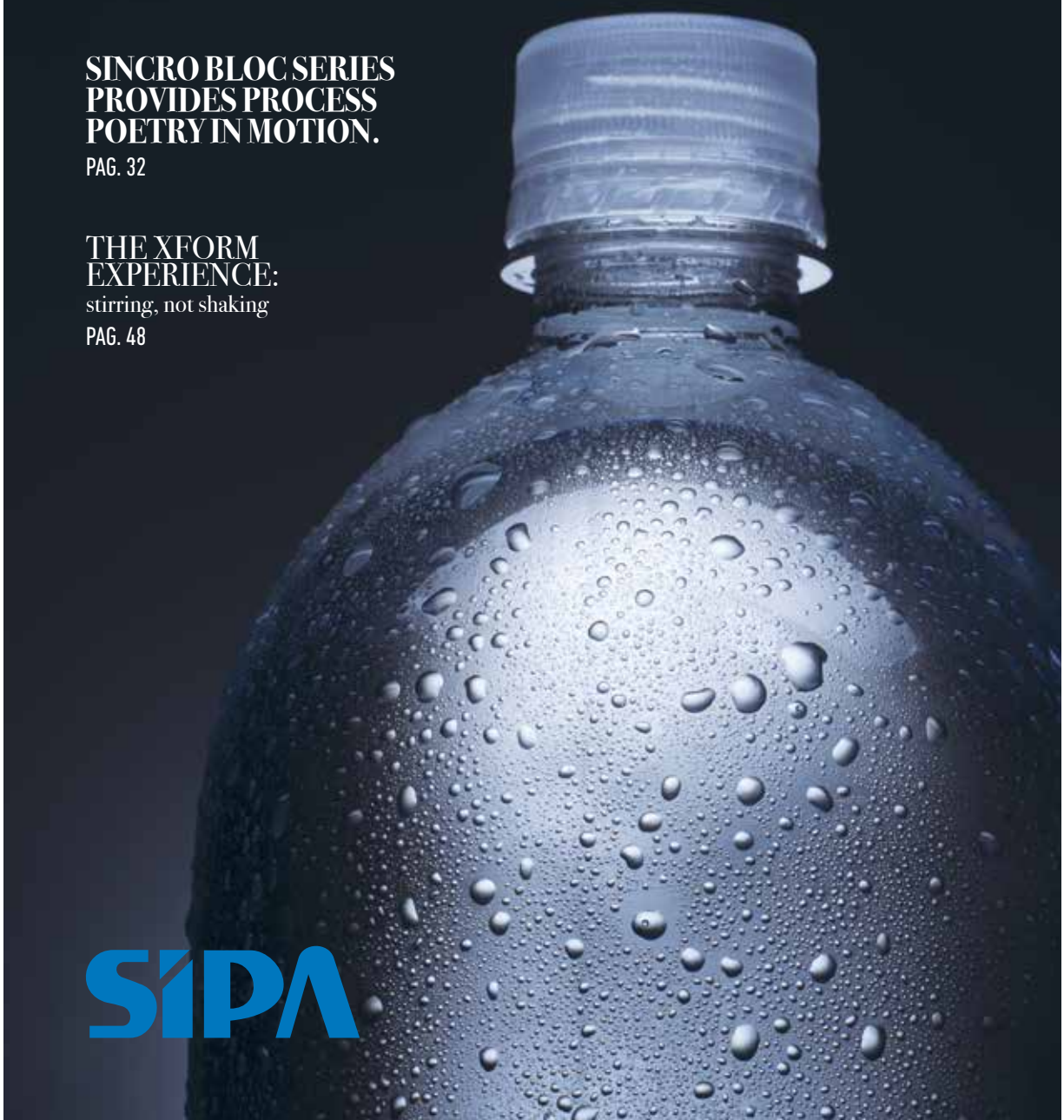
SIPA SPEAKS



SIPA

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Innovation Is change

Our world is turning faster than ever. Never before have our markets given us so little chance to take the long-term view. Today, we are confronted with so much change, coming at us with such speed, that it is almost overwhelming. In the new business equation, adaptation needs to be the constant, innovation the variable, with our place in time linking them together. We have to consider the future in a different way. **To paraphrase Charles Darwin: it's not the biggest or the most intelligent companies that will survive, but the ones that best adapt to change. In other words, only those who know how to continuously innovate today – to renovate – will be competitive tomorrow.**

But there is something else, something extremely important, that we should not underestimate in this equation of change: and that is diffusion -- or maybe we should call it exploitation. Innovation is a journey, and on the road to success, innovators need to pass through at least three stages. At the beginning is the invention, the creation of something new. What then? This invention needs to make a process or a product innovative, to facilitate change, possibly transformation, in system economics.

Finally, and possibly most importantly, we reach the point of exploitation. **Without exploitation, innovation produces no change.** If a company cannot show its market how an innovation meets a need, the innovation dies. To be successful, a company needs to have the force to convince. This is what is behind our new magazine, SIPA Speaks.

SIPA Speaks is the voice of innovation, it is a window that opens out onto a world of change. It is here to show you our spirit, to shine a light on how SIPA is in a constant process of transformation, building on an entrepreneurial story that covers the globe. We chose the title SIPA Speaks for its clarity and precision, and to provide authority to the words on these pages.

In every issue of **SIPA Speaks**, you will find a rich collection of interesting articles, in five chapters:

01. AROUND THE WORLD, where we report on where SIPA has installed equipment and systems, in collaboration with our important customers;

02. FOCUS ON, an in-depth look at new technologies and the most innovative systems, "Made in SIPA";

03. TECHNICAL WINDOW, a space to explore new solutions and technological improvements, with machine facts and figures;

04. PETWORK, ideas, inspiration and curiosities from the world of packaging;

05. REPET AND AGAIN, dedicated to environmental sustainability and the theme of recycling, with updates on SIPA's commitment to the planet and its role in supporting processes within the Circular Economy.

With SIPA Speaks, once again we have changed to innovate, to renovate. **SIPA Speaks embodies the energy, experience, knowledge and understanding of a company playing a leading role in global packaging**. Let us not forget: SIPA is one of the largest producers of equipment to produce PET preform machines and PET containers, with global design and engineering capability.

SIPA is a force for innovation around the world, with more than 1,100 people in 17 sales offices, four production plants, 28 after-sales service centers providing technical support and spare parts, and eight mold refurbishing locations.

Above all else, SIPA is a force for transformation. Just one example: this year SIPA's Xtreme Renew was awarded a prestigious World Star Packaging Award, in recognition of applied technological innovation. This system is unique in its ability to produce performs using PET recovered directly from post-consumer waste, in a single heat cycle. Xtreme Renew is a perfect response to needs in the Circular Economy for high-quality, sustainable and economical systems.

Innovation is change. So, SIPA Speaks. Today, even more than ever.

AROUND THE GLOBE:

news from the different continents.

01

JAPAN

KEY INNOVATION IN PET BOTTLE RECYCLING WINS WORLD STAR PACKAGING AWARD

Ground-breaking technology for production of PET bottles entirely out of post-consumer waste has been recognized with a prestigious WorldStar Packaging Award. XTREME Renew was codeveloped by SIPA with Austrian recycling technology specialist EREMA. The two companies were honored at a gala ceremony hosted by the World Packaging Organisation (WPO) in Prague, Czech Republic in May. The WPO presents WorldStar Packaging Awards every year to what are considered by independent experts to be the best packaging solutions and applied technological innovations.

> “XTREME Renew technology is unique in the world in its ability to produce bottles.”

XTREME Renew technology is unique in the world in its ability to produce bottles, suitable for food contact and with properties as good as those of bottles produced from virgin PET, directly from flakes of post-consumer scrap, in a single heat cycle. The recognition for this important development, which SIPA and EREMA hope will be adopted around the world as the Circular Economy takes shape, came a few months after the first XTREME Renew plant went into operation in Japan at the end of 2018.

EREMA and SIPA collaborated with two Japanese partners – also cited for the award – Kyoei Industry (a major recycling company) and Suntory (one of the largest beverage producers in the world) on an installation in Kasama. The system can produce over 300 million containers per year. A measure of the importance of the new installation can be taken by the fact that the inauguration ceremony was attended by representatives of ministers of industry, agriculture and the environment of Japan. Suntory, with sales of 20 billion dollars and 38,000 employees worldwide, fills more than 2.5 billion bottles every year. It is a leader in the production and distribution of beverages that include Schweppes and Orangina for European markets and PepsiCo for America.

EXTREME Renew uses EREMA technology to convert conventional washed bottle flakes into decontaminated melt-filtered PET food-grade melt with an increased viscosity (IV). This is then directly fed to a SIPA XTREME injection-compression preform molding plant (unlike other molding systems on the market that have to start from pelletized recycled material, RPET). Containers produced from the preforms boast a high level of aesthetics, thanks to the elimination of an entire melting process that could otherwise cause yellowing in

the resin. “This is a solution that represents the perfect response to the requirements of the new Circular Economy,” says Gianfranco Zoppas, President of SIPA parent company Zoppas Industries. “Waste reprocessing is rendered sustainable and economical while producing new products of the highest quality.

“This innovative technology uses 30% less electricity than traditional recycling processes, thanks largely to systems integration, while CO_2 emissions are cut by 25% – a massive 60% when you compare it to bottle production from virgin resin.” Zoppas concludes: “I am particularly honored that this Austro-Italian green technology has received important international recognition. It has already had such a success in Japan that our partners there are even now thinking of two additional installations that will triple the production capacity to up to almost a billion RPET bottles per year.”

Here are the advantages:

10%

10% lighter PET containers, leading to a competitive advantage in packaging.

30%

Energy savings: -30%, only 0.58 kWh/kg PET.

15%

Lower TCO, up to -15%, compared to conventional recycling.

60%

CO_2 emissions: -60% compared to virgin resin.

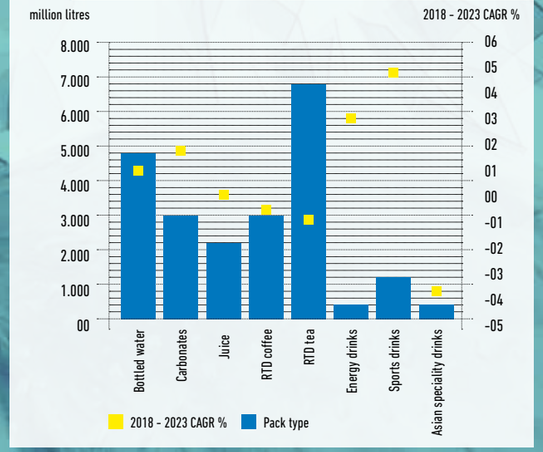
20%

Advantage in logistics: -20% logistics and transportation costs.

100%

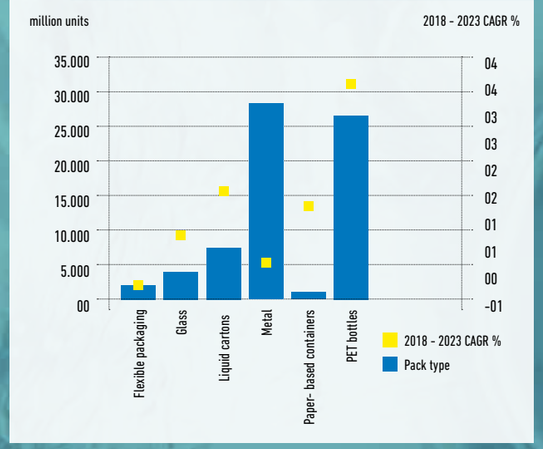
100% sustainable: only recycled PET flakes.

2019 Market Size of Soft Drinks in Japan and expected growth



Source: Euromonitor

2019 Market Size of different pack type for Soft Drinks in Japan and expected growth (2018-2023)



Source: Euromonitor

SIPA IN SOUTH AFRICA

SOUTH AFRICA

Willowton Group, a leading FMCG business and major African oilseed processor, has turned to SIPA to help it bring production of bottles for its edible oils in-house.

WILLOWTON MAKES MAJOR INVESTMENT WITH SIPA IN SOUTH AFRICA TO BRING OIL BOTTLE PRODUCTION IN-HOUSE

SIPA has installed five new SFL linear stretch-blow molding systems at Willowton's plant in Pietermaritzburg, South Africa. "Willowton has been procuring bottles externally for some 20 years, but last year it took the decision to produce them itself, and it chose SIPA as its technological partner," says Giovanni de Rosa, SIPA South Africa General Manager. Willowton has taken delivery of two SFL6/4 units, two SFL6/6's, and one SFL6/8 EVO. They are now making bottles in various sizes, ranging from 375, 500, and 750mL on the SFL 6/8 EVO, through 2L on the SFL 6/6, to 4 and 5L on the SFL 6/4. Outputs range from 4,400 bottles/h on the SFL 6/4 up to 14,000 bottles/h on the SFL 6/8 EVO. Says Ali Akbar Moosa, Chairman & Director at Willowton: "The SFL is the right platform for us to meet the quick change-over requirements on our filling lines. The machines are all easy to run, and the costs of maintenance are low. They also give us the flexibility to produce a wide range of containers in terms of size, complexity and shape."

Next year, Willowton Group will celebrate its 50th anniversary. The family-owned business was founded in Pietermaritzburg by DH Moosa together with his brothers and sons in 1970. Since then, it has grown to become one of Africa's leading edible oil processors, as well as one of the leading competitors in the South African FMCG market.

The group operates across South Africa with manufacturing facilities not only in its home town of Willowton, Pietermaritzburg but also in Johannesburg and Cape Town. It has manufacturing operations in Zambia and Zimbabwe as well, and has aspirations to further extend its reach to customers throughout Africa. Willowton's product range stretches well beyond edible oils, into margarines and spreads, beauty, toilet and laundry soaps, candles, baking and industrial fats, as well as maize meal, rice, and sugar. It has its own distribution company, Willowton Logistics. Key to the group's success are the sound foundations of service excellence, continued investment in technology and human resources and the hands-on involvement of the directors in the day-to-day running of the business. Willowton puts a very strong emphasis on safety and hygiene. The oil and margarine manufacturing facility in Pietermaritzburg operates the Hazard Analysis and Critical Control Point (HACCP) Food Safety Management System, an internationally accepted food quality and safety management system that ensures that products are hygienic and safe for public consumption; it has also attained British Retail Consortium (BRC) accreditation, which is essential for securing contracts with companies supplying food products to major UK supermarkets such as Marks & Spencer, Tesco and Sainsbury's.

SIPA HELPS PHILIPPINE BOTTLING BEVERAGE STAY CLOSE TO NATURE

PHILIPPINES

philippine bottling beverage

SIPA has helped a company in the Philippines bring to market the first bottled water in the country that is named after its source. Philippine Bottling Beverage launched Banahaw Spring Purified Water last year.

The water is named after its source, Mount Banahaw, which is just a few miles away from the company's bottling plant in San Pablo, about 50 miles south of Manila. Mount Banahaw is an active volcano, sacred to locals and to pilgrims outside Laguna province, with mountaineering trails and hot springs.

The plant at Philippine Bottling Beverage – or PBB – is fully automated, "preserving the essential natural qualities of the water from the mountain," says PBB Business Development Manager Thor Jourdan Mutuc.

"Beyond careful usage of water, we are putting in place measures that are geared toward protecting forests that nurture groundwater and contribute to the healthy circulation of water in nature," Thor says. "Our world-class facility is strategically located to create the perfect balance between its natural water source and the plant's innovations."

PBB supplies Banahaw Spring Purified Water in three bottle sizes: 350 and 500 mL, and one-liter sizes, designed with a special curvature that makes them very easy to hold. The bottle caps are very light to help reduce the overall carbon footprint of the product. After years of research and testing to perfect the product, several months ago PBB had SIPA install a complete bottling line for the purified water. The line goes all the way from an XFORM 350 PET preform production system with a 48-cavity mold, through an SFR EVO3 six-cavity stretch-blow molding unit and a Stillfill SP filling unit, to labelling, palletizing, and stretch-wrapping, with all the necessary associated ancillaries. The line runs at a speed of up to 13,000 bottles per hour.

"The collaboration between our two companies began with us offering a turnkey filling line, and that then expanded to include in-house production of preforms to drastically reduce packaging and logistics costs," says SIPA Regional Manager Gianfranco Perricci. "PBB tells us it is really happy with the line and our proactive approach and readiness to resolve any potential problems".

"SIPA will continue to serve PBB to ensure quality of a service that PBB in turn can guarantee its own customers."

PBB is a 100% Filipino-owned company whose business involves not only its own new Banahaw Spring brand, but also manufacturing, private labeling and tolling of other liquid products, together with marketing.

RUSSIA

BAIKALSEA Company

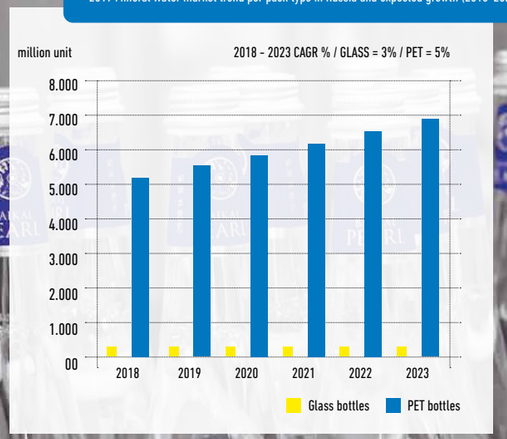
BAIKALSEA COMPANY

SIPA is helping BAIKALSEA Company to bottle precious natural water from Lake Baikal.

By the side of the largest and deepest lake in the world, SIPA is helping BAIKALSEA Company bottle precious natural water from Lake Baikal and adjacent subterranean sources for thirsty consumers across Russia. BAIKALSEA Company is a Russian manufacturer of Baikal water in the premium segment, a leading manufacturer of bottled water from artesian sources: natural water BAIKAL PEARL, mineral sparkling water BAIKAL RESERVE, as well as deep Baikal water BAIKAL430.

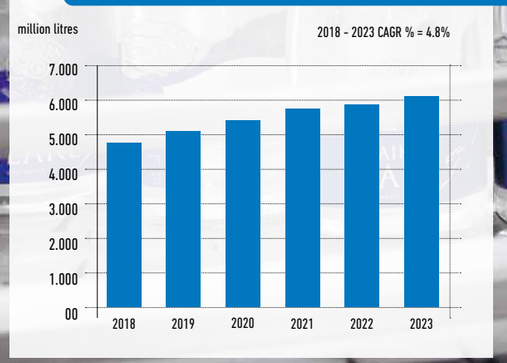
SIPA has installed two complete bottling lines for BAIKALSEA Company in Irkutsk, one beginning with SIPA's SFR-12 EVO rotary stretch-blow molding system and going all the way through to final product wrapping via an Isofill P filling station and a Genius PTF Fast Layer palletizing unit, together with various other line elements from partner companies. Depending on bottle size, output can be as high as 24,000 bottles per hour. SIPA also installed a second complete line, for filling glass bottles.

2019 Mineral Water market trend per pack type in Russia and expected growth (2018-2023)



Source: Euromonitor

2019 Mineral Water market size in Russia and expected growth (2018-2023)



Source: Euromonitor

"BAIKALSEA Company is also particularly happy with the work we did with them on product design," says Karina Sokhova in SIPA's Moscow sales office. "Together we have created quite a number of new formats."
BaikalSea Company sells water with several different brand names in PET bottles ranging in size all the way from 330 mL up to 2 L.
Vyechaslav Bulatov, BAIKALSEA Company's production director, says his company chose SIPA as its partner for its optimal ratio of quality to price. "During the project study phase and in the bidding process, SIPA showed interest in taking on projects, giving attention to the individual requirements of each of our brands," he tells us. "SIPA's specialists provided us with some very useful and novel recommendations." SIPA's Sokhova adds: "Obviously our key strengths are in PET bottle making and filling, but with BAIKALSEA Company we were also very well positioned to help them with the glass line, including several components produced by us in-house for tasks like bottle depalletization, filling, inspection, labelling, and packaging.
"We were able to include an innovative feature that enables a single robotic palletization system to operate simultaneously for both lines, PET and glass.
"Meanwhile, back at the beginning of the PET bottling line, operators appreciate how easy it is to use the SFR-12 EVO, especially setting it up for new recipes to produce high-quality bottles."
BAIKALSEA Company is very aware of its debt to nature for its success in bottling water from the lake, so it takes great care to be as friendly as it can to the environment. SIPA technology helps here too, with such features as recovery of heated air as a means of saving energy. Water bottled by BAIKALSEA Company finds its way to consumers by numerous routes, via large and small retailers, hotels and restaurants. "Lake Baikal is one of the national symbols of Russia," says Marketing Director Roman Gvozdinsky. "The image of Lake Baikal is one of the strongest and easily recognizable images in the country and abroad, symbolizing eternal values, which everyone can relate to and understand."

IN UZBEKISTAN, SIPA GIVES SAMPLAST GREAT FLEXIBILITY

In a village just outside Samarkand, one of the major cities of fast-growing Central Asian country Uzbekistan, SIPA is helping Samplast progress in PET packaging.

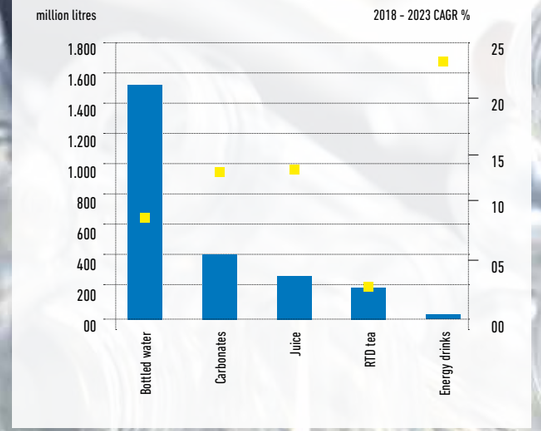
Samplast, part of the SIYOB group that has interests ranging from food and drink through to car tyres, recently bought a SIPA XFORM 350 GEN3 PET processing system, including molds for producing preforms in no fewer than 27 formats. Tooling included complete molds with 24, 48 and 72 cavities, as well as cold-halves with 48 cavities, together with various sets of cores. The preforms end up in diverse applications: edible oils, carbonated soft drinks, and dairy products.
Samplast also took two stretch-blow molding systems – an SFR6 EVO3 and an SFL4/3 XL, for production of oil bottles in various sizes.
Says Leonid Nim, SIPA's local representative: "SIPA came to Samplast with the business solution that best met its requirements. Samplast was particularly impressed with the proven preform designs we recommended. That is the main reason why

THE BUSINESS SOLUTION THAT BEST MET ITS REQUIREMENTS

we won such a large order for tooling – which can also run on equipment from other equipment suppliers if necessary.

"Samplast is really satisfied. Installation and start-up went very smoothly, and the equipment is now running faultlessly. The customer appreciates the speed, flexibility, and reliability of our equipment, as well as its ease of use."
Nim points to the strong partnership between the SIPA and Samplast teams. "We are providing strong commercial support, and we have Russian-speaking field engineers on hand, should the case arise for any intervention from our side," he says.

2019 Soft Drinks market size in Uzbekistan and expected growth (2018-2023)



Source: Euromonitor

FOCUS ON:

SIPA's SINCRO solutions.

02

SINCRO BLOC SERIES PROVIDES PROCESS POETRY IN MOTION.

There is a steely beauty in a machine running at a speed so high, everything is a blur. Only if you blink very fast, can you begin to make sense of what is actually happening. A SIPA XTRA rotary stretch-blow molding machine is one of those wonders, as it turns preforms into bottles as fast as 18 every second. Flying in front of you, one after the other.
Where do they fly to? If you are lucky enough to have a SIPA Sincro Bloc system, they go straight into a filling and capping system that, almost unbelievably, works just as fast. Exactly as fast. Perfect synchronization, adding beauty on beauty.
Sincro is now a name that SIPA applies to a series of integrated equipment combos. Not only bottle making and filling – now with linear as well as rotary bottle blowing – but also preform production (with the outstanding XTREME sequential extrusion-injection-compression molding system) and bottle stretch-blow molding – XTREME Sincro – and XTREME Sincro Cube, which puts preform making, bottle blowing, filling and capping, all together, totally synchronized, in one place.

Leading in Stretch-blowing and filling systems.

The linear Sincro Bloc integrated PET bottle stretch-blowing, filling and capping system is the latest addition to the range. Using SFL linear stretch-blow units, it was introduced in 2017 to complement SIPA's existing offering in rotary. Linear Sincro Blocs were introduced in response to calls, particularly from companies bottling water and also oil, for a compact system that could produce and fill bottles in all formats up to 12 liters in size. A Linear Sincro Bloc based on an SFL 6 can make and fill up to 11,000 small bottles every hour, while a system configured for larger formats can produce and fill up to 4,000 12-L containers in the same time (or 6,600 5-L containers).
These systems can produce bottles with handles and wide-mouth jars. They can also work with all types of liquids, water, oil, CSDs, milk, hot-filled products, detergents and personal care products. If necessary, the same line can produce and fill hot-fill and CSD drinks. Numerous SIPA customers have taken advantage of this feature.

Extremely clean machines
Sincro Blocs – linear and rotary – are not only fast, they are also user-friendly, thanks to their relatively simple mechanical movements. This helps keep maintenance and initial investment costs down, leading to an advantageous Total Cost of Ownership (TCO). Simplicity also helps with cleanliness and hygiene. There is no need for rinsing between blowing and filling, no need for external conveying systems, and total protection from the outside environment, from the moment the preform enters the feed shoot until the filled and sealed bottle emerges, ready for wrapping. The high levels of cleanliness make it possible for customers to use them for CSDs that contain no artificial preservatives.

A variety of mechanical and electronic fillers
SIPA produces various types of fillers that can be coupled with the blow molders. These include the Stillfill Evo mechanical gravity filler for hot- and cold-filled non-carbonated drinks; the mechanical Isofill isobaric level filler for carbonated soft drinks and mineral waters; the Flextronic S and SE electronic volumetric fillers for various types of still liquids and hot-fill products respectively; and the Flextronic W electronic weight filler for products with extra added value.
The Flextronic C electronic multi-product volumetric filling monobloc is suitable for filling CSDs, still and sparkling mineral waters, cold- and hot-fill juices. The configuration of the valve makes it suitable for processing products containing pulps and fibers. On top of all this, maintenance is once again very straightforward.

Integration of compression and stretch-blow molding
The XTREME Sincro brings together in a single bloc SIPA's ground-breaking preform compression molding system with a high-speed stretch-blow molding unit. It embodies numerous advantages for bottle producers, combining the flexibility of two-stage systems with the convenience of single-stage systems. When designing the Sincro XTREME, SIPA wanted to create a production plant that was compact, flexible and easy to operate, which had very low materials and energy consumption; which treated the PET as gently as possible to retain high purity, which provided perfect product handling without damaging the preforms in any way,

and which produced bottles with extraordinary performance, but which were lighter than anything available on the market. We believe we have achieved our objective.

Lighter than ever
With the XTREME injection-compression system, it is possible to produce preforms that are up to 10% lighter than even the lightest preform produced by conventional injection molding, without losing any key properties. More weight can be shaved off the body and base of the preform than ever before. Not so long ago, the maximum length-to-wall thickness ratio (L/t) of an injection molded preform was little more than 45. With XTREME technology, a figure close to twice as high – 80 – is possible. Processors can now make a preform for a 500-mL bottle that weighs just six grams. The system is particularly well suited to production of preforms for bottles up to 1.5 L in volume, but can also be used for bottles up to 2.5 L. With its rotary configuration and its pneumatic actions, XTREME fits perfectly into a Sincro Bloc with any SIPA rotary stretch-blow system. In the Sincro XTREME, it is directly coupled to the next-generation rotary stretch-blow molding unit.

Reduced energy consumption
Several factors make the integrated system so highly energy efficient. First of all, XTREME uses lower temperatures than an injection molding system, reducing energy consumption of around 10% in that section alone. On top of this, the integration of the preform production and the bottle blowing operations has a further, massive, effect. Much like SIPA's existing ECS single-stage ISBM systems, there is no need on the Sincro XTREME to cool down the preforms immediately after they are molded, and the need to reheat them just before blowing is much reduced. Conventional ovens with infrared heaters are replaced by small ovens that use highly efficient induction heating that is directed only at the areas of the preforms just below the neck.

Fast mold change
Just like the XTREME preform molding system, the blowmolders have a standard mold changeover system that is quick and easy to use. It is also much easier to convert from production of cold-fill to hot-fill containers too. This is because, while the heating circuit remains in the shell holder, the cooling circuit is now built

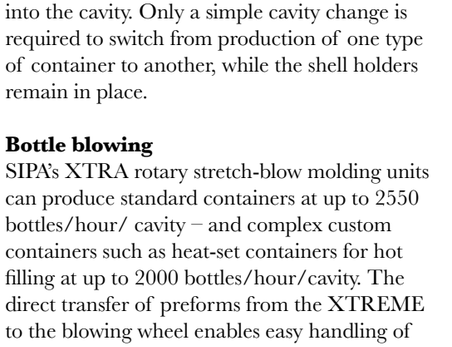
> "Pure poetry in motion!"

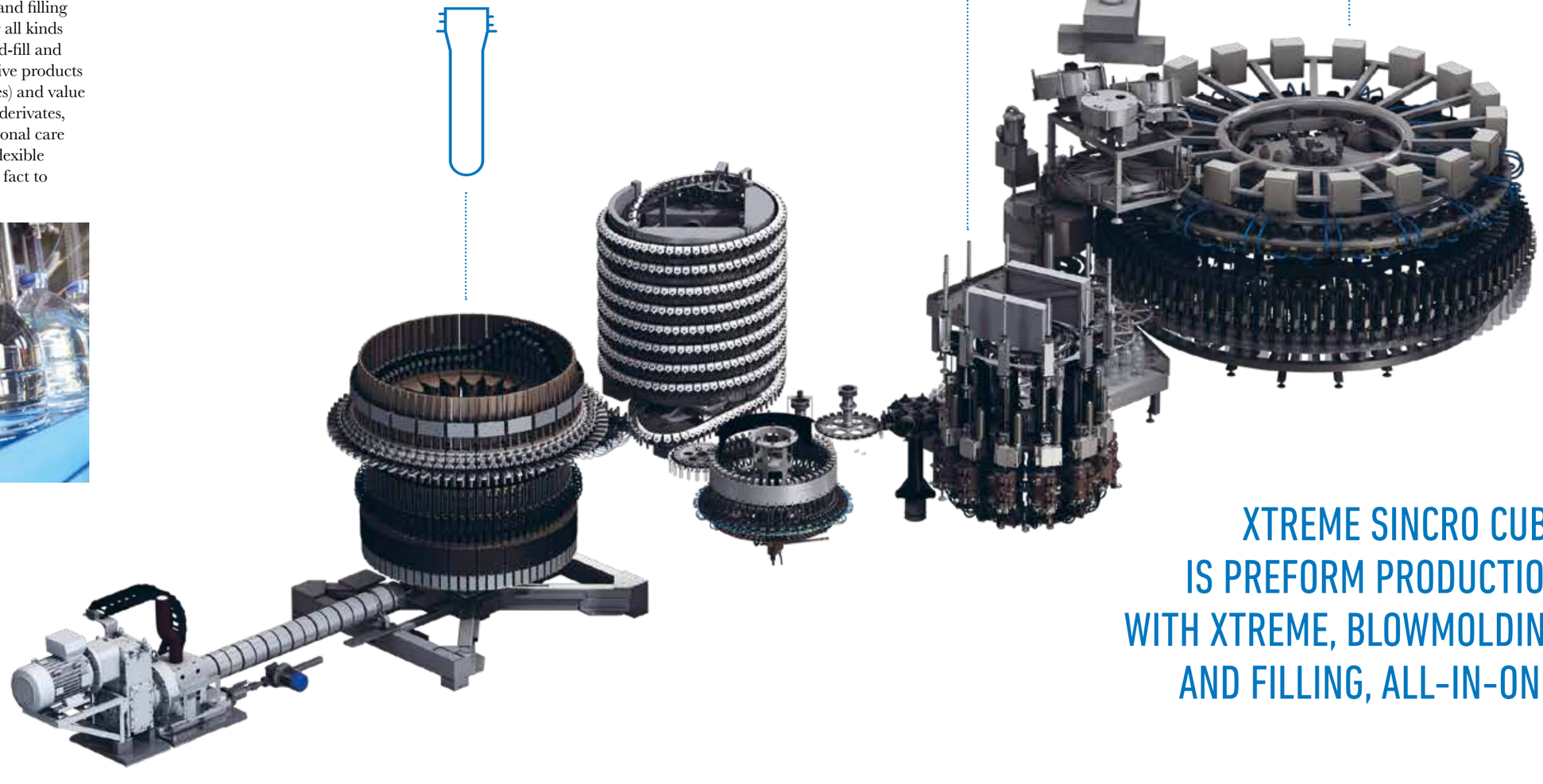
into the cavity. Only a simple cavity change is required to switch from production of one type of container to another, while the shell holders remain in place.

Bottle blowing
SIPA's XTRA rotary stretch-blow molding units can produce standard containers at up to 2550 bottles/hour/ cavity – and complex custom containers such as heat-set containers for hot filling at up to 2000 bottles/hour/cavity. The direct transfer of preforms from the XTREME to the blowing wheel enables easy handling of light bottle necks at such high production rates as well.

From pellet to filled bottle
The XTREME Sincro Cube system is the ultimate in process integration. It combines preform production, bottle blowing, and filling and capping. It can be configured for all kinds of products: still and carbonated, cold-fill and hot-fill, with and without pulp, sensitive products (including CSDs without preservatives) and value products such as edible oil, milk and derivates, premium clear juices, home and personal care products. This solution is compact, flexible and easy to operate – easy enough in fact to allow it to be operated by fewer personnel than alternative systems configured for the same job. It is of course extremely energy-efficient. With the additional benefit of an elimination of preform handling, total overall costs are significantly lower, while the quality of the finished bottle is better.

Multiple configurations
The XTREME Sincro Cube system is available in four versions, with a preform production wheel holding 72 or 96 cavities, feeding a blowing unit holding 16, 20, or 24 molds, which in turn feeds a filling station with 60, 80, or 100 valves. Depending on the combination, maximum output is between 36,000 and 54,000 filled bottles per hour. All combinations are capable of producing filled bottles up to 3L in volume.





XTREME SINCRO CUBE IS PREFORM PRODUCTION WITH XTREME, BLOWMOLDING AND FILLING, ALL-IN-ONE.

TECHNICAL WINDOW:

latest developments.

03

HOT-FILL OPTION FOR SINGLE-STAGE ISBM DEBUTS AT K2019

The biggest plastics show in the world will be the stage for not one, but two debuts from SIPA. The company stand will showcase the new hot-fill option for ECS SP single-stage injection-stretch-blow molding machines and also the latest PET preform injection molding system, the XFORM GEN4 (more details on this elsewhere).

ECS SP machines have a hybrid drive technology. Servo-electric drives are used where precision and speed are required, while hydraulics perform tasks where there is no particular need for high performance. This solution provides the best combination of high performance and low energy consumption.

VALVE-GATED HOT RUNNERS

The molds mounted on the ECS SP are equipped in a standard configuration with valve-gated hot runners for production of premium quality containers. An additional advantage of the molds solution provided by SIPA is that it gives users the opportunity to use, for any given number of cavities, the same hot runner system for different types of preforms, with only the cold half needing to be changed. This has obvious advantages in term of costs and significantly reduces the time required for format changes. At K2019, the hot-fill option will be fitted to an ECS SP80, the larger of the two models in the ECS SP family (the smaller ECS SP25 can also be equipped with the hot-fill option).
The ECS SP systems stand out for their compact dimensions, high energy-efficiency, for the best-in-class productivity (thanks to a combination of high cavitation and low cycle time), and the premium quality of the containers they produce.

PRODUCTION OF KETCHUP CONTAINERS

The ECS SP80 HF, which has an 80-tonne injection clamp force, can produce containers as small as 10 ml. At the K show, the containers being produced will be rather larger than that: 420-ml ketchup bottles with an oval shape that weigh just 28 g. Other bottle features include a height of 167.5 mm and a neck diameter of 38 mm with a SP400 neck finish.
These containers are resistant both to a filling temperature of 85°C (±2°C) and to vacuum forces that occur as they cool down. This second feature is very important, because it solves the long-standing problem of the label crinkling, that is, the partial or even complete peeling off of the label, owing to deformation of the container.
The ECS SP80 HF on the stand will have six cavities and will run with a cycle time of around 14 seconds, resulting in a productivity of 1540 bottles per hour.

YEARS OF EXPERIENCE IN HOT-FILL AT SIPA

The new hot-fill option for ECS SP machines stems from SIPA's extensive experience in technology for production of hot-fillable containers with both single-stage and two-stage technologies. This has enabled it to tackle the two major downsides of the solutions currently available on the market for low-output systems (producing from a few hundred to a few thousand parts/hour): on the one hand, there is the lower energy efficiency of two-stage technology; and on the other, there is the poor thermal resistance of hot-fill containers produced so far with single-stage machines. The hot-fill option now provides ECS SP users with a lower-cost alternative to aseptic filling. In addition to that, if oxygen scavengers are used in the PET, it is possible to achieve a shelf life for the ketchup as long as 12 months without needing to adding preservatives to the product, therefore providing a healthier product in line with the latest trends of the market.

FOR NEW MACHINES AND RETROFITS

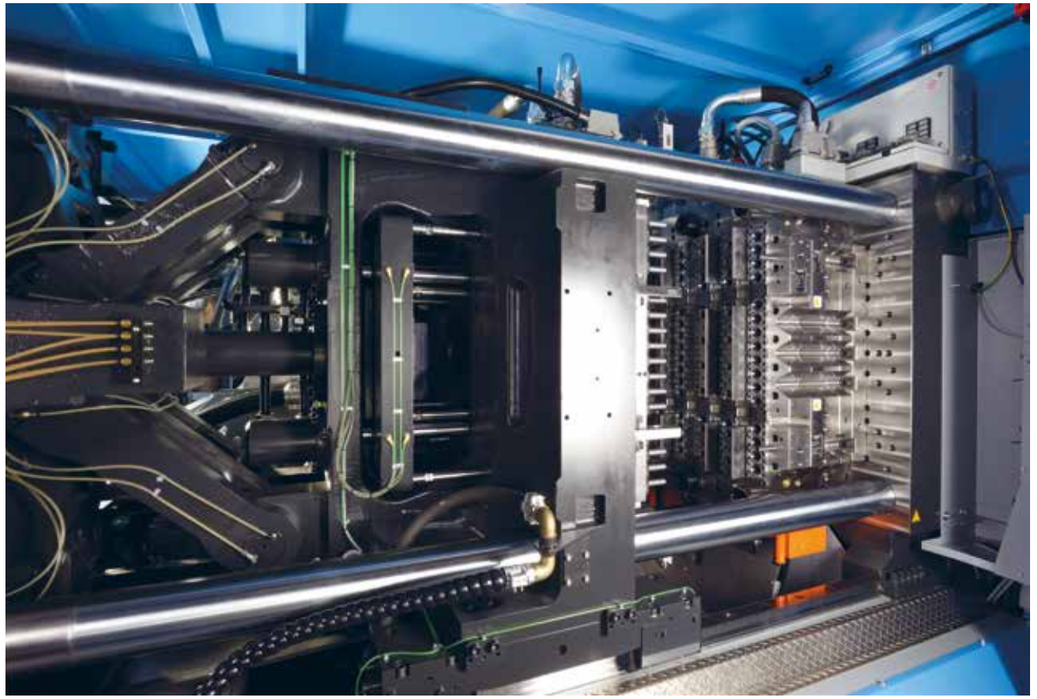
Hot-fill capability can be retrofitted to existing ECS SP machines as well as supplied on new ones. The retrofit kit includes dedicated stretching rods, air valves, air vessel and piping that are required for the air recirculation in the container during the hot-fill process, an electrical heating system for the blow molds that ensures the cleanliness of the blowing area (no oil is used), and the upgrade of the machine's control software in order to include the management of this option.
SIPA, whose experience in the single-stage technology now stretches back over more than 25 years, also offers ECS SP users the opportunity to leverage its wide expertise in developing optimized preforms that enables very high productivity and premium container quality.

XFORM GEN4XP

SIPA unveils latest generation of its XFORM preform injection molding platform

SIPA's new XFORM GEN4 XP system incorporates the latest generation of preform injection molding technology to deliver the lowest conversion cost alongside unmatched speed, flexibility and ease of use. New technology incorporated into the 250, 350 and 500 tonne system, capable of running with molds holdnig up to 180 cavities, has been designed to handle the most demanding applications. It delivers leading short cycle times in the industry; it offers industry-leading energy efficiency; and it has the lowest maintenance cost in the sector. As with all other XFORMs, the XFORM GEN4 XP accepts virtually all legacy tooling produced by any major mold maker.
The XFORM GEN4 XP provides a totally new operator experience, delivered through an HMI with a large 21.5-inch touch screen with high-definition graphics, swipe functions just like a smartphone, a multi-function control knob for one-handed operation, and fast response times unaffected by processor load. The HMI incorporates an advanced automatic process set-up and an in-depth part quality troubleshooting tutorial, which together will help users improve machine up-time, lower scrap rates, and depend less on highly skilled machine operators. Powered by the latest servo-driven hydraulic pumps, the XFORM GEN4 XP has record-low lock to lock time, paired with an increased injection rate. Total energy efficiency has been increased by a similar amount: in a typical set-up with the machine set-up to full screw utilization and PET with an IV of 0.80, the XFORM GEN4 XP consumes just 0.195 kW of energy for every kg of material processed. One of the reasons for the improvements in dry cycle time and energy efficiency is the introduction of a kinetic energy recovery system acting on the toggle drive.
SIPA's XFORM platform has already gained a reputation for its ease of maintenance, but on the GEN4 XP, it is easier than ever, SIPA says. That's because, for example, the company has modified the accumulator area layout so that the accumulators are now mounted on a pull-out rack inside the machine frame. In addition, the oil tank has been redesigned so that it does not need to be emptied in case of maintenance (it can also be used at altitudes of up to 3000 m without any modifications).
"The net result of all these improvements is that our customers will be able to operate more consistently, at higher speeds, spending less on energy and maintenance, using a machine that will reduce conversion cost at record-low levels," says Stefano Baldassar, Global Sales Director, Preform Systems & Tooling at SIPA.

THE XFORM EXPERIENCE:



stirring, not shaking

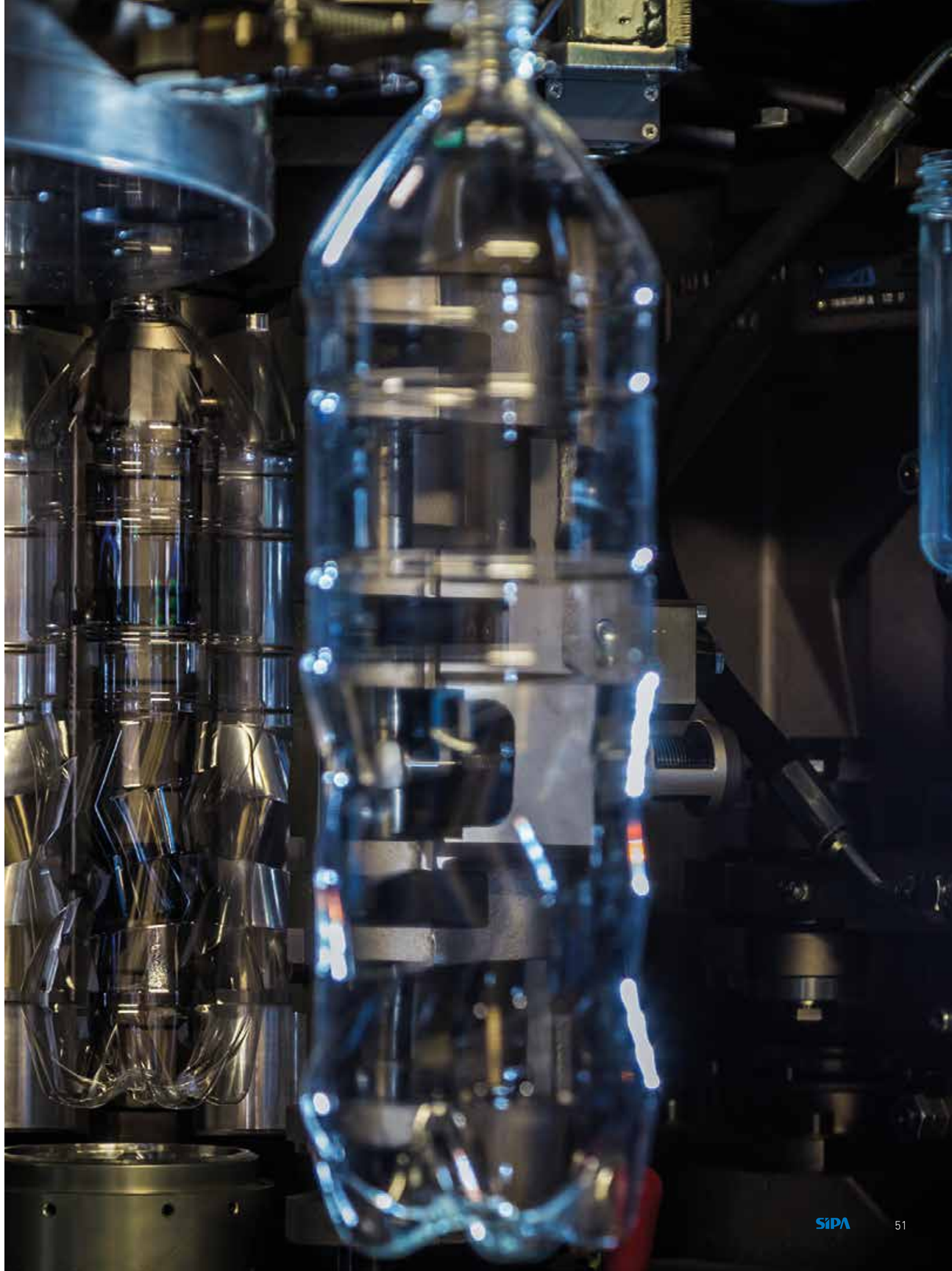
SIPA's latest generation of XFORM PET preform injection molding systems impress in many ways: they are of course very fast, very reliable, very flexible, very energy-efficient, very cost-effective.
But they are not very moving – literally.
A short while ago, a SIPA employee was watching an XFORM 500 system equipped with a 180C tooling (the largest preform tooling available in the market) running at full tilt, with a cycle time of 5.4 seconds. Just out of curiosity, they put a glass of water on the frame of the machine. Now normally, when a machine of that size and type is doing what it does, you know about it, even with your eyes closed and your ears plugged. The air vibrates, you may even feel it in your feet.
Not with this machine. There was hardly a ripple on the water. This was not a one-off. It is a characteristic of all XFORM machines. And the larger machine, and the higher the cavitation, the more characteristic it is.Which is one reason why XFORMs are so reliable.

Vibration obviously puts stress in a system, and when that system is running fast for very long periods – which is often the case in PET preform production – that stress is significant. It can cause premature wear on moving parts, leading to high maintenance costs on the machine and the tooling, especially on large systems. In fact, the clamping systems, linear bearings, tooling tapers – essentially the entire system structure – undergo massive stress. Component lifetimes fall.
The XFORM by contrast can operate with ultra-high cavitation tooling (up to 180 cavities, unique in the preform industry), with very short cycle times, and still run extremely smoothly. It's all down to an extremely robust clamp design and an extremely smooth clamping profile that comes from the servo-driven toggle. Performance hardly wavers, maintenance costs stay low. In fact, maintenance costs on machine and tooling on the XFORM are significantly lower than any other PET preform system in the market.

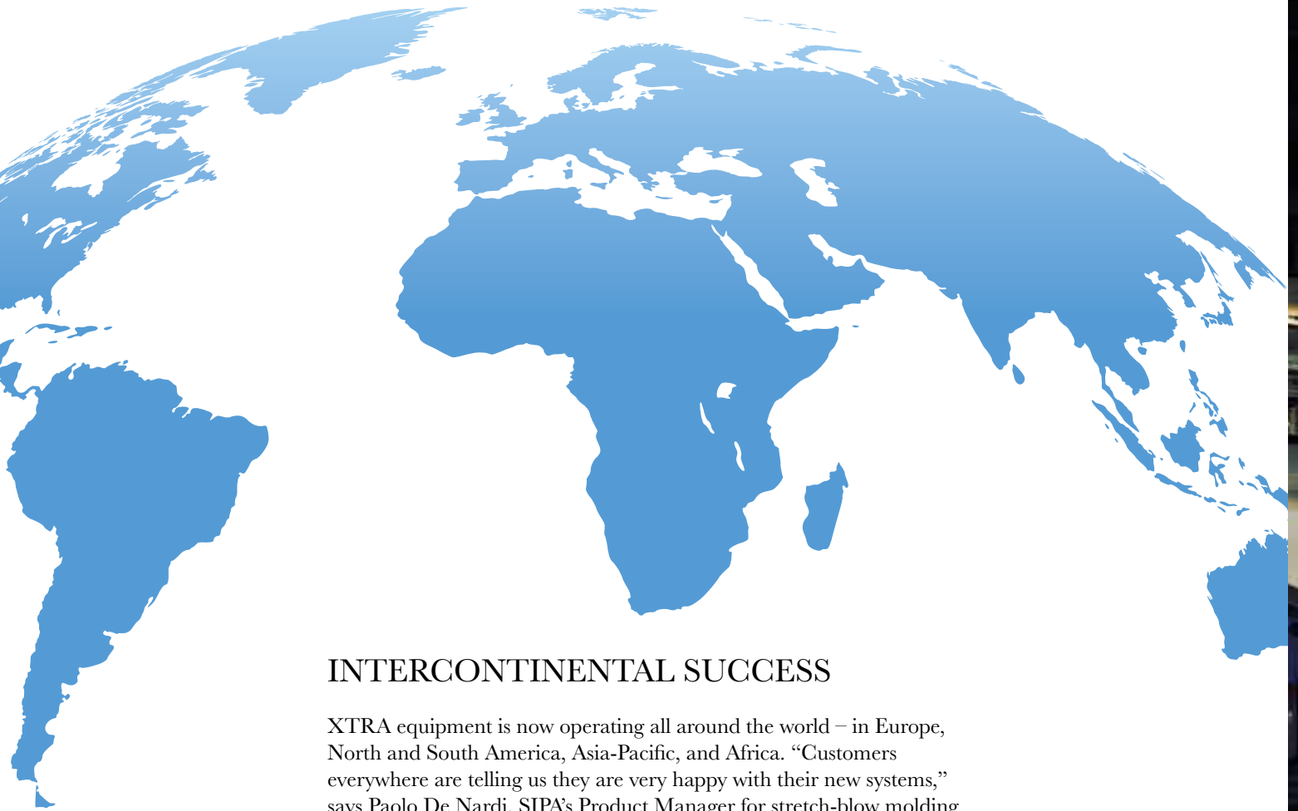
XTRA

All-new XTRA rotary stretch-blowing system is already a hit with customers

Just a few months after SIPA unveiled a revolutionary new range of rotary stretch-blow molding equipment, early adopters are already putting in repeat orders. The new range, called XTRA, first went on sale in early spring 2018 . It is now available in numerous sizes, suitable for production of cold- and hot-fill bottles, in virgin or 100% recycled PET. All XTRA models stand out for their ability to produce high-quality containers, very quickly. A figure of 2550 bottles per cavity per hour for production of 1.5-liter carbonated soft drinks bottles is Best in Class. As many as 51,000 bottles can come off the largest XTRA version every hour. When it comes to hot-fill containers, XTRA machines have an output capacity of up to 2000 units per cavity per hour (0.5 L), using fully clean electric heating system: oil-free mold allows quick start-up and accurate thermal profile.



SIPA is demonstrating once again that it is the benchmark in technologies for the production, filling and packaging of PET containers.



INTERCONTINENTAL SUCCESS

XTRA equipment is now operating all around the world – in Europe, North and South America, Asia-Pacific, and Africa. “Customers everywhere are telling us they are very happy with their new systems,” says Paolo De Nardi, SIPA’s Product Manager for stretch-blow molding machines. “The repeat orders are a confirmation that the performance we promised is being fulfilled in real-life conditions.” Seven versions of XTRA are currently available, differentiated by the number of molds they can hold: 6, 8, 10, 12, 14, 16, and 20. They can produce bottles for a wide range of liquids, using cold, hot, and aseptic filling systems. Next year, the range will be extended upwards in size, and with the ability to produce bottles for even more applications than is possible today.

MODELS	BLOWING CAVITIES	MAX SIZE (L)	MAX OUTPUT (B/H)
XTRA	20	3,5	51,000
XTRA	16	3,5	40,800
XTRA	14	3,5	35,700
XTRA	12	3,5	30,600
XTRA	10	3,5	25,500
XTRA	8	3,5	20,400
XTRA	6	3,5	15,300

COST CUTTER

The new models combine features to maximize performance while cutting Total Cost of Ownership (TCO) by a full quarter. They feature an extra-wide active angle (200 deg.), reduced energy consumption, high flexibility and ease of use, as well as simple compatibility with other machines upstream and downstream.
“With XTRA, SIPA is demonstrating once again that it is the benchmark in technologies for the production, filling and packaging of PET containers,” says De Nardi. “XTRA is the result of our unmatched expertise, constant research, and concentration on process & packaging innovation.”

FOR MANY PRODUCT TYPES

The clamp stroke on XTRA machines has two settings, short and long, depending on bottle size. This mechanical flexibility is complemented by the ability of the machine to switch between production of hot- and cold-fill containers without any changes to the system.

QUANTITY AND QUALITY IN PERFECT HARMONY

The high-speed capability of XTRA machines is the result of a development process that put particular emphasis on kinematics and mechanical movements. “Being able to produce up to 2550 bottles per cavity per hour obviously means that fewer molds are needed for any given total output requirement, but on top of that simple fact is the advantage it brings in cutting product changeover times and lowering overall investment costs,” says De Nardi.

15% MORE ACTIVE ANGLE

The 200-degree active angle on the new XTRA machines exceeds current market standards by some 15% and facilitates production of bottles of excellent quality, even at high speeds. Such a wide process angle makes it possible to apply high pressure air for up to as long as 0.8 seconds, enabling extremely accurate production of containers – even the most complex ones.

A SYSTEM THAT IS OPEN AND COMPATIBLE

XTRA was designed to be able to integrate and interact with other machines, creating high-performance production systems consisting of different products that all speak the same language. It can for example be directly connected to a filler to create a standard system for production and filling of PET containers; equally, it can be integrated with SIPA’s XTREME rotary injection-compression platform for preform production. Finally, XTRA can interface with XTREME Renew, which produces preforms directly from recycled bottles, creating a system unique in the world – XTREME Renew Sincro Cube.

INTUITIVE, ACCESSIBLE AND ENERGY-EFFICIENT

The new XTRA stretch-blow molding system is designed to make the work of its operators easier. Thanks to its simple interface, each user can adjust all parameters extremely quickly and safely. In addition, all planned and assisted maintenance activities can be carried out with timely support of HMI. Further simplification is the quick neck change with fingertips and mold change without use of any tool.

PETWORK:
concept, design, engineering,
what's new in packaging world

04

3D PRINTING PUTS YOUR IMAGINATION IN YOUR HANDS

When you are developing a new packaging product, nothing beats being able to hold the thing in your hands before you sign off on it. Simulations with 3D graphics on computer screens take you a long way there, but they still don't give you the tactile experience and the ability to look at a solid product from any angle you want.

Enter additive manufacturing, better known these days as 3D printing. This is the ideal way to create your product prototype without having to cut any metal for your mold. Little more is needed than the digital (STL) file of the design, the 3D printer, and the printing material. Once set up, the actual process of creating your prototype takes just a few hours.

As part of its container design service, SIPA has for a few years now been offering customers the opportunity to have prototypes 3D printed. The technology is getting more sophisticated all the time, and an increasing number of customers are taking advantage of it.
One reason is because it is now possible to make clear prototypes in a spitting image of stretch-blow molded bottles that you can actually color, fill, cap and label, just like the real thing. This enables SIPA to provide customers with the maximum level of customization.
The mock-up service from SIPA, in collaboration with a specialist 3D printing bureau in Treviso, not far from SIPA's headquarters in Vittorio Veneto, Italy, makes use of various printing technologies. In the beginning, 3D printing was done using selective laser sintering, SLS, in an opaque white resin in powder form known as PA2200, which is a type of polyamide. More recently, SIPA and its partner have added stereolithography, SLA, which enables them to use a clear, almost water-white, liquid photopolymer resin from a range called Somos.
SIPA also offers the option of creating prototypes machined from acrylic. They are even more transparent, and the surface quality and precision in the smallest details that can be obtained is at the highest level. These prototypes are solid.

"3D printing is incredibly versatile – and versatility is the strong point of our design center," says SIPA packaging designer Stefano Zugno. "We can create prototypes in sizes from 10mL all the way up to 4L. These rapid prototyping technologies allow us to provide our customers with the best solution for a real-time packaging assessment."

So why not make cans in PET too? A drinks company in Asia was looking for something original in its marketing strategy, to offer consumers a package that was truly different. It wanted to give the PET can concept a try. It asked SIPA to develop a project, and the SIPA designers and engineers got to work.
OK, so you lose the advantage of being able to reseal the container, but in an awful lot of cases, consumers empty it in one go anyway. You score over aluminium in being able to see the contents, so it has an extra aesthetic attraction. PET is certainly easy to form, so the possibilities for new shapes, while echoing the traditional straight-sided can, are considerable. Opportunities for decoration are many and varied. The PET itself can be colored while still retaining its transparency, and there is great the potential for using shrink sleeves from bottom right to the very top of the can. Plus, the stretch-blow moulding process also makes it possible to introduce texture onto the container surface for a unique feel as well as look.
On top of this, the PET manufacturing process makes it possible to achieve good performance in a can with a leaner supply chain compared with aluminium cans production chain.
In its laboratories, SIPA has already produced several variants of a possible PET drinks can, with champagne and petaloid bases, some of them weighing as little as 20 g. Weighing the options is now down to the customer.

SIPA DEVELOPS PROTOTYPE CANS IN PET

Here is a rather novel idea. PET has lots of things going for it as a drinks container – so many in fact, that today the sight of glass bottles for drinks on our supermarket shelves, if not a rarity, is certainly uncommon. When it comes to containers in the 330-500mL range, PET bottles sit side-by-side with aluminium cans.

You have an excellent product for discerning consumers. But you are new to a market that is already crowded. Competition is more than tough. How can you make your product stand out from the rest?

You certainly need a package that looks great. But looks aren't everything. You also need something that performs well, all the way from the moment it is formed, through the bottling plant, transport and handling, onto the shop shelf and into the kitchen, or the dining table, wherever.
PET sounds like it could provide the answer – it's strong, light, cost-effective, and versatile. But how can you maximize all these advantages?

HOW TO MAKE A CONTAINER JUMP OFF THE SHELF

It's time to call the SIPA creatives!
SIPA has assembled a great team of designers and engineers who can work wonders taking your idea, your sketch on the back of an envelope, and turning it into a beautiful piece of PET packaging that ticks all the boxes on your list of wants.

A premium package for olive oil
Let's take the hypothetical example of a premium olive oil. The SIPA people know lots about olive oil because they are Italian (mostly!) and Italy has the best olive oil in the world (or most of it). So they are in their element.

The idea
We begin with the idea: an innovative bottle that sets a highly venerated product in a new light, which expresses its elegance, its authenticity, its evocation of the Meditteranean sun and sky.
But let's face it, oil can be really messy. So you want a bottle that lets you pour well, which has a good grip, which has a mouth that lets out the liquid, just so – and which you can then shut tight.
So we look for inspiration from classical designs, and think about how we can put a new twist on them.

The concept
We create the first concept sketches that express all these ideas. That still means, in most cases, getting out a blank piece of white paper and an HB pencil, and letting our feelings flow through our fingers.
We are after that perfect line that expresses purity and elegance in a simple way. We could get through a lot of paper! And maybe we arrive here. A bottle that evokes old shapes but is most definitely 21st century, which can show off or echo the beautiful colour of the olive oil, which feels well in the hand, which has a clever cap, and which has a nice flat surface for a simple label with graphics in tune with the overall package.
Maybe the cap snaps on, maybe it screws on. We can work on that.

More than a simple bottle design
The SIPA design team can design the secondary packaging too, so you have an ensemble that sends all the right messages. Organic cardboard tubes perhaps?
Working side by side with the ideas people are the project engineers who ensure we have a design fit for manufacturing. They start putting numbers all over the drawings and they deal with things like thread specifications.

Will it work on the production line?
Now it's on to the equipment engineers with all their expertise in molds and systems for production and filling of the new bottles. There's lots of choice!
It total, SIPA can provide you with a complete service, from the first sketch to the final manufacturing solution.
So let's get to work, let's make sure your new product get the success it deserves!

PET IS CALLED TO THE BAR

SIPA has designed new 750-mL premium carbonated cocktail mixer drink bottles for Schwarzwald Sprudel in South-West Germany.

SIPA has designed new 750-mL premium carbonated cocktail mixer drink bottles for Schwarzwald Sprudel in South-West Germany.
Schwarzwald Bar Edition drinks come in four flavours – Wild Berry, Hot Ginger, Tonic Water, and Bitter Lemon – all in identical 750-mL top-quality bottles with labels that give them a vintage look. They look very much like the glass originals, but they are of course lighter and break-

resistant. These elegant bottles make the best use of PET technology, with the carbonated contents calling on considerable effort in faithfully reproducing the decorations on the bottle.
Schwarzwald Sprudel, which uses water from its own source, makes the bottles on SIPA's SFR 8 and SFR 20 rotary stretch-blow molding systems, fitted with molds also made by SIPA.

SUSTAINABILITY

Technologies and actions for recycling in a view of circular economy.

05

REDRESSING THE BALANCE

Plastics packaging has been coming in for a hard time from parts of the general public in recent times. We are all now highly aware of the damage that is being done to the planet because of the irresponsible disposal of used (and sometimes unused) plastics packaging. It ends up on our streets, in our fields and rivers, and ultimately in the oceans. Microplastics, the result in part of degradation of plastics in the environment over years, are turning up literally everywhere. And a lot of the blame is being put on the plastics industry. Among justified calls for increased re-use, recovery and recycling of plastics packaging, there are also moves to cut back on plastics packaging all together, and replace it with more traditional materials – paper, card, glass and metals. After years of the pendulum swinging in plastics' favor, it now looks like it could start swinging the other way. That could be a big mistake. If we do turn back the clock, the planet could be the loser. Plastics in general and PET in particular, when produced and used responsibly, are most often the Number One option in consumer packaging on sustainability grounds.

Plastics beat glass and metal in many ways

The fundamental advantages in terms of environmental impact for plastics packaging over alternatives are quite clear. For example, far less energy is required to produce units of equal size than in aluminum or glass, far less water is consumed in their production, and far less carbon dioxide is produced in the process. Much-criticized single-use plastics (SUP) packaging, such as that used for fruit and vegetables, can reduce packaging weight in transit, thus cutting fuel emissions from trucks, and then goes on to improve hygiene and reduce food waste in stores.

Studies have also shown that if plastics packaging were to be replaced by other materials, the overall packaging consumption of packaging mass, energy and greenhouse gas (GHG) emissions would increase. In a study[1] commissioned by Plastics Europe several years ago, researchers concluded that "plastic products used on the market today enable significant savings of energy and greenhouse gas (…) the use of plastics for thermal insulation, for food packaging or to produce renewable energy results in extraordinary 'use'-benefits."

Environmental costs are much lower

Three years ago, a study[2] prepared for the American Chemistry Council (ACC) found that the environmental cost of using plastics packaging for consumer goods is nearly four times less than it would be if plastics were replaced with alternative materials. The study is based on natural capital accounting methods, which measure and value environmental impacts, such as consumption of natural water and emissions to air, land and water.

More recently, another ACC study[3] concluded that replacing plastic with alternative materials in packaging applications would cause increases in energy use, water consumption and solid waste, as well as increase greenhouse gas emissions (GHG), acidification, eutrophication and ozone depletion. The report focused on six packaging categories: caps and closures, beverage containers, stretch and shrink film, carrier bags, other rigid packaging, and other flexible packaging

End-of-life solutions

"The findings challenge common misperceptions around plastics and underscore that plastic is a versatile efficient material that is helping to solve some of our greatest environmental challenges," says Steve Russell, vice president of plastics, American Chemistry Council. "However, we can't realize its full benefits if we don't work toward better end-of-life solutions. We all want a world without plastic pollution, but we wouldn't want a world without plastic." In Europe, the European PET Bottle Platform is a voluntary industry initiative that provides PET bottle design guidelines for recycling, evaluates PET bottle packaging solutions and technologies and facilitates understanding of the effects of new PET bottle innovations on recycling processes. It points out that PET is the most recycled plastic packaging material in Europe. 1923 million tonnes of PET bottles were collected for recycling in 2017, it says, noting that the PET resin recycling rate in 2017 was nearly 58.2%.

That's pretty good, but of course it could be better. In its partnership with recycling technology specialist Erema, SIPA is working to push the numbers higher.

Integrating recycling with preform production

All the way from flake to XTREME Renew combines, in a single integrated plant, the Vacurema system from Erema – which produces a continuous, pre-dried, decontaminated, filtered, and IV-adjusted stream of PET melt, sourced from flakes derived from used PET bottles – with SIPA's XTREME revolutionary rotary injection-compression preform molding system.
SIPA has carried out a life cycle assessment on its XTREME Renew process, so it can quantitatively compare its potential environmental impact in production of preforms from 100% recyclate (rPET) with a traditional process for producing PET preforms from virgin material (using a SIPA XFORM injection molding system). The results were independently verified.
The LCA considered the contribution of the production of the raw material, transport of the raw material, production of the bottles, and construction of the plant. It showed that the global warming potential of XTREME Renew is 79% less – 0.74 kg of CO_2 equivalent for every kg of preforms produced, compared with 3.50 kg. Comparing the XTREME Renew process with a traditional process for producing PET bottles from rPET, which uses granules produced from flake, the difference was still important, at 18%.

XTREME Renew is already being used by major food and beverage company Suntory to reduce its reliance on virgin PET. The Japanese company plans to increase its use of the technology very soon. The hope is that other companies around the world will also make use of the benefits of XTREME Renew in the near future.

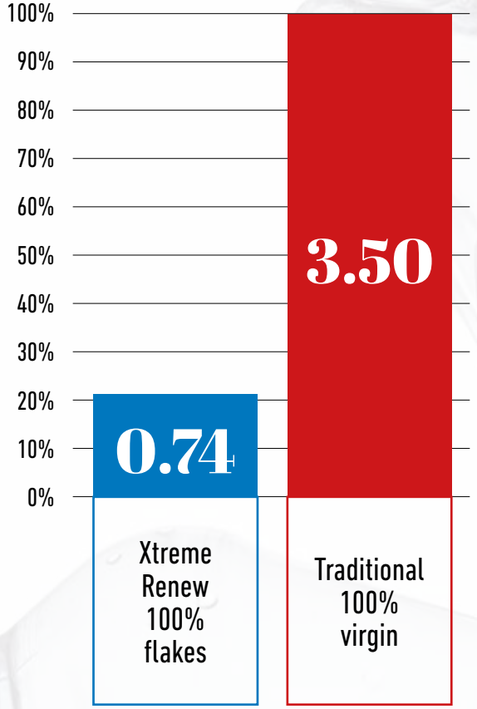
1. The impact of plastic packaging on life cycle energy consumption and greenhouse gas emissions in Europe; Bernd Brandt and Harald Pilz
2. Plastics and Sustainability: A Valuation of Environmental Benefits, Costs, and Opportunities for Continuous Improvement
3. Life Cycle Impacts of Plastic Packaging Compared to Substitutes in the United States and Canada: Theoretical Substitution Analysis

XTREME RENEW

COMPARISON 1
- Xtreme Renew, 100% rPET flakes
- Traditional preform injection system, 100% PET virgin PET granules

-79%

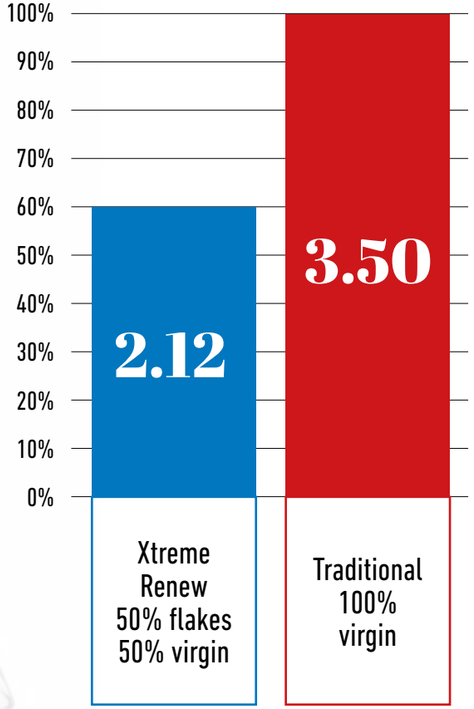
Xtreme Renew, 100% flakes
Traditional injection 100% virgin



COMPARISON 2
- Xtreme Renew, 50% rPET flakes + 50% PET virgin granules
- Traditional preform injection system, 100% PET virgin granules

-40%

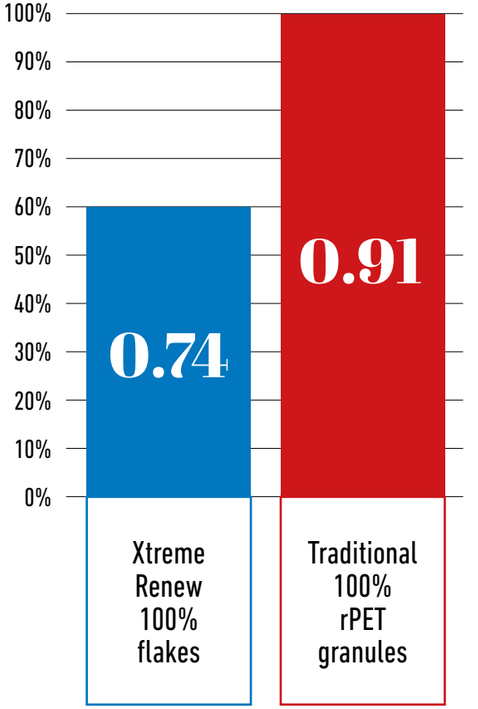
Xtreme Renew, 50% flakes
Traditional injection 100% virgin



COMPARISON 3
- Xtreme Renew, 50% rPET flakes + 50% PET virgin granules
- Traditional preform injection system, 100% PET virgin granules

-18%

Xtreme Renew, 100% flakes
Traditional injection 100% rPET granules



XTREME RENEW: THE NEW ERA OF THECIRCULAR ECONOMY IS NOW A REALITY

Simplification VS traditional R-PET production

gruppoicat.com

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