FOCUS ON

PREFORM DESIGN REVOLUTION

PET PACKAGING NEWS OF THE WORLD

SIPAMAGAZINE

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PET PACKAGING NEWS OF THE WORLD

SUMMARY

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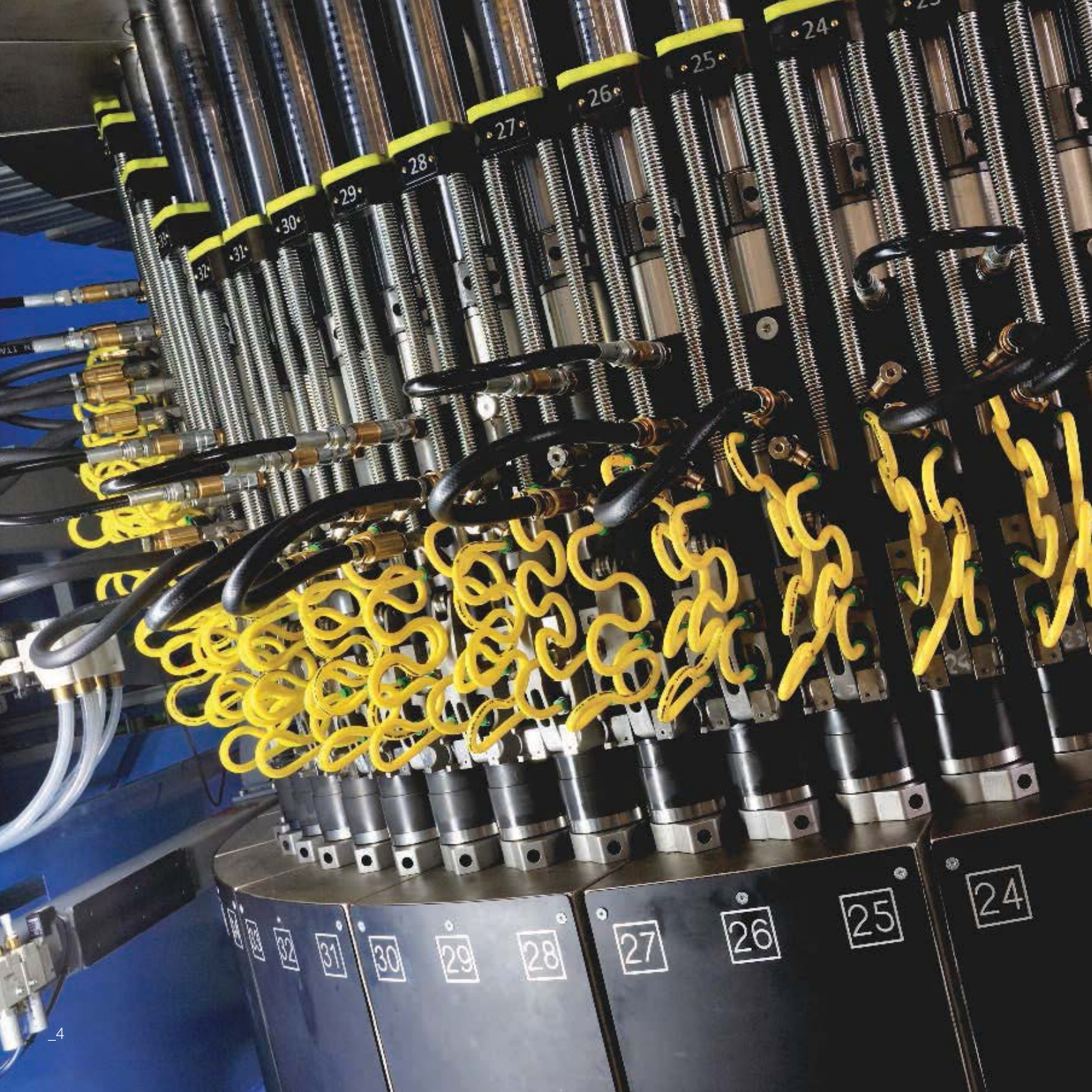
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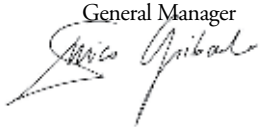
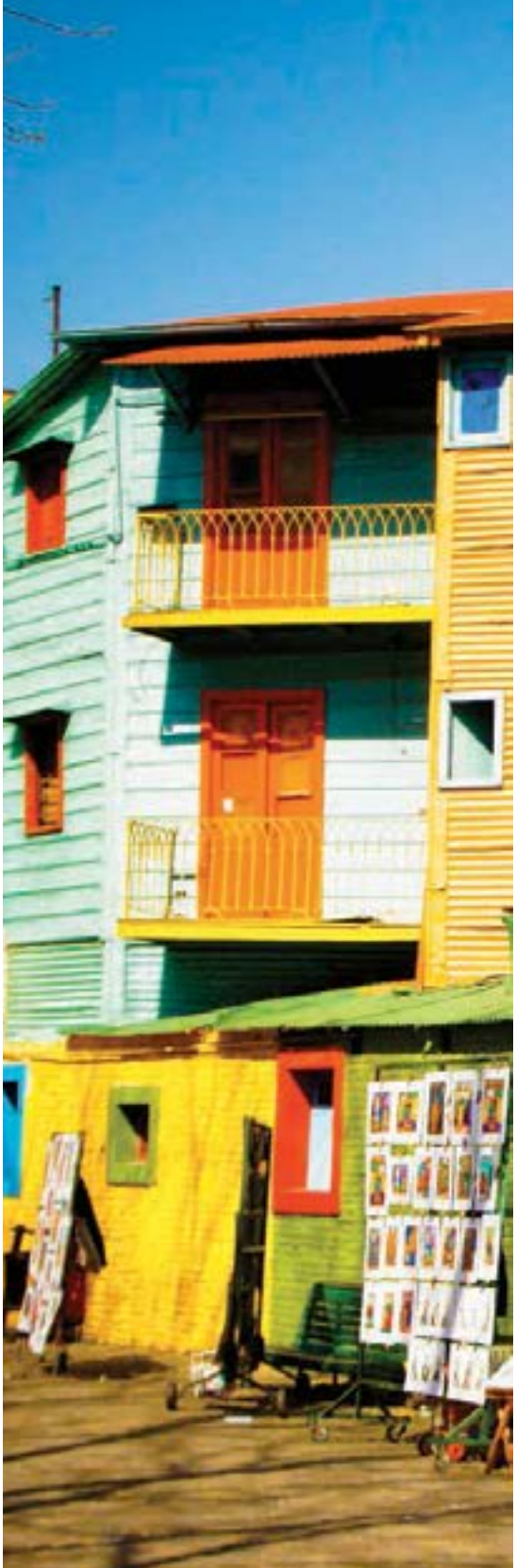
EDITORIAL

I'd like to take you on a walk with SIPA into a whole new world of PET packaging. A world that stretches all the way from the pellet to the pallet, wrapped safely and securely, holding bottles full of high quality drinks. A new era upon us, and this is only the beginning. A few years ago, it became clear to the technical experts at SIPA that the possibilities for making a PET preform better, lighter, and faster using injection molding were all but exhausted. No amount of tweaking and fine-tuning could alter some basic laws of physics. The thinner you make a preform wall, the narrower you make the flow channel, the harder it is to fill it – there comes a point where any extra effort no longer pays off in a benefit. We were on the final stage of our asymptotic curve. So we jumped off the curve. At Drinktec this year, SIPA is unveiling a technology that has never been used before commercially for producing very thin, very high quality PET bottle preforms, very quickly: injection-compression molding. We think that XTREME is the beginning of a new and exciting chapter in the story of PET packaging. XTREME presents a paradigm shift. We have changed the assumptions about what is possible in PET preform production. Result: a preform for a 500-ml bottle that would normally weigh close to nine grams now weighs six grams – and yet it looks and performs just as well. XTREME process is incredibly fast and quite easy to operate. But the major thing is that it produces amazingly good ultra-lightweight preforms. XTREME has extremely precise dosing, and it uses low pressure to fill the mold. As a result, stress in the preform is very low, even when the wall thickness is much thinner than the thinnest injection molded preform. Acetaldehyde levels are minimized. Stress crack resistance is improved. Part aesthetics are unequalled. Production flexibility is enhanced. Costs are highly competitive. There are numerous other advantages too, as you will find out as you read on. Now a few words about another exciting innovation we are unveiling: X-Mould. I have written before in SIPA MAGAZINE about how important it is for us to respond to customer needs. One of those needs is to maximize the sustainability of existing assets. X-Mould enables preform processors to make massive material savings while using injection molding equipment and molds that they already own, by increasing their capability to create very lightweight products without compromising on performance. We are even offering this technology, which is ideal for retrofits, to companies running molds from other suppliers. But SIPA has not stopped there. For customers with established operations in more conventional preform injection molding equipment, our new MICROPITCH molds make it possible to increase cavitation without having to invest in higher-tonnage machines. And we have also made radical changes to our filling equipment. FLEXTRONIC is the name for our new generation of versatile modular units, each on capable of handling a wide range of products. The Flextronic C version, for example, is equally at home with still and carbonated drinks, hot- and cold-fill products, in all sorts of container configurations. Flextronic filling units increase the cost-effectiveness of filling operations, they need less power, they create less waste, and they are more stable in operation.

Our spirit of innovation stretches all the way down to the end of the bottling line. Our new generation of CINETIC high-speed pallet stretch-wrapping equipment provides a compact, flexible, and cost-efficient solution on high-performance bottle packaging lines. CinetiC can be easily installed on existing lines running with conventional and robotized palletizers. So, whatever your interests along the line from PET pellet to pallet, SIPA has something truly revolutionary waiting for you. I am very excited about the new products developed by the company, and what it means for our customers. I welcome you to our booth at Drinktec to witness it for yourself.

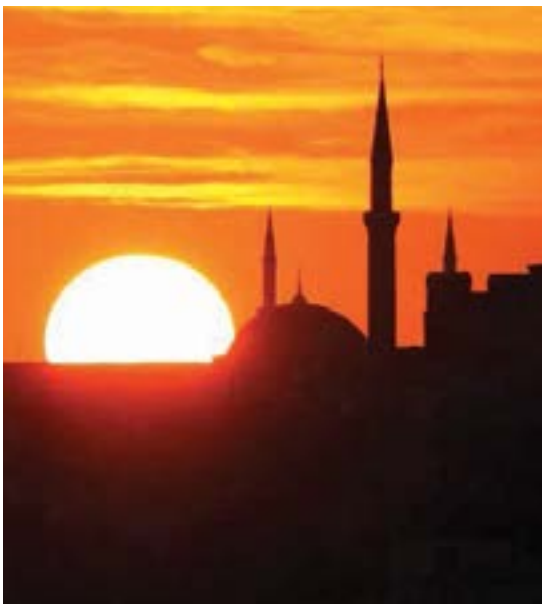
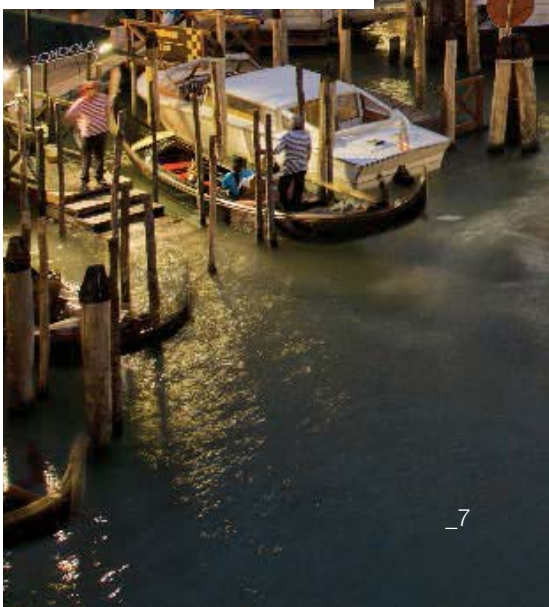
Enrico Gribaudo
General Manager







AROUND THE GLOBE: NEWS FROM THE DIFFERENT CONTINENTS

BIG 8 BEVERAGES GETS BIGGER WITH ALL-IN-ONE PACKAGE DEAL FROM SIPA

Canadian spring water and soft drinks supplier Big 8 Beverages is the recent recipient of a total package deal from SIPA that includes an SFR 6 EVO rotary stretch-blow molding unit coupled directly to a Stillfill S P gravity filling unit in a SincroBloc.

Big 8 also came to SIPA for the development of new PET preform and bottle designs. SIPA worked with Big 8's preform supplier to create the new unique preforms, which Big 8 uses to produce bottles in 500-ml, 1 liter and 20-oz sizes for still spring water.

The line runs at 12,000 bottles/h when producing and filling 500-ml bottles. "Big 8 liked the idea of getting everything it needed for its new production system from a single source," says SIPA's Denis Marcon. "As well as the bottle production and filling units, we also took care of the peripherals, including the chiller and high pressure compressor. It was a true turnkey project. Big 8 has a single partner, SIPA, to work with on the entire system, and SIPA was able to configure the system to run at high speed, producing high quality bottles. Big 8 is very happy with the complete service package we provided for them. The customer also appreciates the SFR 6 EVO for its speed and its compact design, and of course the Sincro set-up integrating the blowing and filling units dispenses with meters of conveyors. But compact does not mean hard to access-on the contrary, changeover times between different bottle sizes are very short."

Located in Stellarton, Nova Scotia on Canada's East Coast, Big 8 Beverages has been providing high quality water and soft drinks since 1986. Its state-of-the-art facility is capable of producing and shipping orders of any size, anywhere around the world. Big 8 is owned by major Canadian stores group

Sobeys Inc. Big 8 gets its spring water from a pristine underwater aquifer with very low natural mineral counts, and its soft drinks are made using the highest quality syrups and natural sugars. It offers extensive private label services tailored to meet the specific needs of its customers.


SIPA

SIPA LINE AND QUILMES AMONG THE BEST

SIPA Soft Drinks line for Cervecería y Maltería Quilmes in Corrientes plant is among the best performance of the group.

Leading Argentine drinks supplier Quilmes is a star performer for PepsiCo, and SIPA can take much of the credit. Cervecería y Maltería Quilmes, headquartered in the city of the same name, just outside Buenos Aires, is not only Argentina's biggest beer producer by a distance, but it is also the local franchisee for PepsiCo.

For the last five years, it has been running a complete SIPA bottle production and filling line at its plant in Corrientes, 1000 km to the north of Buenos Aires, for production of a wide range of Pepsi soft drinks in various formats. And it has been running the line so well, that also Pepsi has twice crowned it as the most efficient of any franchisee in the world.

The SIPA line starts with an SFR 16 EVO rotary stretch-blow molding unit, and finishes with a Genius PTF/4 palletizer. In between, there is a Massblend 40 mixer/carbonator, an Isotronic P filling bloc, an ACP cap feeder, an SPF stretch wrapper, a 06 RP TR14 strapping machine, and various pack conveyors.

The line produces, fills and packs three sizes of bottle: 0.5 l, 1.5 l, and 2.25 l. Drinks coming off the line at a rate of up to 48,000 bot-

Cervecería y Maltería Quilmes, is Argentina's biggest beer producer and the local franchisee for PepsiCo. Pepsi Co has twice crowned SIPA line as the most efficient of any franchisee in the world.


SIPA
Systems

tles per hour include Pepsi, Pepsi Light, 7up, and Mirinda, as well as flavored waters.
SIPA Magazine met Ricardo Morales, project director at Quilmes a short while ago, so we asked him a few questions.

SIPA Magazine: Quilmes has been running a complete bottling line from SIPA for some years, and we understand it is operating very well. What would you say are its main advantages?
Ricardo Morales: First of all, we can say that the efficiency of the line reaches such high levels that for two years in a row it has been rated the most efficient of any Pepsi bottler worldwide. The integration capabilities of SIPA, together with the high level of technology in the machines that make up the line, allow us to supply our customers in a timely fashion, with a container of the highest quality, respecting the highest standards of hygiene.
The simplicity of format changes on the line allows us to support a market in continual evolution ... we can offer our flagship products in the most popular flavours and formats, according to consumer requirements.
In addition, the SIPA machines

that make up the line help us to reduce our consumption of energy and water, since they are designed with a great attention to the environment being this focus fundamental and entirely shared by Quilmes.

SM: How do you rate your relationship with SIPA?
RM: Our relationship with SIPA goes back many years, and it is an open one built on mutual trust. SIPA collaborates with Quilmes in a joint project, it strives for our satisfaction just as we do, and it is committed to keeping the product that we distribute at the highest quality levels. We can say that SIPA is not just a supplier, but a partner who understands our needs and helps us to achieve and maintain the innovative content of our brand.

SM: Would you choose SIPA for another project?
RM: Yes, I would without doubt. SIPA it's among the trusted providers that we would choose for another production line. We are pleased with the results so far obtained.

Cervecería y Maltería Quilmes is one of the largest beverage com-

panies in the region and has been operating in Argentina since the 19th century. Founded in 1890 by Otto Bemberg, a German immigrant, it is now part of the Argentine landscape and culture. Its blue and white colors are the same as the Argentine flag, and Quilmes is one of the major sponsor of the national football team.

The Company has a staff of 5,278 employees at its Corporate Center, 11 plants, 9 distribution centers and 9 lines of direct sales. It also has a network of 192 independent distributors. Every year, Quilmes sells around 17 million hL of beer and 8 million hL of soft drinks. Quilmes is now part of Anheuser-Busch InBev, the world's largest brewer.

SAN BENEDETTO SET A RECORD IN SPEED WITH SIPA

SIPA has recently sold two of the most efficient and fast palletizers in the market for production lines at one of its famous neighbours, San Benedetto. Acqua Minerale San Benedetto, to give it its full name, is one of Italy's most famous suppliers of bottled mineral water and soft drinks, and was the first Italian company to supply water in PET bottles, some 30 years ago.

It is headquartered in Scorzè, not far from Venice. The two palletizing units are very similar, apart from some minor differences in the accessories. One works on a line handling PET bottles, while the other works with glass bottles. They use the top-feed principle, which means that the bottles come in at around head height, and the height of the pallet falls as each layer is added (moving pallet solution).

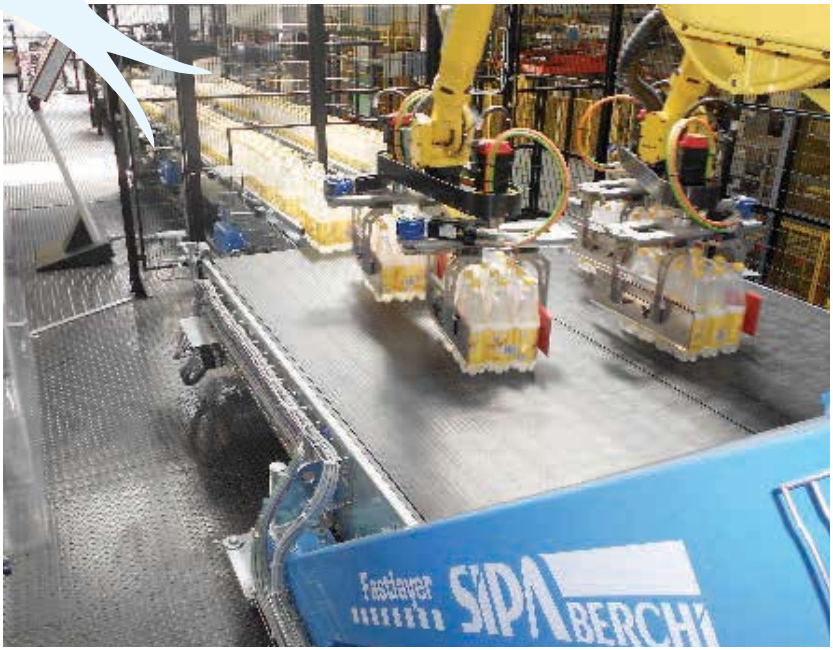
Each layer of bottles is created by a SIPA Fastlayer 2.2R unit, in which the bottles arrive in two lines and are placed in position by two robotic arms. Each robot is equipped with a double gripper with three independent rotation systems that allow the placement of two groups of packages at the same time.

By having grippers that can handle

two sets of packs simultaneously, the machines can reach high production speeds. This contrasts with other systems on the market that need to use a series of at least three or possibly four modules to achieve the same speed. Needless to say, they take up a lot more space.

MINIMAL MANUAL INTERVENTION

The grippers are also equipped with electric adjustment of the aperture, which means that no manual intervention is required in the Fastlayer 2.2R area when there is a change in format of the product to be palletized. This is important, because at San Benedetto, formats change quite frequently. Due to the high speed with which the layers are filled, the palletizers are equipped with systems capable of changing pallets "on the fly." As a result, pallet change takes just a few seconds. Each machine is equipped with high speed system for inserting interleaves between each layer of bottles. This system provides mobile centering of the interleaf as it is being picked up, and automatic changeover of the pallets holding



the interleaves, with discharge of the empty pallet and a buffer system that enables the machine to continue running during pallet changeover. The machines are equipped to work with half-pallets (600 x 800 mm), Europallets (1200 x 800 mm), pallets sized 1300 x 1000 mm, and 48 x 40 inch pallets for the American market.

PALLETIZER ON PET LINE

This is one of the most important production lines in Scorzè, handing drinks in PET bottles, including external brands such as Schweppes and Pepsi. The palletizer is equipped to handle 0.75 l and 1 l PET bottles in 2x2, 3x2 and 4x3 shrink-packs, at rates of up to 56,000 bottles/h. In other words, high speed handling of quite unstable packs holding sensitive carbonated products.
San Benedetto wanted to increase considerably the output of the line, and the palletizing section was one of the critical points in the upgrade. Reaching high speed was a key objective, but the customer also demanded extreme reliability and a high accuracy in the assembly of the pallet.

PALLETIZER ON GLASS LINE

This is probably the fastest glass bottling line in Scorzè. It bottles carbonated and still water in non-returnable bottles packed in wrap-around cartons and returnable bottles in plastic crates. Bottles 0.75 l and 1 liter in size are handled at a rate of 44,000 bottles/h, while 0.25 -and 0.5 l bottles fly through at up to 48,000 bottles/h.
On this line, the palletizer is required to handle different products with the same components, in particular plastic crates and cartons. The various formats it has to work with requires rapid set-up changes without manual intervention by the operator.

A LOT OF BOTTLES

Apart from the plant in Scorzè, San Benedetto has three more plants in Italy producing and filling some 17 million bottles every day. The company has four more plants elsewhere in Europe and is involved in two partnerships in Central America. San Benedetto produces various soft drinks under its own name,

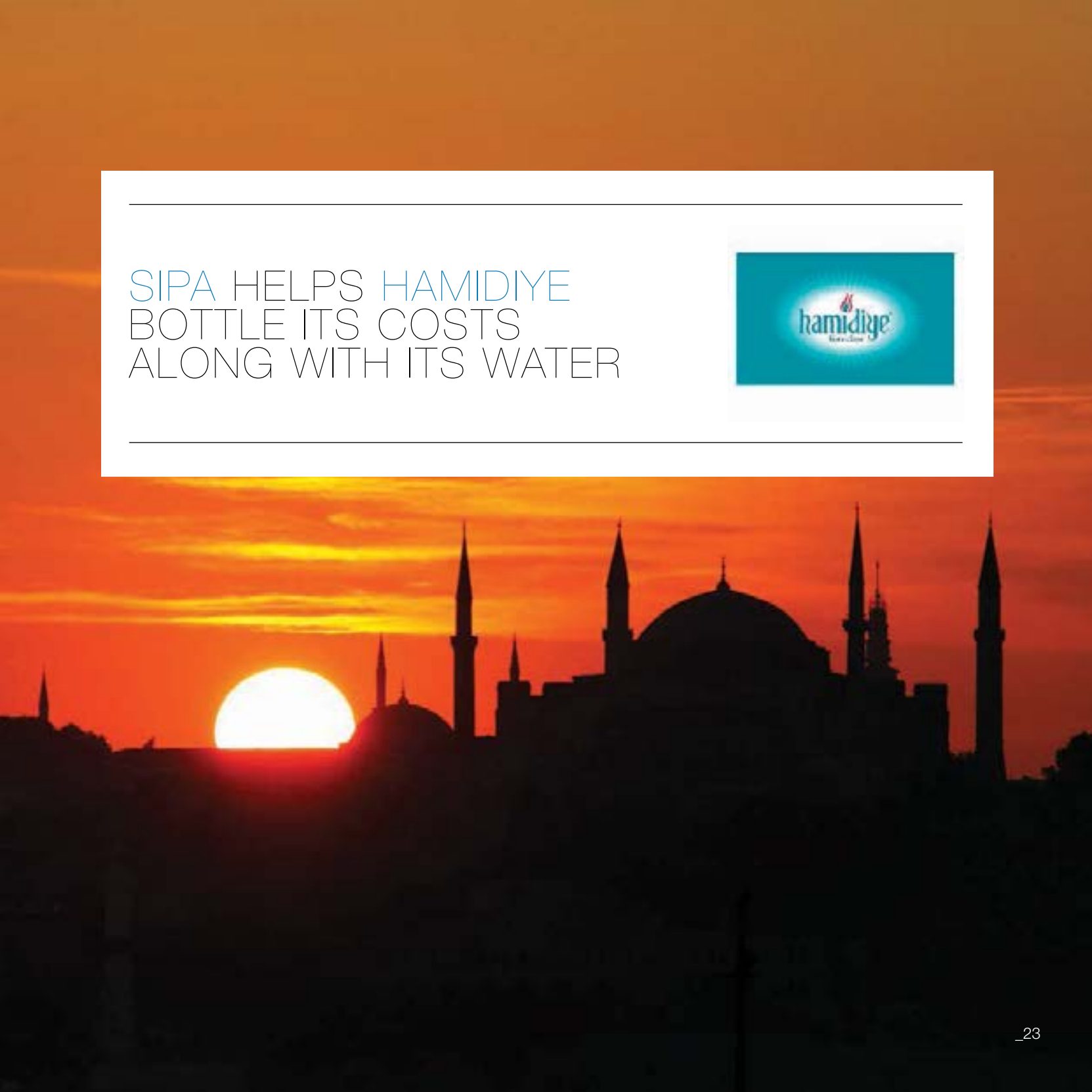

SIPA
Fastlift

and is a licensee of the Schweppes brand. San Benedetto puts a strong emphasis on energy saving and environmental issues.

Over the years, it has made significant investments in research directed at the development of lighter bottles, the use of regenerated PET, and reduction of CO_2 emissions. In 2009, San Benedetto became the first company in the Italian food and beverages sector to implement a voluntary carbon footprint monitoring process.

Earlier this year, it became involved in a government-sponsored project, "New Life for PET," which includes the installation of compactors at selected stores in the Veneto region, where consumers can return used PET bottles. The collected PET is recycled for use in San Benedetto bottles again.

SIPA HELPS HAMIDIYE BOTTLE ITS COSTS ALONG WITH ITS WATER



On the edge of the Belgrade Forest, 15 kilometers north-west of Istanbul, is the spring water bottling plant of Hamidiye Kaynak Suları (Hamidiye Spring Water). Hamidiye water, which rises to the surface almost unaided from 15 wells 200 meters below, picking up minerals on the way, is an integral part of Turkey's history.

Hamidiye Kaynak Suları was established in 1902 by Sultan Abdülhamit II, and the brand is one of Istanbul's oldest and most famous. In partnership with the Istanbul Metropolitan Municipality, the company provides water not only to Istanbul and the surrounding Anatolia region, but it also exports to 27 nations and sells to over 20 international airlines. Hamidiye Kaynak Suları is in fact Turkey's leading exporter of spring water. SIPA helps Hamidiye put its water into PET and glass bottles.

For the last five years, Hamidiye has been operating a complete line supplied by SIPA that begins with a depalletizer and pneumatic conveyor for glass bottles, and an SFR 8 EVO rotary stretch-blow molding unit for PET bottles, and continues with rinsing, filling, capping, labelling, wrapping and palletizing equipment that can be used for both types of bottle.


SIDA
Systen


SIDA

The line handles PET bottles in sizes 0.33, 0.5 and 1.5 l, as well as 0.33 and 1 l glass bottles.

"We are very happy with the line," says Metin İlhan, Factory Manager of Hamidiye Kaynak Suları. "We are running it nearly 350 days a year (24 hours per day) with virtually no problem."

The other 15 days are used for maintenance. Line efficiency is very high –around 96% for 0.5 l bottles for example, and almost as high for 1.5 l bottles.

"Operators can set the machine for a particular production specification, and as long as the product doesn't change, no more adjustments are necessary," says Mr. Metin İlhan, Production Manager of Hamidiye Kaynak Sulari, "The whole line is very well synchronized, from preform feeding through to pallet stretch-wrapping." The area in the Hamidiye plant allocated to the SIPA line is quite limited, but Mr. Metin İlhan says that SIPA has provided an optimum solution and made the best use of the space available for product storage.

SIPA was chosen for the filling line because it provides high performance at a competitive price. Because Hamidiye Kaynak Suları is managed by the Istanbul Metropolitan Municipality, any investment has to be made according to the local public procurement law.

That means price comes first.

"However, scope of supply and quality of the supplies are also checked," says Mr. Metin İlhan.

"When the company makes a purchase, it is always comparing apples to apples".

"SIPA is certainly very price competitive, but we have other important assets, such as our technical service department located in Turkey and staffed with native Turkish speaking technicians.

So whenever help is needed, we are quick to respond" says SIPA's Turkey Area Manager Ahmet Baki Akcal.


THE PENINSULA BANGKOK
THE PENINSULA BANGKOK

SIPA HELPS EUROPEAN FOOD APPEAL TO THAI TASTES

European Food has a taste for SIPA. No, nothing has been lost in translation. This year, Thailand-based food and beverages company European Food, and its preform producing subsidiary Mega Preform, are taking delivery from SIPA of an XFORM 500/128 preform production system, an SFR 20 rotary stretch-blow molding unit for hot-fill bottles, a SFR 6 EVO - also for hot-fill bottles, an SFL 4/4 linear stretch-blow molding unit, and a PPS300/48 preform production system.

SIPA is supplying all these pieces of equipment with the relevant auxiliaries. The new lines are destined for new facilities around Bangkok capable of serving various major locations around Thailand. European Food will use much of the equipment for a distinctly Asian product, green tea. Its "Ichiton" brand is the leader of PET bottled green tea in Thailand. SIPA and European Food know each other well.

The new orders for two-stage technology follow the successful adoption several years ago of SIPA's ECS single-stage injection-stretch-blow molding technology in a dedicated line for production of hot-fill bottles.

For the hot-fill bottle production, the SFRs with heat-set via electrical heaters provide important energy savings. The machines are very clean, since there is no potential for leakages of hot oil. Electrical heating also provides more flexibility in product changes and in setting the temperature profile.

Temperature settings can be adjusted on individual molds, rather than having on thermoregulator controlling all the cavities at once. "With our 'crocodile' mold opening systems, the customer also benefits from a small machine footprint," says SIPA's Gianfranco Perricci, Sales Area Manager for Southern Asia.

"The preform feeder is right by the star-wheel, there is no need for a preform gripper moving in and out of the mold, and machine components suffer less wear than some other machines."

SIPA and European Food have together developed a special preform to provide optimum mechanical performance in the finished bottle. "Thanks to this new shape, the SIPA two-stage machines can run at up to 30,000 bottles per hour," continues Perricci. The preforms incorporate SIPA's new Hotlight 28 ultra-lightweight short neck, which represents a true revolution in hot-fill thread finishes. XFORM, SIPA's latest generation of preform injection equipment, gives outstanding reliability, the highest flexibility, the lowest maintenance requirements, excellent preform quality, the lowest system energy costs among all com-

From left: Mr. Romeo Grava, Mr. Somchai Wachakorn, Mr. Cezar Vasandan, Mr. Somsak Wachakorn, Mr. Nathapon Wachakorn, Mr. Weera Eiamrattanawong, Mr. Wichai Kabda

parable systems on the market, and the lowest total transformation costs. "The key reason why European Food once again chose SIPA technology was because of the savings in energy and PET resin that it provides, as well as the good experience it has had with us in the past," says Romeo Grava, Service Area Manager for Southern Asia. "The customer rates us highly, not only in terms of our efficiency but also for our strong local presence for after-sales service." SIPA has a highly efficient assistance center in Bangkok, serving Thailand and other parts of South-East Asia. SIPA's cooperation with European Food does not stop there either. The two companies are now working together on new projects that will bring further innovations to the beverage industry. "Of course, what remains as a cornerstone of all our projects is that we provide the best solution in terms of preform and bottle production: SIPA single-stage technology for dedicate hot-fill product, and two-stage technology for flexibility on size and product," confirms Mr Weera Eiamrattanawong, SIPA Thailand Branch Managing Director.

EURO

European Food was founded in Samuthprakarn, Thailand in 1984, with a registered capital of five million Baht. In 1995, it moved to its current location in Prachinburi, and became a public company. Today, its registered capital is 1.2 billion Baht, which is close to 30 million euro. Over an area of more than one million square meters, it makes not only green tea, but also wafers, candies, jellies, cakes, and biscuits, and it is the country's leading producer of ready-to-eat bakery products, with an 80% market share.

BIG WATER BOTTLES: SIPA MAKES A SPLASH IN JAPANESE (HOME DELIVERY) MARKET

Two Japanese companies specializing in home and office delivery of large water bottles have recently added to their capacity with SIPA SFL 2/2 twin-cavity linear stretch-blow moulding machines.

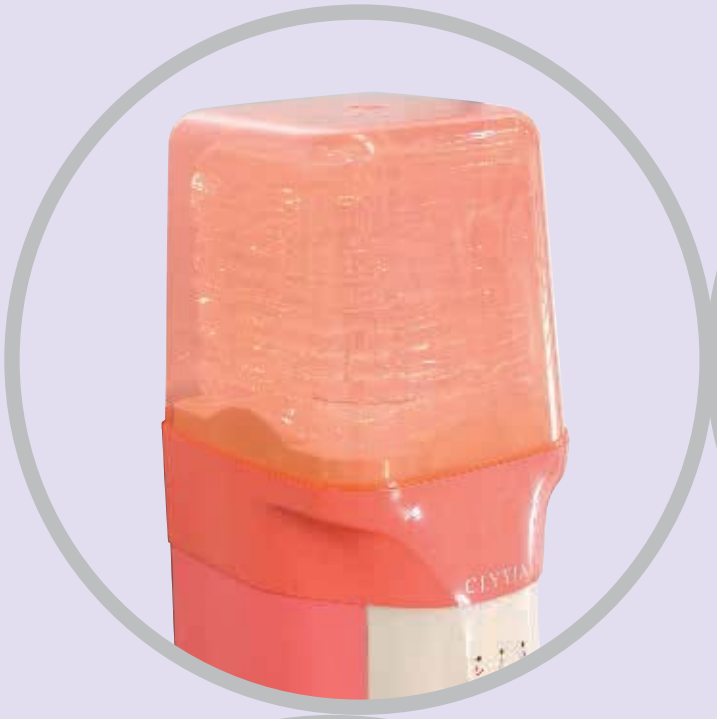
Cosmo Water and Water Direct both took delivery of their new lines through SIPA's partner in Japan, Itochu Machine-Technos Corporation, a specialist equipment importing and engineering company.

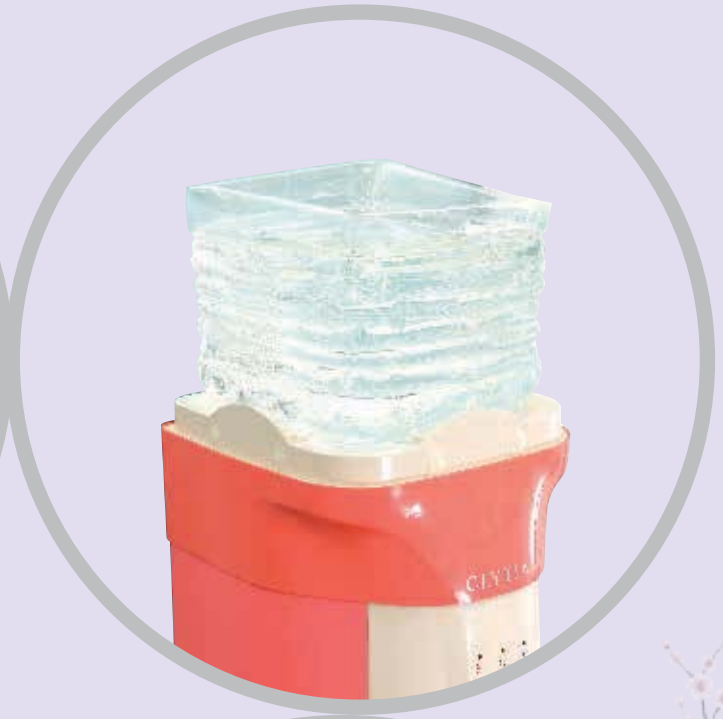
SIPA collaborated in fine tuning the designs of the 12 l bottles, originated by Cosmo Water, to enable them to be produced more efficiently on the new machines. Some minor modifications were also made to the ovens on the machines themselves.

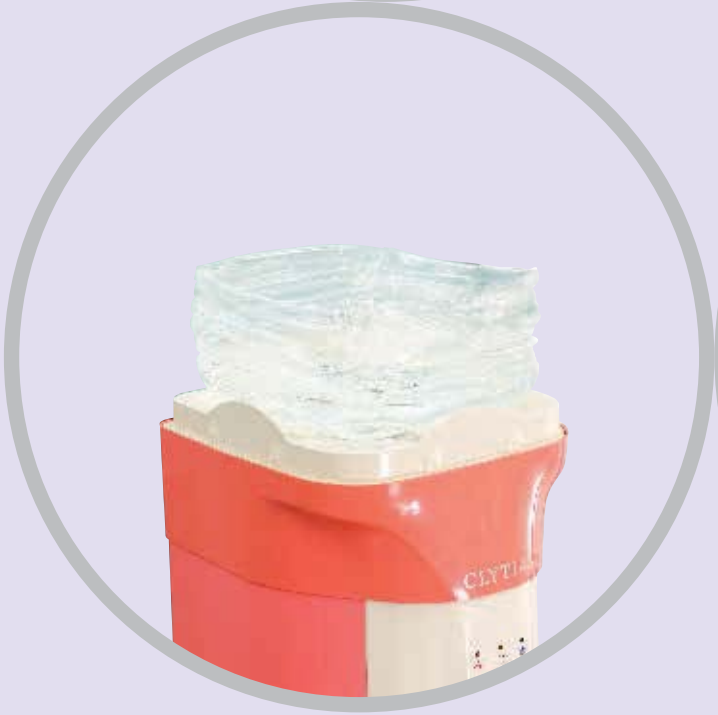
What makes the bottles a little bit different is that they are collapsible. Normally with large water bottles – often referred to as water cooler bottles (even though the bottle sits on top of a server that does not necessarily cool the water) – when the tap underneath is turned on, water comes out and then a big bubble of air goes in to fill the space vacated. It makes a satisfying 'gloop' sound as it does so, but it may also carry germs into the headspace.

With the new bottles, a one-way valve stops the air getting in, and as the bottle is drained, it collapses in on itself. No satisfying 'gloop' sound, but no germs either.

Itochu and SIPA have engineered the bottles – different designs for each company – so that they collapse into compact fat discs that take up as little space as possible. This is important because the bottles are one-way types, unlike more







conventional ones that are used many times over.

Instead, the compacted bottles go straight into the recycling stream, and being small is important for storage and transport.

The bottles have been designed with thin walls and special ribbing to make them collapse in a predictable fashion. The bottles weigh just 130 g, and Water Direct will soon produce a bottle that is even lighter than that. By contrast, a five-gallon multi-trip bottle weighs over 650 g.

Using the SIPA SFL 2/2 stretch-blow molding equipment, Cosmo Water and Water Direct can both be sure of obtaining high productivity (700 containers per cavity per hour, which is half as much again as could be obtained from a rival machine made more locally), consistently high bottle quality, a stable blowing process and ease of operation. The equipment for Cosmo Water, which went into commercial production in April, is connected directly to a rinsing/filling/capping block supplied by an Italian company. Mr.Arakawa, technical director of Cosmo Water says the high productivity of the line has proved very satisfactory. "We are getting steady production of good bottles," he says.

He also appreciates the compact and sophisticated design of the SFL 2/2, as well as the speed with which Itochu installed and commissioned the line. Water Direct's new line was commissioned in June, connected to downstream equipment from a local supplier.

There are other advantages too, as SIPA's Tanigaki points out.

"The layout of the complete line is simpler, thanks to the high output of the SFL 2/2 compared to rival stretch-blow molding equipment: one unit can fulfill the input requirement of the filling equipment, so there is no need to have a system that merges the output from two slower machines.

"In addition, bottles made on our system are more transparent. With light, thin-walled bottles with square shapes that Cosmo Water and Water Direct are producing, you need very good process control to stop crystallization occurring in the corners, which would show up as white areas. On top of this, the linear configuration of the SFL equipment provides great flexibility in the layout of the ovens, and that gives a much wider processing window than is possible with other suppliers' equipment."



FOCUS ON:
PREFORM DESIGN REVOLUTION



SIPA STARTS A PREFORM DESIGN REVOLUTION

New technologies from SIPA will make massive differences to the amount of PET it takes to make a bottle. Lightweighting is good for your pocket, and good for the environment too. Less material consumed, less energy used, less waste generated. In the end, that makes for a more sustainable production, and a more sustainable society.

Until today, an ultra lightweight 500 ml mineral water bottle weighed above 8 grams. Trying to make it any lighter, without encountering problems in injection molding the preform or stretch-blow molding the bottle itself, or suffering a significant fall-off in properties, was a major challenge.

THE CHALLENGE

SIPA has accepted the challenge. It is now in a position to offer its customers a new solution that will enable them to improve the sustainability of their packaging.

This is a solution that can be applied to SIPA injection molds as well to non-SIPA molds – new ones and existing ones – a clear demonstration of the importance attached by SIPA to its customers' sustainable development.

To make a lightweight PET bottle, you need to make its walls thinner, and to make the bottle walls thinner, you need to either make the preform walls thinner or make the preform shorter. Either way, this is where most people run into a brick wall. Major issues with filling the preform cavity occur when the ratio of preform length to wall thickness (L/t) is much greater than 50. Normally, the only way to get around this hurdle is to increase injection pressure. That most likely means a higher clamp force is required to prevent leakage, and that raises the risk of premature mold wear and increased maintenance requirement. SIPA aims for around 8 million cycles between refurbishments on its molds, which is a lot higher than the industry norm of 5 million cycles, and it intends to keep that record.

CUTTING THE WEIGHT FURTHER

So to cut weight further, the most obvious option it to reduce the length of the preform.

But that introduces issues in the stretch-blow process: reheating is

more problematic, more energy is needed, whitening due to crystallization in the base of the bottle becomes more likely. It is difficult to blow good bottles when the total stretch ratio is higher than 15.
So SIPA has gone back to the drawing board, and the first result is a new injection mold technology called X-Mould.
This new technology enables processors to fill thinner wall sections, so designers can create preforms that are longer or wider, and with more suitable stretch ratios.
For example, it is now possible to design a 500 ml bottle preform weighing as little as 7.2 g that presents no production issues, either in injection or in stretch-blow with existing legacy equipment.

SOMETHING REVOLUTIONARY NEW

In fact, with the X-Mould technology, it is possible to create preforms with L/t ratios of close to 60, with a similar injection pressure of 45 L/t ratio.
This means that the stretch ratio on the 7.2 g bottle is between 10.5 and 13.6, depending on the design of the final bottle.
Plus, the performance of the bottle, on the filling line and in use, meets all relevant requirements.
With its new technology and preform designs, SIPA has been able to balance all critical requirements in preform injection and stretch-blowing. It has made possible the production of preforms that are extremely light, and which can be molded and blown highly cost-effectively – all while maintaining the high mechanical performance required in today's PET bottles.
The new preform designs save on material and energy, so carbon footprints along the production and supply chain are smaller than ever.

AVALABLE FOR MOST EXISTING PERFORM SYSTEMS

Because it wants these advances to be used by as many of its customers as possible, SIPA has ensured that injection molding of the new preform designs can be carried out, not only on its latest XFORM equipment, but also on most existing preform injection molding machines, regardless of their brand. Similarly, the preforms can be blown on SIPA linear and rotary stretch-blow lines, as well as lines from other suppliers. "SIPA has the capability to provide solutions that range from the PET pellet to pallets of filled and packaged containers," says Laurent Sigler, Innovation Director.

"With X-Mould technology, what you get is more pallets for less pellets." In the following article, we introduce a true revolution in preform design and production.

With breakthrough technology, SIPA is about to redefine the boundaries of PET packaging completely.

A NEW ERA IN PET PREFORM PRODUCTION BEGINS WITH SIPA'S XTREME

XTREME

Every technology has its limits. Injection molding is capable of doing almost incredible things, but when it comes to PET preforms, the signs are that its possibilities have almost been exhausted.

There are limits to how thin you can make a preform wall before it becomes impossible – or at least economically unfeasible – to injection mold it. Welcome to the XTREME world of PET preform injection-compression molding.

As SIPA will demonstrate with its all-new XTREME machine, it is possible to produce preforms that are up to 10% lighter than even the lightest injection molded preform – but without losing any key properties. More weight can be shaved off the body and base of the preform than ever before. The new injection-compression technology takes the shackles off developers' freedom to create new and unique designs. Whereas just a short while ago, a preform with a length-to-wall thickness ratio (L/t) of much more than 45 was virtually unthinkable, SIPA's XTREME technology makes an L/t ratio of 80 a reality. This is little short of amazing.

Injection-compression molding overcomes the issue of filling molds with very thin walls, by having the

molds slightly open when injection starts, and then closing them as dosing finishes. This means lower injection pressure can be used, lower clamp force is needed (which has the additional benefit of extending mold life), and there is less stress on the melt-which means acetaldehyde (AA) levels are reduced, and resin intrinsic viscosity (IV) falls less.

XTREME IS THE ANSWER

With XTREME, it is now possible to produce preforms with bases thinner than ever before. In a conventional preform, the thickness of the base has more to do with enabling the mold cavity to fill than it has with bottle performance, but XTREME injection-compression removes that constraint. As a result, it is now possible to 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.

The XTREME is also a high productivity system. The mold opening and closing is working on a cam, so cycle time is just a fraction of what it is on an injection molding machine. On top of all that, the equipment uses lower tempera-

tures and 10% less energy than an injection molding system with the same output – and it fits into much less space. A 72-cavity XTREME machine takes up just 34.5 m^2, which is over 30m^2 less than SIPA's own XFORM. The XFORM is one of the most compact preform injection molding machines on the market.

FLEXIBLE, BUT NOT ONLY

The XTREME system is very simple to operate, it uses only pneumatic valves, and the mechanical layout has numerous similarities with rotary stretch-blow molding machines. No hydraulics are used, which is an extra bonus in terms of cleanliness. Pneumatic operation has a lower sensitivity to very short power interruptions and the overall quality of the electrical supply – a feature especially important for processors operating in developing countries. The new system will also be very attractive to companies running a wide range of products, since it is very easy to change the lightweight mold blocks. In fact, the time it takes to change all the mold blocks, or stacks, on a 72-cavity XTREME machine is around 45 minutes, or one quarter of the time it takes to change a 72-cavity

mold on a conventional injection molding machine. The XTREME is more versatile, product changeover times are significantly reduced, and preform quality is higher. It is even possible to produce two different types of preform at the same time. Furthermore, 100% preform quality control is possible with an automatic opto-electronic system, which makes XTREME ideal for "lights out" operations that run with minimal manual intervention.

A REVOLUTIONARY ARCHITECTURE

The molds are mounted in blocks of three on a high-speed carousel fed by an extruder. The extruder rotates continuously, delivering melt to the dosing devices mounted directly under the preform molds, which are mounted vertically. There is no hot runner system in the conventional sense. The pressure involved in the molding process is a fraction of the one used in injection molding, which has a significant effect on stress levels in the preform. This improves mechanical properties, as well as aesthetics. The preform compression wheel continues to turn, and just before it completes a full circle, the molds open and the finished preforms are removed by a transfer star onto a preform cooler, where they remain until they are cool enough to be put into storage. Of course, all of the significant advantages of the XTREME system would count for nothing if the system were not cost competitive. SIPA reckons that in use, the XTREME, with the savings it enables in weight, in energy consumption, in resin and additives, in costs of operation and maintenance, and in overall production efficiency, will have a very competitive total cost of ownership, TCO. And this is just the beginning. XTREME provides a compelling set of advantages today, when it is being presented as a commercial proposition for the first time. But this is just the beginning of a new era that is bound to see those advantages increase as the technology is developed further. All in all, XTREMELY interesting.

Welcome to the new era of lightweighting.


Genius


63!



TECHNICAL WINDOW
ON SIPA PRODUCT PORTFOLIO: LATEST DEVELOPMENT



HIGH PERFORMANCE AND FLEXIBILITY COME TOGETHER IN SIPA'S NEW FILLER PLATFORM

SIPA specialists in filling technology have completely revolutionized the company's range of volumetric fillers. Flextronic is the new name for our highly innovative, extremely flexible, modular platform. It elevates SIPA technology to the highest level available on the market today. New filling valves in EVO versions have been developed at the same time to be perfectly integrated and interchangeable on the new platform. By taking full advantage of the modular design of every element in the platform, and by combining the most suitable filling valves, it is possible to design solutions best adapted to the most diverse requirements in the bottling world. One of the key guidelines in designing the Flextronic platform was the ability to fill multiple products on the same line.

CARBONATED, STILL AND HOT FILL ON THE SAME LINE

At Drinktec, SIPA is showing the Flextronic C, one of the most complete and powerful configurations in the new range. The Flextronic C makes it possible to handle carbonated, still and hot-fill products, with or without pulp, all on the same line. It is therefore an excellent solution for water, soft drinks and juices. The flexibility of the Flextronic C applies not only to the type of product it can be used for, but also the type of containers it can handle. It is very simple, for example, to switch from one neck size to another. The filler at Drinktec will be shown in its "Xfill" configuration. This has no onboard product tank, and when the unit is used for carbonated drinks, the mixing unit tank is used as a buffer tank. The integration of the mixing unit with the filler makes it possible to obtain a high quality, stable finished product, with a consequent improvement across the entire filling process. The combination of the new valve and the Xfill configuration offers a whole series of advantages for the user. For example, the extreme operational flexibility it provides minimizes product loss and downtime at flavour change.

ELECTRONIC MANAGEMENT OF THE FILLING PROCESS

In addition, a new concept incorporated into the entire filling process electronic management yields a global reduction in power

consumption. Consumption of carbon dioxide when filling with carbonated drinks is also reduced, as are product losses from the snift circuit. And these are just two of numerous plus points. "We decided to look at our existing range of fillers in a new light to see if we could achieve even higher standards of quality and efficiency while retaining the simplicity and sterilizability of the original designs," says Federico Zannier, Filling Line Sales Manager. "What we were aiming for was a new generation of fillers that would stand out with their versatility, high performance, ease of use and maintenance, in a complete system characterised by extreme cleanliness." SIPA has incorporated numerous innovative technical solutions into the Flextronic to achieve these goals. It has made use of the latest updates of the best mechanical, pneumatic and electronic components available on the market today.

CLEAN, SAFE AND WITH FASTER MAINTENANCE

"With this platform we are introducing several new developments while retaining key advantages of the previous generation of fillers," says Renato Le Brun, R&D Manager, Filling Division. "The valves are made of 316L stainless steel, and they are very solid and compact. They have been designed with a clear separation between the pneumatic components and the parts in contact with the product, in order to avoid any problems with contamination. And they are made up of a series of elements that can be separated without disassembling the entire valve, so maintenance is simpler and faster." The Flextronic C differs in several ways from its predecessor. The improved stability of the product during filling is particularly important for carbonated drinks. In addition, the new valve has larger channels for the passage of carbon dioxide, for improved operation with liquids containing pulp and fruit. The valve has been designed for "dry" pressurization via a separate channel for faster and steady decompression. This solution makes the Flextronic C ideal for incorporation into SIPA's Sincro-Bloc blowing/filling monobloc: this not only eliminates the need for bottle rinsing, but also enables improved control over the entire filling process and hence an overall improvement in filling performance.

SIPA IS AT THE END OF THE LINE TOO – WITH THE DIGIPAC PALLET WRAPPER

SIPA's new generation of Digipac pallet stretch-wrapping equipment is designed to provide a compact, flexible, and cost-efficient solution on bottle packaging lines. Two different systems compose the range: rotating pallet (Orbiter) and rotating arm and rotating arm (Cinetic). Digipac is the latest manifestation of SIPA's ability to provide bottle production and filling lines using equipment developed and built in-house, embodying outstanding technical expertise, many years of hands-on market experience, and innovative talent that is all but unmatched.

INTEGRATION WITH PALLETIZERS

By producing the pallet stretch-wrapping machine itself, SIPA has been able to obtain the best integration possible with its traditional and robotic palletizers, creating what can almost be considered a palletizing island.

EASY TO INSTALL

Digipac range has been engineered by a team of SIPA development specialists who understand the demands and concerns of the food and beverage packaging industry inside out. They have created equipment that can be easily

installed on lines running with conventional and robotized palletizers.

SINGLE- AND TWIN-ARM ROTATION SYSTEM IS GROUND-MOUNTED

On Cinetic, film unwinding arms mounted on a space-saving rotating platform anchored to the ground turn around the fixed pallet. It is available in two versions, with one or two rotating arms, and is capable of wrapping as many as 120 pallets per hour. Cinetic complements SIPA's Orbiter stretch-wrapping units, which rotate the pallet, and are capable of handling up to 50 pallets per hour.

ROBUST AND STABLE

What makes the Cinetic and the Cinetic Twin special is SIPA's patented "Matrix" system, in which the film unwinding arms are mounted, not on an unwieldy and costly overhead structure, but on a ground-based rotating platform. Matrix is much more robust and stable, providing extra performance at no extra cost. This is due to the rigid and well-balanced construction of the arms, and also to the fact that the rotating

system has a low center of gravity.

90 DEGREES EXIT PALLETS MANAGEMENT

Another advantage of the new SIPA solution is its ability to manage the pallet exit at 90 degrees to the line without the need for a turntable. This helps make the Cinetic unit very compact. In order to receive and sort the pallets at 90 degrees in a straight or multi-channel lay-out, Matrix is equipped with Driver , a simple solution that requires the application of a small pneumatic device that does not change the orientation of the load.

TOP SHEET POSITIONING IN NO TIME

Positioning of an impermeable top sheet to protect the product against dust and water can be carried out by the optional Fast-cover, another new device that operates from above as the pallet is being wrapped, with virtually no effect on the productivity of Cinetic and Cinetic Twin. For products with special dustproofing requirements, or to achieve a double pallet cover, another innovation, Pre-cover, can intervene during the transit of the pallet on its way to the wrapping unit.

PRE-STRETCH TO OVER 300%

Another device, St-unit, pre-stretches the film by as much as 320%, depending on the speed of the operation and the needs of the product being wrapped. St-unit is fitted with large, 145-mm diameter rollers. A direct mechanical link ensures exact performance and optimal film consumption, under all conditions of use, preventing errors and uneven regulation. Result: higher efficiency, less film consumption, lower costs and a reduced environmental impact.

AUTOMATIC FILM CUTTING AND WELDING

Cutting and welding of the end of the film once the pallet is wrapped is performed by Cs-unit. This has a patented system that ensures a complete weld without damaging the wrapped product, by keeping the film under tension while it is being welded and cut.

AT-A-GLANCE ADVANTAGES OF CINETIC

With its various new and innovative solutions pre-incorporated, Cinetic has been engineered to ensure:

- **GREAT STABILITY** the rotating platform is anchored to the ground;
- **SPACE SAVING** high performance in low space that can be delivered pre-assembled to the customer;
- **ADJUSTABILITY** driver platform adjustable +/-90 deg for a non-linear or multi-channel lay-out;
- **FLEXIBILITY** pallet dimensions up to 2700 mm
- **BASE PALLET WRAPPING** no extra cost involved for elevators;
- **TOP ERGONOMICS** centralized operator position, integrated electrical cabinet;
- **COMPLETE COVERAGE** optional Fast-cover puts the top film in place without taking extra time;
- **READY TO GO** quick and easy installation (lower costs for dismantling, delivery, re-assembly, and testing at the user);
- **PLUG AND PLAY** immediate start-up.

PETWORK: CONCEPT, DESIGN, ENGINEERING. WHAT 'S NEW IN PACKAGING WORLD

SIPA MAKES A BEELINE FOR THE HONEY POT

We all like honey. We' d probably eat more of it if it weren't so runny and sticky. Whether you spoon it out of the jar, or take a knife to it, more honey tends to end up on your fingers than on your food.

No surprise then that honey is increasingly found in squeezable plastic jars rather than rigid glass ones. You can control almost exactly the amount of honey that comes out, and it all goes where you want it to. No more sticky fingers, much less washing up.


ONEYHONE
ONEYHONE

SIPA has created some very practical and attractive designs for honey jars made in PET. The jars have "top down" designs, with the aperture on the bottom, which also means that you have the best chance of getting all the honey out of the jar, without all the trouble of scraping it off the bottom.

PET honey jars have big advantages for producers and sellers too, of course. They are much lighter than glass, so less costly to transport and handle, they are virtually unbreakable, and the possibilities for creating new designs that jump out from the shop shelf are enormous.

With PET in SIPA's hands, there are few limits on what squeezable honey jars can look like. Versions in the shape of a bee are particularly apt. After all, they do all the hard work, so it's only right that they should gain some recognition. So squeeze the bee and enjoy!

SIPA SENSES SUCCESS IN HOT-FILL SYSTEMS FOR TOMATO SAUCE

SIPA is always looking for new opportunities for its customers to exploit with PET containers. The humble tomato could well provide more fruit for success (the tomato is a fruit, after all). As we indicated in the last issue of SIPA Magazine, more food companies want to supply their tomato ketchup products in PET bottles. Now, SIPA thinks a similar trend could be put underway in tomato sauce – or, as Italians call it, passata.

We are talking here about an Italian staple. Where would pizza be without tomato sauce, not forgetting numerous pasta dishes? Per capita consumption of tomato sauce in Italy is more than twice as much as in any other country in the world, and the total amount consumed is second only to that of the USA.

Of course, many Italians still make

their own sauce from fresh tomatoes, and it really is not that difficult to make, since the product is nothing more than tomatoes and a little salt. But as people find themselves with less time and inclination, increasing number of people are getting it from a bottle.

Virtually all of the tomato sauce bought in the stores is packaged in glass, but there are few things more messy to be found in a supermarket (or a kitchen) than a broken bottle of tomato sauce lying on the floor. Glass breaks. PET doesn't.

PET has a lot more going for it in this particular market segment. PET bottles are of course lighter than glass ones, but they are just as clear – if not even clearer, since wall thickness is thinner – and this is particularly important for tomato sauce, where discerning customers want to see the color of the content as a sign of its quality.

In addition, the primary material price of PET is lower than glass, and in an increasingly competitive market, this can make an important difference to the sauce supplier.

This is particularly true in Italy, where more imported brands are appearing on the shelves, and consumers have a keen eye on the price tag. The advantages continue: it is possible to hot-fill tomato sauce in PET bottles at temperatures lower than those used for glass bottles (around 85°C – 87°C rather than 90°C or higher), because PET has a higher specific heat capacity and the bottle walls are thinner. Furthermore, there may be no need for a pasteurization or sterilization tunnel afterwards. Use of oxygen scavenger additives in the PET makes it possible to produce PET tomato sauce bottles that prevent oxygen getting into the product, discoloring it, and altering its taste.

SIPA has carried out a significant amount of research to ensure the feasibility of PET packaging for tomato sauce, which is quite a sensitive product that is not difficult to spoil under the wrong processing and storage conditions. Different types of bottles were hot filled, stored under controlled conditions at different temperatures, and a wide range of organoleptic tests such as appearance, acidity, consistency, oxygen levels, micro-organism content, and color were carried out. Also some elaborate tasting tests at an independent laboratory were conducted. From the results obtained SIPA concluded that it should be possible to produce tomato sauce hot-filled in PET bottles with a shelf life of at least 12 months. This is more than sufficient for commercial purposes. One major Italian food company has recently started offering one of its tomato sauces in PET barrier bottles, marketing it as a product that is "simple and modern," and with a shelf life of 18 months. SIPA believes more of its competitors will follow. It has already developed some attractive PET bottle designs that show the product in its best light and which will be easy to handle too.

You might say that SIPA sees a PET future in the passata.


SIPA
TOMATO SAUCE
Sipa
TOMATO
SIPA
TOMATO SAUCE

MASSIVE MACHINE OUTPUT INCREASES WITH MICRO-PITCH PREFORM MOLDS

Massive machine output in new SIPA PET preform molds with tighter cavity layouts make it possible to increase productivity by 33% without modifications on 300-tonne injection molding machines. Micropitch molds incorporate 96 cavities into the space normally required for 72 cavities.

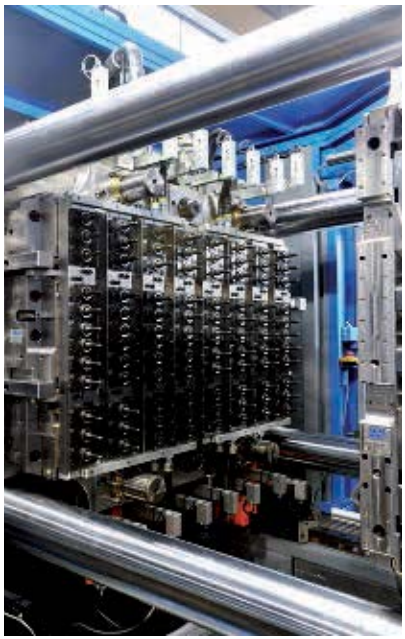
Instead of six columns of 12 cavities, there are eight columns, but the total width of the mold is the same. Moving the cavities closer together involves no compromise in processing performance however, so cycle times are, for example, exactly the same as before.

Until now, if a company wanted to use a 96-cavity PET preform mold, they would need to have, or buy, a 400-tonne injection molding machine to run it on.

A 300-tonne machine could take a mold with no more than 72 cavities. Now, preform processors can make major savings by running the SIPA 96-cavity micropitch mold on a 300-tonne unit.

With the new cavity layout, SIPA has managed to achieve excellent hot runner balancing and an optimal clamping force distribution at the same time.

Result: the best preform quality and a long mold life. SIPA hot runners used with the new micro-



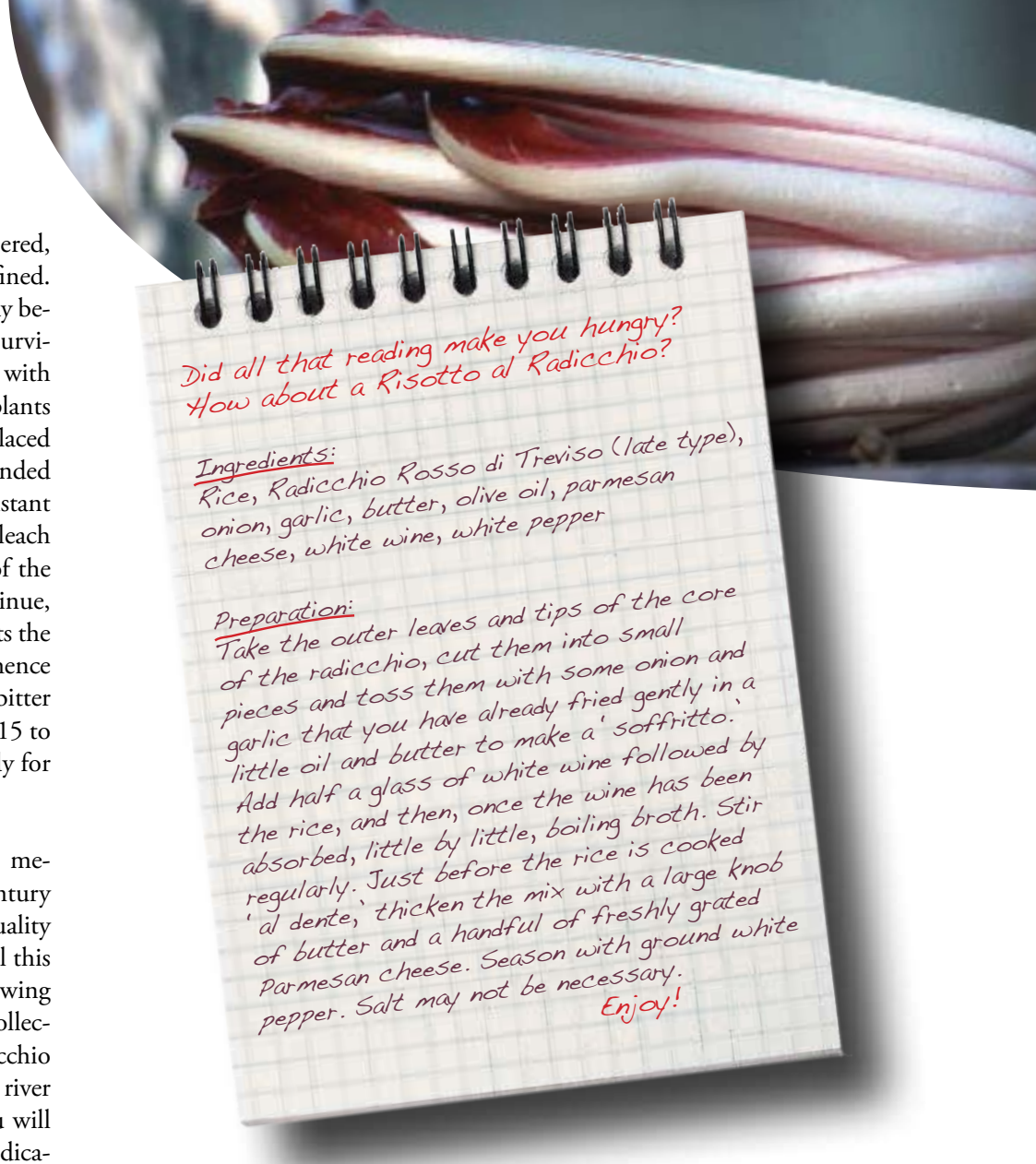
pitch molds provide rheologically balanced filling of the cavities. Acetaldehyde levels are kept extremely low, dead spots are minimized, and so is pressure drop along the flow paths. SIPA cold halves incorporate highly efficient cooling and precise stack alignment.

Just as before, they are characterized by long life and easy maintenance. The micropitch molds will fit on SIPA's latest XFORM 300 high performance injection molding machines, codeveloped with Athena Automation, when they are launched next year. They will also run on existing 300-tonne machines from rival suppliers.

THE RED RADICCHIO OF TREVISO

Today we are going to talk about Red Radicchio of Treviso. It is a variety of chicory characterized by deep dark red leaves with white streaks, a crisp texture, and a distinctive delicately bitter taste. It is the first vegetable to gain Protected Geographical Identification (P.G.I.) status in Europe, and can only be grown in 24 municipalities in the provinces of Treviso, Venice and Padua in Italy.

Radicchio Rosso di Treviso comes in two variants: early, "precoce" and late, "tardivo". The less-valued early-harvested type has wider leaves and a more bitter taste. It is grown in open fields, and at the end of the summer the heads are tied up in order to force their bleaching and maturation. They are then collected and sorted before being sent for sale. The late-harvested variety is much more highly prized. Its le-



aves are longer, elegantly tapered, and look altogether more refined. Collection from open fields may begin only after the plants have survived two frosts. Once collected, with their roots still attached, the plants are then tied in bunches and placed in tanks with the root surrounded by ground water at a constant temperature of 12-15°C to bleach them. The mild temperature of the water allows growth to continue, but the absence of light prevents the production of chlorophyll: hence the typical color and mildly bitter notes. This stage can last from 15 to 20 weeks, after which it is ready for its final grooming.

THE RADICCHIO ROUTE

Venetian Villas, natural oases, medieval castles, sixteenth-century mills, the hospitality and the quality of the products of the land - all this and more awaits travellers following three charming itineraries collectively known as The Radicchio Route. If you follow the Sile river from Treviso to its source, you will immerse yourself in a park dedicated to the largest river rising from a spring in Europe. Not to be missed here is the Oasis of Cervara in Quinto di Treviso.

You can then continue towards Castelfranco Veneto, a town dominated by a beautiful medieval castle and famous as the birthplace of the painter Giorgione. Nearby, you will also find Villa Emo in Fanzolo di Vedelago, and Villa Barbaro in Maser. Further south, just as you enter the territory of Padua, you can admire the splendid Villa Cornaro in Piombino Dese. All the dwellings were built by Andrea Palladio and are part of a Unesco World Heritage site.

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16-23 OCT.	**K2013** DUESSELDORF, GERMANY	*www.k-online.de*
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