SIPA SPEAKS

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SIPA

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EDITORIAL

STAYING AHEAD IN SUSTAINABILITY

All around the world, SIPA and its customers are innovating in many ways to use PET to produce and use more sustainable packaging. In the following pages of this issue of SIPA SPEAKS, you will find several case studies that show how bottle makers are using novel technologies to help reduce material usage, enhance recyclability of PET packaging, and minimizes consumption of energy.

Ho.Bag, for example, uses one of our highly energy-efficient ECS SP 25 injection-stretch-blow molding systems to produce cosmetic bottles incorporating post-consumer recycled PET; it also contains a special pigment in dark bottles so that they are easier to pick out in automatic sorting systems than bottles containing carbon black. In Turkey, major plastics processor Özler Plastik, which places strong emphasis on reducing its carbon footprint, chose a SIPA SFL4/4 EVO system to blow mold monolayer and multilayer bottles for sauces after it came out top in a benchmarking exercise for energy consumption.

Ice River Sustainable Solutions in Canada, a pioneer in processing 100% post-consumer PET recyclate into bottles for water, and already a user of SIPA's XFORM preform injection molding system, now also uses an SFL MAXI 2 stretch-blow molding machine to make lightweight 19-liter water cooler bottles.

In Cambodia, PET packaging manufacturer UST chose an XFORM 350, complete with a 72-cavity mold, for production of preforms for water and beverage bottles, not only because it runs and runs, but also because its high efficiency helps UST save time, cooling water, and energy. And in Africa, Angolan agricultural company Carrinho has invested in a complete bottle production, filling and packaging line from SIPA that will help it on its way to manage all stages of the value chain in food cereals and pulses, with a mission to create an ecosystem that promotes national production, always with a sense of social responsibility.

Meanwhile, in our PETWORK feature, we talk about how SIPA is pushing back the boundaries of what products can be packaged in PET. In the perfumes sector, for example, major brands are looking at PET instead of glass, partly because they need less energy to produce and transport. We also take a look at what SIPA packaging designers have been up to in developing new concepts that follow the philosophy of AWArPET, which stands for an environmentally conscious approach to the design and production of PET packaging, incorporating the principle of the "3Rs" – Reduce, Recycle, Reuse. Take a look at the beautiful bottles for water they have created, and imagine yourself on a beach in the sun as the waves lap over you – but just remember to take the bottle with you when you go back home!

SIPA are also talking about technology, and how flexible thinking helps keeping SIPA ahead across multiple segments. In mold making, for example, we show how an 84-cavity preform mold – something only SIPA makes – represents a much more cost-efficient alternative to the "regular" 72-cavity molds that often run on 250-tonne injection molding machines like the XFORM 250. Output: capital spend ratio is around 13% higher when producing preforms for 1.5L bottles – outstanding, no? Meanwhile, when it comes to blowing the bottles themselves, there are some new kids on the block in the form of XTRA BIG 4, 5, and 6, for making bottles up to 12L in volume, quickly and energy-efficiently. And speaking of blocks – or blocs – XTRA BIG can be integrated with SIPA's BigFill volumetric gravity-filling monobloc in a new version of the SincroBloc system, which has important advantages in such areas as reduced handling and cleaning requirements.

All this, and much more, in your new issue of SIPA SPEAKS. Have a good read!

AROUND THE WORLD:

news from the different continents.

01

HO.BAG BAGS AND SIPA FOR A TRIP INTO THE COSMETIC AND PERSONAL CARE WORLD

ITALY

Just down the road from SIPA's headquarters in Vittorio Veneto, a company called Ho.Bag Corporate has an increasing activity in bottle making.

A few years ago, Ho.Bag, which started life as a seller of accessories, mostly for cosmetics and personal care, extended into in-house production. It started in 2019 with an investment in extrusion-blow molding of polyolefin bottles, and this was followed last year by a move into production of small PET bottles.

Ho.Bag has acquired two ECS SP 25 single-stage injection-stretch-blow molding systems, including numerous molds made by SIPA. Ho.Bag is using these machines to supply customers with a notable range of container sizes, shapes and colors, in small and very small lots – down to as low as 10,000 bottles per order.

SIPA's ECS SP units are robust, versatile, and very energy efficient, thanks in part to hybrid drive technology that uses servo-electrics to provide speed and precision in injection, with hydraulics performing more "workhorse" tasks. They have the shortest lock-to-lock time on the market, mold changeover can be performed quickly and simply, and the same hot runner system can be used on different cold halves.

Ho.Bag has a keen eye on the environment. It is processing post-consumer recycled PET (rPET) as well as virgin polymer – not a problem in SIPA ECS machines – and among its color offering there's an attractive black PET bottle that can be detected by near-infrared (NIR) detectors to improve sorting when used bottles enter the post-consumer waste recycling stream. Traditional carbon black pigments are invisible to NIR, so Ho.Bag uses a PET that contains an alternative pigment that reflects NIR, so automatic sorting machines in mixed waste recycling operations can see them and put them into the right stream. Once again, the ECS SP 25 has no problem processing this material.

Normally, Ho.Bag takes care of product development in-house, but it can turn to SIPA for such services as prototyping and testing. It goes without saying that having your technology and technical service supplier almost on your doorstep is a not-inconsiderable advantage.

SIPA and Ho.Bag are now cooperating on an increasing number of containers.

FOOD PRODUCTION CHAIN INTEGRATION IN ANGOLA

CARRINHO INDÚSTRIA

ANGOLA

Ambitious Angolan foods company Carrinho Industria has invested in SIPA systems covering PET preform production through to palletizing, as it moves ahead with its plan to create the first fully vertically integrated organizational structure in the food industry in Angola.

Carrinho Industria recently came back to SIPA for a complete line for bottling edible oil. The first line starts with a 10-cavity XTRA advanced rotary stretch-blow molding unit, which feeds a Flextronic W precision weight filler equipped with 50 filling heads. Capped and labelled bottles transfer to a case packer and then onto a palletizer with an active layer. The line runs at a speed of 25,000 b/h for one-liter bottles.

At the same time, Carrinho acquired a SIPA XFORM 350 preform production system that included three SIPA molds — two with 96 cavities to feed the 25,000 b/h line plus one additional mold with 48 cavities — to make preforms for three- and five-liter formats. For bottle blowing, Carrinho went with a three-cavity SFL Dynamic 3H linear blower, while a BIG fill W 12/6 takes care of the filling.

Also included in the package was a labelling unit, equipment for inserting hanadles into the bottles, and a SIPA PTF 1 palletizer. On top of all this, SIPA provided auxiliaries and the piping along the line. Everything is highly automated, with a supervisor carrying out monitoring and providing production reports.

Family-owned Carrinho says it intends to be able to manage all stages of the value chain in food cereals and many other products related to the food industry (pasta, biscuits, flour, margarine) managing all the operations from raw material up to distribution. Its stated mission is to create an ecosystem that promotes national production, always with a sense of social responsibility, and a vision of being the driving force in food and nutritional self-sufficiency in Angola.

The company's industrial park, which incorporates 17 factories, is one of the most complete in the world, allowing it to process various cereals and refine vegetable oil, while also producing more than 20 consumer goods.

SIPA ADDS SAUCE TO ÖZLER PLASTIK PACKAGING OUTPUT

ÖZLER

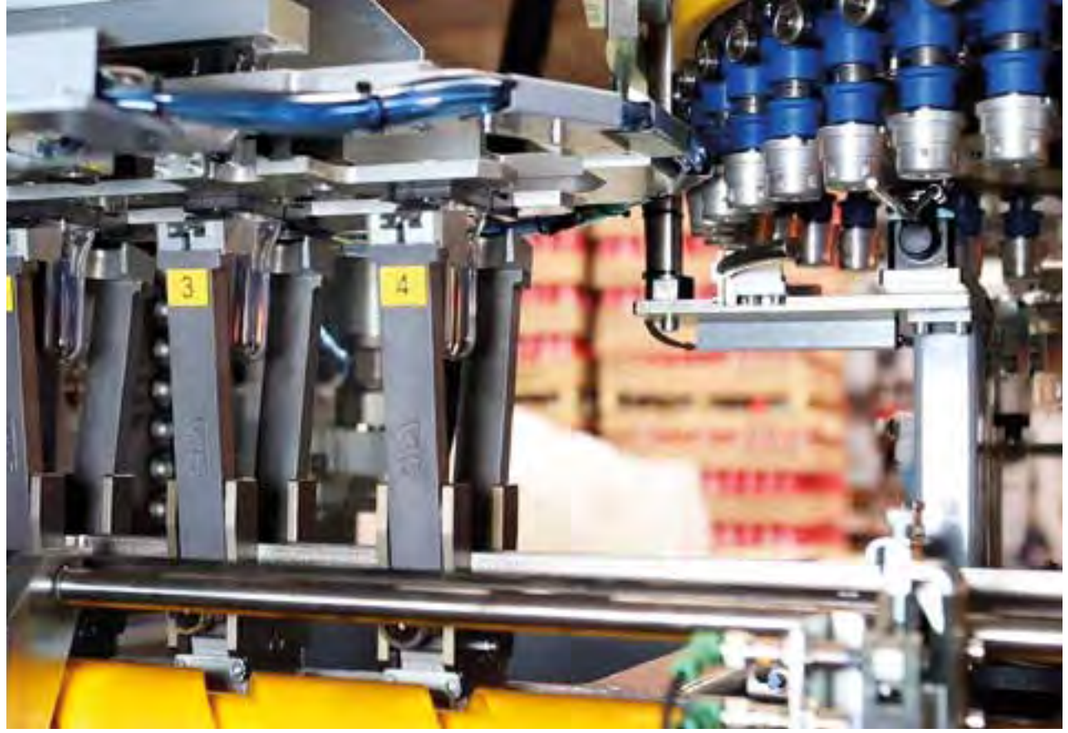
TURKEY

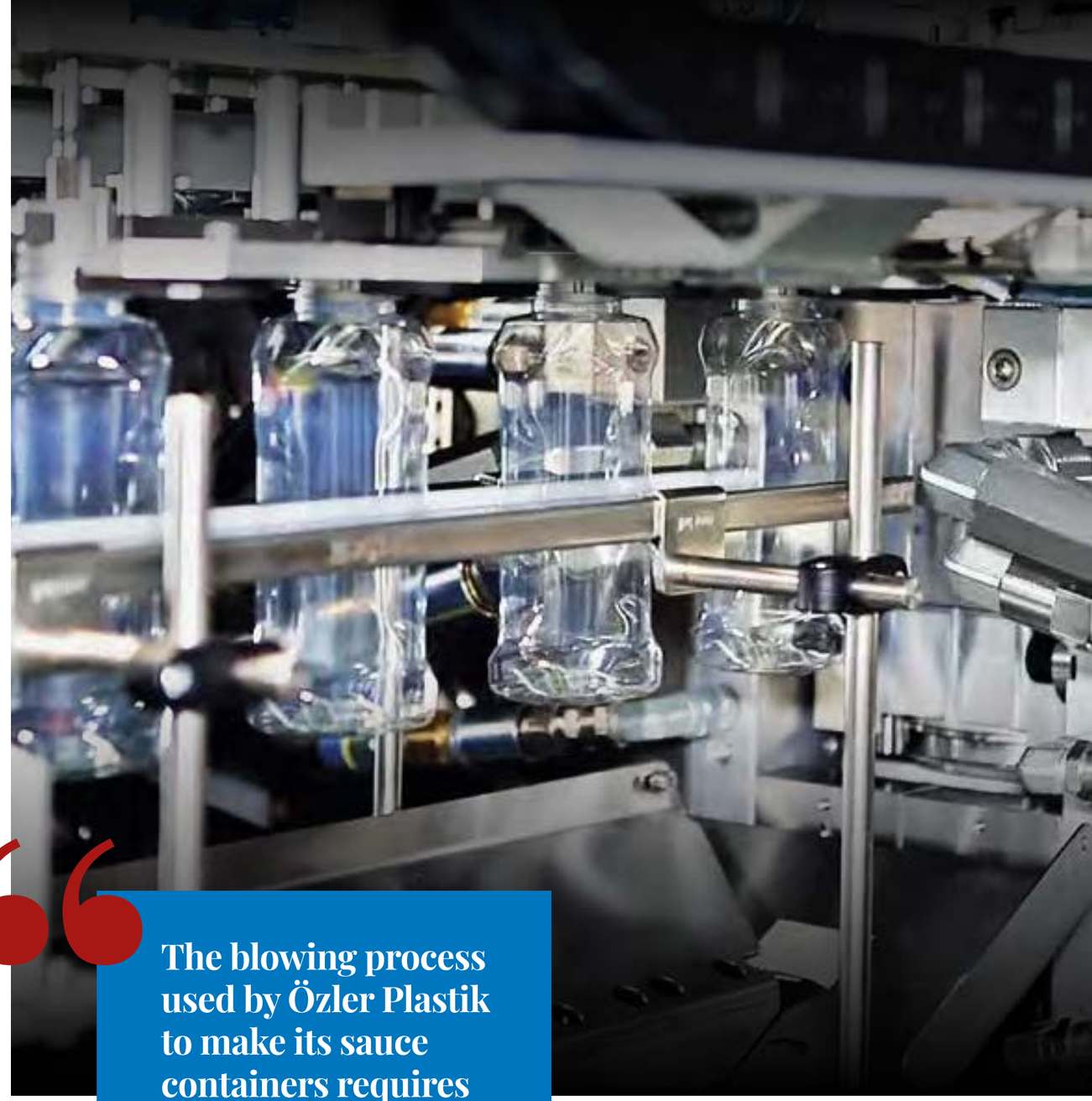
One of the largest plastics processors in Turkey has chosen SIPA technology for production of bottles used for a leading brand of sauce in the country. Özler Plastik uses a SFL4/4 EVO system to blow mold monolayer and multilayer bottles in three sizes: 250 g, 400 g and 650 g, with outputs reaching as high as 5000 b/h.

Özler Plastik, headquartered in Avcılar, a district of İstanbul, chose SIPA for its particular competence in production systems for specialties such as these warm-fillable containers. It also appreciates the customer-oriented approach demonstrated by the SİPA team.

"SIPA provides strong after-sales service from its local branch in Turkey," says Emine Tilmaç, SCM- Purchasing Manager at Özler Plastik. "This was the most critical point, especially during the COVID-19 pandemic. SIPA's strong reputation in linear blow molding also had an impact on our decision."

We analysed the efficiency of processes on the SFL4/4 EVO and benchmarked its energy consumption. The result was top of the class. We are now obtaining stable production with high product quality.





SİPA Turkey Branch General Manager Betül Betül Boz Yöney says: "The blowing process used by Özler Plastik to make its sauce containers requires neck orientation and preferential heating, in which SİPA has a very strong experience globally. I am very proud that the company decided to cooperate with us for such a strategic project."
Özler Plastik was founded in 1951 and has six production facilities in Turkey, one in France and one in Spain, where it produces rigid packaging, including closure systems, for various consumer and industrial applications. It also has substantial capability in production of technical parts, especially for automotive, as well as for white goods. Özler Plastik has more than 100 delivery points all around the world. Last but certainly not least, the company has its own Technology and R&D Centre, with capabilities covering design and testing, as well as development for parts, tooling and machinery.

The company invests heavily in R&D, with strong emphasis on the European Green Deal, aimed at making the European Union climate neutral by 2050. We have taken important steps in reducing our carbon footprint in a short time," says R&D Director Mert Gülcan.

The blowing process used by Özler Plastik to make its sauce containers requires neck orientation and preferential heating, in which SİPA has a very strong experience globally.

TAKWEEN TAKES TWO XFORMS FOR HIGH OUTPUT, LOW COST IN WATER MARKET

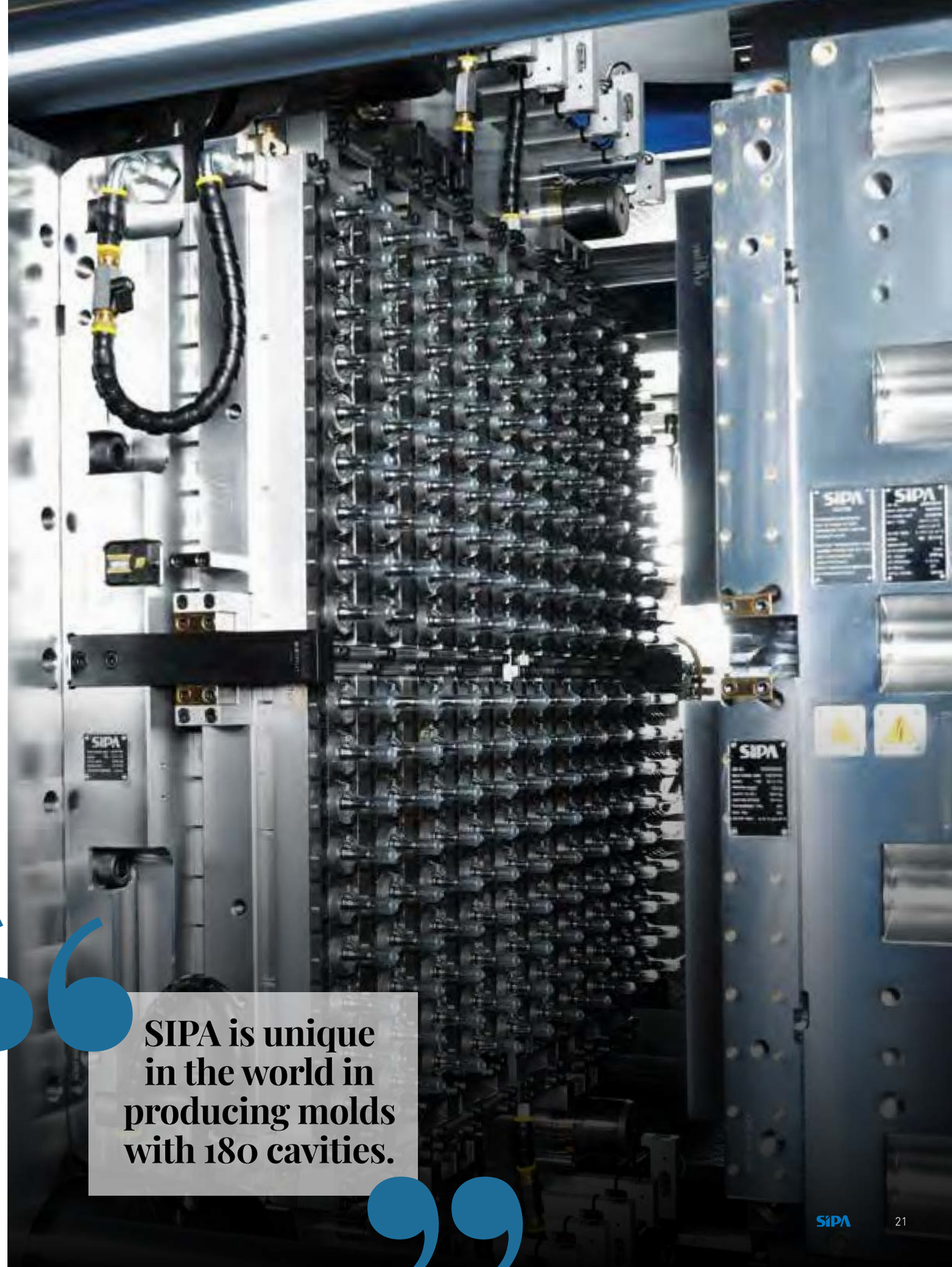
تكوين
Takween

KINGDOM OF SAUDI ARABIA

Saudi Arabian preform converter Takween says an investment in two XFORM preform injection molding systems from SIPA is paying off with their high performance and high productivity, at highly competitive cost.

Takween is using two systems, based on 500-tonne units fitted with 180-cavity molds (both from SIPA), to produce preforms for a local supplier of drinking water bottles in three sizes: 200, 300, and 600 mL.

Takween Advanced Industries was founded almost 30 years ago as Al Othman Factory for Plastic Products. It got its current name in 2010. Headquartered in Al Khobar, it has production on several sites across the country. It is the largest PET preform producer in the Middle East. Takween says it chose XFORM for its latest investment because of what it says is its best conversion cost and efficiency in the market. The two systems can produce around 2 billion preforms per year. No other system comes close, thanks to the high speed of the machines and the high level of cavitation of the molds.



SIPA is unique in the world in producing molds with 180 cavities.

SIPA AND OMEGA PACKING PUT SOME CUSTOMERS IN GOOD SPIRITS

OMEGA packing

PANAMA

Recently OMEGA PACKING, a Panamanian industrial consulting and engineering company worked with SIPA on some interesting projects for Central American liquors companies in the rum and spirits market. In particular, OMEGA PACKING supported an important brand in Central America that was in search of a new lightweight packaging solution for one of its mayor spirit product. The company has invested in SIPA technology, and the XTRA rotary stretch-blow molding system. The Production started up last summer.

Lightweighted packaging is produced on a six-cavity XTRA 6 that makes bottles in four sizes. It is achieving outputs up to 15,000 bph. The preforms it uses were also designed by SIPA and supplied by a local converter that is using SIPA's tooling for the production.

SIPA came into the Latin America liquors market strongly recommended by engineering company and systems integrator OMEGA PACKING, which operates across Central America and Caribe, and which itself has already bought SIPA bottle making equipment for other projects in the region. The decision to acquire the XTRA 6 was made easier by the fact that SIPA has strong team of technicians stationed not far away as well as spare part stocks easily available.

OMEGA Packing is an industrial consulting and engineering company with extensive Latin American experience in design, sourcing and installing equipment and integrating automated lines for processing, bottling, labelling and packaging that provides personalized, efficient and rentable solutions for the food industries, drinks with or without alcohol and mass consumption, among others. OMEGA Packing Inc. born in the year 2016, product of the union of three partners in the sector: Federico Villa, Medardo D'Ambrosio and Juan Ramón Villa, who want to raise their knowledge at another level with a wide vision, deciding to combine experiences, ideas and willingness to work in a single company integrating solutions for the, liquors, foods and beverages industries.

The spirits bottle was already made in PET, but the XTRA 6 means it can make them lighter than ever, thanks to its high precision bottle/preform manipulation and high overall performances of the system. The company can take full advantage of complete packaging development (preform and bottle) to achieve high performance with low weight. And of course it can also profit from the class-leading output and energy-efficiency of the XTRA system.

UST PUTS TRUST IN SIPA FOR PREFORM PRODUCTION

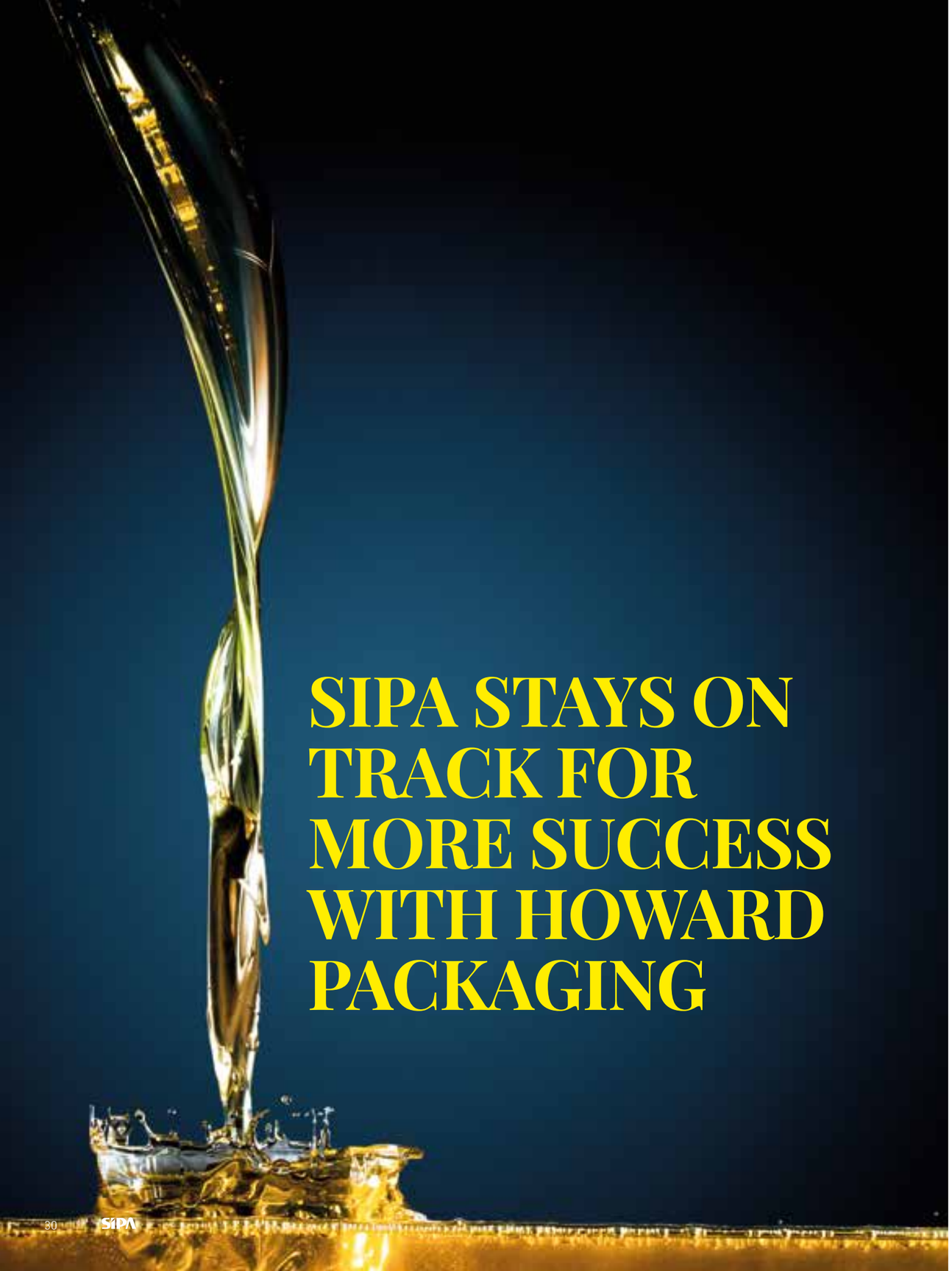
CAMBODIA

In Cambodia's capital city Phnom Penh, PET packaging manufacturer UST is more than happy to have chosen an XFORM 350 injection molding system from SIPA, complete with a 72-cavity mold, for production of preforms for water and beverage bottles.

UST stands for Ung Sok Try, the company's owner and CEO, who founded the firm in 2010. "We chose SIPA because of its reliability," he says. "SIPA machines are known for their precision and cost efficiency. The XFORM 350 has enabled us to cut down total production times, allowing UST to save both time and energy, leading to lower production costs. We are running with excellent cycle times."
Ung Sok Try goes on to list a range of benefits that UST gains from being a SIPA system user. For example, the XFORM 350 saves on water cooling as well as electricity, while the hydraulic system is leakproof, always keeping the oil in good condition. Only a small pump is required to keep the oil at the right pressure, so that saves energy too. Similarly, little air is lost in pneumatic operations.

“Maintenance costs are also low, says the company boss. And overhauls can be carried out ahead of any parts failing, thanks to a sophisticated warning system in the machine controls. There are very few rejected parts too, thanks to gentle and efficient preform handling. We get quality and quantity, says Ung Sok Try.”

Finally, Ung Sok Try points to the all-round safety of the XFORM 350. “The operator always feels secure,” he says.



SIPA STAYS ON TRACK FOR MORE SUCCESS WITH HOWARD PACKAGING

Howard Packaging, Inc.

USA

American container maker Howard Packaging has taken its tally of SIPA ECS SP single-stage ISBM machines to three. The Corydon, Indiana-based company took its first unit, an ECS SP 80, in 2015, and added a second in 2018. In Italian, we say "Non c'è due senza tre" – There's no two without three – and indeed, SIPA installed another ECS SP 80 in 2020.

Howard Packaging originally operated only extrusion-blow molding (EBM) equipment for production of bottles in polyolefins and PVC. Now though, it also specializes in production of small and medium-sed PET bottles for mineral oil. In fact, it was a pioneer in using PET for production of engine oil additives bottles. It began with a series of bottles ranging in size from 16 to 64 oz, and has since expanded its offering.

A key customer is Lucas Oil, a world leader manufacturer of additives to enhance performance of engines and a well-known presence on the Indy 500 car race circuit. Lucas Oil is also located in Corydon, and Howard Packaging is its exclusive supplier of mineral oil bottles. A short while ago, SIPA helped Howard Packaging in the development of two new bottles, in 16 oz and 5.25 oz sizes with narrow long necks, for Lucas Oil engine additives.

> Howard Packaging and Lucas Oil both like the PET bottles for their low weight and high performance. Particularly important is the fact that they are very robust, so the risk of them leaking when dropped is virtually zero.

Single-stage production using the ECS SP 80 is ideal for these particular bottles, given the production numbers and the variety of sizes involved. The SIPA units run fast and efficiently, and the time and effort involved in changing format is low.
The bottle maker can rely on responsive technical support from the people at SIPA North America, and that includes short turn-around times for any mold renovation or repairs.

FOCUS ON:
digital transformation

02

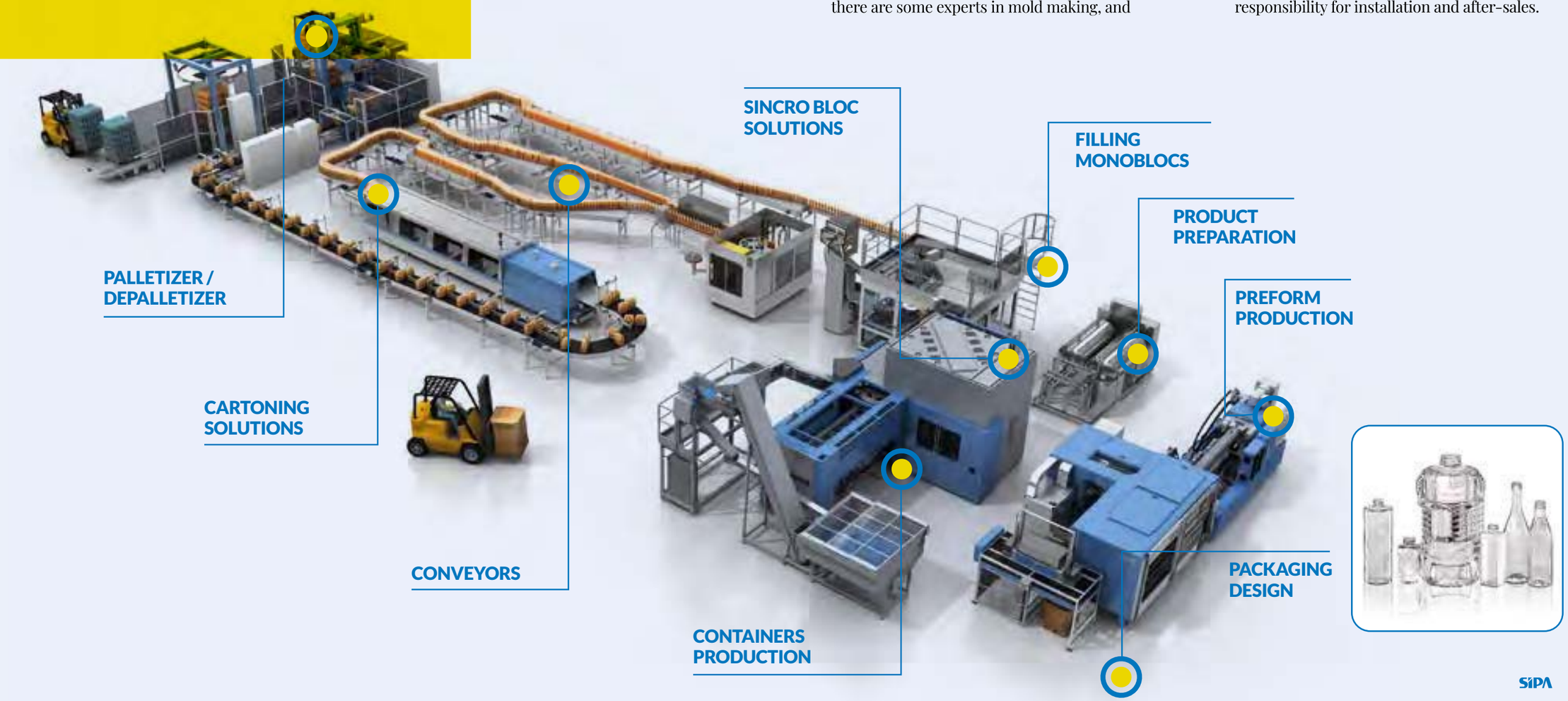
WELCOME TO THE WORLD'S ONLY PET CONTAINER TECHNOLOGY SUPERSTORE

You've got people coming round for dinner, and you want to impress. So you plan to go out shopping for the best ingredients. There's one shop that's really good for starters, and across town you know a great place for fish. Then you could go to the farmers market for fresh vegetables, but it's something of a hike to get there. You may have to go to the next town if you want to get the best for dessert. And that wine shop with its own sommelier, where is that?

Wouldn't it be great if all these experts were under one roof? They might even be able to give you some tips on which dishes go well together. Just think of all the time and energy you could save, and you'd most likely end up with the best meal ever!
It's rather like that with PET packaging. One outfit is good for preform machines, another for bottle blowers, and a third for fillers. Then there are some experts in mold making, and others in hot runners. You'll probably have to go somewhere else for finished product handling through. Plus, if you want help in bottle design and engineering, where do you go for that? And then if everything in the end does not quite work together as you want, who is going to take responsibility?

> "Or you could call SIPA."

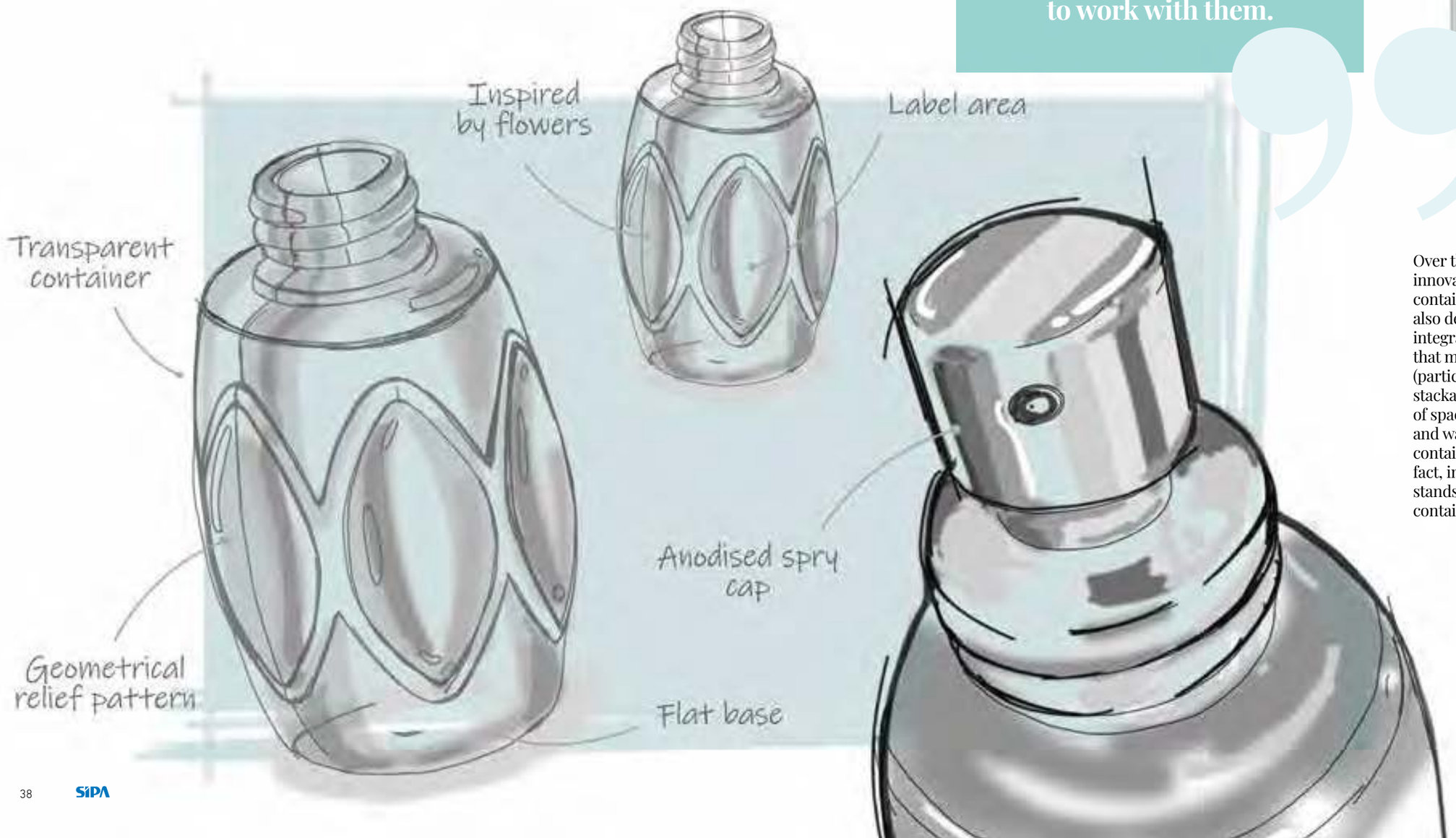
SIPA is unique – and we really mean unique – in acting as a one-stop-shop for everything from input in PET bottle concepts, through to pallets stacked with filled and labelled bottles ready for shipment to the store. SIPA can offer consultancy on all aspects of production along the line, and it will of course take full responsibility for installation and after-sales.



PACKAGING DEVELOPMENT

SIPA has an arsenal of tools that can help customers create containers that will gain consumers' attention, and which can be produced economically and sustainably. Design and development experts understand the key parameters that need to be considered when taking the seed of an idea all the way through to a successful product. They consider not only the look of a container, but also how the look fits with the identity of the packaged product, how the container feels and behaves, how easy it is to produce, how it performs on the filling line, in storage, and in transport, and how much it costs.

> **SIPA can create preform designs, for whatever size of container, incorporating special features in the neck and body, and then make sure that the blowing and filling equipment is best configured to work with them.**



Over the years, SIPA has developed numerous innovative design solutions for all sorts of containers, not only standard types, but also designs incorporating handles, or with integrated grips, with off-center necks that make it easier to pour the product (particularly useful for cooking oil), and stackable containers that make the best use of space on the pallet to improve transport and warehousing logistics. Lightweight oil containers are a specialty of the company. In fact, in this particular market segment, SIPA stands out as having developed the lightest containers available, anywhere.

PREFORM MOLDS

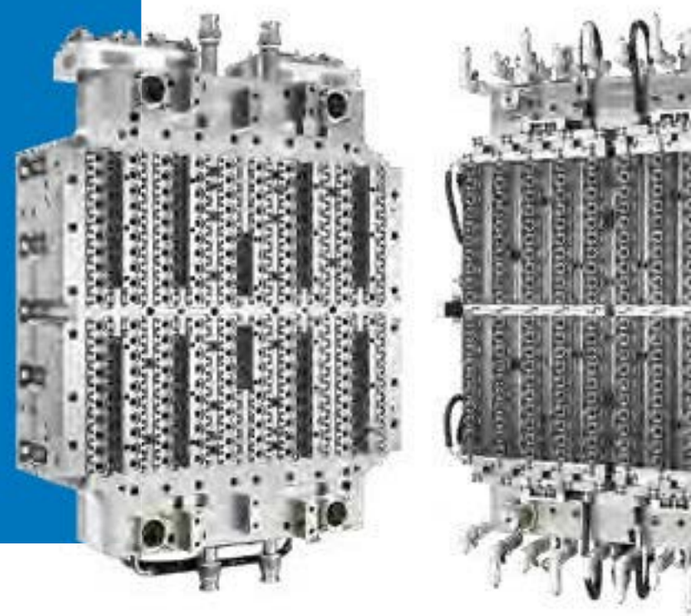
Productivity goes up, costs come down and carbon footprint gets smaller, when you cut cycle time in preform production. As a developer and manufacturer of more PET preform molds than almost anybody else around the world, SIPA not only understands these sums, but knows how to put them into practice. The benefits are available for preform producers everywhere, since SIPA preform molds can be interfaced with the vast majority of injection molding machines that are used in this application. A flexible approach to preform design and development has been fundamental in arriving at this leading position.

What results is a robust mold design that is suitable for whatever machines the customer has on their production floor.

This concept of flexibility and customization is built into the complete mold development process, virtually from the moment the idea of the product is born, throughout the development of the application with the customer.

Dimensioning of every individual system is strongly supported by finite element analysis to evaluate the thermal and fluid dynamics of that system.

To provide maximum flexibility, SIPA engineers consider multiple variables, including the layout of the mold.



APPLICATIONS IN MIND

SIPA stands alone in the PET preform production arena with the breadth of technologies it offers to its many and varied customers. The company has developed several families of machines, each with its own distinctive technology and set of operating characteristics, for different sectors of the global packaging industry.

THE FULL SIPA LINE-UP FOR PRODUCTION OF PET PREFORMS NOW COMPRISES XFORM AND XTREME.

The XFORM platform for highly cost-efficient production of PET preforms by conventional injection molding includes models to accommodate diverse production requirements. The XFORM 500 is SIPA's largest injection molding system, based on a 500-tonne machine with a double-toggle clamp. It stands out with its high energy efficiency, low maintenance costs and its ability to accept molds built by any manufacturer. It is for molds with many cavities (up to the astonish number of 200 cavities), molds with a weight that demands a clamp system capable of handling heavy loads, and for long periods.

XFORM 250 and 350 are for smaller molds, with lower cavitation. The former accepts molds with between 8 and 96 cavities, while the larger unit takes molds with as few as 16 and as many as 128 cavities.

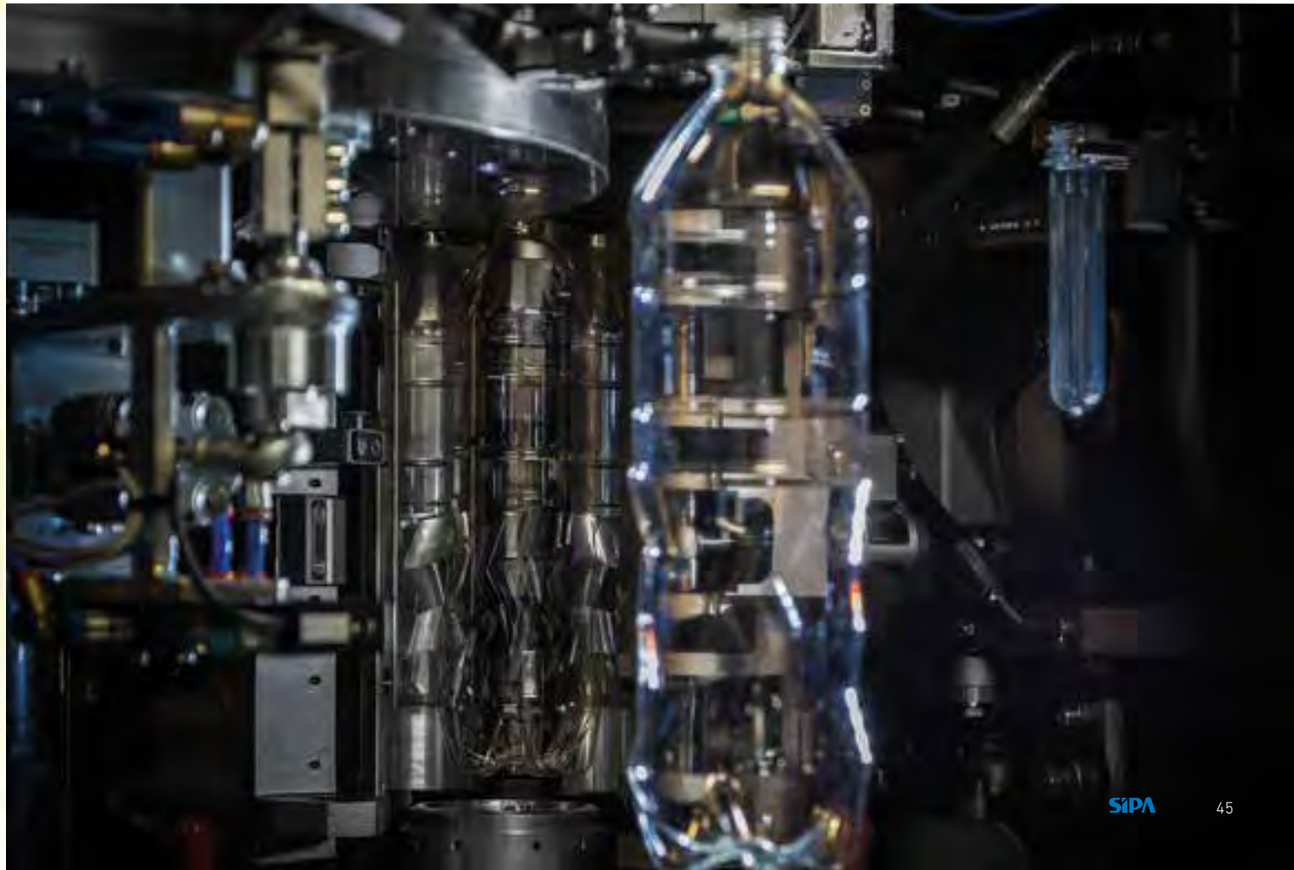
Meanwhile, XTREME is SIPA's revolutionary extrusion-injection-compression molding system intended specifically for processors wanting to produce preforms for extremely lightweight bottles. It is the best—and cleanest—solution on the market for high-speed production of lightweight preforms destined for bottles for water and aseptic filling

BOTTLE PRODUCTION

SIPA's revolutionary range of rotary SBM equipment, XTRA, comes in numerous sizes holding up to 24 cavities, suitable for production of cold- and hot-fill bottles, in virgin or recycled PET. All XTRA models stand out for their ability to produce high-quality containers, very quickly. A figure of 2800 bottles per cavity per hour for production of 1.5-liter carbonated soft drinks bottles is Best in Class. Machines feature an extra-wide active angle (200 deg.), reduced energy consumption, high flexibility and ease of use, as well as compatibility with other machines upstream and downstream.

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 the XTREME platform for preform production, including XTREME Renew, which produces preforms directly from recycled bottles, creating a system unique in the world – XTREME Renew Sincro.

SOME PET BOTTLE PRODUCERS PREFER LINEAR STRETCH-BLOW MOLDING (SBM) MACHINES, OTHERS PREFER ROTARIES. EITHER WAY, SIPA HAS THE SOLUTION.



RECENT UPDATES ON STRETCH-BLOW-MOLDING SYSTEMS, SFL AND XTRA

Recently, SIPA expanded and diversified its range of SFL premium linear blow molding machines. The family has been increased with the addition of SFL Flex units with one or two cavities, for small batches production, while existing units have been rebranded: SFL Dynamic is for large bottles and for oval and custom shapes; SFL Performance units have the most cavities and the highest output (up to 16,000 bph); for larger containers, SIPA offers the SFL Big and the SFL Maxi; there are also versions devoted to wide-mouth containers, called SFL WM.

SIPA recommends its XTRA rotary equipment for high speed production (up to 65,000 b/h) and for lightweight products. The XTRA PH (Preferential Heating) model can produce oval bottles at high rate while XTRA BIG is fitted for the production of large containers up to 10 liters bringing the production rate up to 9000 b/h. But whatever type of SBM machine a customer chooses, SIPA can also produce (and design of course) the molds that go with it.

SINGLE-STAGE BOTTLE PRODUCTION

SIPA has not put all its eggs in one basket when it comes to bottle production. For a long time – longer in fact than it has been producing separate systems for preforms and bottles – it has offered single-stage injection-stretch-blow molding (ISBM) systems, under the ECS brand. There are two families: the original ECS FX line, and ECS SP machines that are better suited to lower outputs and smaller bottles, especially miniatures. So once again, all the bases are covered.

FILLING THE CONTAINER

SIPA produces various types of fillers. 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.

SIPA offers linear and rotary options for highly integrated units blowing and filling with PET bottles – the SincroBloc family. In the beginning, all SincroBloc models were based on rotary stretch-blow moulding equipment.

But SIPA found that some customers, especially those bottling water and edible oil, needed a system, clean and compact like the originals, for larger formats up to 12 litres. For this, only linear stretch-blowers will do. Some customers also want to produce only limited quantities, possibly at only 2000 bottles per hour, and for this a linear machine is again more appropriate. So now, outputs from SincroBlocs cater for all tastes.

A SINGLE SYSTEM FOR BLOWING AND FILLING BOTTLES FOR CSDS AND HOT-FILL PRODUCTS

Around the world, many PET bottling companies are handling both carbonated soft drinks and hot-fill drinks such as fruit juices, isotonic sports drinks and teas. To do this, they generally choose lines that are configured for one type of product or the other.

But they don't have to. SIPA has for some time been offering filling lines that can handle both types of product, with change-over times of just a very few hours. With SIPA's rotary stretch-blow molding machines and Flextronic C, the concept has even more added-value than ever. The ability to blow and fill diverse types of container on a single line has been made without compromising any performance characteristics of the line.

In the product preparation area, SIPA has extended its offering with a series of machines that, together, provide an increased high level of flexibility and customization. The deaeration, carbonation, blending and

pasteurization stages can all be configured exactly to the specific needs of the customer and their products, whether they are CSDs or HF types.

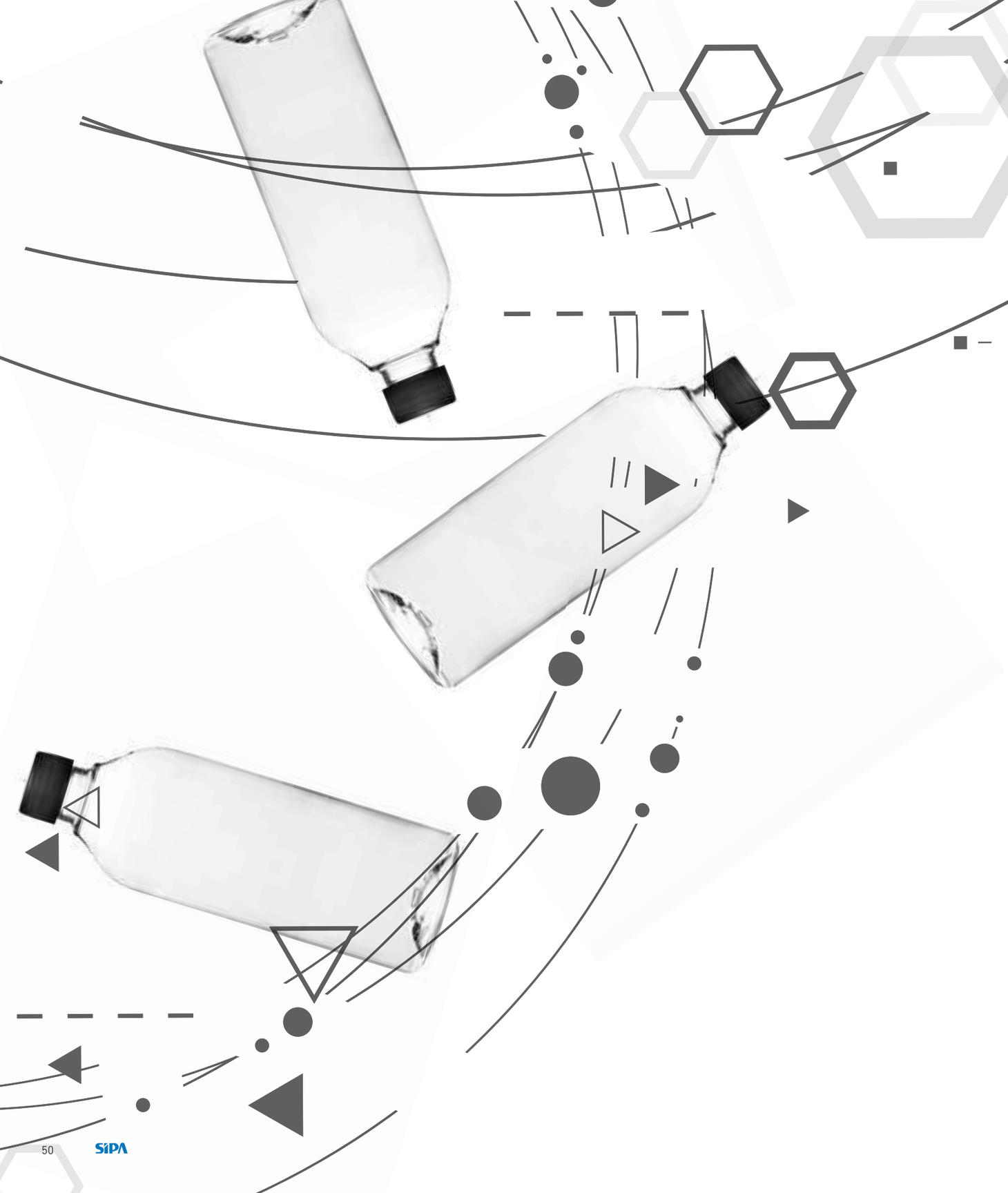
SECONDARY PACKAGING

To complete the offer SIPA provides the complete range of palletizers and depalletizers, both traditional and robotized, for bottles, jars, cans, cartons, crates and shrink-packs as well as a comprehensive range of solutions for different container handling in plastic crates, American-type cartons and wraparound, designed to meet different levels of speed and to cover all production needs, from the simplest to the most complex packaging configurations handled with robotic solutions.

The secondary packaging range offers performance and efficiency to satisfy the most demanding needs of the beverage, food, wine & spirits, detergents, chemical and pharmaceutical industries.

TOTAL PLANT ENGINEERING

SIPA has strength in depth in plant engineering. Customers can consult with its experts to obtain optimum solutions that save them money and space while delivering the quality they need to be strong in the market. Customers get the optimal solution for their particular application, thanks to SIPA's cooperation with partners who are leaders in their own specific fields.



TECHNICAL WINDOW:
latest developments.

03

SIPA OPTIMIZE TO MAXIMIZE

SIPA GOES OFF-LIMITS TO MAXIMIZE PET PREFORM MOLD CAPABILITIES

There is a well-known rule of progression when it comes to cavitation in medium and large-sized PET preform molds: 72, then 96, 128, 144. But SIPA thinks some rules are made for breaking – especially when it means its customers can optimize the output/capital ratio!

SIPA has demonstrated on numerous occasions that, with some very clever hot runner configurations and ingenious tool engineering, it is perfectly possible to squeeze more cavities into a given mold space, with absolutely no loss of preform quality.

UNCONVENTIONAL CAVITY NUMBERS

FOR BETTER OUTPUT/CAPITAL RATIO

Think about a "workhorse" 72-cavity mold: this is considered a good choice for low-to-medium output production on a 250-tonne machine like SIPA's XFORM 250. But what if you could give yourself an **important incremental boost**, without having to invest on a bigger tooling (i.e. 96 cavities)?

SIPA has the answer. It has developed an **84-cavity mold** for the XFORM 250 platform. This unconventional mold provides **a significantly better output per capital ratio** than a 72-cavity mold – something like **13% better** in fact, when producing preforms for 1.5-L bottles on the same SIPA machine – and well ahead of what is possible on rival 72-cavity machine/mold combinations.

XFLOW ALLOWS

CONSISTENCY AND RELIABILITY

Creating a hot runner system that **consistently** and **reliably** enables more cavities to be filled identically, at high speed, without excessive force, is a task that extremely few companies are capable of handling. SIPA can do it, thanks largely to its **Xflow melt distribution system**. Xflow incorporates an innovative hot runner manifold design that provides the best balance of melt distribution in the industry. In fact, it exhibits the lowest pressure drop ever measured.

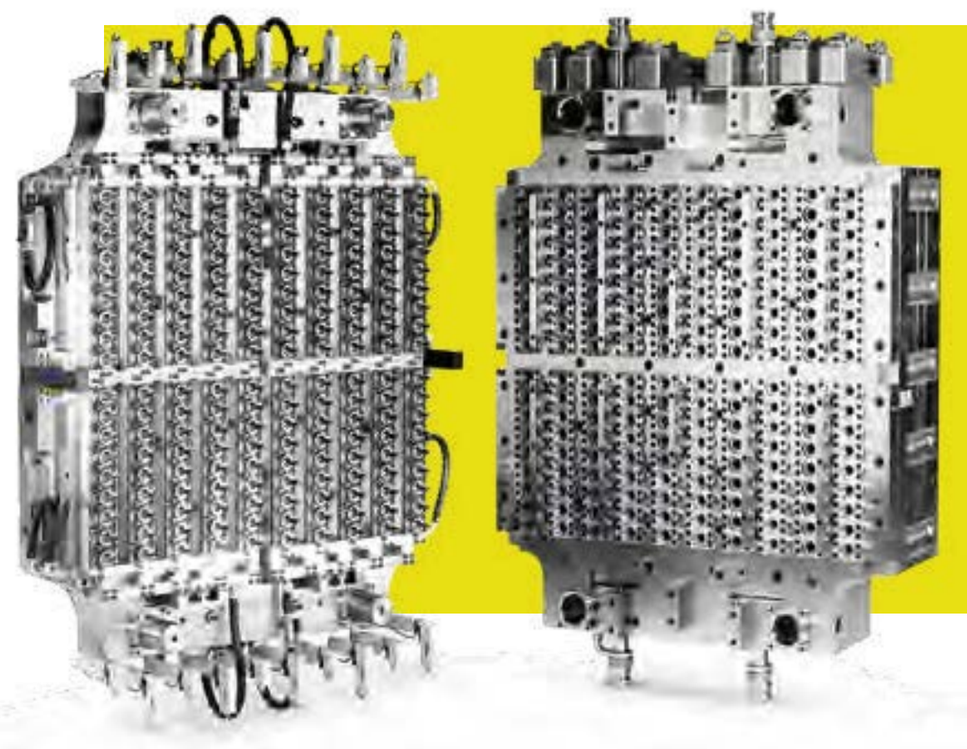
This technology, unique to SIPA, allows the company to create very high-cavitation systems without having to compromise on balance, pressure losses, and the formation of acetaldehyde due to polymer degradation.

COST-EFFECTIVE UNIQUE SOLUTIONS

FOR HIGH PRODUCTIVITY

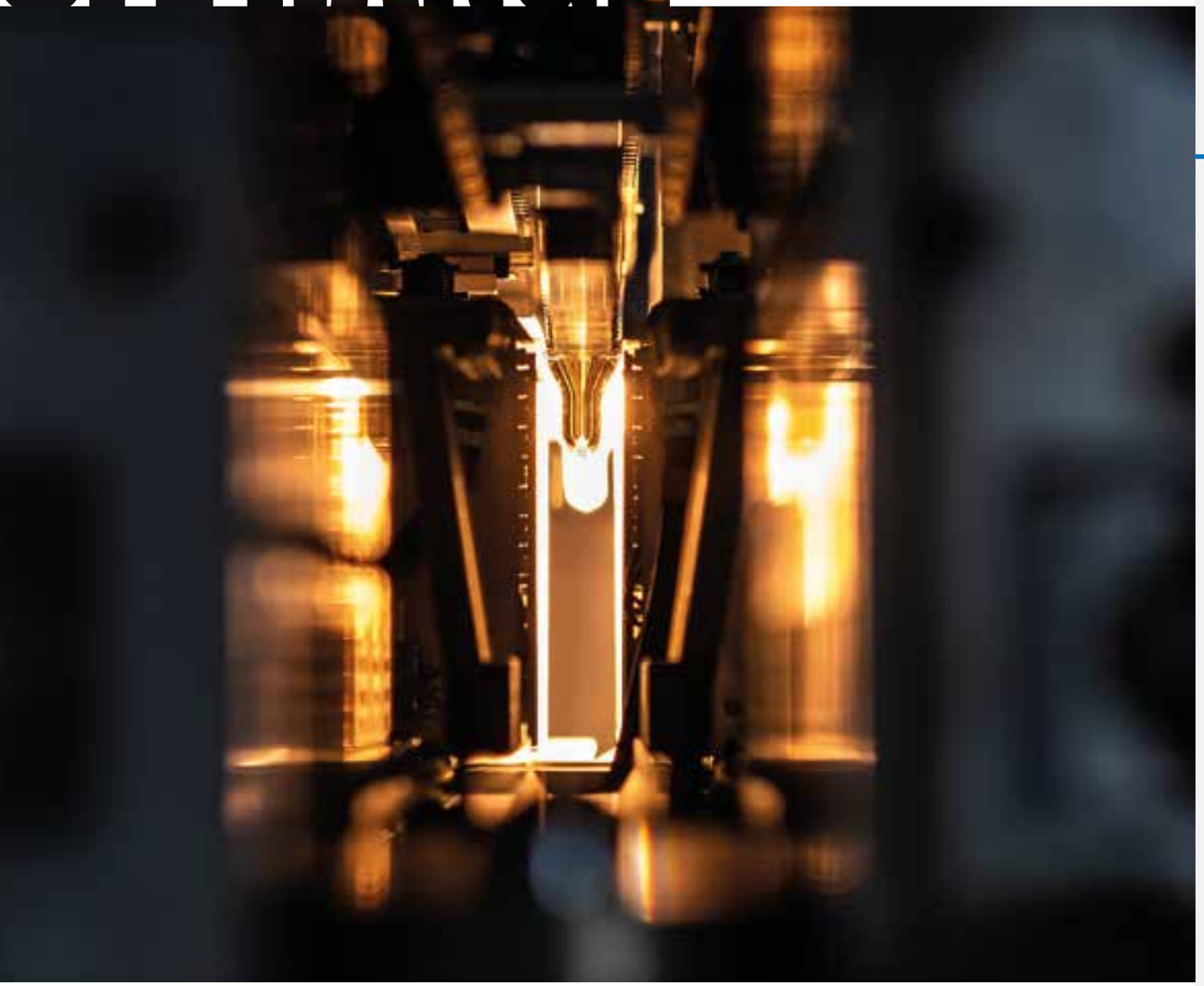
The unique engineering solution applied to 84-cavity molds has already been widely proven by SIPA when introducing the **world's first 180 cavity injection mold** and which has since then become one of the **company's bestsellers** to run on XFORM 500 systems that would normally be acquired to run with 144-cavity molds.

The world's first **200-cavity preform mold** makes it possible to produce over **130,000 preforms every hour**, making the investment in an **XFORM 500 production system even more cost-effective** than ever. It is just what major packaging companies are after: with a single system producing more preforms, they can cut consumption of utilities, be more efficient in the use of labor, and tie up less valuable floor space.



SIPA's 200 CAVITY INJECTION MOLD

A NEW LOOK FOR THE SIPA SFL RANGE



SIPA has rebranded and expanded its range of SFL linear stretch-blow molding machines. New names for existing machines are simpler and more intuitive than before.

The SFL 4 range for large bottles and also for oval and custom shapes is now called SFL Dynamic. Four models in the range hold between two and five molds.

SFL THE RANGE

Up to 16,000 b/h
PERFORMANCE 8

Up to 10,000 b/h
DYNAMIC 5

Up to 10,000 b/h
DYNAMIC 5

Up to 1,700 b/h
MAXI 2

Up to 600 b/h
MAXI 1

Up to 300 b/h
with handle MAXI 1

Up to 9,000 b/h
PERFORMANCE 6 PH

Up to 6,000 b/h
DYNAMIC 4 PH

Up to 3,000 b/h
FLEX 2 PH

Up to 6,000 b/h
WM 4

Up to 120 mm neck finish
WM3

Up to 8,400 b/h
BIG 6

Up to 5,600 b/h
BIG 4

Up to 1,400 b/h
FLEX 1

> The SFL range now also includes two new small models, the SFL Flex 1 and 2, for production of small batches. You can read about those elsewhere.

SFL FLEX SMALL BUT PERFECTLY FORMED

SFL PERFORMANCE,

previously SFL 6, stands for machines with more cavities (between three and eight, depending on model) and higher production (up to 16,000 bph).

SFL BIG

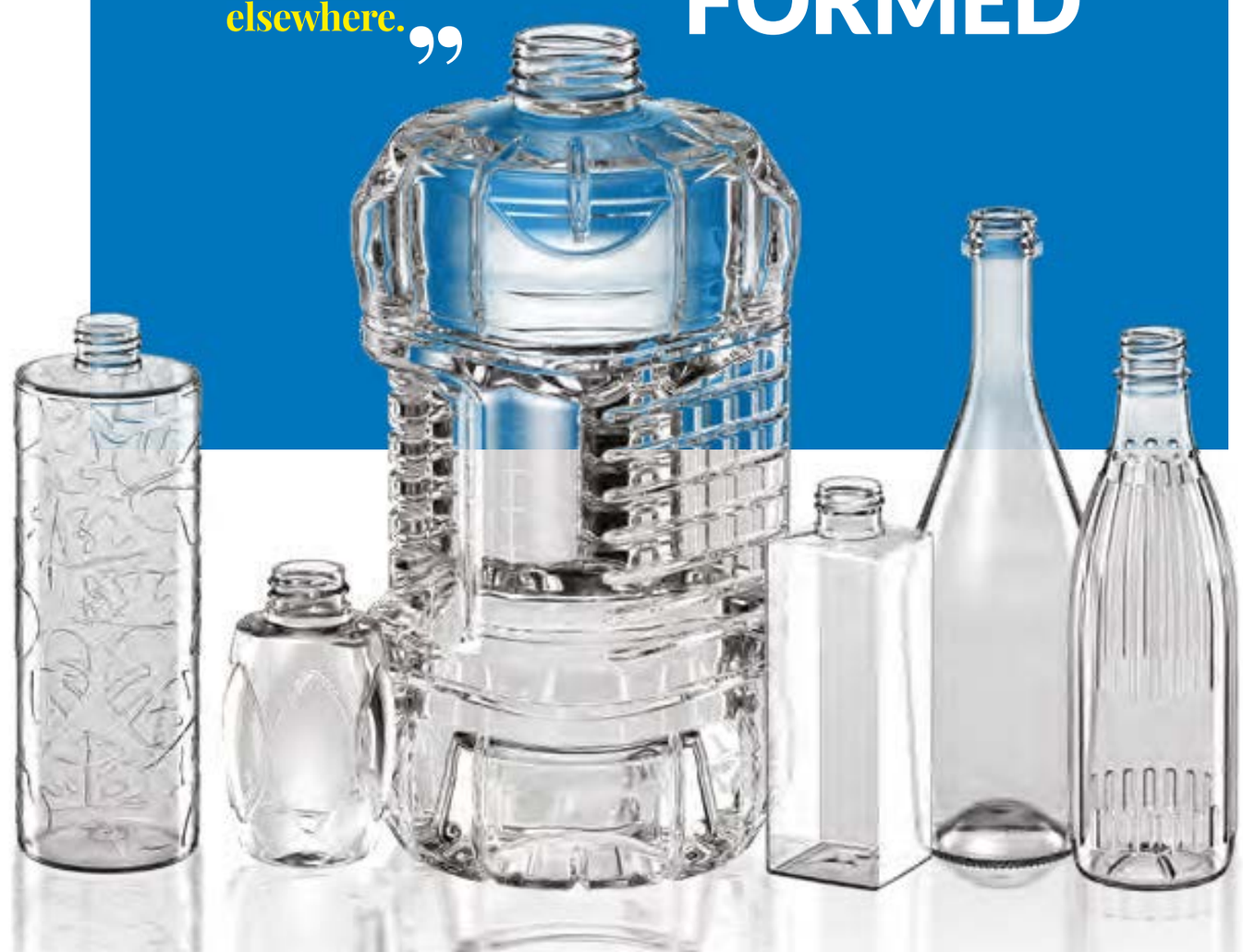
machines, which can produce containers up to 12 liters in size at medium-to-high speeds, were previously called SFL 6 XXL. There are models, with four, five, or six mold positions.

SFL MAXI,

for the largest containers, is what used to be called SFL 1 or SFL 2. Machines take two or three large molds or one extra-large mold.

There are still three **SFL WM** units for wide-mouth containers; these have a slightly different nomenclature, indicating two, three, or four molds.

One important thing to remember is that while the names have changed, the specifications and advantages, of course, remain the same!



SIPA has extended its SFL range of linear stretch-blow molding machines downwards to include models for production of small batches: the SFL Flex, which is available in two versions, one with two cavities, and the other with just one.

Covering the lower output segment of 1000 to 4000 bottles per hour, these machines are small, flexible, and easy to use. Just like their bigger brothers in the SFL family, both produce very high quality PET bottles, and are ideal for facilitating start-up of new products aimed at all segments – beverages, personal and home care, hot-fill, refillable, and so on, in PET, rPET and other polymers compatible with the SBM process.
The SFL Flex 2 can produce bottles up to 3L in volume, with necks of up to 48mm at speeds of up to 2000 bottles per hour per cavity. It can be equipped with numerous optional features to expand its capability in bottle shape and filling requirements.

ATTRACTIVE FEATURES INCLUDE QUICK MOLD CHANGE (IN ABOUT 20 MINUTES AND POSSIBLY LESS); NECK CHANGE TIMES OF 40 TO 60 MINUTES; AND A COMPACT FOOTPRINT OF JUST 8M².

FLEXIBILITY IN FILLING: A SINGLE SYSTEM FOR GLASS AND PET BOTTLES

SIPA's Isotronic G filling monobloc is the perfect solution for companies handling a mix of bottle types. Not only can it fill single-use and refillable (RefPET) PET bottles, but it also works with glass bottles. To make things even better, it can handle bottles using screw tops and crown tops. Naturally, it can fill with all sorts of still and carbonated drinks.

This isobaric electro-pneumatic level filler has numerous innovative design features to guarantee significant advantages in terms of performance and operating flexibility. It is available in versions with between 20 and 100 valves, with output rates of up to 50,000 bottles per hour.

HIGHLY CAPABLE, VERY VERSATILE

The Isotronic G has a stainless steel central tank and uses filling valves with mobile filling and vent tubes and centering cups that work without requiring any movement in the vertical position of the bottle. This provides the user with advantages in low maintenance as well as in other characteristics such as the automatic use of dummy (false) bottles used for valve washing. The valves are simple in construction, reliable, and easily sanitized.

ANY SHAPE, ANY SIZE

A particularly important feature for companies operating with a variety of bottle types (shape, volume, neck size, material) is the low downtime during changeover. Filling level adjustment is made centrally, with no need to replace vent tubes. If the line is running with glass bottles, handling is done through the base; on the other hand, neck handling is used for PET bottles, with no need for monobloc height adjustment if there is a change in neck size. The neck changeover from glass to PET requires no tools and can be carried out very quickly. Centering cup replacement is also fast and simple. Any changes to operating parameters are made via a user-friendly touchscreen HMI, with a menu-based interface.

SPECIAL FEATURES

Other notable features include flexible liquid product deflection using a swirling device without format change; automatically engaged dummy bottles; extremely low foam production (thanks to snifting with the vent tube raised inside the valve); a separate air return circuit; valve protection solutions against accidental bottle burst; and low maintenance, thanks in part to the absence of a pneumatic lifting cylinder. As an option, CIP (Cleaning In Place) can be integrated within the carbo/mixer.

SWIRL

The deflection of the product on the walls of the bottle is performed through a helix system inside the valve – this is the swirl device. This creates a homogeneous film of product that is deflected inside the container without turbulence or foam. By not having the deflector on the vent tube there is no need for any adaptation or replacement when there is a change in bottle type.

This obviously helps minimizing down time during format change.

HYGIENE

The sanitation phase on the Isotronic G is very simple and fully automatic. By means of a control on the operator panel, the machine prepares itself for the electro-pneumatic control of all the on-off valves. The sanitation cycle is carried out in such a way that the solution passes over all the internal areas of the filler with forced flow.

AUTOMATIC DUMMY BOTTLES

The mobile filling tube, an important feature of the filling valve, makes it possible to engage and disengage dummy bottles with a simple pneumatic control, avoiding any contact between operator and machine. In the rest position, dummy bottles are protected by a special cover that prevents them from being hit by any glass fragments if a glass bottle bursts.

LOW FOAMING, LOW MAINTENANCE

The pressurization of the bottle takes place through a dedicated circuit that is free of liquid particles ("dry" pressurization), guaranteeing reduced foaming when filling bottles with carbonated drinks. Inside the valve, the product circuit is isolated from the outside "control" circuit through a membrane. There are no sliding gaskets. The air returning from the bottle never comes into contact with the product inside the tank. The absence of a pneumatic lifting cylinder reduces maintenance cost and time. Cleanliness is also improved, since no lubrication of moving parts is needed.

Bottle handling is easier too, with bottles moving on a single flat plane.

MOBILE VENT TUBE

The mobile vent tube has numerous advantages. For instance, the filling level in the bottle can be adjusted, even during production, without having to replace the vent tubes, significantly shortening the time and cost of format changeover. The vent tube is protected during the pressurization phase, as pressurization is done with it inside the valve, and so protected from glass fragments in the unlikely case of a bottle bursting. Product losses are lower because the decompression phase (snifting) occurs with the vent tube back inside the valves, reducing foaming to a minimum.

BOTTLE BURST PROTECTION

There are more features to reduced damage if a bottle bursts during filling. For example, after the pressurization phase, the bottle presence is controlled by a sensor that detect the roller position; bottles and filling valves are protected by separators against the glass fragments in the event of a burst; and the swirling device inside the valve is always protected against any glass fragments. The only gasket in contact with the bottle is the one in the centering cup, and if a bottle bursts, it can be washed by high pressure water.

MULTIPLE CONFIGURATION OPTIONS

The Isotronic G filling monobloc can be customized to meet any production need. A careful study of plant engineering, ergonomic design, a simple but comprehensive operator interface, and a fully automatic configuration of process flows, make any solution easy to use and manage.
For water fillers it is possible to integrate the CIP unit on the external product tank of the filler or on the Carbo.

This brings several advantages, including a reduced footprint; reduced energy consumption; Capex reduction; elimination of the need for a boiler in the plant that requires a specific user license; and finally, a machine suitable for multiple applications.

MORE THAN A FILLER

SIPA fillers can be coupled in Sincro Blocs with SIPA rotary and linear stretch-blow molding units, for integrated blowing-filling-capping lines. The monobloc can be also completed with the addition of mechanical and electronic rinsers, equipped with various types of treatment according to the different applications. SIPA offers a wide choice of capping systems, for plastic caps, aluminium crown and ROPP (Roll On Pilfer-Proof) caps, and other types, as well as cap decontamination.

ENVIRONMENTAL CONTROL

To guarantee the maximum hygiene of bottles, several solutions can be integrated in order to keep under control the filling environment, and meet the most stringent requirements. The SIPA entry level is ISO class 7, but this can be increased up to ISO class 5 if the customer requires it.
Features that can be added include overpressure sterile air cabins with contamination control equipped with HEPA filters, and protection of the filling area with a mini-enclosure (isolator technology) for sensitive product handling.

This solution ensures a drastic reduction of the area to be controlled, allowing extremely effective sanitizing at reduced cost.

IMPROVING ISBM INTER-BRAND COMPATIBILITY WITH NEW THERMAL GATING ON SIPA MOLDS

As anyone familiar with hot-runner injection molds knows, there are two types of gating: valve gating and thermal (or hot tip) gating. As a rule, SIPA uses valve gating, essentially because its greater sophistication allows for more control and better injection point quality (e.g. less risk of stinging and/or crowning). That makes valve gating more expensive, but SIPA believes the price is worth paying. This is the case with injection molds that SIPA makes for single-stage and two-stage PET bottle production processes.

Some people prefer the more economic option, however.

Certainly in the area of single-stage injection-stretch-blow molding, there are many processors using equipment not built by SIPA who have taken this route and have built up large stocks of ISBM injection molds fitted with thermal gating hot runners.

As anyone familiar with SIPA knows, the company excels in offering compatibility. In particular, SIPA supplies machines that accept molds from other suppliers, and vice-versa, the molds that SIPA builds can be used on other brands of machines.From the very beginning, SIPA developed its smaller ISBM systems, branded ECS-SP, with the embedded flexibility to run with injection molds fitted with either valve gates or thermal gates So a processor, who already has molds with thermal gates (built by competition) that have been running on ISBM machines from rivals, can install them in a SIPA ECS-SP system, with all of its advantages in performance, energy-efficiency, low maintenance and more, and still use those existing molds.

But here is what's new: SIPA has recently further developed its smaller ISBM systems by developing its own thermal gating hot runners, so that full and easy compatibility on the main competitor's machine is now granted. It means that a processor who already has single-stage ISBM systems from a machine supplier that favors thermal gating can use molds from SIPA too.

SIPA is famous around the world for the quality and performance of its molds (blow molds and injection molds, we hasten to note) as well as its machines, so this is an option worthy of serious consideration.

> All told, this makes SIPA's single-stage ISBM proposal extremely flexible, as well as offering excellent performance and first-rate quality.

XTRA ROTARY STRETCH-BLOW SYSTEM IS GOOD FOR BIG BOTTLES TOO

SIPA's revolutionary XTRA rotary stretch-blow molding machine series, renowned for high-speed, low-cost production of top-quality containers, has been extended upwards. XTRA BIG variants can blow bottles as large as 12 liters.

XTRA BIG machines are mainly aimed at production of big bottles for water or edible oil, as well as other sensitive products, with neck sizes up to 48mm. They can also make smaller bottles, if necessary. There are three models, with four, five, and six cavities. The smallest, XTRA BIG 4, can serve lines for 30-40,000 litres/hour, while with the largest, XTRA BIG 6, the number rises to 50,000 litres/hour.

All XTRA models combine features to maximise performance while cutting Total Cost of Ownership (TCO). They feature an extra-wide active process angle, reduced energy consumption, high flexibility and ease of use, as well as compatibility with other machines upstream and downstream.

> **"The very wide process angle on XTRA machines facilitates production of bottles of excellent quality, even at high speeds."**

It makes it possible to apply high pressure air for longer, enabling extremely accurate production of containers – even the most complex ones.

XTRA BIG systems share many design features with their regular counterparts – machine layout, preform handling and active grippers are just about the same for example – but SIPA engineers have used finite element analysis (FEA) to create a new blowing press designed specifically for big bottles.

SIPA's expertise in designing and producing SBM machines for big containers stretches over decades, during which time the number of development projects it has been involved in has surpassed 800. The new XTRA BIG rotary units take advantage of SIPA's award-winning linear SFL BIG process competence, including simple preform handling and the specially-sized stretch system and blowing block.

> **"XTRA BIG is a further demonstration of SIPA's ability to set the benchmark in technologies for the production, filling and packaging of PET containers."**

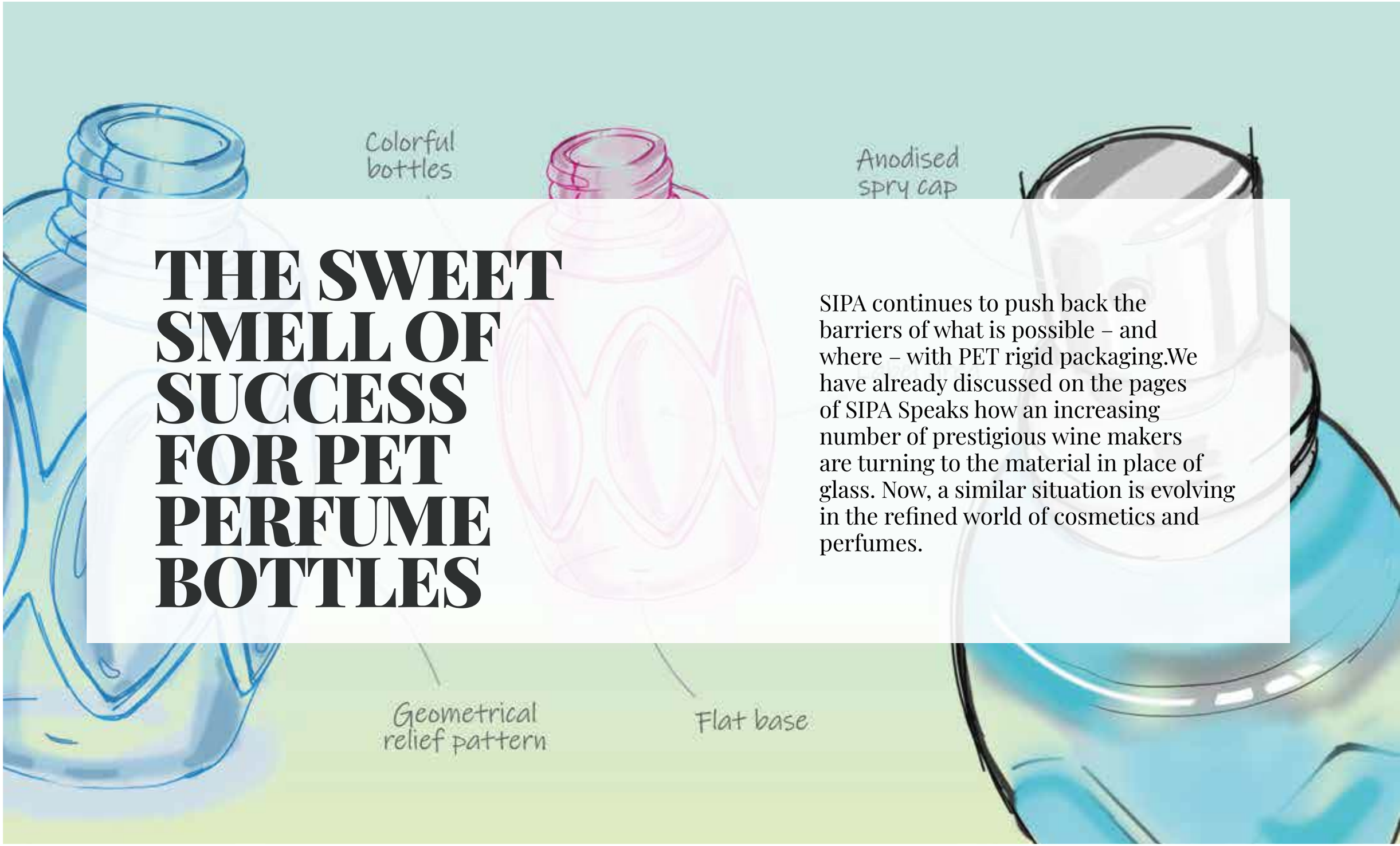
"XTRA BIG is the result of years listening to what the market tells us, talking with customers, understanding new needs," says Paolo De Nardi, SIPA's Product Manager for stretch-blow molding machines.

SIPA's expertise in large containers stretches extends well beyond bottle blowing machines of course, starting with preform design, development and injection molding, and going through to filling (and further). SIPA fillers provide state-of-the-art solutions for electronic filling for water, and weight filling for edible oils, with ATEX approvals for volatile chemicals and alcoholic liquids.

With the SincroBloc clean and compact combined blowing and filling unit, system integration enables bottling companies to avoid transportation of empty bottles and eliminates the need for rinsing. For several years now, SIPA has been offering both linear and rotary SincroBloc systems, for formats anywhere up to 12 liters. A SincroBloc incorporating an XTRA BIG and SIPA's BigFill volumetric gravity-filling monobloc for formats from five to 12 liters has an hourly output capacity of 6600 5-L containers and up to 4000 containers in the very largest sizes.

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

04



THE SWEET SMELL OF SUCCESS FOR PET PERFUME BOTTLES

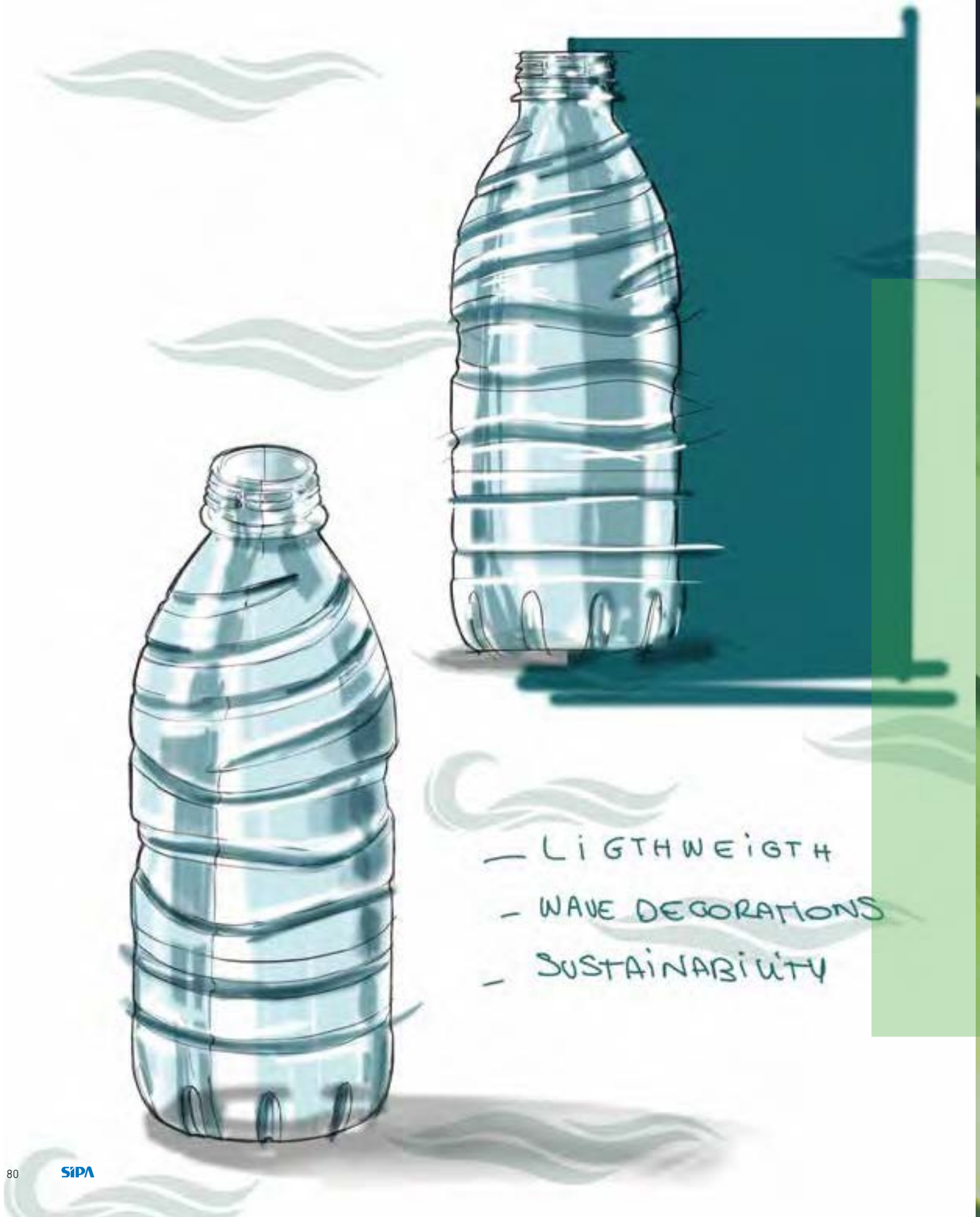
SIPA continues to push back the barriers of what is possible – and where – with PET rigid packaging.We have already discussed on the pages of SIPA Speaks how an increasing number of prestigious wine makers are turning to the material in place of glass. Now, a similar situation is evolving in the refined world of cosmetics and perfumes.

This is another market that for many years has been the exclusive domain of glass. But times, and attitudes, are changing.

SIPA is proving that it is possible to produce beautiful PET bottles for cosmetics and perfumes that add value to the product, and which are more ecological to produce than glass bottles, because of the energy involved in the conversion process, and also because they weigh less and so cost less to transport. Recycling can be carried out in a more energy-efficient way too. Last but certainly not least, there is no problem in finding PET granules – supply issues still plague the glass bottle value chain.

The "green" credentials of PET get even greener when new routes (or should we say roots?) are used to make it. Last year, LVMH Beauty – whose famous brands include Dior, Givenchy, and Guerlain – said it would adopt "carbon-negative" PET for its cosmetics and perfume brands. It intends to use bio-PET derived from wood residues, coming from recently-felled trees that have captured carbon over their lifetimes.

What you see here is some prototype PET packaging that SIPA created and produced for Cosmopack, part of Cosmoprof Worldwide Bologna, one of the most important shows for the cosmetics industry, which took place in March. The classic 50-mL bottles were produced on an ECS SP 80 injection-stretch-blow molding system, in various colors. They already look great, and they should look even better when they have some exotic fragrance inside them!

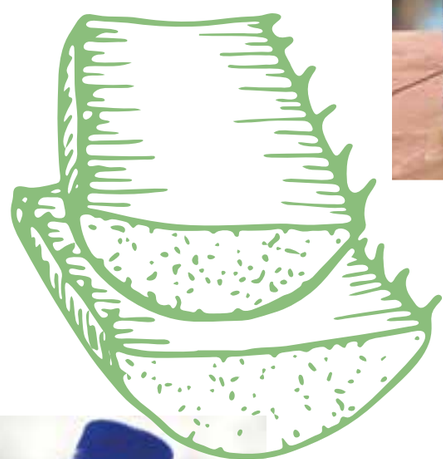


MAKING WAVES WITH SIPA WATER BOTTLE CONCEPTS EMBRACING AWArPET

> Packaging designers at SIPA have put their creative heads together to come up with concepts of what can be achieved in aesthetics and performance while following the principles of AWArPET – the SIPA philosophy and brand that stands for an environmentally conscious approach to the design and production of PET packaging.

They succeeded in developing five different bottle formats, in sizes from 330 ml up to 1.5 L, all of which can be produced directly from post-consumer recycled PET flake, and then filled directly in-line, on SIPA's ground-breaking XTREME Renew Sincro Cube system.

The ultralight bottles have been imagined for mineral water, still and lightly flavoured with Aloe, and share a look reminiscent of soft waves, evoking evokes calmness and serenity. The designers came up with a new name too, AloA, or rather, which has echoes of the succulent plant as well as Aloha, the Hawaiian word for peace, compassion, and love.



With this project, we wanted to emphasize how we always respect the principles of AWArPET when we work with our downstream partners to develop new bottles,

says the spokesperson of SIPA designers team. "These bottles use the minimum amount of material possible without compromising on performance, and they can be made entirely out of rPET."

> "The fact that we have the technology that makes it possible to produce them directly from flakes, giving them a very small carbon footprint, is another feature we are extremely proud of."

BE SQUARE! SIPA HAS A DESIGN ON STACKABLE OIL PACKAGING

At Interpack in Düsseldorf this May, SIPA will be producing a new PET container of its own special design.

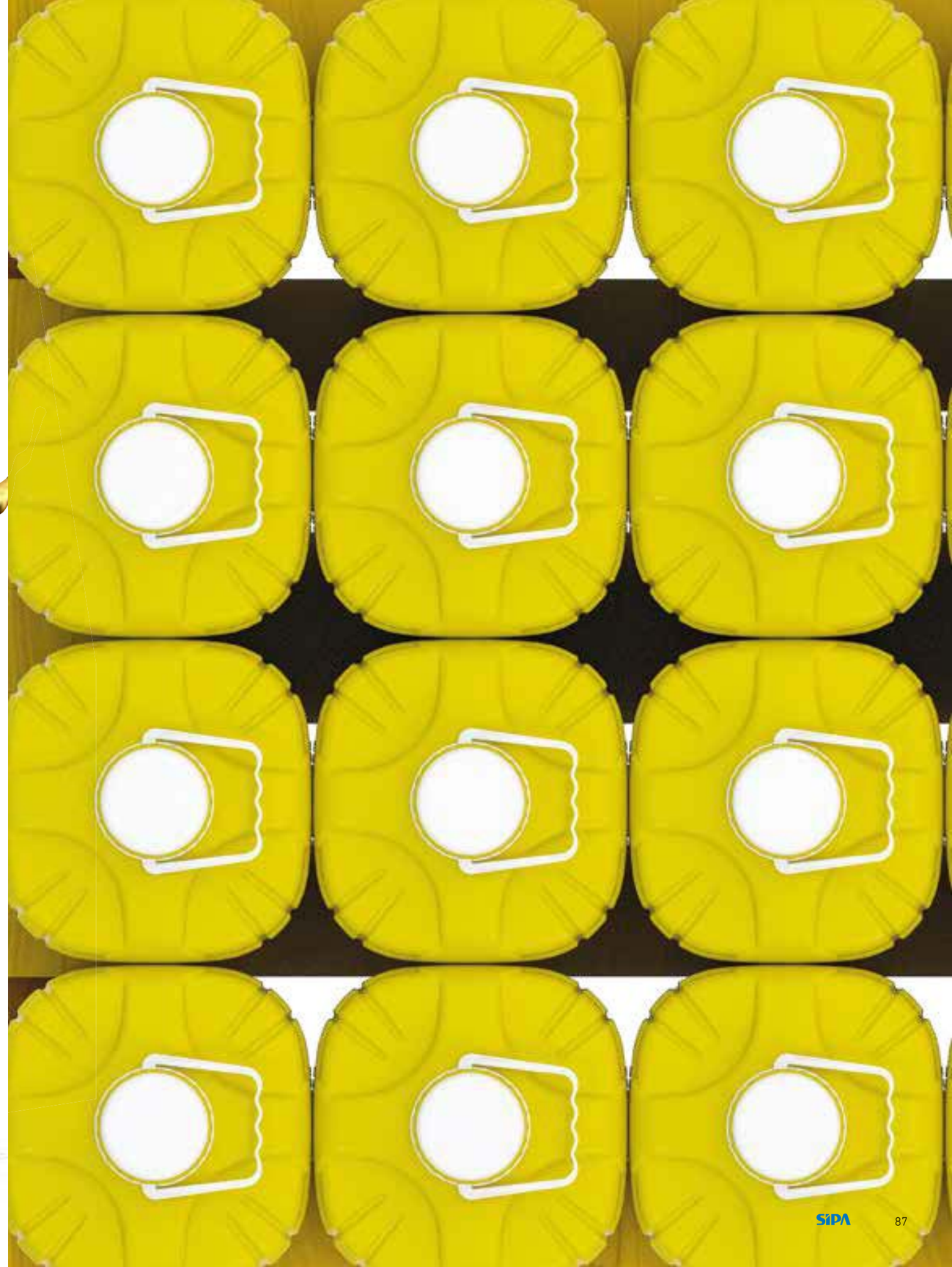
This one is intended for edible oil, and it caters for a trend in the market towards larger formats. In fact, the bottle will hold 20 liters of oil.
Plus, it is stackable, because the 77-mm neck fits just right inside the hollow in the base of the bottle on top, and the base is contoured to nestle into the shoulders of the bottle underneath.

Also extremely important is that SIPA has designed the bottle for optimal top load strength, as well as stability (SIPA knows what it's doing here, since it has accumulated extensive experience in successfully designing stackable containers for water).

As you can see, it is square, so little space is lost in storage and display. And of course, despite its strength, it is light – just 550 g – which makes for lower transport costs as well as ease of handling. Once it is full of oil, the total weight is getting on for 15 kg, which is quite a lot, but the highly ribbed walls help with handling.

Overall, this attractive design is a much more cost-efficient proposal than metal cans, and even more environmentally friendly than other plastics solutions.

Obviously, it is totally recyclable.



SUSTAINABILITY

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

05

GIANT WATER COOLER JUG IN 100% rPET

ICE RIVER
SUSTAINABLE SOLUTIONS

2023 CANADA'S GREENEST EMPLOYERS

ICE RIVER IS GREENER THAN EVER WITH ITS GIANT WATER COOLER JUG IN 100% rPET

Ice River had recently bought an XFORM preform injection molding system to process 100% post- consumer PET recyclate into preforms for its 500-mL spring water bottles.

Ice River t was the first beverage company in North America to purchase “blue box” materials to produce its 100% rPET bottles, which is produced in various sizes up to 15 L (4 US gal).

In the meantime, Ice River decided to improve the design of their 15-L (4 gal) water cooler bottle. To redesign their bottle, they came to SIPA for one of its special-purpose stretch-blow molding machines, a linear SFL 2/2 (which SIPA now markets at the SFL MAXI 2 - see article elsewhere in this issue). Once again, the bottle is made in 100% rPET.

Ice River called on SIPA to carry out development work to optimize container properties.

This bottle has improved top-load strenght and resistance to the vacuum that forms as the bottle empties, thanks to optimized distribution of material throughout the container; this itself is made possible through the special design of the bottle and through optimized process conditions.

“Ice River Sustainable Solutions remains a leader in the use of rPET. It even has its own recycling company, Blue Mountain Plastics.”

gruppoicat.com

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