Rest of the World” – contributed to this excellent result. The solid growth path of the subsidiaries once again laid the foundation for a very successful operating performance: Excluding one-off expenses Group operating profit (EBIT) rose by +6.0% to CHF 675 million. The EBIT margin also improved again to 15.0%. Net income thus increased by +5.1% to CHF 521 million.

Market share gains in Europe

In EUROPE, Lindt & Sprüngli achieved solid organic growth of +6.2%. This result is very positive given the various political disruptions, such as Brexit. Lindt & Sprüngli once again managed to expand their market shares in all key countries and to grow faster than the market average. Sales growth was particularly strong in the United Kingdom, Germany and Austria. But sales also rose in the home market of Switzerland, as well as in Spain, Italy and France, while all the Eastern European markets even reported double-digit growth. In addition, Lindt & Sprüngli opened a new subsidiary in the Netherlands and are about to open a representative office in Portugal in 2020.

Solid result in North America

The NORTH AMERICA region achieved strong organic sales growth of +5.4%. All three brands – Lindt, Ghirardelli and Russell Stover – contributed equally to this solid result. During the past year, a number of important strategic decisions were taken to improve efficiency on the sales, production and logistics side of the three US subsidiaries. First, merchandising for the three brands Lindt, Ghirardelli and Russell Stover was outsourced

to a specialised third-party provider as of January 2020. This allows Lindt & Sprüngli greater flexibility in the deployment of resources during their busiest seasons. Another important decision was taken affecting the Russell Stover production: its oldest manufacturing facility in Montrose, Colorado will close in 2021 and production moved to sites in Kansas and Texas, which will be expanded. This measure allows production efficiency to be optimised and capacities to be increased, while at the same time creating additional jobs at the remaining production sites. The third measure involves the closure of existing warehouses as part of the consolidation of the US logistics network already initiated two years ago. The cost savings created by these measures will improve the result of the US business in future, while at the same time providing greater support for the brands in achieving additional sustainable and profitable sales growth. These steps will enable Lindt & Sprüngli in North America to strengthen their position as No. 1 in the premium segment and No. 3 in the overall US chocolate market with their three brands Lindt, Ghirardelli and Russell Stover in the long term.

Continuous growth in Rest of the World

The REST OF THE WORLD segment continues to expand and generated sales growth of +7.6%. The markets of Japan, China and Brazil performed particularly well, with all three reporting strong double-digit growth. These countries hold substantial growth potential for Lindt & Sprüngli, as the consumption of premium chocolate is steadily rising in these markets.

Around 500 own shops worldwide

The strategy of Lindt & Sprüngli's own store network continues to pay off and GLOBAL RETAIL once again made a notable contribution to the overall Group result. Following numerous new shop openings, Lindt & Sprüngli are now present at around

500 locations worldwide and offer consumers a unique brand experience. Every year, millions of chocolate lovers visit the company's own shops. The biggest drivers for the retail business were Japan and Brazil.

Operating performance

The solid growth path of all subsidiaries once again laid the foundation for a strong operating performance. Excluding one-off expenses, Group operating profit (EBIT) rose by +6.0% to CHF 674.6 million. This represents an EBIT margin of 15.0% (previous year: 14.8%). Net income increased by 5.1% to CHF 511.9 million, providing a return on sales of 11.4%. Operating cash flow rose +27.5% to CHF 830.9 million. The balance sheet is debt free on a cash basis, and with an equity ratio of 58.1% is very solid. The one-off effects for the reorganisation of the North America business did not have an impact on the result at net profit level, nor subsequently on earnings per share. This is because the two effects at the level of EBIT and taxes, in the net amount of CHF 59 million each, offset each other.

Outlook

For the coming years, Lindt & Sprüngli confirm their existing mid- to long-term organic sales growth target of 5–7% p.a., combined with a steady improvement in the operating margin of 20–40 basis points p.a. In achieving these targets, Lindt & Sprüngli will continue to grow faster than average in all their markets. Lindt & Sprüngli continue to pursue with the global expansion plans in 2020.

2020 is a very special year for Lindt & Sprüngli: The company is celebrating its 175th anniversary. On this occasion the Lindt Home of Chocolate is now coming to life at Lindt & Sprüngli's headquarters in Kilchberg. The flagship project, funded and realised by the charitable Lindt Chocolate Competence Foundation, will open its doors to the public on 10 May, 2020, on Swiss Mother's Day. The multifunctional building strengthens

Switzerland's position as a center of excellence for chocolate manufacturing and continues the pioneer work of the company's two founders. An interactive multimedia exhibition, a pilot plant with show production, the largest Lindt Chocolate Shop in the world, a Lindt Chocolate Café and a Chocoleria for chocolate-making courses will be offered to visitors from Switzerland and abroad at "Schokoladenplatz 1". A chocolate fountain measuring over nine meters in height is an impressive feature located right in the entrance area. In addition to the fountain, which will have real chocolate flowing through it, the

tasting room is another highlight, where visitors can sample a wide variety of creations from the Lindt Maitres Chocolatiers. One particularly interesting feature is the research facility in the Lindt Home of Chocolate, which will be open to other research institutes as well.

Annual General Meeting

Lindt & Sprüngli are extremely grateful for the continuing trust placed in the company by the shareholders. Thanks to a strong performance in 2019 the company will not only be able to continue the attractive dividend policy, but will also be topping

it up with a generous special dividend to celebrate its 175th anniversary. The Board of Directors is proposing to the 122nd Annual General Meeting scheduled for 24 April, 2020, a +75.0% higher dividend of CHF 1,750.- per registered share (CHF 330.- from the approved capital contribution reserves (agio) free of withholding tax, and CHF 1,420.- from available retained earnings) and CHF 175.- per participation certificate (CHF 33.- from the approved capital contribution reserves (agio) free of withholding tax, and CHF 142.- from available retained earnings).

Higher Fairtrade price boosts Ivorian cocoa farmers' incomes by \$15 million in Q4

Sales of Fairtrade certified cocoa from Côte d'Ivoire in the fourth quarter of 2019 increased farmers' earnings by approximately \$15.1 million USD (€13.8 million) compared to non-Fairtrade cocoa, according to preliminary figures released by Fairtrade International.

The higher earnings are due to the difference between the guaranteed Fairtrade Minimum Price and the current Ivorian government-set cocoa price. Fairtrade increased their Minimum Price for cocoa by 20 percent to \$2,400 per tonne at FOB (point of export), effective 1 October 2019. This means that Fairtrade certified cooperatives in Côte d'Ivoire are currently receiving almost \$236 more per tonne on top of the government-set FOB price.

More than 140 Ivorian cocoa cooperatives sold approximately 64,000 tonnes on Fairtrade terms from October through December 2019, according to available trader reports. The cooperatives are now distributing the earnings, including the full amount of the difference between the Fairtrade and government prices, to their farmer members as required by the Fairtrade Standards. This effectively raises the farm gate price that Fairtrade farmers receive by 17 percent. Payments to cooperatives and to farmers are being

audited by Fairtrade's independent certifier, FLOCERT.

"I'm very happy," said Etienne N'Guesan, who has been a cocoa farmer for more than 40 years. "I can take care of my children's needs." He also plans to invest in some farm improvements. "Cocoa farmers deserve to earn a decent living just like anyone else," said Anne Marie Yao, West Africa Regional Cocoa Manager for Fairtrade Africa. "The additional funds going into the pockets of these farmers are the tangible result of people choosing Fairtrade chocolate. It makes a big difference."

In addition to the Fairtrade Minimum Price, certified cooperatives also receive the non-negotiable Fairtrade Premium of \$240 per tonne, which was also increased by 20 percent as of 1 October. Each cooperative will democratically decide at their annual General Assembly how to invest their Premium in their businesses and communities. The Fairtrade Premium earned on Q4 sales is estimated at more than \$15.3 million.

About two-thirds of the world's cocoa is grown by smallholder farmers in Côte d'Ivoire and Ghana. More than 190,000 Ivorian cocoa farmers are members of Fairtrade certified cooperatives.

The Ivorian and Ghanaian governments announced last year their own mandatory Living Income Differential of \$400 per tonne to ensure that all farmers receive a higher minimum farm gate price. This should take effect in October 2020. At the same time, Fairtrade are working with chocolate companies and retailers to test various interventions that impact price, income diversification and other components of a holistic strategy to enable cocoa farmers to earn a living income.

"The additional money that farmers are receiving as the result of the Fairtrade Minimum Price is a step in the right direction, as is the government's Living Income Differential for all cocoa farmers starting in October 2020," said Jon Walker, Fairtrade International's senior advisor for cocoa. "However, many cocoa farming households will still not be earning a living income even with these higher prices. That's why Fairtrade is working with cooperatives, their commercial partners and governments to test what factors work in enabling farmers to actually achieve a living income. This includes price but also income diversification and cost efficiency, for example. It's essential for chocolate industry players to continue to step up their commitments, since that's the only way farmers will truly see a sustained impact."

Masthead sweet vision

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Web: www.erling-verlag.com

Coordination

Stephan Musiol
Jürgen-Töpfer-Straße 67
22763 Hamburg, Germany
Phone: +49 175-56 06 61 8
Mail: musiol@sweetvision.de

Art-director

Helge Putzier
Mail: helge.putzier@erling-verlag.de

Advertising service

Stephan Musiol
Phone: +49 175-56 06 61 8
Mail: musiol@sweetvision.de

Horst Saenger

(Germany/Swiss/Austria)
Phone: +49 58 44 97 11 88-4
Fax: +49 58 44 97 11 88-9
Mail: saenger@sweetvision.de

Subscription service

Nicole Schulze-Wons
Phone: +49 58 44 97 11 88-0
Fax: +49 58 44 97 11 88-9
Mail: subscription@sweetvision.de

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MONDOMIX

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HAAS-MONDOMIX B.V.
Damsluisweg 41,
NL-1332 EA Almere
Postfach 30226,
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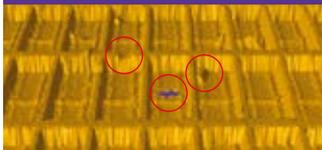
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