FOCUS ON
SINCRO BLOC FOR EDIBLE OIL

PET PACKAGING NEWS OF THE WORLD

SIPAMAGAZINE

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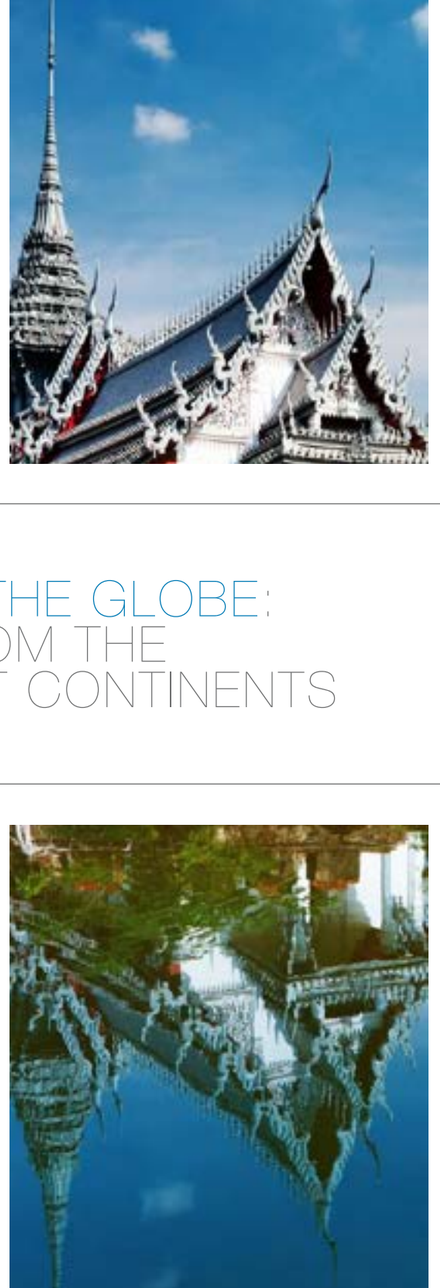
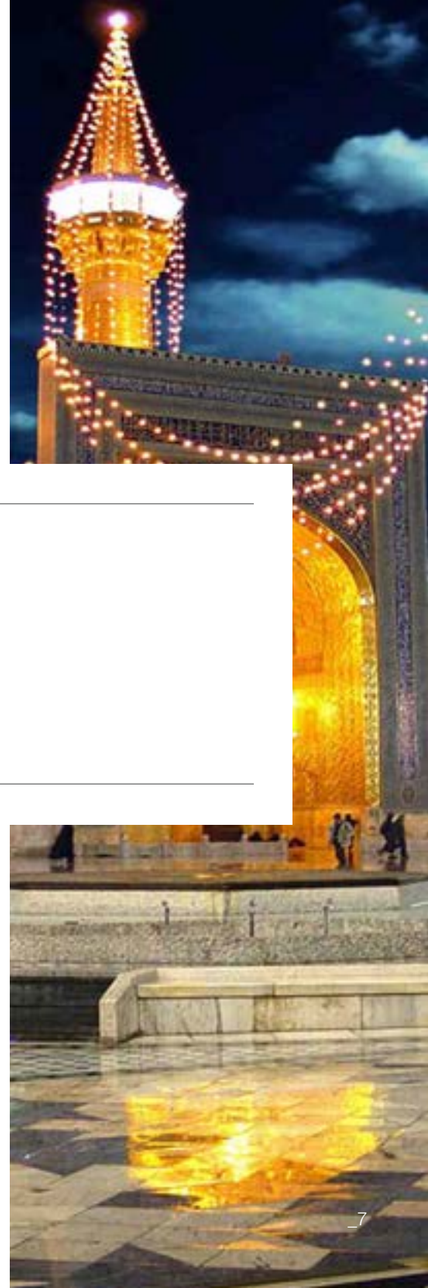
EDITORIAL

WASTE NOT, WANT NOT

I was reading an article the other day about just how wasteful we humans can be. This one was about food waste. Apparently, around one third of all food produced in the world for human consumption is wasted at some point along the supply chain: something like 1.3 billion tonnes a year. Once I had learned this almost incredible, I was led on a train of thought about the business we are in, rigid PET packaging. This started with the most obvious notion that PET packaging is an excellent way of preserving food – and as we continue to develop barrier systems, it is getting better. But then I was diverted into consideration of other types of waste, and the numerous routes that SIPA is taking to ensure that our technologies – and the ways they are used by our customers – are ecologically as well as economically benecifical to all, thanks to our ECO² program. This program is divided into four categories: resin waste and recycling; energy waste; space waste; and finally, the rather intangible logistic waste – which I guess includes the waste of that other resource we all value increasingly as we grow older: time. I shall begin with resin waste and the related subject of optimum resin usage: of course, injection-stretch blow molding is the ideal way to make bottles because, unlike some other technologies, nothing is wasted: every granule ends up in the bottle. At SIPA, we have been at the forefront of the movement to minimize just how many granules make a bottle, with various ground-breaking technologies aimed at lightweighting the bottle body, the base, the neck, and even the cap. And with our XTREME compression molding technology, now in commercial use at our customer Suntory in Japan, bottles are lighter still. Furthermore, the consistency of our processes means that the number of preforms and bottles that end up being rejected for being out of tolerance is negligible. I would also like to mention another, brand new, XTREME technology, which we will be covering in depth in the next issue of SIPA MAGAZINE. This is called XTREME RENEW. SIPA has worked closely with EREMA, a world leader in recycling technology, to develop an integrated system for producing PET preforms using XTREME technology from post-consumer waste as cost-effectively as possible. The system, which starts with EREMA's VACUREMA process, operates without the need for pre-drying and regranulating flakes before reprocessing – something that can waste considerable amounts of energy. But this is far from the only innovative approach that SIPA is taking to combat energy waste. Our XFORM preform injection molding systems are class leaders in terms of energy consumption, the "green" ovens we offer on our reheat stretch-blow units are highly energy efficient, and of course our single-stage ISBM systems mean that the energy needed to reheat preforms is minimized. The compact nature of SIPA systems provides further waste-saving bonuses, and not just in terms of floor space – important though that often is. Keeping everything close together yields benefits in energy consumption, and this is particularly the case with our Sincro units that combine separate operations such as stretch-blow molding and filling in highly efficient monoblocs. Most recently, we have taken the Sincro concept a step further by applying it to our XTREME technology. As we described in an earlier edition of SIPA MAGAZINE, the Sincro XTREME, the world's first injection- compression-stretch-blow molding system, combines the flexibility of two-stage systems with the convenience of single-stage system. Obviously, Sincro XTREME can be also integrated with SIPA's Flextronic filling systems. Sincro XTREME also provides another example of SIPA's aim to simplify logistics by eliminating the waste-creating steps involved when two individual steps in the complete pellet-to-pallet system are separated by time and distance. So I invite you to take a few minutes to go through this issue or SIPA MAGAZINE to discover how we are helping customers cut waste in materials, energy, space, time – and yes, money! You can also find out about some of our latest innovations in mold technology, Xcore and Xvent; read about the third generation of our XFORM 500 high performance preform production system; and much more.

Enrico Gribaudo
General Manager





AROUND THE GLOBE:
NEWS FROM THE DIFFERENT CONTINENTS

SIPA GIVES ATLAS SUPPORT TO SPEED UP WATER FILTER HOUSING PRODUCTION

SIPA is a byword for innovative packaging technology. It has contributed in many ways to lightweighting solutions for bottles and preforms used in the drinking water industry. So maybe it should not have come as too much of a surprise when it was contacted by Atlas Filtri in search of help with one of its own water-related developments – even if the query had nothing to do with bottles.

Atlas Filtri is the benchmark company for water filtration and treatment solutions, producing vast numbers of filter housings and cartridges in various sizes every year, and with a constant focus on quality and innovative processing technologies. Just like SIPA, the company is always researching new solutions, improving and innovating its own products, processes and services. Many

of Atlas Filtri's filter housings look very much like large bottle preforms. They are in fact injection molded in PET. The main difference is that these housings don't go onto be blow molded into bottles. Atlas Filtri was very keen to introduce improvements to its manufacturing operations in order to increase productivity for one particular housing. So it called on SIPA for help.

The company asked SIPA if it could assist in developing a new version that had the same properties as the original, but which could be

produced more quickly – it was looking for a shorter cycle time.
At the time of writing this story, SIPA has succeeded in producing several different prototype molds for housings to optimize weight and performance. Work continues on cycle time reduction, but Alberto Uliana, in charge of the project at SIPA, is certain that with the use of a cooling system similar to that used for PET bottle preforms, it will be possible to arrive well below the target.

Atlas has been getting ready to produce some test moldings for homologation, before deciding which design to go into production with. Once it comes to its conclusion, SIPA will produce a blower for series production.
Atlas Filtri makes water filters in a range of sizes, but this one is the most critical, says Uliana. If the new design proves successful – and there is no reason to believe that it won't – there are good chances that SIPA will be asked to collaborate on further projects.
"Atlas Filtri saw in SIPA a potential partner with a level of technical competence high enough to support it in this important development," says Uliana. "We have used our knowledge and expertise in injection molding of PET packaging and applied them successfully to a rather different form of packaging. I look forward to future collaboration with our new partner!"

SIPA HELPS GRAHAM OPEN NEW CHAPTER IN PET FOOD PACKAGING

GRAHAM PACKAGING COMPANY

ThermaSet® PET containers from converting giant Graham Packaging could be the next big thing in food packaging. These hot-fillable, pasteurizable and retortable wide-mouth containers are set to provide serious competition to glass jars and possibly metal cans too.

They provide cost advantages along the production chain, can be used as drop-in replacements on existing filling lines, and have increased shelf appeal for consumers.

Graham Packaging is making them on SIPA single-stage injection-stretch-blow molding systems. The new PET jars are just now beginning to appear on supermarket shelves after exhaustive testing and consumer acceptance trials. They are "the future of food packaging," says Graham Packaging.

Graham is currently producing 16-ounce and 24-ounce "blow and trim" ThermaSet® containers on a SIPA ECS system that was specially designed for the process. This system has an output of up to 11,000 units per hour. (Blow and trim is a process for making wide-mouth jars from standard preforms, by incorporating the thread into the blown part of the container and then laser-trimming and recycling the top to provide a

perfect sealing surface.)
The ThermaSet® containers score big-time over glass jars when they hit the scales: the 24-oz jar for example (that's around 730 mL for Europeans) weighs just 37 g, which is only a little more than one tenth the weight of a glass jar. Despite this, they are still very robust: they are capable of withstanding filling temperatures of over 96°C (205°F), and once filled and capped, they can be pasteurized for 5 to 10 minutes at over 96°C (205°F). The containers accept a variety of closures typically used for glass jars and metal cans. The first jars hitting the market shelves, for example, have metal lug closures that are fitted on capping equipment normally used for glass jars.
SIPA Key Account Manager Denis Marcon says Graham Packaging chose SIPA because it wanted a high-output, highly capable single-stage injection-stretch-blow molding system. The ECS FX20/64 is capable of producing containers with the very high performance required for the filling process and for the remainder of the supply chain, all the way to the kitchen. "The ECS is the fastest single-stage system in the world," he adds.
Some more advantages of the ThermaSet® jars are: trucks can carry close to 30% more units than glass versions before they reach their load limits; breakages are virtually eliminated along the production and transport chain, or if a jar falls off the shop shelf – with important savings in production downtime and clean-up; ThermaSet® jars are much more resistant to thermal shock caused by rapid cooling after hot filling, so lines can run faster and energy consumption can be reduced; noise on the filling line is notably lower than on lines filling glass jars; and because of the narrower wall thickness of the ThermaSet® jars, more can fit into the same display space.
It goes without saying that the jars are fully recyclable.

***Graham Packaging** - ThermaSet® Blow Molded PET Container*
2016 Diamond Award

SIPA HELPS CASTELO ALIMENTOS OBTAIN CHAMPAGNE FROM VINEGAR

The corks were popping at leading Brazilian foods packaging producer Castelo Alimentos when a new design for its vinegar bottles picked up a top prize late last year. The Grandes Cases de Embalagem awards, which honor excellence in Brazilian packaging, are sponsored by Embalagem e Marca magazine, a leading packaging trade magazine based in São Paulo.

The 750-mL vinegar bottles were designed by Castelo Alimentos in collaboration with SIPA, and they were produced on a SIPA high-speed single-stage ECS HS 12/32 EVO injection-stretch-blow molding machine. The elegant designs, with their delicate "engraved" swirling patterns, are light, strong and sustainable, and they are helping Castelo Alimentos make a

quick return on its investment.
The company installed the "Evo" version of the ECS HS at its plant in Jundiaí, São Paulo, in 2014, after eight years of successful operation with its original ECS HS system. It invested some 6 million Reais in the new production set-up.
The new line of vinegars came onto the market last year. The 750-mL bottles are lighter than the previous versions – down from 17 grams to 16 – and yet they are 40% more resistant. This has a considerable effect on overall productivity along the supply chain: Castelo Alimentos has been able to halve its losses caused by bottle damage during transport. Overall productivity is up 20%. The ECS HS is an extremely robust and reliable system, producing very high quality preforms and bottles at a highly attractive price point.
The two systems at Castelo Alimentos operate in a facility very close to the filling line, feeding an intermediate buffer zone so that supply is constantly available for the filling lines. The company is currently bottling around 70 million liters of vinegar, in various flavors, every year. Each ECS HS system produces up to 11,500 bottles per hour.

Both systems can produce the bottles of different sizes: Castelo Alimentos also packs vinegar in bottles sized 750 mL for other brands and 520 mL Vinegar Castelo. The packaging company has chosen to use the same 16-g preform for all sizes, so that product changeover

is extremely fast – only the blow molds need to be changed.
"SIPA is unique in the market with its complete know-how about both PET injection and blowing under the same roof," says Marcelo Cereser , Castelo Alimentos director. "Our new bottles are an example of the synergy of dedicated preform design, bottle and packaging development. The result is the lightest and the most attractive bottle for vinegar by far in the

markets we serve."
Says Pablo Fiorentini, Account Manager at SIPA: "Single-stage technology for this kind of container is the preferable technology since it guarantees the most effective output and the needed flexibility. Furthermore, the SIPA HS, and its sister, the ECS FX, are for sure the most reasonable choices in single-stage systems when volumes are quite high."

SIPA HYBRID BOTTLE BLOWING AND FILLING LINE IN ARGENTINA TAKES THE HONORS AT ARCA CONTINENTAL

"The best hybrid filling line in all of Arca Continental South America." That is what a top executive from Arca Continental, one of the region 's largest Coca-Cola brand bottling companies, calls a new line from PET technology specialist SIPA for bottling a wide range of products at its plant in Salta, Argentina.

The line is blowing and filling PET bottles in sizes from 300 mL to 2.25 L with carbonated and still drinks, using hot and cold filling techniques. Brands running on the line include Coca-Cola, Aquarius and Powerade sports drinks, Cepita fruit juices, and Fuze "new age" drinks with added vitamins. Hot-fill drinks are being bottled at a rate of up to 30,000 bottles per hour (300-mL Cepita for example), while 500-mL bottles of cold-filled Aquarius and 600-mL bottles full of Coca-Cola come off the line at a rate of 40,000 per hour. "The SIPA system provides us with the highest flexibility of any filling line in South America," says Alejandro Molina Sánchez, Executive Technical and Supply Chain Director with Arca Continental. "It's great that we can bottle so many different types of drinks in such a wide range of sizes, so quickly, on a single line."

The line in Salta is one of fourteen production units that Arca Continental operates in South America. It has two more in Argentina, in Tucumán and Formosa, three in Ecuador: in Guayaquil, Quito, Santo Domingo and eight in Peru.

SIPA supplied Arca Continental with a turnkey operation for the filling operation in Salta. Based around a SincroBloc system that incorporates an SFR 20 EVO rotary blow molder and an Isotronic HR 100-20 isobaric filling section into a single, fully integrated unit, the line stretches all the way from a syrup room to a SIPA Genius PTF palletizer with Fastlayer robotic layer preparation and SPF/E pallet wrapper. Along the way, it takes in such sections as fill level and closure control, laser bottle coding, an automatic cooling tunnel, sleeve wrapping, and shrink packaging.

Says Ezio Magagnin, SIPA's account manager responsible for Arca Continental in South America: "This line is not only highly flexible in terms of the bottles it can blow and fill, and the drinks it can handle: with its filling val-

Alejandro Molina Sánchez
Executive Technical and Supply Chain Director.

ves controlled by magnetic flow meter, the Isotronic HR unit provides very high performance and accuracy."
Arca Continental is a long-standing customer of SIPA's. At its plant in Guayaquil, Ecuador,for example, it has two SIPA SFR 12 EVO rotary blow molding units, as well as a complete blowing and bottling line based on an SFR 16 and an Isotronic SC isobaric volumetric filling Monobloc. In Quito, there are three stand-alone rotary blow molders – an SFR8, an SFR 12 and an SFR 12 EVO – as well as an SFR 12 EVO feeding a line producing hot- and cold-filled bottles using a SIPA Stillfill HR gravity filling monobloc.

KHOSHFORM UPS THE PACE OF PREFORM PRODUCTION WITH SEVEN SIPA XFORM 500

Iran's largest producers of PET preforms is banking on SIPA in its latest round of expansion.
Khoshform, which has operations in the cities of Mashhad (Khoshform Toos) and Qazvin (Khoshform Caspian), has, other than 10 different Husky machines, 7 XFORM 500 preform injection molding system at both locations, all of them running with 96-cavity molds. The XFORM 500 systems produce preforms for carbonated soft drink, 38mm-neck dairy products and for mineral water bottles; the XForm 500 has the capability to run legacy tooling as well.
Khoshform has been on a steep growth path since it started making PET preforms in 2003. Both of its sites have benefitted from surging demand for drinks bottled in PET, both at home and in neighbou-

Dr. Hajrezapour, owner of Khoshform (left) and Stefano Baldassar, SIPA's Global Sales Manager PET Systems

ring countries. It has connections to numerous major international brand owners.

The company makes preforms weighing as little as 10.4g and as much as 54.75 g, for bottles ranging in size from 300 to 2500 mL. It has an extensive park of molds, so investing in the XFORM 500, with its ability to accept large molds from all the top suppliers, makes a lot of sense. "The full compatibility of the SIPA XFORM with our existing equipment is a great advantage for us," says Dr. Hajrezapour, owner of Khoshform. "This has given us extra versatility in our production. And the XFORM 500 system produces high quality preforms with high consistency. The machines have already proved to be very reliable, and we have quickly grown accustomed to the new platform. "With its latest technology, SIPA has made a big leap forward. We appreciate this, because at Khoshform we look only for the best in class. Our customers own the most important international brands in the beverage business, and they audit our production regularly – so we cannot compromise on the quality of our equipment."

Khoshform has only recently come to SIPA. After it heard good things about the company from existing SIPA customers in the region, top executives had a close look at an XFORM installation. They carried out a technical survey and set the system against its competitors. In a complete comparison, taking into consideration such critical factors as cycle times, running cost and initial investment, the XFORM came out on top. SIPA has the extra advantage of being able to provide local service from technicians close by – another important selection criterion for Khoshform.

Khoshform appreciates the XFORM 500 injection molding system as a solid tool with a robust design and construction, says SIPA's Stefano Baldassar. "They are very efficient, especially for the sorts of preforms used for CSD bottles, which have thicker walls than some other types, thanks in part to their multi-stage cooling robots." The Best-in-class platen parallelism guarantees unprecedented mold life and extremely low refurbishment costs. Stefano Baldassar also says that the complete integration of auxiliary equipment into the XFORM 500 systems makes them easy to use by operators. "Plus, mold changeover is easier compared to other systems, thanks to the great accessibility provided to the clamp area. This helps make moving from one mold to another quick and safe."

SIPA HELPS KLINTPACK KEEP IT SIMPLE

In the town of Ban Khlong Suan, just south of Bangkok, PET bottle maker Klintpack is renewing its machine park. It has decided that it wants to concentrate, not only on a single supplier, but also on a single type of machine. And it has chosen SIPA's SFL 6/6 linear stretch-blow molder. The unit went in last year. The first is producing 1.5-L bottles for mineral water, at a rate of 8400 bottles per hour.

Tanakrit Juthamaneesirikul, President of Klintpack, has a strategy of keeping things simple. By choosing the SFL 6/6, which has a high level of flexibility in the type and size of containers it can produce, as well as a high level of reliability, he can save on spare parts and maintenance. He can also take advantage of the SFL's high output. Plus, its compact dimensions mean floor space require-

ment is minimized.
Mr. Juthamaneesirikul became attracted to the SFL when he saw a unit running on the SIPA stand at the K 2013 in Dusseldorf, Germany, just under three years ago. He was at the international plastics show looking for European blowing machines to replace Japanese single-stage equipment he had been using for several years. The model is ideal for Klintpack's purposes, since it provides the company with the capability to provide a variety of products for its focus market of medium-sized packaging customers.

AROUND THE GLOBE - THAILAND

FOCUS ON:
SINCRO BLOC FOR EDIBLE OIL

SYNCHRONIZED BLOWING AND FILLING OF EDIBLE OIL BOTTLES

Synchronization is everywhere. At the movies, we watch the Mission Impossible team synchronize watches to make sure their incomprehensible plot goes to plan.
On the sports channels, we marvel at the beauty of synchronized swimming and we cheer when the relay runners exchange batons at full speed, millimeters inside the box.
We synchronize our electronic devices to make sure we always have access to critical documents (or maybe the latest song by Adele).
For the industrial world, SIPA has the Sincro Bloc system for blowing, filling and capping bottles.
It could be filling the bottles with just about any sort of liquid, but today we focus on systems for edible oil.

SPACE AND COSTS CONTAINED

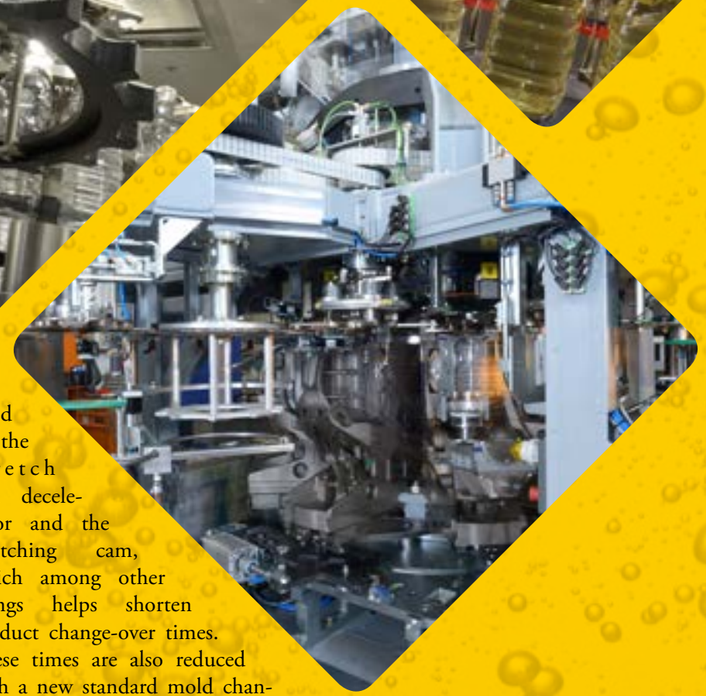
Sincro-Bloc is a highly compact, fully integrated system that can produce and handle up to 30,000 bottles per hour. By bringing together, in perfect harmony, the best technologies available today on the market in blowing, filling and capping, it ensures the highest performance in the smallest space possible. The SFR rotary blower and the Flextronic W weight filler are synchronized electronically, with a bottle transfer unit linking them together.
Not only is space reduced, but so are the costs. The entire system can be controlled by one operator; energy consumption is cut by eliminating any air conveyors; there is no need for any rinsers, so water consumption is minimized too. Costs involved in product changeovers and in maintenance are also kept down.

MAXIMUM EFFICIENCY

The low costs are complemented by high operating flexibility, hygiene, and overall efficiency. The Sincro-Bloc can for example handle a wide range of body, neck and cap shapes and sizes, and various tools installed in the equipment reduce any change-over time.
Efficiency obviously comes through the electronic coupling of the blowing and filling operations, with no bottlenecks in between. A special cap feeding unit eliminates obstacles in the chute. Overall efficiency can be as high as 98%.

EVOLUTION IN BOTTLE BLOWING

SIPA continues to improve the Sincro-Bloc system. It can, for example, now be fitted with the SFR Evo3 rotary stretch-blow molding unit, which is faster than its predecessor but still manages to use up to 25% less air, and less energy too. Improved oven efficiency, special reflectors and lamps, and more stable process conditions all add up to an energy consumption reduction in this area of up to 40%.



Thanks to new designs in the clamp unit and in the cams that have reduced moments of inertia, the SFR EVO3 has a maximum output rate of 2250 bottles per hour per cavity, which makes it highly competitive.
The SFR EVO3 can be equipped with electrical drives for the stretching rods. This brings much more versatility in fine tuning the process compared to pneumatic drives. Stretch rod timing, speed, acceleration and distance can all be controlled with ease. Electric drives are perfect for the Sincro Bloc, since it is so much easier to match the blowing operation to different filler speeds.
Electric drives mean there is no need for the stretch rod decelerator and the stretching cam, which among other things helps shorten product change-over times. These times are also reduced with a new standard mold changeover system on the SFR EVO3 that is quick and easy to use.

With the standard mold change-over system, each cavity can be changed in 100 seconds, which is already fast. But with optional tool-free systems for extra-quick changes in the shells and the bottom mold, that time can be cut to just 35 seconds.

HIGH LEVEL OF HYGIENE

SIPA pays special attention to how preforms are treated in the Sincro-Bloc, to ensure maximum levels of hygiene. The hopper and descent chute into the blow molding section are completely covered and equipped with an over-pressure module, for example. Dust inside the preforms is virtually eliminated by a combination of ionized air and suction. UV lamps or pulsed light keep the neck areas clean, and the oven aspiration system is equipped with special filters.
In the transfer module between the blowing and filling units, cleanliness is further maintained by having the module completely closed to the outside world, and also over-pressurized with sterile air. The bottles are transferred using grippers on the neck ring, to minimize any equipment modifications when bottle shape or size is changed. If the neck finish stays

the same, no hardware modification is needed at all.
Although the Sincro-Bloc is fully enclosed, it is far from being a “black box.” Transparent glass guards provide full visibility, and access to the line, when required, is optimized.

FLEXTRONIC W WEIGHT FILLER

The Flextronic W weight filler, which SIPA introduced in 2014, has outstanding accuracy and precision that make it a perfect fit in Sincro-Bloc lines for edible oils. It is also very clean, benefitting from SIPA’s extensive experience in development and production of systems for a wide range beverage products, including sensitive ones. Components throughout are in stainless steel, helping make cleanliness easy to maintain.
Weight filling technology is considered the most reliable, clean and efficient system for filling bottles with edible oil. Overfills are avoided: by measuring the weight directly in the container (net weight), the Flextronic W it takes into account the changes in the tare as well as the temperature or nature of the oil, and adapts to intrinsic changes of the product during the production cycle.

TO CAP IT ALL

Flexibility extends through to capping machines that can be used in the Sincro-Bloc. The Sincro solution requires the use of a cap feeding system that can guarantee the highest efficiency as well as the complete emptying of the units in unlikely case of a cap jam without wasting any single cap, preform or bottle. Every solution that SIPA supplies responds to this requirement. Twin and Single Hopper systems enable feeding to continue even when there is a blockage, for example. In the Cap Stream gravitational feeding and buffer system, caps arrive already oriented at the top of the feeder and descend under gravity to the caps chutes, without the need for compressed air.

THE BEST BOTTLE DESIGN FOR THE LINE

A further improvement in production efficiency can be achieved by having SIPA help in the design of high performance and attractive bottles that perform the best on the Sincro-Bloc system. SIPA can bring its know-how to bear on development of bottles with improved ergonomics – particularly important with edible oil bottles. SIPA has extensive experience in the creation of designs with integrated and embossed grips, and also of designs with separate handles. Bottles can be as small as one liter, or as large as 30. But whatever the size, they will look great on the shelf.

TECHNICAL WINDOW ON SIPA PRODUCT PORTFOLIO: LATEST DEVELOPMENTS

XFORM 500 ENTERS ITS THIRD GENERATION

Just four years after its market debut, SIPA's XFORM 500 high-volume PET preform production system is taking its third evolutionary step. The XFORM 500 GEN3 is now available.
The latest system incorporates numerous new design features to allow reductions in cycle times and increases in overall system performance.
They include:

- higher injection speeds: lower energy consumption;
- a reduced lock-to-lock time-now under 2.5 seconds;
- a new design of the XFlow screw for increased throughput;
- more efficient post-mold cooling technology for record-low cycle times;

and capability to install any generation of legacy tooling without any modification to the mold.

The new XFORM 500 GEN3 can be equipped with the very latest SIPA GEN3 tooling technology, which is full of innovative features, including:

- 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.

Extremely low maintenance costs and extremely long mold life are among key features that differentiate the XFORM 500 platform from the competition, and two of the many reasons why the market has embraced it so enthusiastically.
Since the XFORM 500 first saw the light of day at the NPE plastics exhibition in Orlando, Florida in 2012, SIPA has sold over 60 units to most of the leading players in the market.
All through May, SIPA hosted an open house in Vittorio Veneto to show off the new XFORM 500 GEN3 equipped with its latest 144-cavity GEN3 tooling. The system produced light preforms for a still water application, running at a cycle time below 5.3s.
The good news does not stop there. SIPA is also introducing ground-breaking 180-cavity preform tooling, designed to maximize system output at large preform producers. Featuring a completely new hot runner technology capable of delivering an outstanding flow balance, the new tooling is a perfect complement to the new XFORM500 GEN3. Together, they are capable of producing over 120,000 preforms per hour.
And since, as the Italians say, there isn't two without three, SIPA is embarking on an extension of the XFORM platform. As is well-known in the market, the XFORM 500 is fruit of a strategic cooperation between SIPA and leading injection molding machine manufacturer Engel. The two companies have now finalized an exclusive agreement that will result in the launch of two additional platforms within the next 12 months. The two new systems will accept small and medium-sized molds.

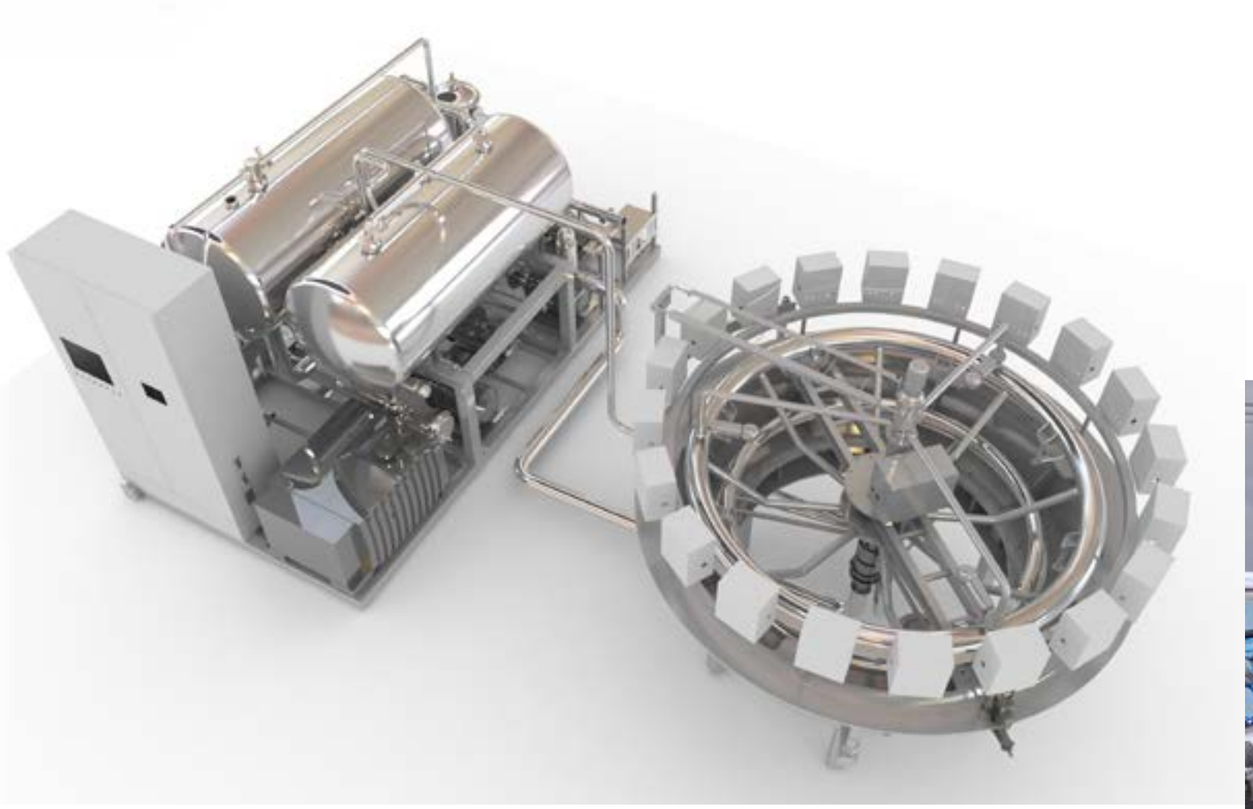
TECHNICAL WINDOW - XFORM 500 GEN3

ENERGY-SAVING MEASURES ARE WORTH THE CANDLE

Electricity prices continue to creep up in most countries of the world. That's despite the price of oil being at levels not seen so low for some 13 years and natural gas for power stations increasingly available. But even if prices were to fall, if there were cost-effective ways to cut energy consumption in industrial production, it would still make sense to use them.
Well, there are ways, and SIPA offers many of them in areas all along its lines for producing and filling bottles, through to shrink-wrapping them. SIPA has identified four areas in particular where energy consumption can be made more efficient: in stretch-blow molding, in filling and mixing, in conveying, and in shrink wrapping. Savings can come directly - for example through the use of more energy-efficient heaters - and also indirectly, via features that, say, reduce the need to compress air.

BOTTLE BLOWING

A major consumer of energy in reheat stretch-blow molding machines is the ovens. With its "green" ovens on the SFR EVO3, SIPA has succeeded in making major savings. Compared to earlier generations of oven, electrical consumption is down by up to 40%, thanks to the use of new lamps and special materials and coatings for the reflectors.
There are also plenty of ways to cut down air consumption in the blowing section. SIPA's high-speed SFR EVO3 rotary stretch-blow molding unit, for example, incorporates several new features that are already helping customers reduce their utility bills.
On the redesigned blowing valve block, dead air volume has been reduced by 35% and air consumption can be as much as 25% less, depending on bottle design. SIPA has also replaced pneumatic compensation with mechanical compensation, so high-pressure blowing air is now used only on the final 0.2 mm of the stroke. This leads to a massive reduction in air consumption, particularly with smaller bottles.
An optional feature on the SFR EVO3 is the ARS Plus system. This recovers air for re-use as primary air and machine service air. Tests on an SFR 24 model fitted with ARS Plus showed it was possible to reduce the total amount of high pressure air nee-



ded by 16%, and cut overall air consumption in half. As a result, the SFR EVO3 can be fitted with a much smaller air compressor, which obviously uses less electricity.

FILLING AND MIXING

Big energy savings can also be made in the filling station. Fillers in SIPA's Flextronic range can be configured in the XFILL version, in which the carbonating or mixing unit tank can be used as a buffer tank for the filler, which then has no need for an on-board product tank.

XFILL makes it possible to reduce electrical power consumption and can also cut consumption of CO2 by 10%. A further advantage with XFILL is that the extra product stability it provides enables carbonated soft drinks to be filled at higher temperatures than before – around 18°C or more – which reduces the need for energy-intensive product chilling. Still more savings are achievable through increased run times. Use of isolator technology and automatic COP (Clean Out of Place) means that run times between separate CIP (Clean In Place) procedures can be extended to 120 hours, cutting overall energy consumption for such procedures in half; water consumption goes down by a similar amount. Hot-fill lines obviously offer potential for energy savings. Thermal recovery systems in the cooling tunnels after the filling operation can capture as much as half of the heat that would otherwise be lost, and channel it into other process areas.

CONVEYING AND WRAPPING

There is even energy to be saved once the bottles have been blown and filled. In the bottle conveying system, for example, a high-end gearbox, may use as much as 40% less energy than a conventional gearbox, and require less maintenance.
The gearbox will clearly cost more upfront, but in most if not all cases, it is an investment worth making.
Energy-saving shrink-wrapping systems can also help reduce electricity bills. Latest equipment has improved hot air channeling systems that direct more heat to the shrink film and less to the conveyor belt, and thermal power and cooling fan speed can be adjusted in real time, according to product output.
The shrink tunnel can also be fitted with automatic doors at both ends to reduce heat loss.

LESS WATER

There are numerous opportunities to save water on filling lines. For example, SIPA's Sincro Bloc units, which combine blowing, filling and capping into a single unit, have no need for a rinser between blowing and filling.

In the filling section itself, the MASSBLEND "liquid ring" vacuum pump with closed-circuit water circulation can cut water consumption by as much as 95%. And for filling operations where a bottle base cooling system is required (for carbonated soft drinks and pressurized products for example), an optional fully draining stainless steel basement with liquid recovery can cut consumption by up to 95% here too.

SINCRO BLOC NOW AVAILABLE WITH LINEAR BLOW MOLDING SECTION

SIPA is extending its successful range of Sincro Bloc fully integrated bottle blowing/filling/capping units.
Until recently, all SincroBloc models were based on SFR rotary stretch-blow molding equipment, but SIPA is now responding to calls from customers, especially those bottling water, who have been asking for a system, both clean and compact, for formats anywhere up to 12 liters. The new SincroBloc system will be able to handle all bottle formats on the market.
As with existing SincroBlocs, the new range stands out for its high level of productivity. A unit based on SIPA's SFL 6, for example, will be able to blow and fill up to 10,800 small bottles every hour. At the other end of the scale, a linear Sincro Bloc incorporating an SFL for large formats and SIPA's BigFill volumetric gravity-filling monobloc for formats from five to 12 liters, has an hourly output capacity of 6600 5-L containers and up to 4000 containers in the very largest sizes.
The linear format has several important advantages, in addition to its compact dimensions. Mechanical movements are simpler than with a rotary stretch-blow section, which also simplifies its use. Total cost of ownership (TCO) is lower too, thanks to lo-

wer investment cost and reduced maintenance requirements.
But just like the original rotary SincroBlocs, the new linear versions excel with their simplicity and hygiene. There is no need for rinsing between blowing and filling, no need for external conveying systems, and total protection from the outside environment from the moment the preform enters the feed shoot until the filled and sealed bottle emerges, ready for wrapping.

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

SIPA LEADS LIGHTWEIGHTING RACE IN COOLER BOTTLES BY A NECK

SIPA has teamed up with a major cap maker to take more weight out of large PET water containers for home and office dispensers. This time, rather than considering the body of the container, it has looked at the neck.

These PET containers - often called HOD containers or cooler bottles - are already much lighter than their glass rivals and even bottles made in other plastics, thanks in no small part to development work carried out by SIPA and key customers on thinwalling and special designs. But SIPA felt that there was potential to make the difference even greater.

Any more reductions in the body of the bottle could lead to a reduction in the performance of the container below specifications. So instead, SIPA set itself the task of developing a new 55-mm neck finish for single-serve designs.

Reviewing existing 55mm neck finishes, SIPA's development team identified several challenges:

- the neck should take a snap-cap so that bottles could be filled on existing lines;
- it must have a reliable anti-tamper feature;
- the entire neck length must be taken into account in order to maximize weight-saving potential;
- material distribution under the support ring needed to be improved in order to maximize the potential for weight reduction.

To best face up to these challenges, it was clear that collaboration with a cap producing company would be necessary. SIPA chose Bericap.

The collaboration with Bericap has led to the development of an all-new 55 mm neck finish that is a whole 25% lighter than previous designs, and a new lightweight snap-cap closure. The neck weighs a mere 11 g, with the height of finish just 14 mm instead of 48 mm.

The closure concept developed by the two partners incorporates a "trumpet" seal. This has several advantages:

- the point of seal is deep inside the neck, where it is protected from scratches and nicks;
- the cap has a one-piece design, requiring no liner, simplifying mold design and part production;
- neck diameter variations of +/- 1 mm are tolerated.

SIPA has already designed a 15-liter bottle incorporating the new neck design, for production on its SFL 2/2 platform. With a height of 463.5 mm and a diameter of 239.55 mm, it weighs just 237.5 g - more than 10 g less than a bottle with a standard neck.

XVENT TAKES THE PRESSURE OFF BLOW MOLDING

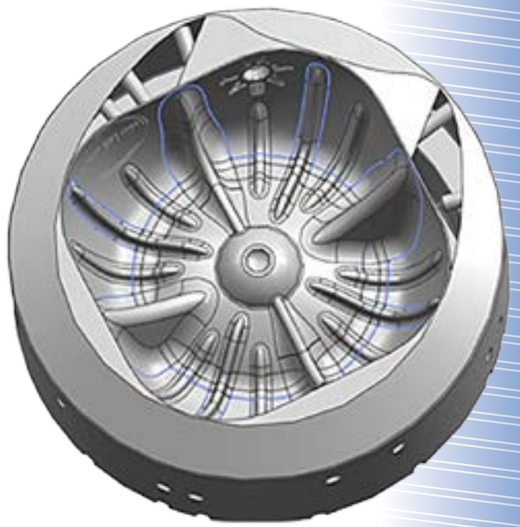
SIPA has developed an innovative new method to help bottle makers produce complex shapes more easily and with less blow pressure, all without having to make any changes to the container design.

Using the patent-pending XVENT method, SIPA incorporates special designs of vents into body and base molds used on reheat stretch-blow molding machines. XVENT makes it possible to use between 10 and 20% lower air pressure than with standard technology, without affecting productivity or the specification of the bottle.

When a preform is blown into a bottle, all the air already in the mold obviously needs to be expelled as quickly as possible so that the bottle takes on the exact dimensions of the mold. Some of the air escapes through the split line and the tiny gaps between the mold for the base

and the two body mold halves, but these fissures on their own are not enough. For this reason, virtually all molds now incorporate numerous venting holes in well-defined positions to allow the passage of air to the exterior of the mold.
These vents are made simply by drilling small holes into the molds in what are considered to be the most critical areas. These holes vary in size, and the smaller they are, the more are needed. From a mold construction point of view, it is better to have fewer, larger holes, but this can lead to clearly visible marks that spoil the esthetics of the bottle.
So to enhance the ability of the bottle to take on the exact shape of the mold, without its esthetics being spoilt, new types of vents are needed. The same argument also applies to special designs of container where conventionally positioned holes are inappropriate. The question is, where should these vents be positioned for best effect, and how should they be designed? The answer is XVENTs.
XVENTs are very narrow circumferential channels, machined into the surface of the mold

in the most critical areas and camouflaged by features in the bottle. These channels lead air to holes drilled into the channels as well as to the gaps between the mold sections; the lay-out of the channels and the positioning of the holes are calculated for each individual mold design, so not as many holes are needed as with traditional technology, and they have smaller diameters.
The strategic positioning of vents – the air flow channels and the holes – in the most critical areas helps ensure that the air between the bottle wall and mold surface is exhausted as efficiently as possible. This permits a better formation of complex shapes and allows a reduction of blow pressure during bottle production.
The challenge for SIPA's technical team was to be able to calculate where to apply the vents to ensure a good formation of all the details in a bottle: sharp edge, logos, tight angles, special base design, and so on. To reduce the level of blowing air pressure required, the vent configurations need to be optimized in critical zones, and these differ from one bottle design to the next. This is why separate studies are done for every new design, in collaborative efforts between the bottle producing customer and the mold designer.
In a series of trials, SIPA experts were able to achieve improved performance in terms of pressure, productivity, energy saving, for the production of plastic containers blown on all types of stretch-blow molding machines. The trials were done on different bottle and base shapes, geometries, sizes and final application (carbonated soft drink bottles with petaloid bases, mineral water bottles with flat bases, and so on).



SIPA HAS DESIGNS FOR YOUR NEXT SUCCESSFUL PET PACKAGE

Appearance is almost everything in the world of fast-moving consumer goods. Shoppers today rush up and down the aisles, looking for things they know they want. So if you have something new and different, it needs to hit theme at a glance. Whether you have a good idea or not of what your next PET container should look like, SIPA has an arsenal of tools that can help you create something that will gain consumers' attention - and which can be produced economically and sustainably.

SIPA is an ideal partner when it comes to designing new containers because it has a team of experts who understand all the key parameters that need to be considered from the seed of an idea all the way through to a successful product. They consider not only the look of a container,

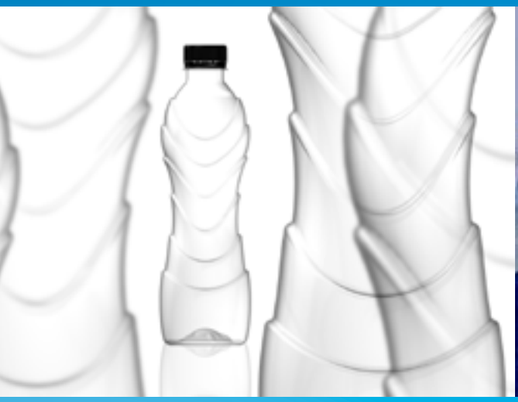
but also how the look fits with the identity of the packaged product, how the container feels and behaves, how easy it is to produce, how it performs on the filling line, in storage, and in transport, and of course how much it costs.

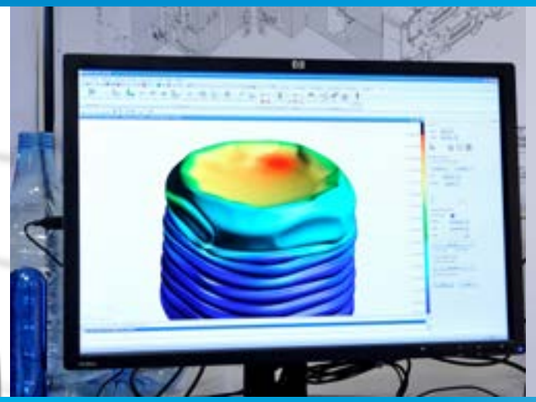
A typical design project can be separated into five steps. These start with the marketing brief from the client, which may include such diverse data as the history of the brand, the target market, an analysis of competing products, and even ideas about the typeface to be used on the label. This leads to Step Two: hand-drawn sketches, concept ideas, and computer-generated 2D proposals. The bottle begins to come alive in Step Three, with 3D renderings, mock-ups and animations.

3D printing is the latest weapon that SIPA's design experts are now using to quickly produce prototypes that have a look and feel very close to that of the final product. 3D printing technologies are advancing rapidly, in terms of the speed at which they operate, the accuracy with which they can turn drawings into actual products, and also the choice of materials that are available to produce the prototypes.

Step Four tackles the feasibility of the product, with such engineering aspects as preform development, technical specifications, stretch ratio calculations, and shelf simulation all being considered. Finding the best shape from an engineering point of view involves several steps. The mechanical performance of the bottle is assessed with the help of Finite Element Analysis (FEA), which makes it possible to predict such things as top load strength,

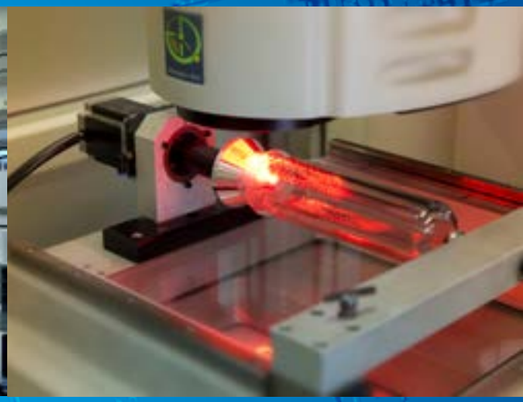
PETWORK - NEW PACKAGING DEVELOPMENT CAPABILITIES





internal pressure resistance, and crushability. Different geometries can be compared, as well as different weights of the same geometry.
In the fifth and final step, technical drawings are finalized, preform and bottle production can be tried, and molded products put through rigorous laboratory testing to confirm computer predictions. Once this has been carried out to fulfilment of the customer's satisfaction, full production can begin.
SIPA has accumulated years of experience working with its customers on the successful design and development of all sorts of PET containers, for food and drink products, as well as non-food products.
Recently, SIPA scored a significant success with its collaborative approach, when it helped bring to market a new PET bottle for a "premium" mineral water. This was an existing product, well appreciated in the market, but still packaged in glass. The customer wanted a design that would give the right quality cues, to convince high-end customers that the mineral water was a premium product, though no longer in a glass bottle. SIPA worked in a threesome, with the customer and an external consultant, on various design concepts. Its challenge was to implement features such as sharp cuts and angles in PET, giving the bottle a cut-glass look.
Without deviating far from the original proposal, SIPA produced new renderings that satisfied not only the customer's marketing needs, but also the functional requirements for the bottle.
After the switch from glass to PET, the client gained 16% more customers, and also took a big step towards its targets in Corporate Social Responsibility. By choosing PET, it reduced its carbon footprint for the product by a massive 65 per cent.

PETWORK - NEW PACKAGING DEVELOPMENT CAPABILITIES



XCORE PUTS A NEW SHINE ON OLD MOLDS TO SAVE WEIGHT IN PREFORMS

SIPA is in advanced development with its latest solution for helping PET preform producers to save weight. With XCORE, SIPA intends to offer a new metallizing service for existing injection mold cores that will provide a cost-effective way of modifying preform dimensions, down-gauging containers, and advancing materials saving.

XCORE will be an alternative and lower-cost solution to core-change programs for preform lightweighting within the range of 0.2-0.8 g, when an investment in a complete new set of cores is hard to justify.

There are probably many cases where preform makers would like to shave some weight off their products; but since they are already close to the limit of what is possible without having an excessive effect on the mechanical properties of the final container, any investment in a core change program will take too long to bring sufficient savings.

So what is needed is a solution that is more in tune with their needs and budgets.

Enter XCORE. Nothing gets thrown away and instead, more is added to what the molder already has. SIPA calculates that on, for example, a 96-cavity tool, metallizing cores to cut wall thickness down from 2.0 mm to 1.9 mm, achieving a weight reduction from 11.0 g down to 10.5 g, would pay for itself about 3 times more quickly than changing the cores.

Experts at SIPA are working with a strict set of objectives they need to reach. The material to be coated onto the existing cores must be carefully selected in order to satisfy the following criteria:

- it must be as good as, or better than, the substrate material in terms of mechanical properties (hardness, fatigue resistance, surface finish etc.);
- it must be able to adhere sufficiently strongly to the substrate to withstand a very high number of injection cycles (typically about ten millions);
- it must resist air and humidity (i.e. it must be stainless);
- it must be approved by health and safety agencies such as the FDA;
- it must be capable of being deposited using a method that does not unfavorably change the microstructure and the mechanical properties of the substrate.

So far, SIPA has succeeded in developing a process that is fast, effective and has much lower costs than a traditional core change program.

At the current stage, core metallizing is not available yet for sales since some more fine-tuning is required on the development side, but it's a matter of a few more weeks to be ready.

Watch this space!

PETWORK - XCORE

USED PLASTIC BOTTLES TURN THE RED CARPET GREEN

Post-consumer PET bottle recycling is glamorous. How can it not be when Valentino gets involved and when a film star like Colin Firth takes part? They are not getting their hands dirty down on the recycling factory floor of course, but they are helping to raise its profile, as they all do their bit to save the planet.

So what are these legends up to? They are helping turn the humble polyester fiber into a fashion statement. Just a few months ago, Colin Firth turned up on the red carpet with a smoking jacket made from old PET bottles, and his wife Livia sported a ravishing red dress from Valentino in the same material. (Livia is the founder of the Green Carpet Challenge, which pairs glamour and ethics to raise the profile of sustainability, ethics and social welfare.)

Not so long ago, the idea of someone wearing polyester on the red carpet would be considered unthinkable, a career-ending fashion faux pas. Polyester was the poor person's silk. Great for drip-dry, but who in Hollywood cares about that? But that was before a company in Piedmont, in northern Italy, succeeded in converting old bottles into new high quality yarns—and in getting the fashion world to buy into the idea that glad rags can be sustainable too.

Newlife yarns are made by Sinterama, which is headquartered in Biella, an important center of the Italian textiles industry. Sinterama owns Saluzzo Yarns, which spent several years working with local companies in the plastics recovery and mechanical recycling business to develop the new product, which has the same level of performance and quality as polyester yarns made from virgin polymer.

When Newlife founder Stefano Cochis began his research into developing recycled fabrics, he knew that it they were going to be embraced by discriminating designers and consumers, the yarns had to be beautiful as well as sustainable, and they had to perform, to hold up as well, or better than traditional fabrics. It looks like he succeeded. Valentino must be considered one of the ultimate seals of approval.

Giusy Bettoni, CEO of CLASS (Creativity Lifestyle and Sustainable Synergy), says fabrics in recycled PET have a feel just like silk or thin cotton, and the number of stylists asking for them are on the rise. Max Mara is moving ahead with a new range of clothing, while EKOCYCLE, the sustainable brainchild of rap artist will.i.am and The Coca-Cola Company, has teamed up with H Brothers to create a range sold by Harrods.

A great deal of effort has gone into achieving a product with a high level of purity and consistency, so that Sinterama is able to work with crystal-clear granules that can be dyed during the spinning stage to avoid wasting water. Sinterama says production of Newlife yarns needs 94% less water than virgin polyester yarn and 60% less energy. CO_2 emissions are 32% lower.

Costs as well as low environmental impact are critical to the success of Newlife, since haut cuture is only one of the targets in Sinterama's sites. Other sectors include corporate workwear, technical apparel, sportswear, lingerie, furnishings, and medical and outdoor fabrics. That's why, for example, all the bottles that end up in Newlife are sourced from within a radius of 60 km, to save on transport costs.

Just in case you were wondering, it takes 30 1.5-L PET bottles to make one kilo of Newlife yarn. So the next time Colin Firth gets asked "What are you wearing?" on the red carpet, wouldn't it be nice if he said "20 old PET bottles"? Dreaming again…

PET UPCYCLING - PET RED CARPET

NEXT EVENTS 2016-2017

11-14 OCT.	**CHINA BREW & CHINA BEVERAGE 2016** SHANGHAI, CHINA	*http://www.chinabrew-beverage.com*
19-26 OCT.	**K 2016** DUESSELDORF, GERMANY	*http://www.k-online.com*
06-09 NOV.	**PACKEXPO 2016** CHICAGO, USA	*http://www.packexpointernational.com*
07-09 NOV.	**GULF FOOD MANUFACTURING** DUBAI, UAE	*http://www.gulfoodmanufacturing.com*
08-10 NOV.	**BRAU BEVIALE 2016** NUERNBERG, GERMANY	*https://www.braubeviale.de/en*
14-17 NOV.	**ALL4PACK 2016** PARIS, FRANCE	*https://www.all4pack.com*
04-10 MAY	**INTERPACK 2017** DUESSELDORF, GERMANY	*http://www.interpack.com*
11-15 SEPT.	**DRINKTEC 2017** MUNCHEN, GERMANY	*http://www.drinktec.com*

THE MAGPIEARTCOLLECTIVE

The Chigubu Chandelier is a composition of recycled PET bottles and is approximately 1 metre x 1 metre. It can be illuminated in the traditional manner with a connection to grid electrics or a solar solution can be incorporated. "Chigubu" means "water vessel" in Shona, a traditional language in Zimbabwe.

The MagpieArtCollective (www.MagpieArtCollective.com) is a studio based in the quant and charming, rural farming community of Barrydale in the Western Cape, South Africa. We have become known for our innovation in the upcycling and repurposing of discarded materials. We have used volumes of PET and other thrown away plastics, tin and other found medium over time and incorporated them into many of our creations and installations. We operate a volunteer recycling project in the village of Barrydale thereby creating an opportunity for practical, local recycling and repurposing through the activities and process of our Studio. Our annual Christmas Tree Installation for the village is a testimony to creativity in the use of found medium. and a thanks by the Studio to the collective spirit of Barrydalers who so willingly share their recycling with us.

See https://www.facebook.com/Magpie-32987036008 for images of our latest work

Zoppas Industries

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