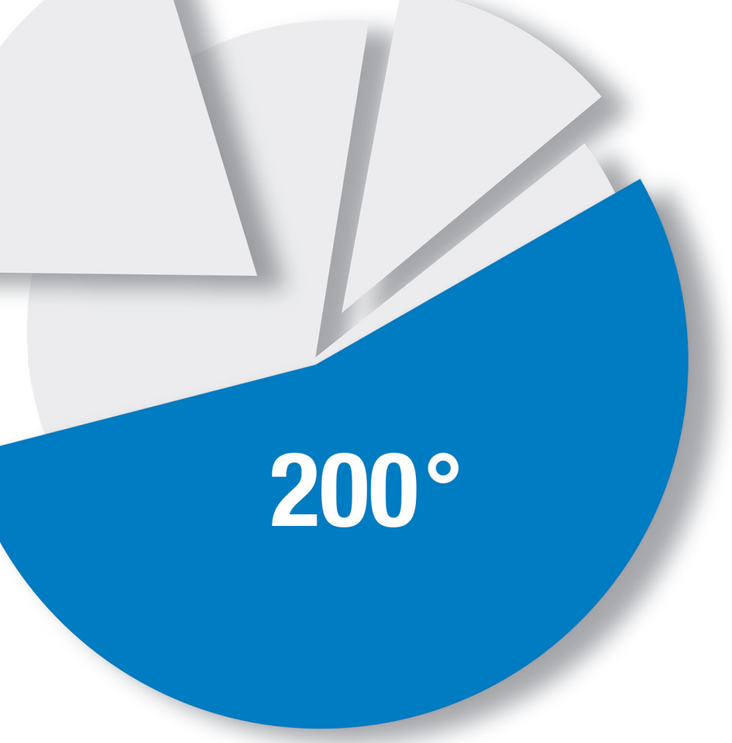
FOCUS ON
WHAT'S ON AT DRINKTEC 2017

PET PACKAGING NEWS OF THE WORLD

SIPAMAGAZINE



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SIPAMAGAZINE
PET PACKAGING NEWS OF THE WORLD

SUMMARY

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EDITORIAL

THE WORLD IS CHANGING. WE MUST CHANGE WITH IT

I like to think of SIPA as a trend setter. We have for example taken the lead in important areas of PET preform and bottle development, with novel technologies for weight saving and for energy conservation, and we often collaborate closely with our customers on bringing cutting-edge container designs to market. But the trends that SIPA sets in the realm PET containers are often a response to broader trends that are shaping the much bigger world outside.

I believe that today, there are five global trends that stand out from others, and which SIPA needs to keep a close eye on to stay in its leading position in the market – and to serve our customers and consumers everywhere with innovative products that help to make all our lives just a little bit better.

In no particular order, these trends cover: well-being; life expectancy; the circular economy; the experience economy; and – possibly underlying all of the above – sustainability.

Well-being. I smile when I see labels on products that say "chemical free." We are all chemicals! But there is such as thing as the over-use of chemicals, particularly in the production and preservation of foods. In response to the call for, let us call them "true foods," SIPA developed many hot-fill solutions to stabilize and lengthen the shelf life of food and beverage products.. It is now possible for SIPA filling lines for carbonated soft drinks (CSD) to operate without the need for any form of artificial preservatives.

Life expectancy. The world's population is growing at a staggering rate. The reason is not so much because more children are being born, but because adults are living longer. We have to take care of our elders and make their lives easier – after all, we all hope to be elders too one day! SIPA plays its small part here too: for example by helping its customers design containers that are more "consumer friendly" easier to handle and to open and close.

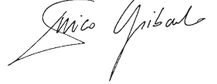
The circular economy. The planet has limited resources, so we need to make the best use of them to let also next generation enjoy of its beauty. Use and reuse, that is. SIPA has taken an important step forward together with recycling technology specialist Erema in the development of XTREME Renew, which makes the recycling of post-consumer PET packaging a much more viable option than it has been until now. On a different note, SIPA has devised technologies that extend the lifetimes of equipment already in the field. We have for example developed preform injection molding systems that accept legacy molds, so molds can be used for longer; and we make molds that fit not only onto our machines but also onto machines of our rivals.

The experience economy. Smart factories will make possible the end of mass production, but a new way of thinking is needed to ensure this intelligence is made to serve the needs of the customer in the best possible way. We already talk about tailor-made offerings, but in the future, this concept will be completely transformed. We are moving into an era where we can create experiences customized for every individual. We will soon be dealing with "transformations," where the economic offering of a company is not a product or a service, but the customer that is changed as a result of what the company does. This may sound strange, but the customer becomes the product.

Finally, to the word that no company can leave out of its mission statement: **sustainability.** It has become something of a cliché, but that should not diminish its importance. If we cannot find a way to live in a more sustainable way… well, we cannot live. SIPA is doing its part with technologies that help our customers use less materials and/or use recycled materials, and to run their operations more energy efficiently. So I think we are doing our part. Of course, we can do more – and we shall do more to preserve this fragile planet for the future generations.

I hope you will too.

Enrico Gribaudo
General Manager



AROUND THE GLOBE:
NEWS FROM THE DIFFERENT CONTINENTS

FIRST SIPA XTREME PLATFORM FOR LIGHTWEIGHT PET PREFORMS IS COMPLETED IN SPECIAL CEREMONY AT SUNTORY

The first XTREME system for production of injection-compression molded PET preforms was officially put into operation at a special Preform Production Facilities Completion Ceremony at the Haruna, Japan plant of Suntory, one of the world's leading drinks producers, on February 23rd. The event took place in the presence of Suntory Beverage and Food Limited chiefs and several delegations of Suntory Group.

Suntory is the first company in the world to produce low-weight, high-performance PET preforms using the revolutionary XTREME process invented by SIPA, headquarted in Vittorio Veneto, Italy. The Japanese company, which has operations throughout the world producing of award-winning spirits, beers and famous soft drinks such as Orangina, Lucozade and Ribena, has a new preform line in Haruna, not far from Tokyo, feeding the production of beverage bottles.

SIPA and Suntory have been cooperating on the development of XTREME since 2014. The official start-up of the new plant is the culmination of a project that has succeeded in meeting all Suntory's specifications and expectations.

Speaking at the completion ceremony, SIPA chairman Dr. Gianfranco Zoppas said: "What brought SIPA and Suntory together is the fact that we share the same mission to constantly innovate and push technological limits in order to provide better products and services to our customers. SIPA could bring its highly innovative XTREME project to fruition also thanks to Suntory's contribution.

"SIPA prides itself on working together in close partnership with its customers, to ensure that the development paths we take are the true ones – paths that will lead to success for us, for our customers, for individual consumers and, yes, for our fragile planet. In Suntory, we have found a partner that shares our values, and our vision. Together, we are helping the global PET bottle processing industry to progress, to be greener and more sustainable."

Suntory chose XTREME technology because the pressure involved in the PET preform molding process is much lower than

that used in conventional injection molding. The low-pressure production of preforms enables a weight reduction in every preform compared to the lightest injection molded preforms on the market today, creating important savings in production costs and, most importantly, in the amount of PET used thus reducing the environmental burden such as CO_2 emissions.

The XTREME system is also very clean, owing to the fact that there are no hydraulic movements: everything is driven by air and electricity. A key feature of the system is the possibility to inspect the quality of each preform, in-line, as soon as it is produced, thus controlling 100% preforms quality.

XTREME permits the production of preforms with walls that are thinner than ever before. Weight can be taken out of both the body and the base of the preform. Critically, this can be achieved without the loss of any key properties in the preform and the finished bottle.

Suntory probably has the most severe quality standards anywhere in the world of PET packaging; the new SIPA system succeeds in reaching and controlling those standards.

All of these advantages, together with the possibility to reduced waste generation due to lighter preform production, come together to create a high performance, high quality preform production system that has lower costs than any other production system in the world today. With XTREME injection-compression molding technology, SIPA has taken the production of PET preforms into a new dimension.

SANIA GOES WITH SIPA FOR BIG STACKABLES IN IVORY COAST

The largest refiner of palm oil on the African continent has chosen SIPA equipment for production of large stackable PET containers.

Sania CIE, headquartered in the Ivory Coast capital, Abidjan, is now making preforms on an XFORM 500 injection molding system running with a 16-cavity mold, and then blowing them into containers with volumes of 20 and 25 liters on an SFL 2/2 linear stretch-blow molding unit which it then fi lls with the edible oil. The PET containers weigh something like 60% less than the containers of the same volume that Sania had been producing in high density polyethylene. With HDPE and PET prices currently around the same level Sania is making considerable cost savings in materials. Sania is now also much more efficient in terms of machine usage. Whereas one SFL 2/2 is all that is needed to blow sufficient PET containers, it could require up to as many as eight extrusion-blow molding machines to provide the same output in HDPE. This clearly provides significant advantages in terms of space needed for the equipment, running cost (energy, air, consumables), maintenance costs and labour.

SIPA has provided Sania with an XFORM500/16 that has customized End-Of-Arm Tooling (EOAT) capable of handling the long, wide-mouthed preforms needed for the 20L and 25L bottles. The cooling robot has also been designed to allow a gentle release of the preforms onto the

transport belt without causing any damage, either to the preforms or the belt. Sania chose SIPA for the new installation, not only for the inherent high performance of its equipment—in terms of output quality and quantity—but also because SIPA was able to supply a complete packaging solution for the design and production of the preforms and bottles, and also molds for the handles and closures. “This makes our turnkey solution highly cost-competitive,” says Giovanni De Rosa, SIPA’s sales manager for Central and Southern Africa. “It’s a winning packaging solution!”

About Sania: Sania is a joint venture between Wilmar International, Asia’s leading agribusiness group, and SIFCA Holding, a major specialist in the agricultural industry in Ivory Coast and neighboring countries. It is a leader in the production of refined palm oil products - olein, stearin, palm fatty acid distillate and margarine - with the largest palm oil refining plant in Africa (daily output is 1,500 tonnes).

SIPA OILS THE WHEELS IN HOWARD PACKAGING'S SWITCH TO ISBM FOR LUBRICANT CONTAINERS

SIPA is helping well-known U.S. container maker Howard Packaging switch from PVC and co-polyester extrusion blow molding to injection-stretch-blow molding in PET for a range of engine oil bottles.

PET is widely used for packaging cooking oil, but Howard Packaging is one of the first companies to switch to PET for production of engine oil bottles. The company, based in Corydon, Indiana, took delivery of its first ECS SP 80 single-stage system a couple of years ago, for production of bottles ranging in size from 16 to 64 oz. With that system now running flat-out, and the company mulling the introduction of smaller (5 oz.) and larger (96 oz.) bottles, it is now considering the acquisition of a second ECS SP 80. The company is an exclusive supplier of oil bottles for Lucas Oil, a world leader of high performance lubricants, which has a major plant in Corydon. Howard Packaging's Maintenance Purchasing manager Steve Hawkins says the company is very pleased with the move to ISBM PET bottles. "Our customers see PET as more earth-friendly than some alternative materials, and PET certainly provides a healthier working environment for our operatives than PVC," he says.

"PET processing equipment is easier to maintain too, as the polymer is kinder to steel. We can also run it with fewer people. Plus, the PET bottles are lighter than versions in PVC, so we save on

material, but they still look much better and give far superior results in drop tests –which is particularly important for oil bottles!

PET provides more freedom on design and shape than alternative materials, and logos and engravings come out more clearly with ISBM. PET bottles also have an excellent seal, due to the higher precision of neck/thread formation. There are additional benefits in switching from extrusion-blow molding (EBM) to ISMB, Hawkins notes. "We don't need a grinder any more for the bottle tops and tails, so that's another expense removed, as well as a source of dust. The SIPA system is more energy efficient and the ISBM process is very stable as well."

Steve also praises SIPA for its local presence. "There is a representative we can always call on to get key action items quickly taken care of, and we have had good technical support to establish an optimal process for our bottles," he says. On top of that, turn-around time on any mold repairs is short, thanks to SIPA's U.S. mold repair and renovation operations.

To kick-start the market for PET engine oil bottles, SIPA earlier produced a range of prototypes in various shapes and sizes. "We wanted to show that with ISBM PET, just as with EBM in other plastics, there is no problem in producing an asymmetrical bottle with a rectangular or oval shape, with the neck in the center or offset," says Paolo Barbaro and Giorgio Gasparini, in charge of the development project at SIPA. In fact, Howard Packaging makes square and round types, with central and offset necks.

Gladson Remos account director for Howard says, Howard Packaging is satisfied with support from SIPA. There is good prospect to sell many ECS SP in very near future.

Privately-owned Howard Packaging makes and decorates high quality containers in several different plastics, providing its customers in automotive and industrial markets with packaging

AROUND THE GLOBE - NORTH AMERICA

solutions designed to meet their specific needs. Its 100,000 ft_2 (9300 m_2) manufacturing facility in southern Indiana is centrally and strategically located to serve local and surrounding regions.

Company owner Robert Howard has been in the plastics business for almost forty years. During his earlier years in the chemical industry, he established numerous relationships with not only customers, but suppliers and competitors as well. He wanted to utilize those relationships, and after taking his experiences, acquired knowledge, and outside advice into consideration, he eventually decided on manufacturing the various types of containers he used to purchase.

SIPA WHEELS FOR OILS AT ACEITERA MARTINEZ

BUNGE

Argentinian edible oil bottling company Aceitera Martinez has doubled up on SIPA filling lines with the addition of its second acquisition in two years, based on an SFR 8 rotary stretch-blow molder and Flextronic W 50/10 high-precision weight filler.

This time, the line came as a turnkey package came complete with a 15-head labelling unit, a SIPA Silent case packer, a PTF 1 palletizer, and a stretch wrapper. The package also included an XFORM 150 system for production of PET preforms on-site. The equipment is running at Aceitera Martinez's plant in the San Jerónimo department of Santa Fe province.

Weight filling technology is considered the most reliable, clean and efficient system for filling bottles with edible oil. It is particularly appreciated for the fact that it avoids overfills: by measuring the weight directly in the container, it takes into account the changes in the tare as well as in the temperature or nature of the oil, and adapts to intrinsic changes of the product during the production cycle.

The Flextronic W is highly suited to lightweight bottles, as it handles them only by the neck. It also comes with the option of pressurizing the bottles with nitrogen in order to prevent the oil inside from oxidizing and losing its flavor. "Aceitera Martinez was very happy with the first line we installed, so it quickly chose the second one," says Saul Couget of SIPA Argentina. "The customer likes our product, and it also likes our collaborative approach to doing business."

Aceitera Martínez is the exclusive bottler in Argentina for vegetable oils produced by Bunge Limited, the multinational agribusiness and foods group. With a bottling capacity of 36,000 bottles per hour, it supplies the home market and exports to neighboring countries in South and Central America, as well as South Africa.

This April, Aceitera Martinez became a wholly-owned part of Bunge Limited. Bunge's Argentinian subsidiary has been collaborating with Aceitera Martinez for several years. The Aceitera Martinez bottling operations are very close to Bunge Argentina's vegetable oil refining center in Rosario. From there, it markets and sells vegetable oils branded Alsamar and Siglo de Oro.

Bunge, which has operations around the world, was itself founded in Argentina, but is now headquartered in the USA. It was already a SIPA customer, with equipment running at various of its operations in Brazil.

AROUND THE GLOBE - ARGENTINA

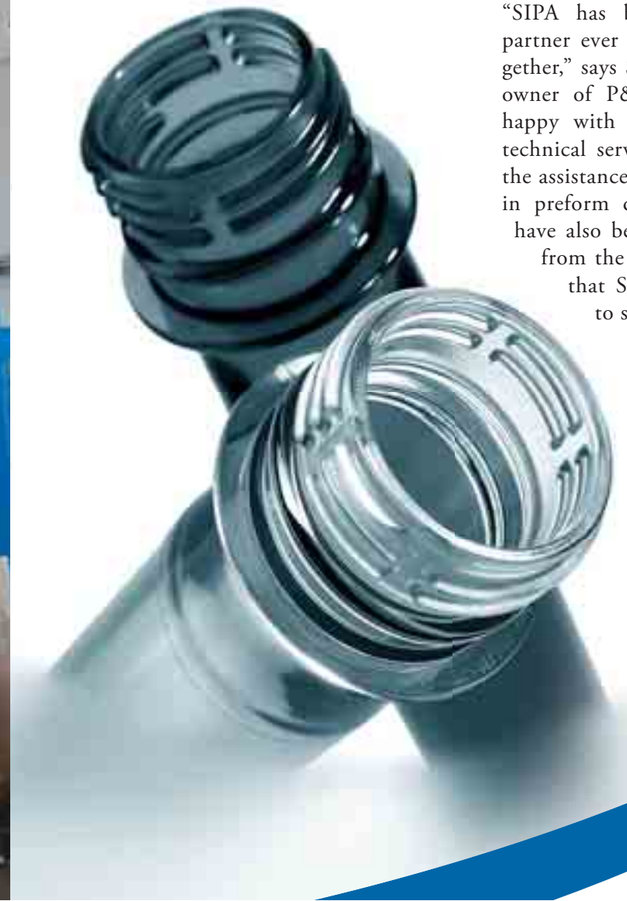
P&T STICKS WITH SIPA TO TAKE FIRST XFORM 350

Long-time SIPA customer P&T has confirmed its faith in the company, becoming the first PET preform producer in the world to take SIPA's new XFORM 350 production system. P&T, located in Floridia, not far from Syracuse in south-east Sicily, began its exclusive use of SIPA preform systems when it began operations in 2001. It now has three PPS units running. Looking to expand production late last year, it ordered the latest addition to SIPA's line-up, which was installed this February. The XFORM 350, equipped with a 96-cavity mold – also from SIPA – is now producing 25.7-g preforms for two-liter water bottles at a rate of 40,000 preforms per hour. The preforms are designed with 26/22 necks for Bericap Hexalite caps. Just like its well-established bigger brother, the XFORM 500, the new system stands out for its extremely low cost of maintenance, low energy consumption – thanks in part to a new all-electric toggle clamp unit – its ability to produce preforms with extremely low levels of acetaldehyde, the high quality of the preforms, and – when necessary – the low time it takes to change formats.

Lightweight preforms are a specialty of P&T, which supplies preforms to numerous companies bottling mineral water and soft drinks in the south of Italy.

"P&T has been able to benefit from SIPA's advanced technologies in preform production, as well as in our expertise in designing thinwall preforms, "says SIPA Area Manager Elio Ceschin.

"SIPA has been an excellent partner ever since we came together," says Salvatore Calafiore, owner of P&T. "We are very happy with the high level of technical service, together with the assistance SIPA has supplied in preform development. We have also been able to benefit from the market knowledge that SIPA has been able to share with us."



FULL SPEED AHEAD FOR HILWA MINERAL WATER, THANKS TO SIPA

Al Jouf Healthy Water in Saudi Arabia is relying on SIPA for its latest line for bottling Hilwa mineral water. The company, located in the city of Domat Al-Jandal in the Al Jouf area, obtains its water from a unique underground well, where the proportion of salts and the balance of water components are ideal for direct drinking without the need for any desalination or other treatments to remove contaminants.

Domat Jandal is the oldest city on the Arabian Peninsula. It contains ruins and landmarks dating back to the seventh century BC. The area is also characterized by the cultivation of palm and olive trees, as well as heavy monsoon rains. The area is considered protected and far from any sources of pollution. Providing

demanding customers across the peninsula with high quality water for 35 years now, Al Jouf Healthy Water has been developing its production capability ever since its establishment in 1982. SIPA has now become a partner, with the installation of a new high-capacity filling line.

The SIPA line incorporates an SFR 24 rotary stretch-blow moulding unit directly connected in a Sin-

cro Bloc to a Flextronic S 80.25 electronic volumetric gravity filler. Downstream from this Sincro Bloc is a CIP Unit 1S35, level, cap and label inspection systems, an Opera 400 33T labelling unit, an Altair 40 wrap-around packer, a Genius Active Layer palletizer, and finally an SPF stretch wrapper.

The complete line has already proved itself with high productivity and high reliability. It produces and fills bottles ranging in size from 200 to 600 mL at a rate of 50,400 bottles per hour – independent of bottle volume. "The customer called for very high productivity for a fast growing brand that needs high volumes," says SIPA's Sandro Rasi. "But it wasn't just a question of speed: during the high season, the line is running 24/7, so it was vital for Al Jouf Healthy Water to have very high reliability to meet the challenging demand from the market. Thanks to our Sincro Bloc configuration pairing two units known for their performance, accuracy, and ease of operation, SIPA has been able to match the requirement in full."

The line also stands out for its low operating costs and flexibility. With its special handling system that adapts to different necks, the Sincro Bloc requires little time for configuration changes when switching between bottle sizes. The rest of the line is designed with the same concept of fast and reliable changeovers. "At 50,400 bph, every second counts!" says Rasi.

The entire SIPA line is designed to handle lightweight bottles. Once again, the Sincro Bloc's neck handling system comes into play, since it never applies pressure to the container. The whole conveying system is designed keep the bottles in the best possible condition. And finally, the line incorporates the latest technology in palletizing, with the Active Layer system. This brings a gentle touch to layer formation, ideal for lightweight bottles in shrink film.

AROUND THE GLOBE - SAUDI ARABIA

CLOSE TO THE TOP OF THE WORLD, SIPA PACKS TOP BEERS FOR MACK

Deep inside the Arctic Circle, SIPA is helping Norway's famous brewer Macks Ølbryggeri put the final touches to packages of some of its best-selling beers. Since last year, the world's northernmost brewery has been putting palletizing, stretch-wrapping and pack conveying equipment from SIPA hard to work, to handle up to 30,000 cans of beer every hour. Headquartered even further north in the coastal city of Tromsø, Mack has been growing ever since it was founded 140 years ago, in 1877, by Ludwig

Mack. Its last major move was five years ago, when it shifted its principal brewing operations from Tromsø to Nordkjosbotn to be able to further increase its capacity and take advantage of the latest technologies.

Last year, Mack took delivery of SIPA's Genius PTF/2 fully automatic palletizer, together with stretch-wrapping and pack conveying equipment.

The Genius PTF/2 is a "steady pallet" unit capable of handling crates, cartons and packs. According to the product to be handled, the standard central unit can be equipped with different heads and accessory elements. Mack is using the unit to palletize 330- and 500-mL beer cans, as well as 330-mL glass bottles; layer transfer is carried out by a roller-type halving platform.

"Mack chose SIPA for the robustness of our system," says Stefano Bonanni, SIPA's Key Account Manager looking after Mack "as well as for the proven ability of our programmer engineers in optimizing the sequences of the palletizer ." Bonanni points out that the Genius PTF/2 installed at Mack currently handles two pallet sizes: full –size euro pal 1200 by 800 mm and half-size 600 by 800 mm, which are then loaded onto a full-sized pallet, and can also be configured in future to handle pallets 400 by 800 mm.

Bonanni concludes by saying: "There is a lot of competition among suppliers of palletizing equipment, but I believe that our system, together with the technical service and the total partnership package that SIPA provides, makes us stand out from the pack. We look forward to further cooperation with Mack."

AROUND THE GLOBE - NORWAY

FOCUS ON WHAT'S ON AT DRINKTEC 2017

WITH ECHO, EVERYTHING REALLY IS CONNECTED

drinktec

ECHO DIGITAL ECOSYSTEM

EASY. CONNECTED. HUMAN. OPEN

SIPA has created a new digital ecosystem to connect people, companies and resources in an interactive environment where amazing amounts of information can be created, sorted, shifted, and shared. It's called ECHO. ECHO lets everybody participate in an intensive co-creation of value by sharing knowledge and competence. In this new hyper-connected world, customers can be suppliers and observers too, all at the same time. In ECHO, information is transparent, accessible and usable. It will save everybody time, resources, and money.

ECO_2 PLAN

From the beginning, SIPA's philosophy has been to create technologies that are ecologically beneficial and economic to use by its customer. SIPA strives to provide the path to a new sustainable business model: ECO_2. Its specifi c focus is on resin recovery and recycling, on energy saving, and on the optimisation of logistical space along the entire line of PET preform production, container blowing and filling. With its smart and simplified approach, the ECHO digital ecosystem is the embodiment of ECO_2, conceived for the collection and sharing of Lean Data.

A DIGITAL TECHNOLOGY PLATFORM FOR SHARING

Every day we are submerged by data that we don't need or can't use. ECHO implements the concepts of the 'sharing economy,' providing every SIPA customer with the means to easily access a wealth of relevant information on functions and applications that interact with data, connecting the entire ecosystem to create more value.

ECHO goes beyond the concept of a simple technical portal with its one-way traffic: it allows an interchange between SIPA, the customer and other stake holders. Internal areas of the ecosystem are customized to fit the profile of the user: their fields of interest, the technology they use, the products they make. The customer has an open and direct line to the information that counts.
Let's have a look at these areas:

THE CUSTOMER LOUNGE

The most important area in ECHO is the Customer Lounge. This is where basic information on machines is kept and where SIPA and the customer can share it transparently. The Customer Lounge is a new concept in customer experience built around the user, where information is contextualized and rapidly accessed. The service is customized according to the SIPA equipment installed at the customer and is based on the products they handle and on their production needs.
With this data sharing, ECHO puts SIPA in the best position to offer each customer the targeted services they need to improve production targets: maintenance, upgrades to installations or new products for example. All offers requested and received can be tracked, problems on machines can be intercepted, and the customer has 'always on' access to user guides, with parts lists preloaded to optimize the supply chain. There is more: by being able to benchmark operations against market standards – compare for example equipment Key Performance Indicators (KPIs) – customers will be able to analyze every individual task on the way to optimized efficiency.

THE VIRTUAL MARKETPLACE

In ECHO, the customer can also be a supplier: they can buy and sell services and spare parts for SIPA machines in accordance with the principle of the 'sharing economy.' The new ecosystem helps create value in the market, providing economic and experiential advantages for the convenience and efficiency of the individual user. With this 'virtual' marketplace,' SIPA is aiming to cut out the middle man, reducing costs and waste in the system.

THE PACKAGING DESIGN AREA

With the Packaging Design area in ECHO, SIPA takes a tilt at the predominantly one-way supplier/customer relationship, to put more emphasis on the generation of shared value. Here, users have the opportunity to assess the efficiency and functionality of bottles produced, with the aim of improving the quality of the supply chain and to have containers optimized depending on the intended use or even positioning in a shop display.
The customer can rate containers according to features such as opening, conservation, recyclability, stocking in the truck, through to its postioning on the supermarket shelf. The user thus becomes directly involved in the process of generating business value, as a form of a unique personalized experience.

THE CAPACITY SHARING AREA

ECHO is an open system that simplifies relations between producers and suppliers in a truly innovative way. With its Sharing Capacity feature, any producer of PET containers can put at the disposal of others its spare production capacity to meet the needs of more potential customers. This allows the saving of time and resources, cost optimization, and the establishment of new business relationships, in a network built on trust and free exchange. Thanks to an ecosystem of this kind, where everybody works together to create growth for themselves and the community as a whole, the entire economy becomes more intelligent, more sustainable.

THE ONLINE TRAINING AREA

In ECHO, the customer has an area entirely at their disposition where they can learn more about SIPA products and services and deepen their understanding of the use of SIPA machinery. In this Online Training area, it is possible to improve understanding of concepts, methodologies and production systems, to keep up to date on technical matters and and increase personal skills. All the tools are there for customers to maintain and increase their competitiveness.

THE FORUM

A community is about sharing, and that is particularly true in the ECHO ecosystem. Sharing and comparing helps create valuable content. The Forum is for exchanges of opinions on products, materials and technologies among providers and users, a virtual meeting place where people gather to express ideas, talk about business issues and find solutions.

NEWS

In this new digital revolution, we are surrounded by streams of information that we can dive into wherever we are – but there is a danger of drowning. ECHO can interact directly with the user to present content that is relevant and important to him or her. Personalization is a key to hyper-connection. ECHO provides each customer with a world built to meet their needs in a simple, fast, and intuitive way.

"VIRTUAL" XTREME AT DRINKTEC

drinktec
Go with the flow

Visitors to Drinktec have the chance to see SIPA's latest equipment innovation, the XTREME injection-compression PET preform molding system – or at least a virtual chance: the XTREME system is running at SIPA's headquarters in Vittorio Veneto, and there is a video link to the company's stand at the show.

The XTREME system can produce preforms that are up to 8% lighter than even the lightest injection molded preform – but without compromising on any key properties. More weight can be shaved off the body and base of the preform than ever before. The technology takes the shackles off developers' freedom to create new and unique designs, and it is also easy to integrate into other systems, upstream and downstream.

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. All this means that acetaldehyde (AA) levels are reduced by up to 40%, and resin intrinsic viscosity (IV) falls far less: over 70% less in fact.

On top of that, the equipment runs at lower temperatures and consumes 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, one of the most compact preform injection molding machines on the market. XTREME is a clean machine too: it is the first totally oil-free high-output preform production system.

SIMPLE, SAFE, SURE

Operation is foolproof – mechanical cam synchronization of mold movements and preform ejection eliminates operator error for example. Flexible too: the mold carousel can hold molds for two different sizes of preforms at the same time if necessary. Inline total quality control is performed with cameras checking neck finish, body and gate, while an optical pyrometer measures preform temperatures. The first XTREME system was of-

ficially put into operation at the Haruna, Japan plant of Suntory, one of the world's leading drinks producers, in July 2016. SIPA and Suntory cooperated on the development of XTREME for many months. The start-up of the new plant was the culmination of a project that Suntory says succeeded in meeting all of its specifications and expectations.

XTREME SINCRO: INTEGRATION WITH BLOW MOLDING

The XTREME system can be integrated directly with an SFR EVO^3 next-generation rotary stretch-blow bottle molding unit to form XTREME Sincro, the world's first injection- compression- stretch-blow molding system. Once again, the system is compact, flexible and easy to operate, and has very low materials and energy consumption. XTREME Sincro produces bottles with extraordinary performance, but which are lighter than anything available on the market.

The XTREME Sincro embodies numerous advantages for bottle producers, combining the flexibility of two-stage systems with the convenience of single-stage system. The SFR EVO^3 has a maximum output rate of 2250 bottles per hour per cavity, putting it on the front of the grid with the competition.

MINIMAL ENERGY USE

Integration of the preform injection-compression and the bottle blowing operations has a major effect on energy consumption. There is no need on the Sincro XTREME to cool down the preforms immediately after they are molded, and the need to reheat them just before blowing is much reduced. Conventional ovens with infrared heaters are replaced by small ovens that use highly efficient induction heating that is directed only at the areas of the preforms just below the neck. Just like the XTREME preform molding system, the SFR EVO^3 has a new mold changeover system that is quick and easy to use. It is also much easier to convert from production of cold-fill to hot-fill containers too. This is because, while the heating circuit remains in the shell holder, the cooling circuit is now built into the cavity. Only a simple cavity change is required to switch from production of one type of container to another, while the shell holders remain in place.

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FOCUS ON - XTREME

XTREME RENEW: UPSTREAM INTEGRATION FOR RPET PROCESSING

XTREME has also been successfully integrated upstream with another ground-breaking innovation, the VACUREMA process from EREMA for treating recycled PET. XTREME RENEW, unveiled last year, produces injection-compression molded preforms directly from washed PET flakes, signaling the dawn of a new era in PET recycling.

In XTREME RENEW, food-contact-compliant melt produced by EREMA's VACUREMA process feeds directly into SIPA's XTREME preform production process, without the need for intermediate cooling and pellet production. The benefit of this direct processing is an enormous boost in energy efficiency, plus considerably lower thermal damage to the PET material. Compared to systems requiring intermediate pelletizing, recrystallization and drying of the RPET, with subsequent re-melting before injection, XTREME RENEW has a Total Cost of Ownership (TCO) up to 15% lower.

XTREME RENEW

EVOLUTION + REVOLUTION = XTRA

drinktec
Go with the flow

SIPA is introducing an all-new PET rotary stretch-blow molding machine at Drinktec. It's called XTRA and it combines an evolution in technology with a revolution in productivity. No other machine on the market today is as fast.
In XTRA, SIPA set out to create a new production platform to offer the highest performance possible with the lowest energy consumption. And it succeeded. XTRA produces more bottles per hour per cavity than any other blow molding machine in its segment – 2550 BHC, to be precise – with the best TCO (Total Cost of Operation) around.

MUCH HIGHER OUTPUT

This is thanks in part to an active process angle of 200 degrees – some 15% wider than the industry average – that allows for stress-free blowing at high speed. The extra blowing time that this wide angle offers also means that it is easier to produce containers with complex shapes. Even at top speed, there is 0.8 of a second available to apply the active high-pressure blowing air.
"With this new design, bottle makers can increase their production speeds without compromising on quality," says Paolo De Nardi, Product Manager SBM at SIPA. "They also have the option of maintaining their productivity using a machine with fewer cavities than before, saving on investment costs and also on the time it takes to change formats."

MUCH LESS ENERGY

Production of each bottle requires 25% less energy on the XTRA, than previous SFR. The heating ovens have been designed to be particularly frugal, even in production of bottles with complicated geometries. Plus, the new blowing block keeps the dead air volume to a minimum and the system for recovering air for pre- and intermediate -blow allows for improved overall air management.

The new system can produce high quality bottles of any size between 0.2 and 3.5 liters, using the same blowing press, in a wide range of formats for various applications. Now it is even easier to integrate upstream and downstream in the creation of complete bottle production and filling lines, featuring XTREME RENEW or different filling line technology.

EASE OF OPERATION

On top of that, XTRA has an innovative interface that makes it very easy to operate. “Accessibility is the order of the day,” says Paolo De Nardi. “We have developed an HMI that is particularly intuitive, so that the operator can adjust important parameters quickly and safely. Guidance on maintenance procedures is also especially clear.”

User-friendliness also features in product changeovers. XTRA is fitted with a rapid mold change system that is easy to access and requires no tools at all. This machine includes also an integrated high-speed neck changeover solution.

VERSATILITY

One of the distinctive elements of XTRA is its flexibility. It can for example produce bottles for hot and cold fill, with simple blow mold change, without any reduction of performance or any major changes to the system. The oven can be configured to accommodate different sizes of neck (28/38 mm). The clamp on the blowing station has two opening strokes: a short one for bottles of up to 1.5 L, and a longer one for bottles up to 3.5 L. This makes it possible to obtain the best cycle times, whatever the size of bottle being produced.

OPEN ARCHITECTURE

XTRA is based on a technological architecture which renders it completely open.

This means that it can for example be fully integrated with SIPA’s XTREME injection-compression preform production system to create a complete pellet-to-bottle ICSBM system that operates with minimal energy consumption and maximum efficiency.

SAFE HANDLING

XTRA is fast and it is lean, but it is also kind. SIPA’s engineering specialists have optimized all the mechanical movements inside the machine to ensure a solid, but gentle and safe handling of preforms and bottles. The use of “active” grippers provides for gentle handling of the preform necks, while the latest generation of electrically driven stretch rods helps optimize distribution of material along the bottle.

SIPA plans to roll out a full range of XTRA in the coming months.

THIRD-GENERATION XFORM IS NOW AVAILABLE IN A NEW SIZE

drinktec
Go with the flow

SIPA is showing the latest evolution of its XFORM PET preform injection molding platform at Drinktec. The new XFORM 350 now sits alongside its well-established bigger brother, the XFORM 500. At first glance, there is little to tell the two systems apart. Both are built on the same platform, but as the numbers make clear, the XFORM 350 has a smaller clamp unit, with a clamp force of 3500 kN rather than 5000 kN. It has been optimized to accept molds with between 72 and 128 cavities. Just like the XFORM 500 though, the new XFORM 350 has an extremely low cost of maintenance, and accepts all legacy molds, as well as legacy end-of-arm tooling (EOAT) for preform handling.

The toggle on the XFORM 350 is powered by servo-electric motor. This makes it fast as well as highly energy-efficient. Lock-to-lock time is below 2.4 seconds. Both models of the XFORM now also make use of SIPA's new XFlow screw design for increased throughput and wider process window. It enables a massive output increase of some 15% compared with the previous design, for example. On an XFORM 350 using an XFlow screw with a 120-mm diameter, power required to process one kilo of PET (IV 0.8) is less than 220 W. Like the XFORM 500, the XFORM 350 can be equipped with the very latest SIPA GEN3 mold technology, which is full of innovative features. These include a new hot runner design for superior flow balance and low pressure drop; XMold technology for reduced melt friction and higher L/T capability; SmartLock stack design for unprecedented cooling for short-neck preforms; and LongLife stack coating technology for superior mold life.

The XFORM 350 also features SIPA's new post-mold cooling system, FlexCool, which adjusts the air flow over the preforms depending on ratio of the preform wall thickness to the thickness of the preform neck (FlexCool is currently not available in the USA).

Both the XFORM 350 and 500 are the result of a partnership between SIPA and leading injection molding machine manufacturer Engel. Engel was instrumental, among other things, in the design of the clamp systems on both systems. The excellent performance achieved with the XFORM platform, which has been received enthusiastically by preform producers all around the world since the XFORM 500 debuted in 2012, convinced SIPA to expand the cooperation with Engel to include a smaller system.

SIPA ECS SINGLE-STAGE ISBM TECHNOLOGY IS IDEAL FOR SPECIALTY CONTAINER PRODUCTION

drinktec
do with the flow

With its ECS range of single-stage injection-stretch-blow moulding (ISBM) machines, PET packaging technology specialist SIPA provides a full service to companies producing specialty containers in all shapes and sizes, and with widely varying output requirements. The company's latest ECS SP 50 and 80 units are ideal for production of containers as small as 10 mL. They now feature an upgraded user interface (HMI), as well as improvements to the injection system, preform conditioning, and bottle blowing. The machines now also accept a wider range of legacy moulds. SIPA's well-established larger ECS HS and FX models are particularly suitable for high outputs of wide-mouth jars, oval containers, and other out-of-the-ordinary products.

FOR MANY MARKETS AND MARKET SIZES

The new ECS SP 50 and 80 are ideal for production of small lots of containers with various designs and characteristics, for pharmaceuticals, personal care, foods, detergents, and other products. They can also make lightweight miniature drinks bottles (like those used on airplanes). The ECS HS and FX types are increasingly used for such products as wide mouth jars, oval and asymmetric containers. It is possible to produce containers with a wide range of capacities, threads and neck finishes.

SIPA sees strong prospects for making inroads into the prestigious market for very high quality small bottles for cosmetics and beauty care products. It recently developed prototype cosmetic containers in a range of striking designs, varying in volume from 200 mL to around 500 mL in round, oval, and rectangular shapes.

HIGH HYGIENE

The extremely versatile ECS systems can produce ultra clean bottles, pasteurizable containers, and warm- and hot-fillable bottles. SIPA was a pioneer in developing technology for producing hot-fillable containers with special amorphous necks that are much less costly for customers to produce than traditional types with crystallized necks.

DEDICATED PREFORMS FOR COST-EFFECTIVE PRODUCTION

Container makers using the ECS single-stage ISBM technology can produce dedicated preforms to obtain characteristics optimized for the particular size and application of the finished container. SIPA's experts will work with customers to create the best possible design of preform and bottle. ECS systems are also ideal for processing specialty resins, including PEN and PLA, as well as polypropylene.

TECHNICAL WINDOW:
LATEST DEVELOPMENTS

SMARTSTACK DESIGN CROWNS A DECADE OF DEVELOPMENT

When SIPA set out to develop its new SmartStack design for PET preform mold stacks, it wanted to build on all the important developments that have taken place over the last 10 years in stack design. The goal was to provide all the following features in a single design:

- Excellent preform quality
- Long lifetime without refurbishing
- Use of standard parts
- Good cooling performance
- Low cost for conversion when necessary
- Corrosion resistance
- Low water requirement
- Excellent demolding behavior
- Simple maintenance procedures
- Superior air vent solutions
- No flash
- Low clamp tonnage requirements
- Very low part weight deviation

EXCELLENT PREFORM QUALITY

The molding surface tolerances and alignment features that SIPA applies to its stack components result in a preform where the split lines between the different mold components are nearly invisible.

LONG LIFETIME WITHOUT REFURBISHING

Large taper selections made during the design phase ensure that the stack components generally exceed expectations. The taper length is directly proportional to the lifetime of an injection molding stack, since the longer the taper, the lower the stress applied during the injection phase.

STANDARD PARTS

The SIPA stack design and the locations of the split lines mean that only three preform design-related stack parts are required – half as many as in other designs. The locking ring, cavity flange and even the neck ring can all be regarded as standard parts, since it is possible to use them for various different preform designs. Only the cavity, gate insert and core are unique to each individual preform design.

GOOD COOLING PERFORMANCE

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LOW CONVERSION COSTS

Thanks to the prefect positioning of the split line, use of the SIPA SmartStack makes it possible to build a mold insert for a new preform design or weight by producing only a minimal number of new stack parts. This means that the customer spends less money to achieve their goal.

CORROSION RESISTANCE

SIPA's selection of special steel grades makes the stack parts corrosion resistant and helps to ensure that the parts achieve a long lifetime without having any cracking issues or surface pitting due to corrosion. In special cases, SIPA even adds special coatings to improve resistance against aggressive media.

LOW WATER REQUIREMENT

The cooling channel layout in the SIPA SmartStack design, together with features that increase turbulent flow, reduces the amount of cooling water needed to achieve excellent heat transfer capabilities. This results in a reduced energy requirement for SIPA preform molds.

EXCELLENT DEMOLDING BEHAVIOR

The dedicated surface preparation on SIPA SmartStacks makes sure that preform demolding is very easy and does not impact on either cycle time or preform quality. Specific methods are applied to achieve this performing behavior, with each surface preparation selected according to the particular preform design or customer specification.

SIMPLE MAINTENANCE PROCEDURES

SIPA stack parts are designed to align with each other using simple features that are applied to each element. This makes sure that wear on stack parts is low and the preform split line quality is perfect. Due to these features, maintenance procedures can be carried out very quickly and with little risk of error.

SUPERIOR AIR VENT SOLUTIONS

Components in the SmartStack have large air vent surfaces to ensure that filling is fast and the interval between cleaning cycles is as long as possible. SIPA has the largest air vent solutions available on PET injection molding stacks.

NO FLASH

An embedded TSS (Top Sealing Surface) in the SmartStack core design eliminates the sorts of TSS issues found on many other tools. An important benefit is improved sealing performance for the cap.

LOW CLAMP TONNAGE REQUIREMENTS

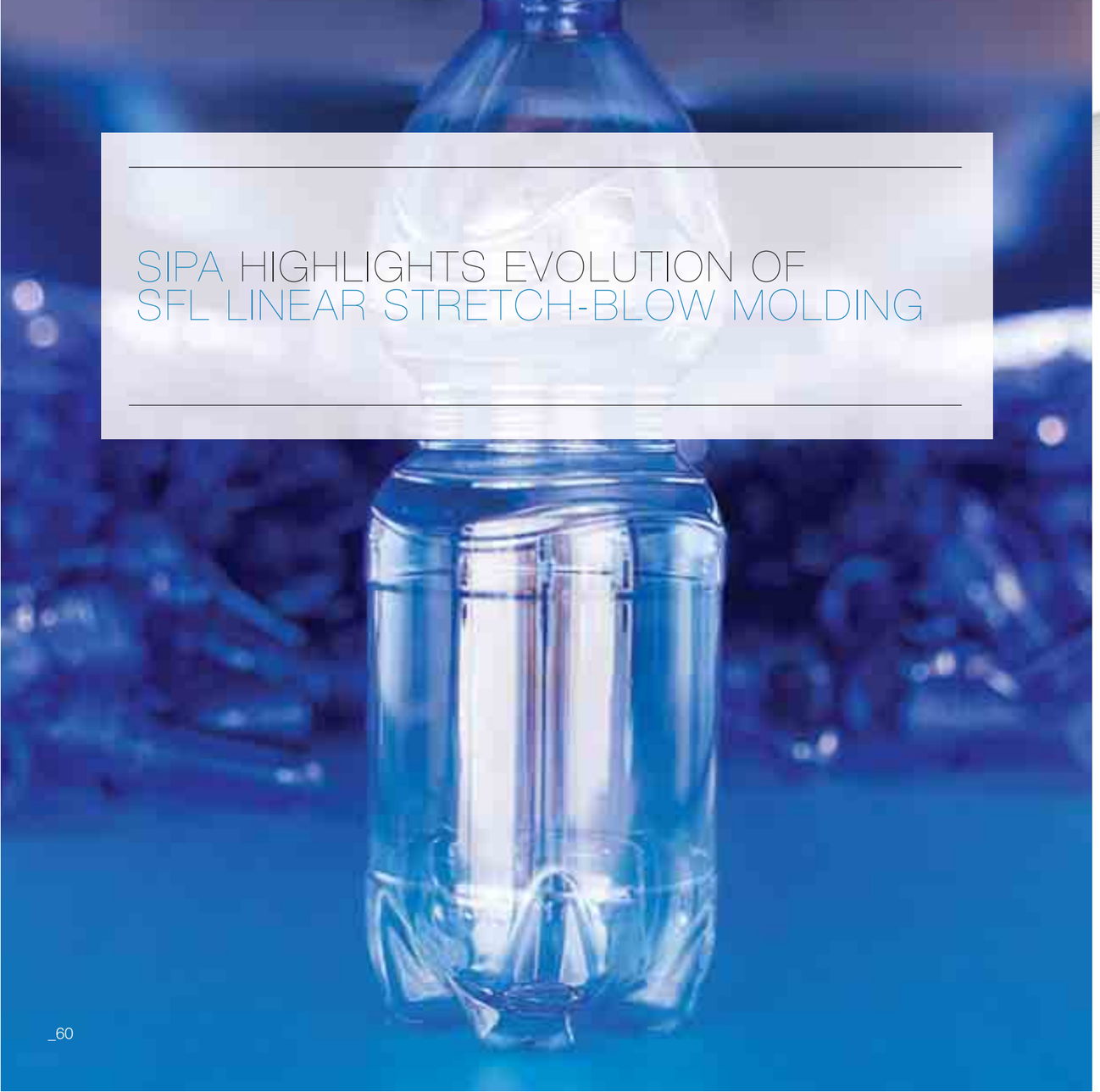
SIPA's neck ring design minimizes the clamp tonnage requirements on the SmartStack. By minimizing the molding surface inside the neck ring and so reducing the force applied to the neck ring, lifetime is extended and cooling requirements reduced.

VERY LOW WEIGHT DEVIATION

With the tight manufacturing tolerances applied to SIPA SmartStack stack parts, as well as the company's superior hot runner technology, it is possible to achieve very low weight variations within a complete set of preforms produced during any one shot. This enables SIPA preform producing customers to reduce their target weight to very close to the minimum in the specification.

IN CONCLUSION

All these features together in the SmartStack add up to a design with multiple advantages over existing solutions on the market. SIPA is faithful to the classical toolmaker approach, checking every project for its specific needs.



SIPA HIGHLIGHTS EVOLUTION OF SFL LINEAR STRETCH-BLOW MOLDING

The evolution of SIPA range of best-in-class SFL linear blow molding systems has been recently presented at Interpack fair in April this year. The new all-electric SFL 6/8 features all the technological advantages of the existing SFL 6/6 system, but has even better performance: output is 10% higher, meaning that production levels of as many as 2000 bottles per hour per cavity are now possible. This is due to faster press movements and improved blowing valve.

REDUCED ENERGY AND AIR CONSUMPTION

Despite the increased capacity, energy consumption in preform heating is down, thanks to a 25% reduction in oven pitch, and lower air consumption, with 30% less dead volume. The SFL 6/8 EVO has a new blowing block and the pneumatic circuit has been upgraded. Blow mold pitch is now 100 mm, suitable to blow bottle up to 1.5L.

Another innovative feature is the new clamp opening and closing system: directly driven by brushless motor, the stroke of the clamp can be adjusted directly from the user interface (HMI) in accordance with the container being blown, providing improved efficiency and extra production flexibility.

Ergonomics have also been a focus of attention in the development of the SFL 6/8 EVO.

The layout of the unit has been simplified and the HMI has been completely renewed.

SINCRO CAPABILITY IMPROVED

The SFL 6/8 EVO also exhibits evolutionary improvements elsewhere. A new preform transfer system, for example, handles the preform necks more gently; and the "SINCRO" connection to enable integrated bottle blowing and filling has also been improved, with a compact system to release blown bottles to a rotary filler star-wheel now possible.

"The SFL 6/8 EVO is an ideal solution for medium beverage filling lines," says Paolo De Nardi Product Manager SBM at SIPA. "It also provides a perfect scale-up opportunity for the big converter, enabling them to manage complex packaging with a small and flexible blowing platform. Plus, all the new developments we have built into the unit, together with the low cost of maintenance, result in the lowest total cost of ownership, TCO, on the market, to guarantee both operational excellence and business flexibility."

A NEW GENERATION OF MECHANICAL FILLERS – STILLFILL EVO

SIPA has in recent years put much effort and money into developing and improving various types of filling equipment. Its electronic-controlled volumetric systems have grabbed much of the limelight, with their ability to guarantee high performance and numerous operational advantages in terms of flexibility and customization. But we should not forget SIPA's mechanical gravity filling monobloc, the Stillfill.

Stillfill caters for a large segment of the market requiring a workhorse for filling non-carbonated products like still water, teas, fruit juices, isotonics, and fruit juices with and without pulp – filled cold or hot with recirculation. Units are simple in use and maintenance, suitable for operation by staff that are less skilled, and which provides excellent performance for its price.

Now SIPA is launching a new generation of modular mechanical gravity fillers, Stillfill Evo. It can be configured in two variants – Stillifll Evo S for cold-filled still water and clear juices; and Stillfill Evo HR for hot-filling with recirculation – with the only difference between the two being a simple- hot-fill kit. This kit includes a pneumatic valve within the filling valves and a rotating manifold for product recirculation, and an external tank for recovery of the recycled product and pumping back to the pasteurizer. Recirculation is maintained in the valve and the bottle for optimal management of the temperature during stoppages and of the level in the bottle, with evacuation of the foam at the end of filling.

VARIOUS NEW AND INNOVATIVE FEATURES HAVE BEEN INCORPORATED INTO THE STILLFILL EVO

These include:

- Centralized remote fill level adjustment that eliminates the need for adjusting each individual valve vent tube when changing from one bottle size to another.
- Product deflection by universal swirl – no deflector change needed for different bottle sizes.
- Fixed valves – no flexible pipes, no sliding parts above the bottle mouth.
- Bottle-activated valve opening and closing, with a built-in "no bottle, no fill" system –there is no component, electronic or pneumatic, on the filling carousel.
- Increased precision in filling level.

TECHNICAL WINDOW - STILLFILL

SEVERAL NEW FEATURES HAVE ALSO BEEN ADDED TO ENSURE HIGH LEVELS OF CLEANLINESS ON THE STILLFILL EVO

- A single membrane is used for both shutter and stroke protection, without the need for sliding gaskets and virtually eliminating debris from wear and tear, as well as product tainting.
- Special care on the cleanliness of the valve, which was developed in response to requests from leading international customers wanting to increase efficiency of washing cycles
- Much attention has also been devoted to a key aspects of fillers in general and fillers for still water in particular, namely cleaning and sanitizing of the filling zone.
- Optional automatic CIP (Clean In Place) cups loading and unloading for CIP operation, removing any contact by the operator of the valve when inserting false bottles, and hence a possible source of contamination.
- Beyond the traditional ISO 7 controlled contamination cabin, pressurized with HEPA filters, it is also possible to configure the Stillfill Evo with a reduced enclosure and isolator technology in the filling valve zone; with this drastic reduction in the space that needs to be kept under control, it is possible to use automatic sanitizing systems on all the surfaces of the filling zone.

ESSENTIAL CONSTRUCTION FEATURES OF THE PREVIOUS STILLFILL GENERATION HAVE BEEN CARRIED OVER INTO THE STILLFILL EVO

These include:

- An extremely simple and fast membrane filling valve.
- Contact filling.
- Easy access for maintenance.
- Central tank on the rotary carousel.
- An optional hot-fill (HF) recirculation valve.
- Ability to accept pulps and fibers separate air return.
- High flow capability.
- 100% stainless steel (grade 304)
- draining basement.
- Quick changeover for different neck diameters, without the need for special tools.
- A nitrogen dispenser option for lightweight bottles.

Roberto Cucciol, Specialties and Beverage BU Director comments on the new Stillfill Evo: "We have taken a successful line of mechanical gravimetric fillers and further improved it to more than satisfy demanding customer needs, especially in emerging markets and for applications where products to be filled are relatively simple and can be handled without the need for investment in electronic valves." The first Stillfill Evo has already been ordered by a customer in Turkey and was due to be installed at the time of writing.

SIPA'S SFL 1 XL GETS A HANDLE ON THE SITUATION FOR BLOWING VERY BIG BOTTLES

SIPA's SFL 1 XL linear stretch-blow molding equipment for extra-large containers is now available in a version for producing containers with integral handles. There is also a new pre-blowing system for the preforms, which helps them conform better to the contours of the mold.

The handle handling system works in two phases. First, the handles are loaded in bulk into a vibrating platform that orients them all in the same direction. Then, a pick-and-place robot takes the handles one at a time and places them into the open mold just before the hot preform is loaded.

The Preform Pre-Blow (PBB) station has been designed to improve production, not only of large bottles with handles, but also other large containers with "difficult" geometries and with surface decoration. The preform is first heated in the oven to around 100°C and then transferred to a mold with a cavity that is wider than the preform (but not as wide as the final bottle) and a little longer. The preform is blown to fill the cavity, and then immediately transferred to the second mold where it is stretch-blown into the final product.

By splitting the molding process into two stages, the PBB station opens up the processing window of the SFL 1 XL and introduces an extra amount of flexibility.

The SFL 1 XL is SIPA's response to the rise in interest in small- and medium-scale production of containers anywhere from 15 to 30 liters in size. The SFL 1 XL can produce as many as 700 one-way containers per hour. Containers can have neck finishes of up to 93 mm.

Requests for the system are coming from sectors as varied as water, oil, beer, wine, and beyond. SIPA regards the SFL 1 XL as best-in-class, with a highly competitive performance: price ratio and very attractive running costs.

SIPA BREAKS THROUGH BARRIERS OF PREFORM MOLD DESIGN WITH ADVANCED HOT RUNNER TECHNOLOGY

PET processing technology specialist SIPA is using its advanced expertise in hot runners to create new preform molds that exploit the potential of existing injection molding machines well beyond current limits.

"We all know that there are more-or-less standard levels of cavitation for PET preform molds running on regular injection molding machines: 72, 96, 128, 144," says Stefano Baldassar, Global Sales Manager – Preform Systems & Tooling. "These numbers were arrived at in order to stay within the design limitations of traditional hot runners. In fact, whenever anybody has tried to introduce molds with different levels of cavitation – 56, 64 or 112 for example – they have failed. The molds simply do not perform well enough."

That is why SIPA developed the new GEN4 hot runner design concept. It overcomes those limitations and provides best-in-class balance, long maintenance intervals, and excellent ease of access when intervention is finally required.

This new GEN4 hot runner design allowed SIPA to engineer and manufacture the first 180-cavity preform tooling in the world.

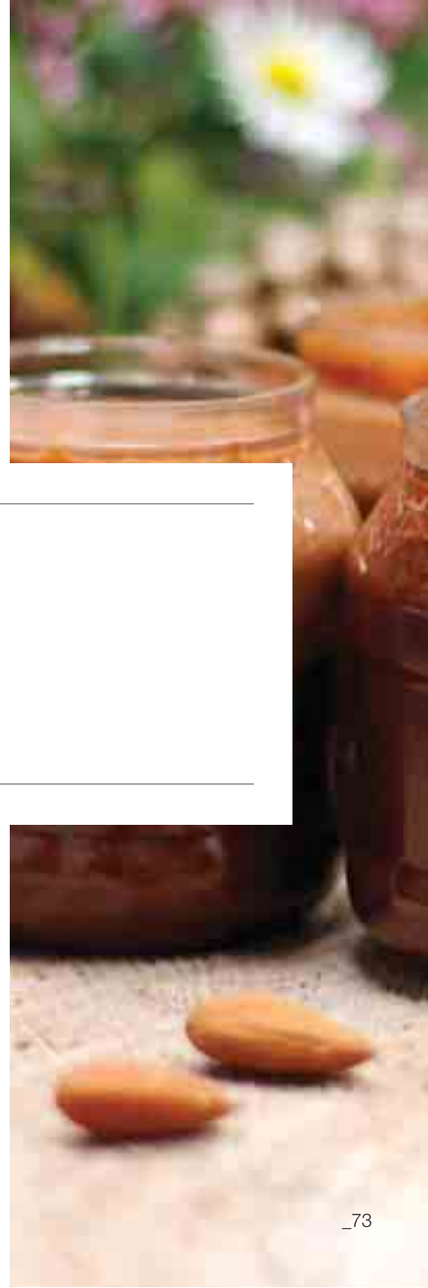
"The geometry of the new mold provides excellent balance in melt

flow," says Stefano Baldassar. "No, it's not the biggest preform mold in the world, but the filling characteristics are excellent, so the customer isn't gaining quantity at the price of quality. There are no penalties to pay in terms of cycle time and weight distribution."

Preform producers can now use molds with non-standard cavity lay-outs to substantially raise output without putting extra stress on their machines. SIPA has just produced this 180-cavity mold that fits on a regular 500-tonne machine that would normally run with molds having no more than 144 cavities – providing potential to raise productivity by 25 percent. More non-standard molds are in the pipeline, for use on smaller machines.

Users of this new tooling can chose to increase output from their 500-tonne machine, rather than running a smaller-cavitation mold at extremely fast cycle times that significantly stresses the machine, increasing maintenance costs and reducing its lifetime. SIPA achieved this while taking no compromises on mold robustness: in fact, thanks to features like the SmartLock™ stack design (which delivers excellent component life), XGuidance™ (which guarantees perfect mold alignment) and its superior LongLife™ treatment, the expected life of this mold will exceed industry standards.

"We are using open and available technology that can be mounted not only on SIPA XFORM GEN3 500-tonne production systems but also on other compatible platforms on the market, as long as they do not incorporate special protective software," says Baldassar. SIPA expects a high level of interest from key advanced markets, especially North America and China.



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

SHINING A LIGHT ON OUR PROWESS IN PACKAGING DEVELOPMENT

SIPA has just opened a brand new showroom at its headquarters in Vittorio Veneto. This is no normal showroom for a machine maker though. In fact, there is no equipment in sight. This showroom is located where our experts in packaging development are hard at work creating new designs of containers. It highlights how we can help our customers in creating outstanding packaging that makes the best use of PET – and, of course, SIPA processing technology.

The showroom puts innovative containers – lightweight bottles, large formats, all sorts of specialities – in the best possible light. Literally: the products are all there in beautifully lit displays.

Laurent Sigler, SIPA's Innovation and R&D Director, gives a taste of what is on view: "We have some big lit boxes showing off really striking samples of how we can go large: stackable containers for example, and the collapsible beer keg we worked with major beer producers to bring to reality. SIPA is the undisputed leader for large size applications, thanks to our SFL 1XL and SFL 2/2 platforms. These machines can make containers for all sorts of applications – beer, oil, water, whatever – and we can supply a total solution that includes a complete line and, of course, hands-on help with product design and development.

"Then there is the wall dedicated to smaller specialties that you can produce with any one of the multiple solutions that SIPA has for this segment. We have for example the ECS SP single-stage platform for low- and mid-level outputs, and complementary to that is our two-stage approach. The SFL platform is recognized by the market as the reference linear blowing system, thanks to its versatility, its ease of use, its energy-saving features, and numerous other aspects."

We invite current and potential customers to come to Vittorio Veneto to find out, close-up, what our creatives are capable of, and how they can work with you to develop your next prize-winning designs.

OLD MEETS NEW IN PET CHURN FOR DAIRY DESSERT

Milk churns have taken a new turn in their development history, and SIPA can take some of the credit. It is a little-known fact that the first churns were made of wood, and were used for "churning" milk into butter. Only some time later did they begin being used (on British railways) for transporting milk. Weight considerations drove the change to steel, which is what some of us may still have faint memories of.

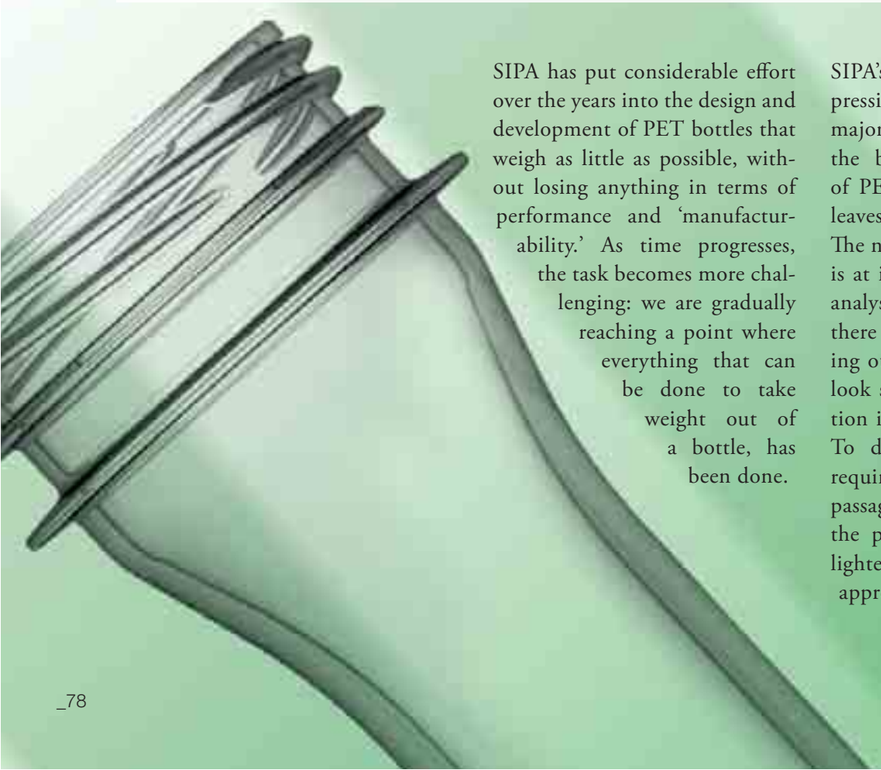
The milk churn conjures up visions of an idyllic past when we were closer to nature, which is probably why the design lingers on in packaging for dairy products. Glass jars not dissimilar to churns are quite a regular feature on shop shelves. Now the story has taken a further twist, with a UK company making miniature churns in PET for premium desserts. They are injection-stretch-blow moulded on a SIPA ECS SP 50 unit, and SIPA also made the moulds.

British premium packaging designer and producer Aegg did the original design work on the PET churns. SIPA then made sure it would work on an industrial level, then sample containers were moulded, measured and tested in SIPA's laboratory and presented for approval – which was quickly forthcoming. Now, delicious desserts in lightweight 135-mL PET churns are appearing across the UK in well-known up-market supermarkets.

Aegg says that as many food-handling factories have a 'no glass policy' due to any breakages potentially causing major health hazards and severe production issues, what it terms this 'mock glass' product not only looks great, but can be used within a safe environment, making it highly practical and cost-effective.

Aegg's managing director, Jamie Gorman, says the pot is most probably unique in the market, and is a clear eye-catcher. He says Aegg is developing a number of recyclable PET injection stretch blow moulded products to enhance its existing product range, which will be available soon.

SIPA PUTS ITS WEIGHT INTO MAKING BOTTLE NECKS LIGHTER



SIPA has put considerable effort over the years into the design and development of PET bottles that weigh as little as possible, without losing anything in terms of performance and 'manufacturability.' As time progresses, the task becomes more challenging: we are gradually reaching a point where everything that can be done to take weight out of a bottle, has been done.

SIPA's XTREME injection-compression technology was the last major step forward in thinning the base, body and shoulders of PET preforms – so that just leaves the neck finish.
The neck is where the bottle wall is at its thickest, so a superficial analysis might conclude that there is good potential for taking out weight. But an in-depth look soon reveals that the situation is rather more complicated. To design a lightweight neck requires a detailed study of the passage of the product all along the process chain. Designing a lighter neck requires a holistic approach that takes into consideration the molding of the preform and the bottle, and also their damage-free handling, filling and sealing.

Here are some of the things that SIPA looks at when designing a new lightweight neck:

- How will the design perform all along the line, and how can we minimize the need to change the configuration of existing molding and filling operations?
- How can we minimize the modifications necessary to existing injection molds?
- How does the neck perform when the bottle is being filled?
- Can we increase potential for down-gauging by further optimizing air vents and exhaust during the filling process, and using special treatments on the mold surface?

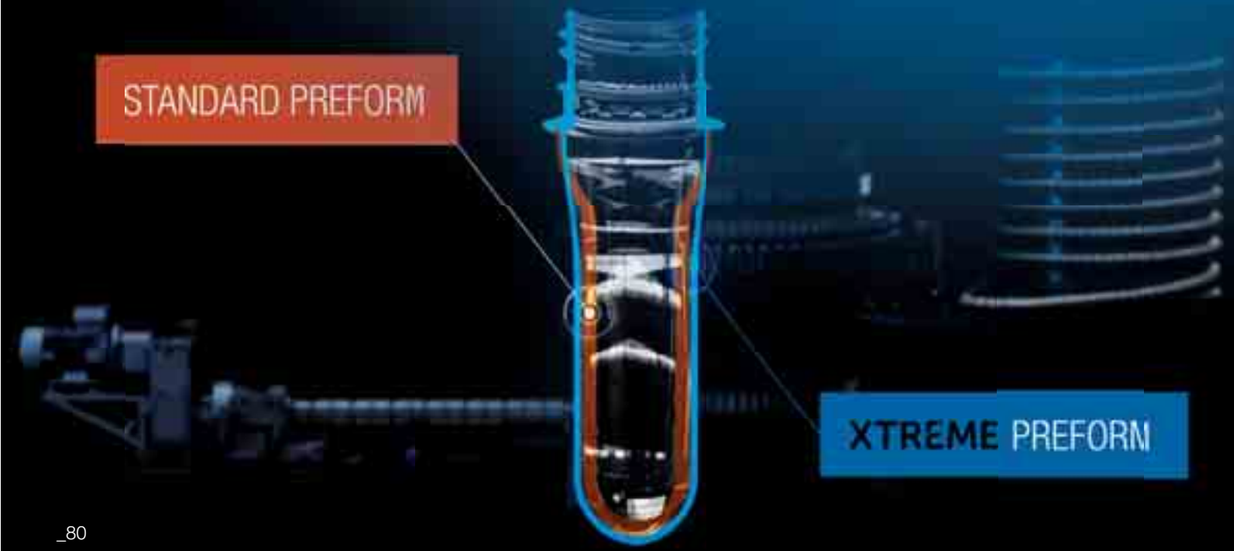
Once all these questions have been answered, the time has then come to carry out internal tests to validate the new neck against the standard and, if possible, tests at the customer.

NECK FINISH LIGHTWEIGHT FOR BERICAP'S HEXALITE

Here is a brief example of how all this thinking recently played out successfully in practice: SIPA has adopted a neck improvement proposal by Bericap, creating a preform with a new slim neck finish for standard 26mm closures – like Bericap's HEXALITE closure range. The newly developed neck finish is incredibly 23% lighter than the original. Users of preforms with the new neck can cut down their PET consumption without compromising on container performance. In addition, no modifications are needed to existing preform handling equipment.

XTREME: ONE GIANT STEP CLOSER TO THE PERFECT PREFORM

SIPA's XTREME injection-compression molding technology is like no other in its ability to make high performance thin walled PET bottle preforms. What's more, it does so in a highly energy-efficient way, and just as fast as traditional injection molding technology. This remarkable achievement is due to its continuous, non-sequential mode of operation. XTREME technology uses a carousel (wheel) system in which individual molds are fed by a continuously running extruder. The carousel rotates at high speed, with all mold opening and closing movments, as well as transfers, driven by cams, making it impossible for any mistakes to be made when setting up the machine.



A typical XTREME preform for a 0.5-L bottle is immediately distinguishable from its injection molded counterpart by its perfect injection gate. What is not so obvious is the difference in wall thickness. The base of the XTREME preform is 33% thinner than its rival: 1.0 mm versus 1.5 mm. Extra length and lower thickness together provide for a more optimal stretch ratio when the preform is made into a bottle. In fact, L/T ratios achievable with XTREME technology are indisputably the highest in the industry.

To achieve such lightweight preforms with very thin wall thickness using standard injection molding, a massive amount of pressure would need to be used – something like 1500 bar when measured at the machine nozzle. That puts an almost incredible amount of stress on the polymer.

By contrast, XTREME technology running with the same output requires a melt pressure of only 270 bar – less than 20% as much. The main reason why it is possible to fill the molds using XTREME technology using such low pressure is the floating core. With injection molding, when melt is injected, the molds are already closed and the core position is fixed. So if you want a preform with a base thickness of 1.5 mm, all the melt has to pass through a passage 1.5 mm thick before it can fill the cavity (since, of course, the injection point for the preform is at the base). With XTREME technology, when the melt is injected, the cavity is slightly open and the melt passage is therefore far wider, at 10 mm. Then the core moves into its final position, forcing the melt up the cavity walls.

The net effect is a much more gentle treatment of the melt. All this means that acetaldehyde (AA) levels are reduced by up to 40% compared with traditional injection molding, and resin intrinsic viscosity (IV) falls far less: over 70% less in fact. Obviously, this improves the mechanical properties of the bottle.

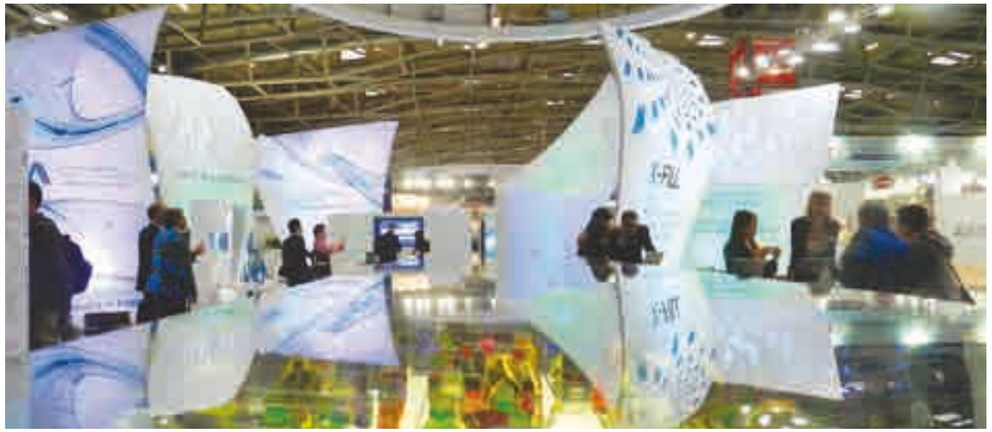
Improved distribution of material around the base of the preform also enables improved cooling, with no crystallization in the gate area. Furthermore, there is no sign of the "crown" gate typical of injection molded preforms.

Not only do preforms made with XTREME technology have optimal L/T ratios, they also have optimal designs overall, with a much better distribution of material throughout the part than can be achieved with injection molding. So while the base is much thinner, the lower sections of the walls are actually thicker, which has another important influence on the mechanical properties of the finished bottle.

In addition, XTREME preforms have thinner walls just below the support ring, where in injection molded versions there is an excess of material. As much as 0.6 g can be shaved off the weight of the preform in this area alone.

NEXT EVENTS 2017/2018

31 OCT. - 02 NOV.	**GULF FOOD MANUFACTURING 2017** DUBAI, UAE	*www.gulfoodmanufacturing.com*
22-24 NOV.	**CBST 2017** SHANGHAI, CHINA	*www.chinabeverage.org/cbst_en*
24-27 APR.	**CHINAPLAS 2018** SHANGHAI, CHINA	*www.chinaplasonline.com*
07-11 MAY	**NPE 2018** ORLANDO, FLORIDA, US	*www.npe.org*



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