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BOTTLING LINE FLEXIBILITY

PET PACKAGING NEWS OF THE WORLD

SIPAMAGAZINE

SIPA

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PUBLISHED BY:
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THANKS FOR CONTRIBUTIONS TO:

Nampak
Wilmar International
Kulara Water
Ab Noosh - Mineral Water
Monarch Plastics Group
Telemark

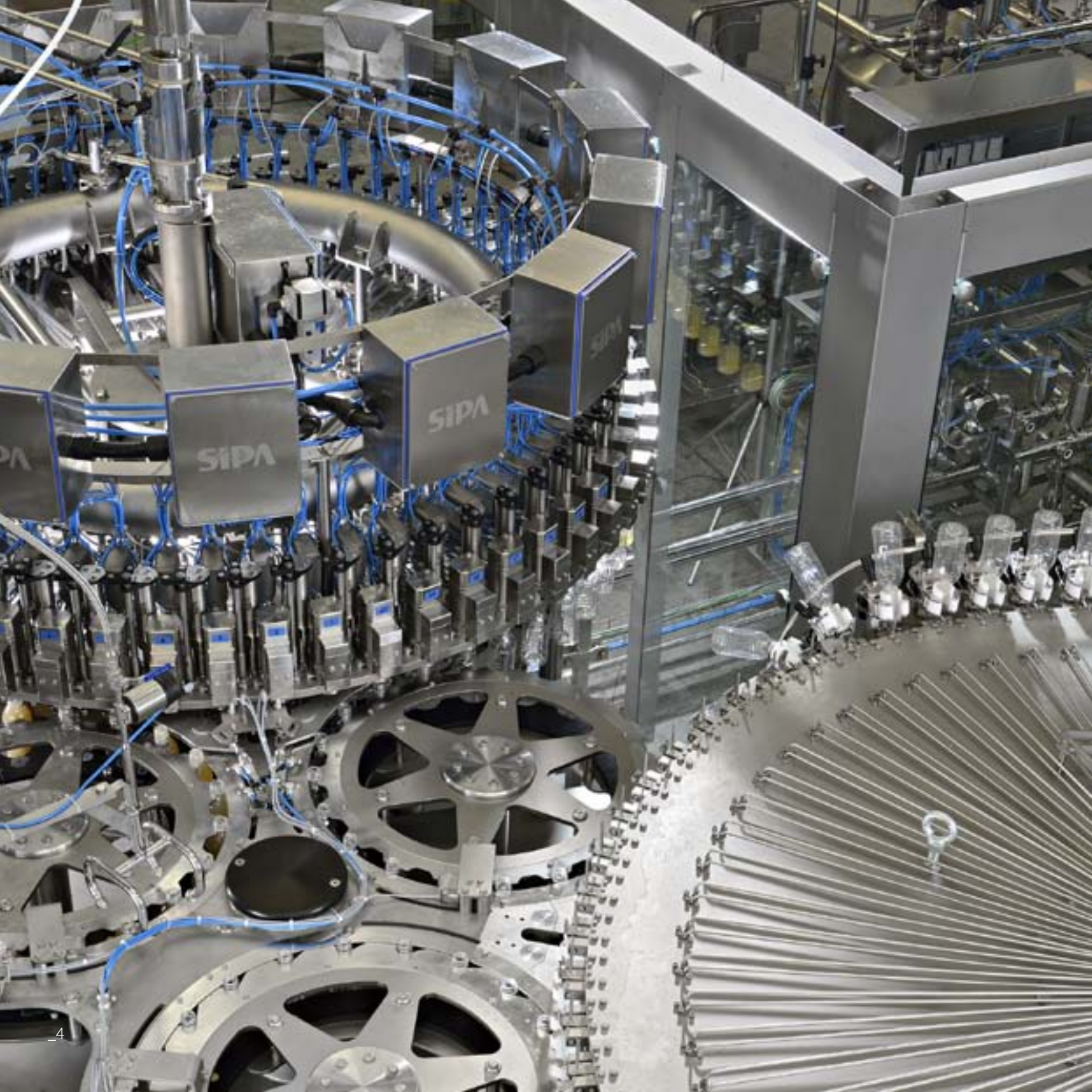
PUBLISHED ON:
April 2014

CREDITS:
IngImage, Shutterstock

Concept, Design, Layout:
Bia Network, Advercity

COVER:
Design: Zitta Schnitt,
Photo Credits: Paris Tsitsos

SUMMARY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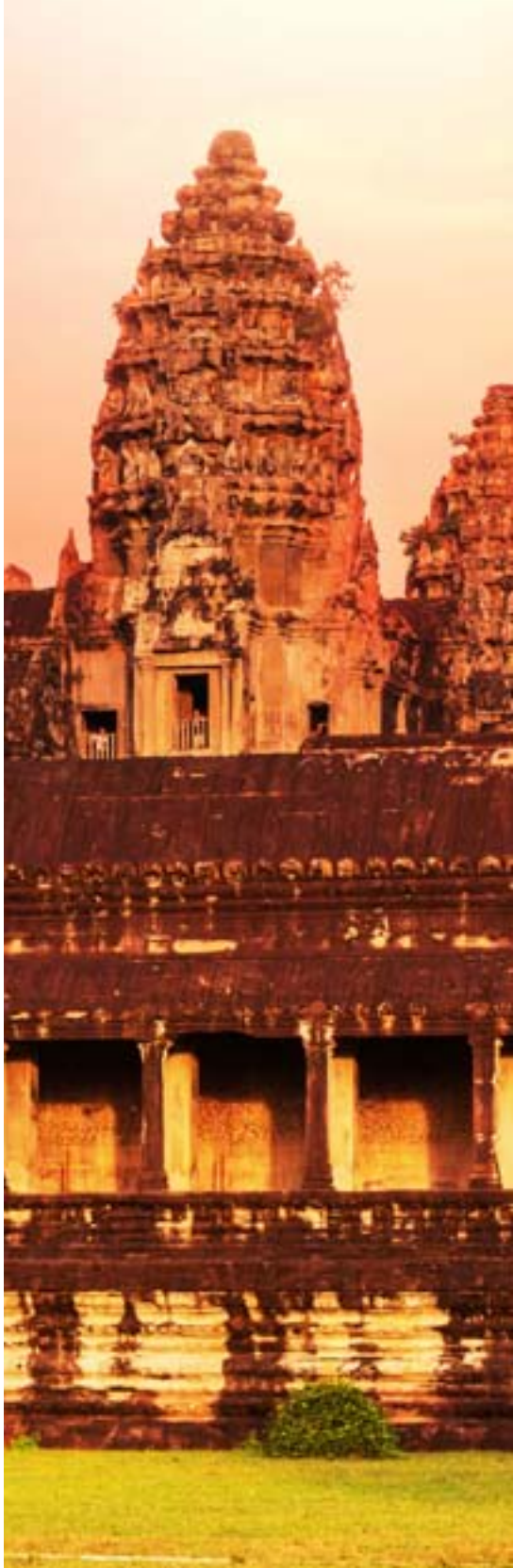
EDITORIAL

As the World Wide Web celebrates its 25th birthday, everything is connected as never before. The global economy is on a recovery path, but things are still rather fragile. The euro area is gradually emerging from a protracted recession, and growth in the United States has increased slightly, but prospects among developing countries and economies in transition are mixed, and still very prone to external influences. Markets change from one day to the next. So just like the spider in its real web, operators need to be nimble. We at SIPA believe that flexibility is even more important than productivity to survive and prosper in these uncertain times – and our equipment can make you more adaptable. Our motto is "Feel free to imagine. We make it happen." With Xtreme, our new injection-compression molding technology, you can produce two different types of preforms contemporarily. Our rotary blowing systems can produce standard or hot fill bottles with few changes, and our filling lines can handle water, soft drinks or hot filled juices, with or without pulp, in the same line. Modular volumetric fillers and new filling valves make it possible to create solutions tailor-made for the most diverse requirements in the bottling world. Our latest palletizing systems are capable of covering all customer requirements, both in term of productivity and logistics. I believe we have made it happen. We think we are getting better at adapting to change too. In 2012, SIPA set out on a new course that was laid out in a "road map" that we called "Shape our Future." We set ourselves a series of ambitious targets and we embarked on numerous projects in order to reach them. Some of those projects are described in this issue of SIPA MAGAZINE. "Shape our Future" will conclude in 2015. As I write in late March, we have already hit most of our targets. We have introduced a series of innovative new products, we have expanded local branches, we have opened brand-new offices, we have implemented a whole raft of improvements in our service activities. I confidently expect that at the end of our road map journey, I will be able to say "Job Well Done" and be ready to tell you about our next plans. "Shape our Future" fits exactly with the main goal of the SIPA Mission: to transfer our competence and expertise to our customers, offering innovative and competitive solutions to specific customer needs. We first understand your requirements and then propose the manufacturing scenario that best satisfies them. We aim to provide sustainable packaging solutions; to create flexible solutions that can adapt to customer needs in an era of rapid change; and to expand PET boundaries. "Shape our Future" will put us in an even better position to achieve our mission. I am sure you all think you have heard enough about sustainable solutions, but please bear with me, because I truly believe that SIPA is delivering on its promise. We have an outstanding packaging design team that continues to create new and lighter preforms that perform just as well as, if not better than, the old ones, saving you money in material and processing energy. Complementing their work, our technology experts are working on ways to break down barriers to further improvements. In the last issue of this magazine, for example, we told you about XTREME that in one fell swoop makes it possible to make preforms ten percent lighter than is possible with conventional injection molding. We realize that for some processors, XTREME will take you out of your comfort zone. That is why we also look at other ways to help you save and prosper. Many of you already know about XMOULD, our highly innovative surface technology for conventional preform molds that changes the rules of what is achievable in L/t ratio, the ratio of preform length to wall thickness. Yesterday, the maximum economically achievable L/t ratio was around 45. Today, with XMOULD, it is 60. In conclusion: SIPA is a partner you can rely on to respond – quickly – to your changing needs; to sustain you with solutions that save energy, materials and maintenance; and to lead you into new applications and technologies. Our road map is called "Shaping our Future." Your future is now.

Enrico Gribaudo
General Manager







AROUND THE GLOBE: NEWS FROM THE DIFFERENT CONTINENTS



SIPA SCORES IN SOUTH AFRICA WITH XFORM PREFORM SYSTEM FOR NAMPAK

Africa's largest packaging company, Nampak, has chosen SIPA's XFORM 500 preform production system to make juice and CSD bottle preforms for major beverages players on the South African market. The system was installed during 2013 and has exceeded Nampak's expectations.

SIPA supplied a complete preform system that included the XFORM500 injection moulding machine equipped with a 72-cavity mold, together with two more 72-cavity cold halves, to produce preforms in various weights for production of bottles between 500 mL and 2 L in volume.

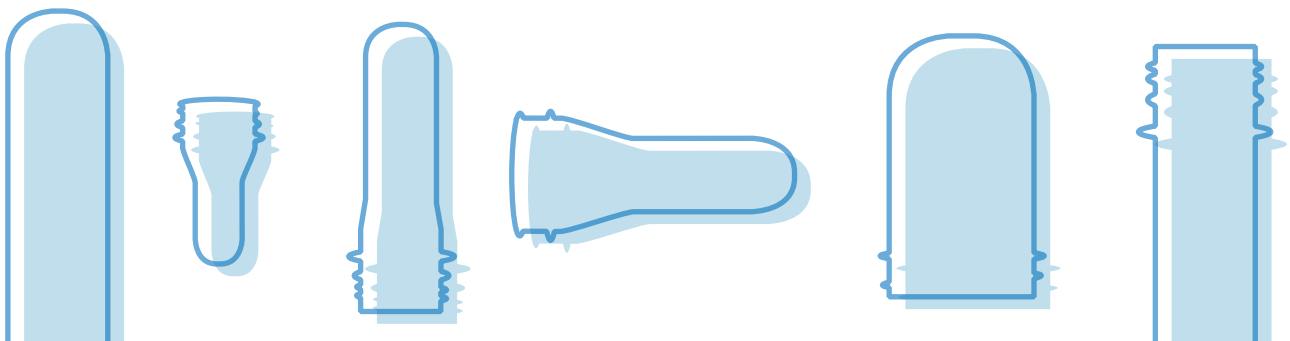
A PIONEER IN PET

When it comes to PET bottle packaging, Nampak knows what it is talking about: it was in fact the first packaging supplier in Africa and the second in the world to blow PET bottles. It began producing PET bottles for local and international brands during the 1970s, and since then it has built up a substantial collection of preform systems from several major suppliers. It is the owner of a huge quantity of legacy moulds. Now, Nampak can install each and every one of those legacy moulds on the XFORM 500, without restriction and without the need for any modifications.

"Nampak was looking for a reliable partner who, on top of being capable of supplying first class preform systems, understands packaging development," says Giovanni De Rosa, SIPA's Southern African Area Manager. "We have in-depth design and production expertise in systems and molds, and we know the market inside out. We have our own office in South Africa too, so we can stay on top of things here."

EFFICIENT PRODUCTION, FULL BACK-UP

Nampak Liquid Technical Director Mthandeni Mkhize says: "We are really satisfied with our choice of



the XFORM 500 and about the relationship we have established with SIPA. The system has been running smoothly since the day we first switched it on, achieving excellent preform quality. SIPA has done a good job with know-how transfer to our people, and on-site service is available with all the right skills, which helped provide a smooth transition. We are happy to have found a partner that can support us both on technology and on packaging development."

SIPA's XFORM 500 is actually capable of handling molds with up to 144 cavities. Not only will it accept molds from any supplier, but the molds can also be changed over inside 3.5 hours. The XFORM 500 has been designed to be robust, versatile, and also energy-efficient. Molds can be cooled with water at 14°C rather than the traditional 8°C, for example. Post-mold cooling is carried out in six stages. Continuous low speed screw rotation minimizes the stress on the PET to ensure minimal generation of acetaldehyde. Furthermore, XFORM 500 performs very well with RPET flakes: throughput drop is less than 10% with 50% flakes.

COOPERATION CONTINUES

Nampak and SIPA are now continuing to work together on more projects, in connection with stretch- blow molding as well as injection molding.

Nampak has grown substantially since it began making cardboard cartons in 1920. It now offers a comprehensive product range, across multiple industries throughout the African continent, manufacturing to the highest commercial and environmental standards in metal, glass, paper and plastics. Apart from South Africa, the company is also present in Zimbabwe, Botswana, Kenya, Malawi, Mozambique, Nigeria, Swaziland, Tanzania, Zambia, and Zimbabwe. It also has a strong presence in Europe, with nine sites in the UK.


XFORM

YIHAI KERRY CONTINUES ITS COLLABORATION WITH SIPA IN PREFORM AND BOTTLE PRODUCTION

Major vegetable oil producer Yihai Kerry is once again banking on SIPA in a new investment for its packaging lines. The Shanghai-headquartered company, part of Part of Wilmar International, Asia's leading agribusiness group, produces edible oils, feed meals, rice, flour, bran, grains, specialty fats, oleochemicals and soy protein concentrate at over 170 large-scale integrated manufacturing plants located in 43 strategic locations.

In its operations dedicated to edible oils, Yihai Kerry has been using SIPA equipment for seven years, during which time it has accumulated a large number of linear stretch-blow molding units, as well as preform injection moulding units. SIPA is in fact already the largest supplier of blow molding equipment to Yihai Kerry.

Now Yihai Kerry is looking to SIPA as a partner for a renovation project at its Kerry Oils & Grains (Tianjin) operation. SIPA will install four SFL6 systems, for production of bottles ranging in volume from 0.9 L right up to 10 L. These will be brought into operation during this year.

In addition, the Tianjin operation will be equipped with an XFORM 500/72 preform injection molding system for production of 100-g preforms.

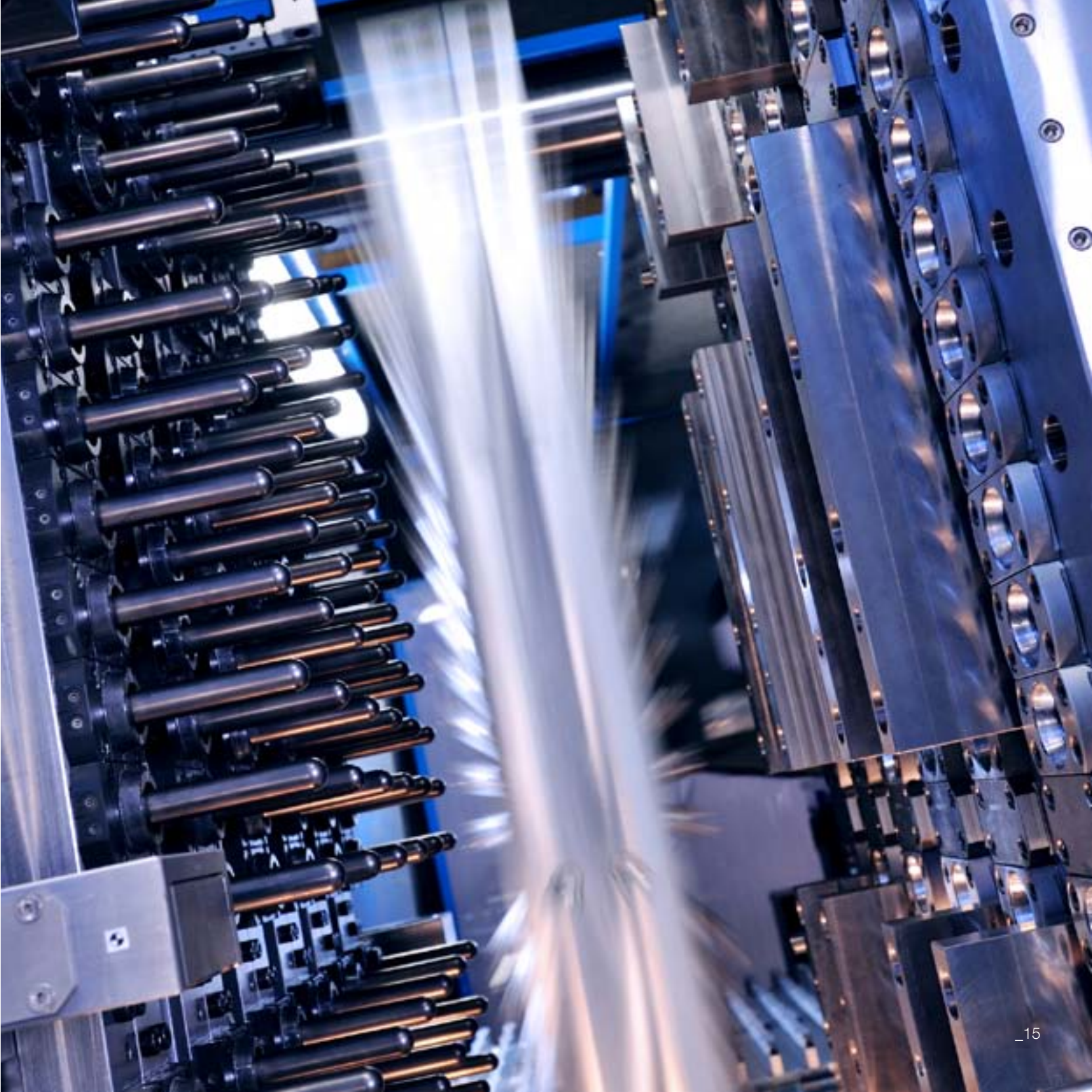
This system has a 72-cavity mold mounted on a 500-tonne injection molding machine.

So it will reap the benefits of having an integrated pellet-to-bottle production system, complete with the assurance that its containers will perform to the highest standards.

SIPA guarantees a minimum of

eight million production cycles before the first maintenance of the mold, and total energy consumption is best in class. And if it chooses, Yihai Kerry can install any existing large mold on the XFORM 500, irrespective of whether that mold was made by SIPA or one of its competitors. So it obtains performance, energy efficiency, and total flexibility.

Yihai Kerry parent company Wilmar International is one of the largest companies listed on the Singapore stock exchange.
Its business activities include oil palm cultivation, oilseeds crushing, edible oils refining, sugar, specialty fats, oleochemicals and biodiesel manufacturing and grains processing. It has over 300 manufacturing plants and an extensive distribution network covering China, India, Indonesia and some 50 other countries.



SIPA INSTALLS COMPLETE LINE FOR CAMBODIA'S FIRST AND FOREMOST NATURAL MINERAL WATER BOTTLER

"Water, water, everywhere, nor any drop to drink," wrote the poet Samuel Taylor Coleridge. His Ancient Mariner was adrift at sea at the time, but he might have said the same thing if he was walking through Cambodia until recently.
Cambodia may have a monsoon climate, but you would have been well-advised to avoid some bottled water there. Happily, things are changing, and SIPA is helping to make it happen.
Just a few years ago, Frenchman Bernard Forey discovered many bottled water in Cambodia was unfit for human consumption.
Luckily, he was able to do something about it. A while earlier, while in Vietnam, he had found a deep acquifer containing water with well balanced mineralisation, similar to leading French brands,

in the country's Long An province. That acquifer became the source of La Vie mineral water, sold by a company that Forey set up and later sold to what is now Nestlé Waters.
So Forey already knew quite a lot about water and how to get it into bottles.

LOOKING FOR WATER FROM THE AIR

To cut a long story short, Forey went with his son who is a pilot, on an aerial survey in Cambodia over the Angkor temples and 30km away to the mountainous region of Kulen, birth place of the Khmer civilisation.
He spotted an unexpected waterfall close to the top of the Mount Kulen, as well as several rivers flowing to the plain of Angkor. He decided to drill at the foot of Mount Kulen, after buying 9 hectares of land and found a deep aquifer, deep below the earth surface with the purest natural mineral water in South East Asia, one of the best in the world, put up a factory to bottle directly from the aquifer and then asked SIPA to propose a complete mineral water PET bottling plant solution. SIPA was very happy to cooperate.
Forey liked the quality and price of the proposal, and things moved ahead from there.

BOTTLES TO PALLETS

SIPA supplied its own SFL 6/6 linear stretch-blow molding unit,

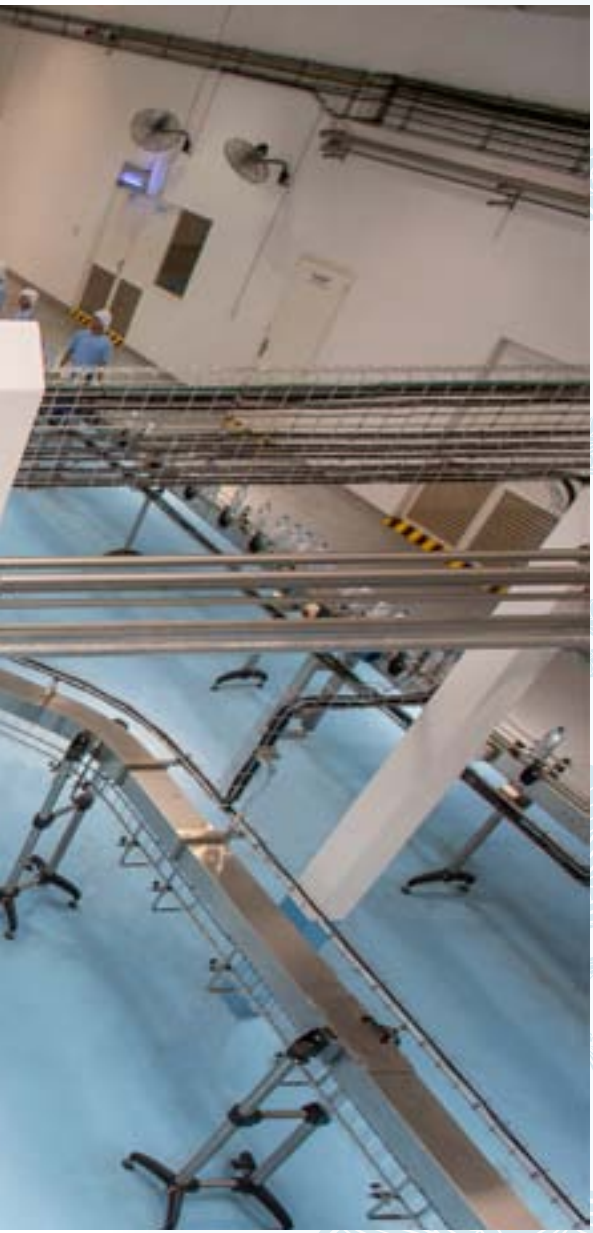
integrated with a complete set of downstream bottling and packaging equipment sourced locally. The line produces bottles in 300, 500, and 1500 mL formats. SIPA and Kulara Water are now working together to develop new designs for premium and lightweight bottles too. Kulara Water, headquartered in Phnom Penh, is selling its Eau Kulen mineral water to the best restaurants and hotels in the country, as well as top supermarkets. The company is now targeting retailers all across the country. Eau Kulen is widely considered to be the only pure mineral water from local source.

NOT YOUR AVERAGE BUSINESSMAN

A simple style and an emotional intensity have taken Bernard Forey on a journey that began in France before taking him to Algeria, Mauritania, Iran, Indonesia, Australia, Vietnam, Myanmar, Cambodia, and many places in between. He is a gentleman, an entrepreneur, an investor, and above all an adventurer.
Bernard Forey has enjoyed working in many industries, as well as many parts of the world. One of his earliest roles was as a prospector geophysicist looking for oil in the sands of the Sahara and Mauritania. Following five years in the desert, he went on to work in a mine in the remote mountains of Iran, before heading out to new adventures in South-East Asia. He arrived in Indonesia in 1963 to study locations for a hydroelectric dam in Java.

Wood operations in Indonesia
Five years later, he spent a year in the Sumatran jungle conducting research for a future timber concession for an international group. After establishing the concession, Forey bought the entire 360,000 hectare operation under the name of P.T. Industries et Foret Asiatiques (P.T. IFA). He established logging, a saw mill, and a plywood factory. He also set up CFA Investments, for doing business across Asia. P.T. IFA operated through the selective cutting and reforestation of various commercial species of timber. It employed some 2500 people, while a logging camp close by, home to the 5000 workers and their families, was complete with a school, clinic and an airstrip.
In 1977 the President of France made Forey a Knight of the Legion of Honour.

Fish in cans, water in bottles
In 1980, Forey made his first move into foods, when he established a major integrated tuna fishing and canning operation, 'from catch to can,' on the Indonesian island of Biak. Eleven years later, he struck water in Vietnam (see main article). And four years after that, in 1995, he established a joint venture in Myanmar, for the production of high-quality baby diapers and sanitary napkins. This company is now the leading local manufacturer of these products in the country, and continues to expand.
Kulara Water in Cambodia is Bernard Forey's latest adventure. But we can't imagine he is not thirsty for more.



COMING SOON: PREFORM PRODUCTION

As might be appreciated, Forey is a restless man. Now he is busy with studies for production of PET bottle preforms in neighbouring Myanmar. Discussions with SIPA to supply a production system for that future operation are well advanced.

AB NOOSH COUNTS ON SIPA TO BOTTLE THE SOFT SPRING WATER OF SEPIDAN

In the mountainous Sepidan district of Iran's Fars province, Ab Noosh Tang Shol Mineral Water Co. is using a complete SIPA system to bottle some of the softest and tastiest spring water in the country. Against a backdrop of peaks that reach to almost 8000 meters, the company has been going from pellet to pallet with SIPA for three years.

Beginning with a 72-cavity injection molding system to make its own PET preforms, the company blows bottles in various sizes up to 1.5 L, and then fills them with water that is reputed to have particularly beneficial effects for those with poor hearts or osteoarthritis. Ab Noosh calls its water Aqua Life.

After detailed investigation and evaluation, Ab Noosh purchased its complete production line from SIPA some years ago. Ab Noosh recognized SIPA as a specialist in PET technologies, with extensive experience and know-how for concept, production, delivery and installation of a wide range of PET bottle packaging production lines. In addition to the preform mol-

ding system with its annual capacity of around 200 million preforms, SIPA supplied an SFR 8 EVO rotary stretch-blow molding unit, linked to a complete SIPA filling line comprising a Stillfill 50-60-12 rinsing-filling-capping bloc, a labelling section, ink jet printing, shrink-wrap unit, a Genius PTF2 automatic palletizer, and an SPF pallet stretch-wrapping station.

"By providing Ab Noosh with a complete 'pellet to pallet' system, we have been able to offer an optimal compatibility between the preforms and the blowing/filling equipment," says SIPA Area Manager Roberto Sommi. "The customer benefits from the very high efficiency of the line and excellent container costs.

"We were able to help our partner all the way along the path from complete plant design to installation and commissioning, putting into the project all the skills of our engineering department."

Gholam Reza Abbasi, Managing Director of Ab Noosh, says: "SIPA has a strong reputation in the local mineral water market. We appreciate the flexibility the equipment provides us in format changes, and the efficiency of the complete line. We have high regard for SIPA's innovation in energy-saving systems. The equipment is user friendly, with an intuitive operator interface, which makes it simple to use. SIPA is famous for its after-sales service in Iran too.

"We deal with a single, respected partner for a complete PET bottling line from A to Z, and that includes input on preform design that takes aesthetics and cost into account. This complete package granted us a quick return on our investment. Overall, I think SIPA is an excellent investment!"

SIPA'S CROWNING ACHIEVEMENT IN PACK DEVELOPMENT WITH MONARCH

SIPA and Canadian full-service plastics bottle manufacturer The Monarch Group are working side-by-side to develop new bottles for Monarch's end users in the beverage industry. Starting from simple sketches, the two companies have together developed several new designs, carried out FEM analysis, built prototype molds, and supplied samples to customers. It's a winning combination, with SIPA benefitting from increased sales of preform molds, blowing machines and blow molds to Monarch.

Monarch with the SIPA team has developed a number of projects, a typical example of what the two companies have achieved is a 20oz bottle. This bottle, with its unique dispensing cap, is being sold in the North American market. Prototype preform and blow molds were developed at a SIPA lab, and after Monarch's end user customer gave the green light, Monarch proceeded to purchase a 48-cavity preform mold, plus an SFL 6 linear stretch-blow molding machine complete with blow molds from SIPA. With the strong support from the SIPA technical group, the molds and machine were commissioned on time, and put into successful production at Monarch.

Bottle 989 -On Demand bottle, with special cap -20 oz.

"SIPA has met all our initial expectations, and we look forward to a growing relationship," says Hemang Mehta, CEO of The Monarch Group. "The bottle development partnership has been instrumental in the introduction of several new products to the market."

Gladson Remos, who looks after the Monarch account at SIPA, says this is the first bottle development agreement made in North America with a company of this magnitude. "The two companies have developed a strong business relationship over the past few years, and we have high hopes for the future," he says.

The Monarch Group has been developing and producing bottles for over 40 years. A full-service manufacturer with a complete line of decoration facilities, it manufactures bottles and jars in a wide range of plastics. It has one- and two-stage PET bottle production systems, and has hot-fill bottle capability. As a way of providing added value for its customers, Monarch manufactures its own PET preforms, while its decoration facilities are equipped for sleeving, pressure sensitive labeling, screen printing, and heat transfer labeling.

From left: Gladson, Mike Gruenberg - Technical Director, Elroy de Xavier - COO- The Monarch Group

The company currently manufactures in Brampton, Ontario, where it has 200 employees, and it has another 100 staff in Kenosha, Wisconsin, USA. It has three plants in all, and has the ability to service customers across North America. It has also begun projects involving work in East Asia.

Monarch has a strong track record working with customers of all sizes. It produces around 400 million containers annually for the personal care, home care, hair care, automotive, food, promotional and pharmaceutical industries.

The Monarch Group of Companies is owned by The Mehta Group, which has manufacturing and service business prominence in North America, Africa, India and the United Kingdom.

The Mehta Group has a deep understanding and proven experience in a wide range of industries, including cement and building materials, sugar, horticulture, cables, general engineering, packaging and plastics containers manufacturing.

Hot fill – SIPA design 591 ML- Energy drink

TELEMARK TAKES A TURN TO SIPA

What does the word Telemark conjure up for you? Depending on your age or persuasion, it could mean downhill skiing, taking turns on one knee – a technique devised by Sondre Norheim, born in the Telemark region of Norway back in 1825. Or maybe you think of that 1960s film, based on a true story, with famous American and British actors pretending to be Norwegians who sabotage a heavy water facility to save the planet from nuclear destruction: "Heroes of Telemark." Well, some of the good people of Telemark in the water business have taken a new turn, and maybe there's something rather heroic about this too. Telemark Kildevann, a well-known bottler of water that wells up in Fyresdal in

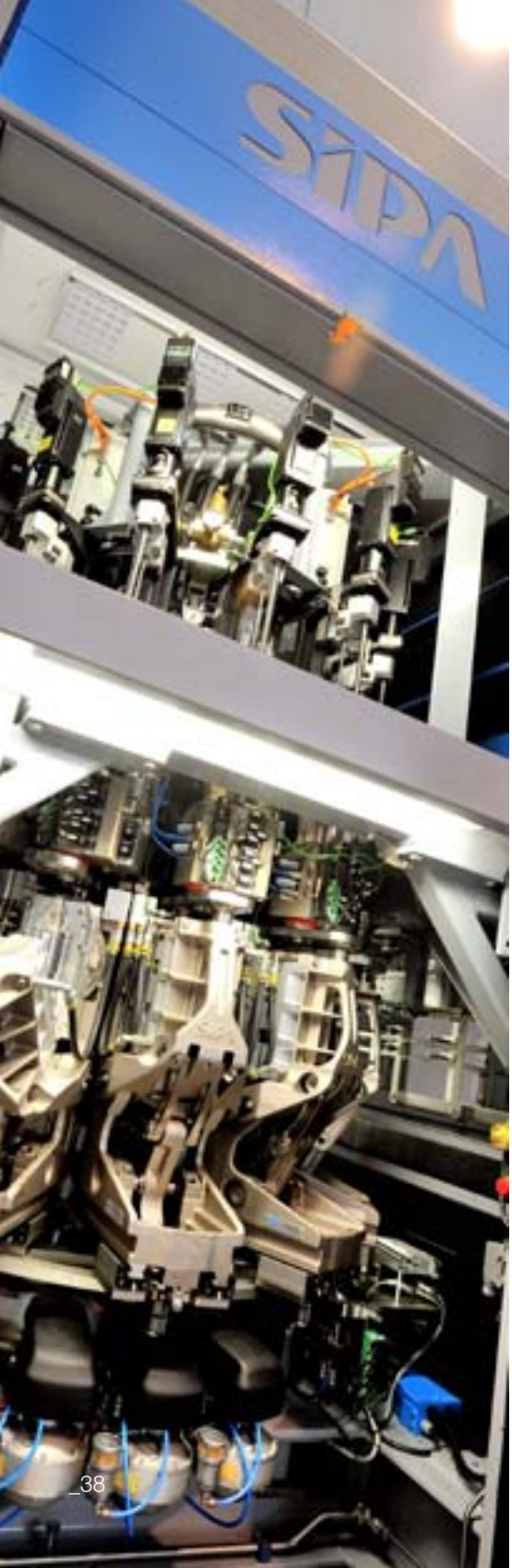
the south of Norway, has set up a second operation, to make carbonated soft drinks 300 km away, in Aurskog ,close to Oslo, the capital of Norway.
Telemark has moved into a plant that not so long ago was the scene of a dream to make the Th!nk all-electric city car. That dream did not come true, sad to say, but Telemark is very bubbly about the prospects for its new venture. And so is SIPA.
Last year, SIPA installed a Sincrobloc 12-108-10 filling unit at Telemark for bottling the CSDs. The equipment handles bottles between 500 and 1500 mL, running at 24,000 bottles per hour. This unit has 12 cavities and 108 valves, and incorporates SIPA's Isotronic isobaric volumetric filling monobloc.
"Telemark was attracted by our professional and creative approach, together with our willingness and ability to satisfy the need to enter production with a very tight

schedule," says Stefano Bonanni at SIPA. "We needed to integrate with other providers in the management of a complex job. It was a real challenge, which we demonstrated we were able to master."

So now Telemark Kildevann enjoys the advantage and flexibility of state-of-the-art filling and packaging equipment for its new drinks.

In addition to its own brands, it produces private label waters, soft drinks and sports drinks to some of the largest grocery-chains in Scandinavia. It also packs Bonaqua Silver still, sparkling and flavoured water for the Norwegian market, under contract for The Coca Cola Company.

Telemark Kildevann chairman Bjorn Bunæs says the new operation will strengthen the company's cooperation with key customers, and is enabling it to adapt to a market that is rapidly changing.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Flexotronic



FOCUS ON:
BOTTLING LINE FLEXIBILITY




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SIPA SHOWS SUPPLENESS IN LINE CONFIGURATIONS

What does a PET bottle packaging company want from their equipment supplier? Everybody wants value for money, but when it comes to specifics, preferences vary.
Some companies are very focussed on one type of product in one type of package, often in highly competitive markets, and what counts for them above all is unit costs. SIPA has the products for you.
But then there are other packaging companies with a broad mix of products that they may need to run for relatively short periods, on a limited number of lines – maybe even just one line. There are others who are moving into new areas, or fast-developing areas, where it is unclear at the outset what the major product will ultimately be. These companies put a priority on adaptability in their equipment and associated services, the flexibility to change with the market.
And this is where SIPA truly excels, all the way from the concept and design stage of a new form of packaging, right the way through preform and bottle production, filling, capping and labelling, to the palletizer at the end of the production line.

VERSATILE NECK FINISHES

Over the years, SIPA specialists have put their extensive experience in the PET packaging sector to great use in developing highly innovative preform and bottle designs that enable customers to make better products more cost-effectively.
They have invented containers that stand out from the competition on shop shelves, and they have become especially adept at

creating lightweight neck designs that are equally suitable for different types of products.
SIPA takes a holistic approach to neck design, taking into consideration not only such basic questions as "Will the mold fill?" but also numerous less obvious ones. For example: "Can we keep the same closure?" "What effect will the design have on total line configuration?" "How can I minimize changes necessary to existing preform molds?" This has led it to such ground-breaking innovations as the HotLight 28.

THE HOTLIGHT 28 FOR CSD AND HOT-FILL

The HotLight 28 is a 28-mm short neck finish that is shorter than standard hot-fill neck finishes, and also considerably lighter at just 3.8 g. Critically, it allows the production of hot fill and CSD containers on the same machine without any personalization change.
The HotLight 28 is already being used by several SIPA customers, helping them to increased success in key markets. One case study was detailed in a previous edition of SIPA Magazine: SIPA and major Asian food and beverage producer URC have together developed what are believed to be

among the lightest hot-fill bottles in the world. The bottles are used for a market-leading brand of green tea-based drink. URC uses the HotLight 28 on two designs for hot-fill bottles, a 230-mL bottle weighing just 12.5 g, and a 1.5-L bottle.

STRETCH-BLOW MOLDING HYBRID

Down on the bottle production and filling line, SIPA equipment shows its flexibility in many ways. A single SIPA SFR EVO^3 rotary stretch-blow molding system, for example, is equally adept at producing bottles for a wide range of drinks. Without changing the mold shells, it can be quickly converted from producing bottles for water or carbonated soft drinks to bottles for hot-fill applications. Consider too some of these features:

• Electrically-controlled stretch rods are standard on the SFR EVO^3. This makes it particularly easy to switch from one format to another.

• On a machine holding molds with small necks for water or CSD bottles (type PCO 1881 28 or 30/25, for example), it is a simple job to convert it to run bottles for

juices or other hot-fill products with a 38-mm neck diameter. This is mainly due to the unique drive chains on the SFR EVO[3] that require no modification when moving from one neck size to another.

• Modular ovens for the preforms on the SFR EVO[3] are easy to move and assemble according to the needs of the process, so that they are always as close as possible to the blowing wheel –something not possible with standard ovens.

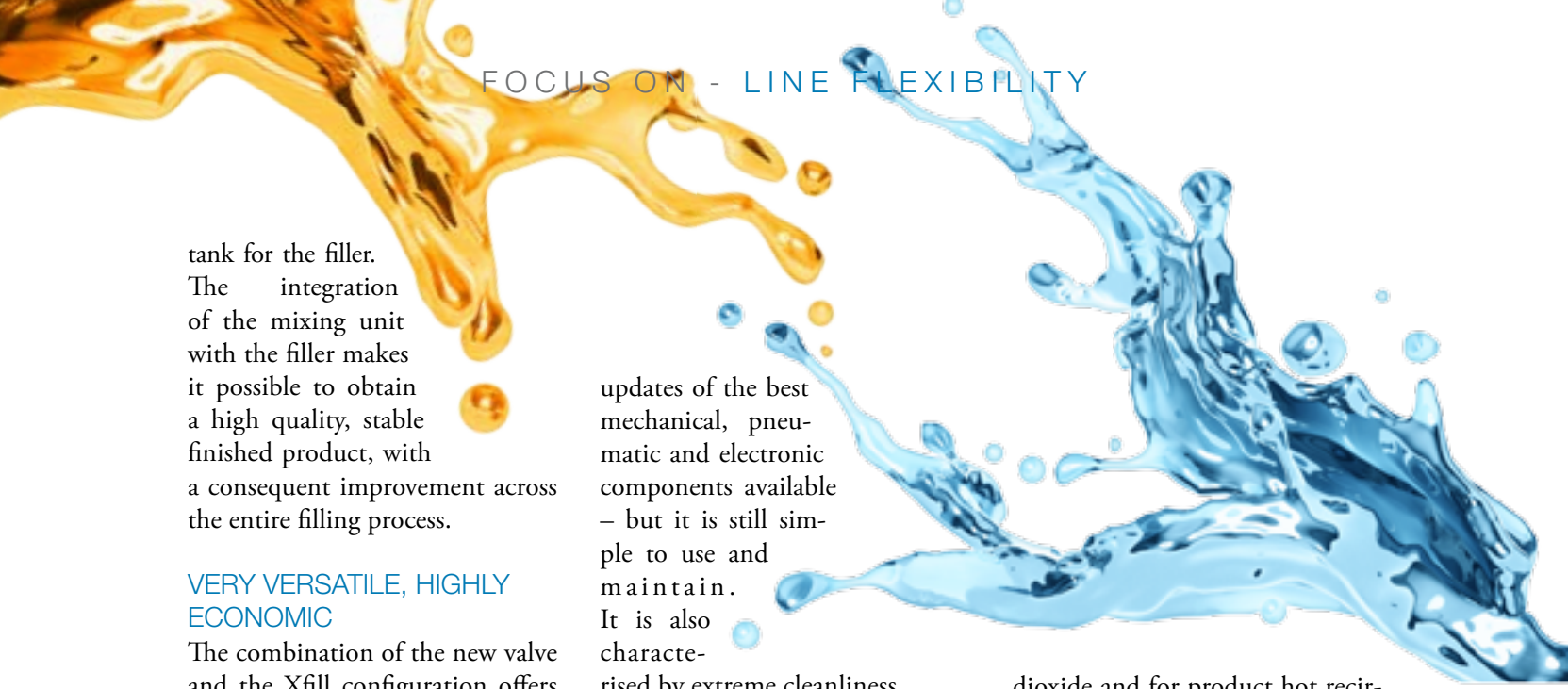
• A quick-change system allows the equipment user to quickly adjust elements in product handling areas, such as the preform orientation rollers and the chute.

FILLING FLEXIBILITY

SIPA's Flextronic range of highly versatile modular volumetric fillers, together with new filling valves in EVO versions that can be perfectly integrated and interchangeable on the new platform, make it possible to create solutions tailor-made for the most diverse requirements in the bottling world. The Flextronic platform allows bottlers to fill multiple products on the same line.

Flextronic C, one of the most complete and powerful configurations in the new range, handles carbonated, still and hot-fill products, with or without pulp. It can also work with various types of containers, with different neck sizes.

Last year, SIPA demonstrated the Flextronic filler in its "Xfill" configuration. This has no on-board product tank, and when the unit is used for carbonated drinks, the mixing unit buffer tank is used as a product



tank for the filler. The integration of the mixing unit with the filler makes it possible to obtain a high quality, stable finished product, with a consequent improvement across the entire filling process.

VERY VERSATILE, HIGHLY ECONOMIC

The combination of the new valve and the Xfill configuration offers a whole series of advantages for the user. For example, the extreme operational flexibility it provides minimizes product loss and downtime at flavour change. In addition, a new concept incorporated into the entire filling process electronic management yields a global reduction in power consumption. Consumption of carbon dioxide when filling with carbonated drinks is also reduced, as are product losses from the snift circuit. And these are just two of numerous plus points.

TOP QUALITY

The Flextronic range offers some of the highest standards of quality and efficiency on the market today –making use of the latest updates of the best mechanical, pneumatic and electronic components available – but it is still simple to use and maintain. It is also characterised by extreme cleanliness.

The valves are made of 316L stainless steel, and they are very solid and compact. They have been designed with a clear separation between the pneumatic components and the parts in contact with the product, in order to avoid any problems with contamination. They are made up of a series of elements that can be separated without disassembling the entire valve, for ease of maintenance.

KEEPS THE BUBBLES IN THE DRINK

The Flextronic C keeps the product very stable during filling – something that is particularly important for carbonated drinks. In addition, the new valve has larger channels for the passage of carbon dioxide and for product hot recirculation, for improved operation with liquids containing pulp and fruit. The valve has been designed for “dry” pressurization via a separate channel for faster and steady decompression.

This solution makes the Flextronic C ideal for incorporation into SIPA’s Sincro-Bloc blowing/filling monobloc: this not only eliminates the need for bottle rinsing, but also enables improved control over the entire filling process and hence an overall improvement in filling performance.

SINGLE STREAM AND DOUBLE STREAM

Two systems are available on Flextronic fillers for putting pulp into drinks: single-stream and

double-stream. With double-stream technology, the juice and the pulp are dosed separately into the bottle, in two separate filling carrousels. With single-stream, pulp and juice are mixed together away from the line, eliminating the need for dosing of the pulp inside the filling carrousel. As well as the Flextronic volumetric fillers, SIPA offers a full range of gravity and isobaric filling systems for single stream dosing, also capable of handling still and carbonated soft drinks, juices and hot filled products. Stillfill and Stillfill HR units are capable of handling hot-fill and cold-fill without the need for any change of components.

PROVEN TECHNOLOGY

SIPA offers a pulp dosing technology that has already proven itself in the food and beverage industry in a wide range of applications. The technology differs significantly from conventional piston fillers in three key aspects: the complete absence of seals; a unique self-draining design; and extreme simplicity and reliability.

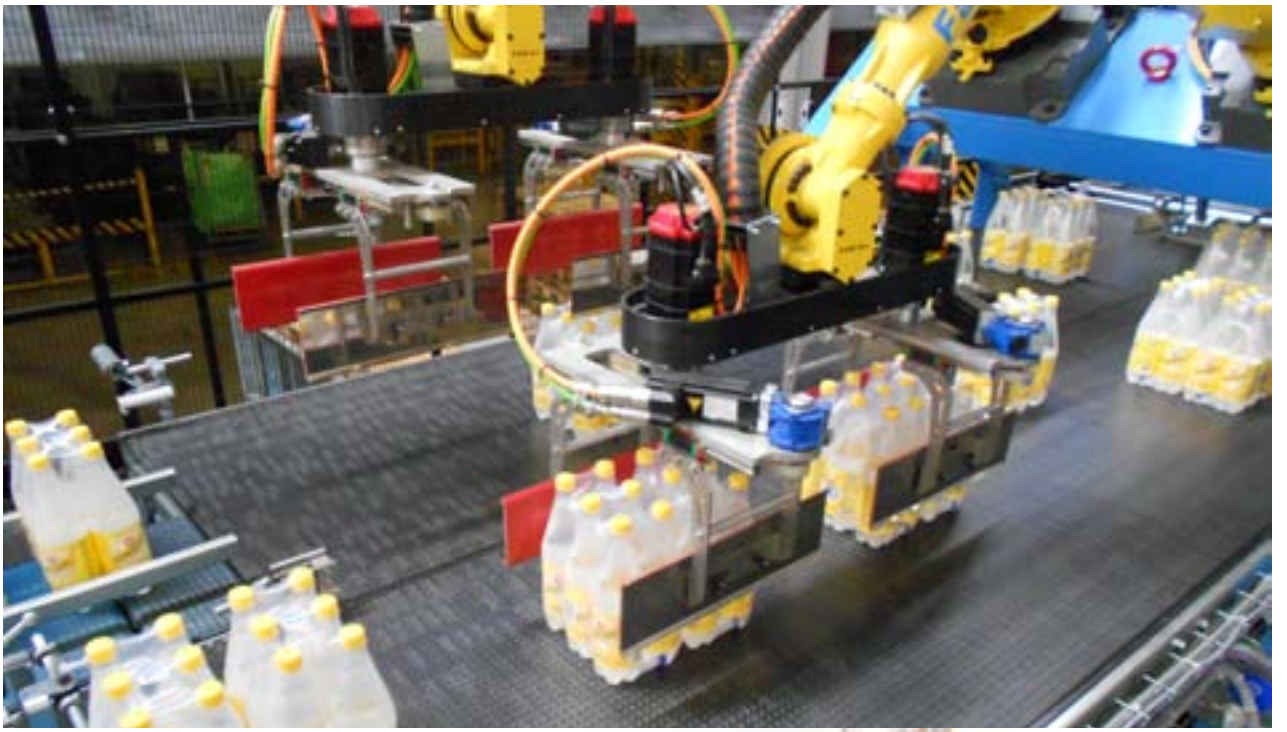
This combination creates a set of key advantages for dosing small volumes of fruit pulp, including:

- unmatched fill precision;
- gentle product handling, with minimum maceration of the pulp;
- fully automatic product change over without fill station disassembly;
- capability to fill at up to 95°C product temperature;
- minimum product dwell time in the filler prior to dosing, for optimal product quality.

END-OF-LINE SOLUTIONS

SIPA's Filling and Packaging Division recently expanded its range of palletisers, making it one of the most complete and advanced on the market today. This range has been enhanced with the state of the art of a gentle, precise and fast layer preparation even in case of extremely light bottles. With Active Layer and Fastlayer systems, SIPA can cover all customer requirements, both in term of productivity and logistics.

The heart of the system is a patented gripping head allowing for simultaneous handling of several packs. The grippers can be equipped with electric automatic adjustment, so no manual intervention is required in the Fastlayer area when there is a change in format of the product to be palletized. This is important when formats change frequently.



Complementing the high speed with which the layers are filled, pallet changeover can be carried out “on the fly,” in just a few seconds.

IN TUNE WITH MARKET NEEDS

This application is perfectly suited to current trends of the beverage market, with its demands for lighter bottles, increased product differentiation, and multiple product formats.



TECHNICAL WINDOW
XMOULD - REFURBISHMENT - GREEN OVENS



SIPA BRINGS THE X FACTOR TO PREFORM LIGHTWEIGHTING, WITH XMOULD

XMOULD

SIPA has just launched a highly innovative preform mould technology that enables processors to fill wall sections that are thinner than ever before.
XMould gives designers the power to create preforms that are longer or wider, for the creation of containers with more suitable stretch ratios.
It is now possible, for example, to design a 500-mL bottle preform weighing as little as 7.2 g that presents no production issues, either during injection moulding of the preform itself or when it is stretch-blow moulded – and which can be processed on existing equipment.

LOW WEIGHT, HIGH PERFORMANCE

Even though the preforms made on moulds incorporating XMould technology are extremely light, the high mechanical performance required in the finished bottle is not compromised.
The new preform designs save on energy as well as material, so carbon footprints along the production and supply chain are smaller than ever.
XMould technology now makes it possible to produce preforms with ratios of length to wall thickness (L/t) close to 60, while applying injection pressure similar to that normally used for preforms with 45 L/t ratios.
This means that the stretch ratio in the final 7.2 g bottle is between 10.5 and 13.6, depending on its design – highly manageable for modern stretch-blow moulding equipment.
Plus, the performance of the bottle, on the filling line and in use, meets all relevant requirements.

PUSHING BACK THE BOUNDARIES

"With XMould technology, we are pushing back the boundaries in PET preform injection moulding," says Laurent Sigler, SIPA's Innovation Director. "When it comes to L/t limits, 50 has been the magic number for more than 20 years, so taking it up to close to 60 in one step is a major achievement. XMould is making new preform design opportunities available, and our customers can lightweight their preforms even more and/or further improve their bottle performance.
"I know that a lot of people are going to be asking what XMould technology is. Right now, all I can say publicly is that it has to do with making surfaces smoother – and that it works!"

TECHNOLOGY IS AVAILABLE TO ALL

The advantages of XMould technology are being made available across the market. Injection moulding of the new preform designs can be carried out, not only on SIPA's XFORM new generation of processing equipment, but also on most existing preform injection moulding machines, regardless of their brand. Similarly, the preforms can be blown not only on SIPA linear and rotary stretch-blow lines, but also on lines from other suppliers.

OPTIMIZING PRODUCTION WITH SIPA'S LATEST MOLD REFURBISHING AND CONVERSION SERVICES

SIPA has added new refurbishing and conversion services to its total PET preform mould offering. Customers now have new options for optimizing production: they can have some components replaced by new ones in order to improve preform quality (refurbishment), or they can choose to have the mould converted to produce a completely new (and quite often lighter) design of preform.
The advantage of mould conversion over buying a brand new mould lies in the lower capital investment involved. The existing mould shoe is reused, and return of investment is faster.

CLOSE TO CUSTOMERS

SIPA has organized special teams of professionals in three dedicated service centers to support the growing demand for refurbishing and conversions.
The service centers are close to main customer concentrations in Italy (Vittorio Veneto), China (Hangzhou), and the USA (Atlanta), so logistics are simple and turnaround times are short. An extensive mould audit program supported by experts in the field is already provided by SIPA.
This helps customers to assess the state of wear of mould components in their own plant; different options on refurbishing or converting the audited mould can then be proposed.
Because SIPA has expertise in injection moulding and in stretch-blow moulding, creative and sound packaging development programs can be bundled together with mould conversion programs. That means customers can take maximum advantage of their investment.

IN-HOUSE DEVELOPMENT AND PRODUCTION OF MOULDS AND HOT-RUNNERS

The new mould refurbishing and conversion services complement SIPA's extensive in-house capability to develop and produce high performance moulds and hot runners in-house.
The hot half of each SIPA mould requires maintenance only after five million cycles, and it is possible to maintain components such as piston, flange O-rings and pin valves without opening the whole mould.
The company's range of solutions benefits from SIPA's special focus on reducing energy consumption. With better distribution flow and a higher water temperature (14-15 °C instead of 8 °C), water consumption is minimized and performance in terms of condensation reduction is improved.
The smooth, polished, rounded profiles on SIPA hot runners reduce stress on material, resulting in better preform quality and a reduced acetaldehyde (AA) level. Mould systems also exhibit enhanced cooling performance, resulting in high quality preforms, maximum productivity and reduced production costs.

BIG ENERGY SAVINGS WITH "GREEN OVEN" UPGRADES ON SFR AND SFL BLOW MOLDING UNITS

Results coming back from early adopters of SIPA's latest oven technology for its stretch-blow molding systems confirm claims that massive energy savings are to be made. The new "green" ovens were originally launched on SIPA's next-generation SFR EVO^3 rotary systems, which came onto the market in 2013, in the meantime have also been made available on SFL linear systems.

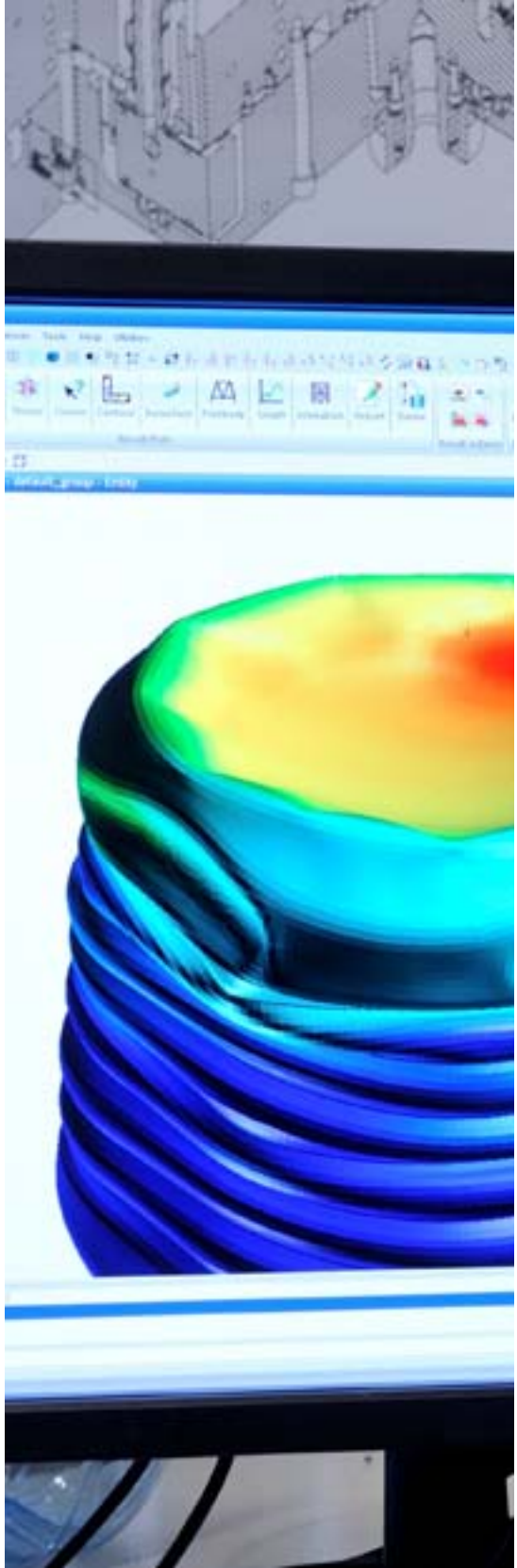
Now, customers with existing standard equipment can reap the benefits too, with special oven upgrades.

Some major customers have already opted for the new "green" ovens. In production of bottles in formats from 0.75 L to 1.5 L, for mineral water, carbonated soft drinks, and milk, they are reporting energy savings of over 40% – and in one case beyond 46%.

Compared to earlier generations of oven, the new "green" ovens have reduced electrical consumption, thanks to the use of new lamps and special materials and coatings for the reflectors. Process conditions are very stable.

The EVO^3 came out last year as a result of SIPA's efforts to improve performance, reliability, and bove all added value in customer's investments.

It is fast, highly versatile, very efficient, and it costs less to run. The new oven is one of the key factors in these improvements, which is why SIPA now offers it as an upgrade option for users of various earlier generations of SFR and SFL stretch-blow molding systems.



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

SIPA PUTS THE (COLD) SQUEEZE ON HOT-FILL DRINKS BOTTLES

SIPA has created a new design for small PET drinks bottles that makes them robust enough to be hot-filled, but still provides the suppleness for squeezing in use. Hot filling provides a cost-effective alternative to aseptic filling.

Developing a squeezable hot-fillable bottle requires a lot of skill and know-how. It's not surprising, then, that designs for bottles already on the market from famous brands have been ring-fenced by patents. So the success of SIPA's design experts in coming up with a concept that is not only hot-fillable and squeezable, but which also offers extra features for the drinks maker and for the consumer, is all the more impressive.

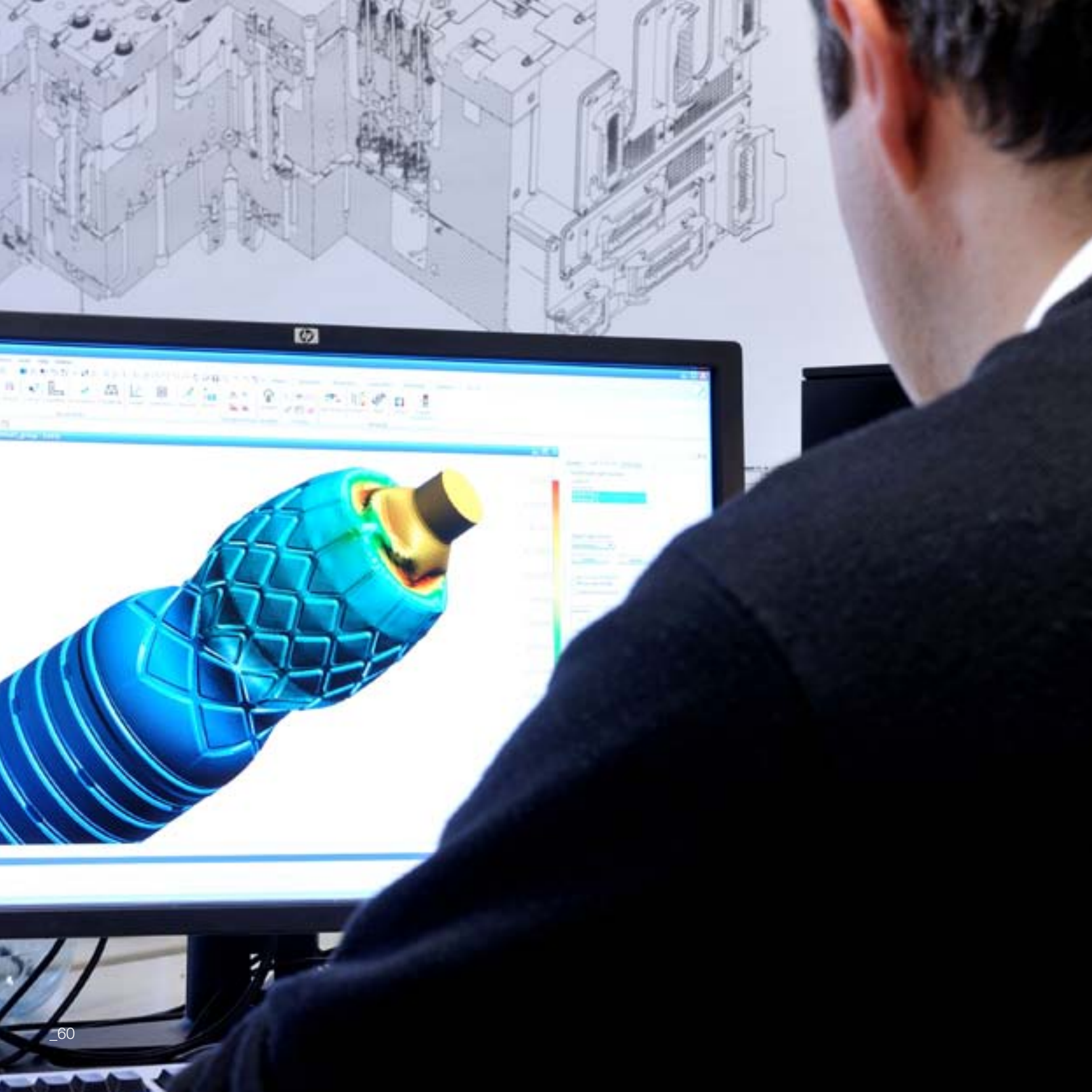
When SIPA started on the new project, it already had two applications pending for patents on hot-fill squeezable bottles – but our designers felt they could do even better. The original ideas were for a design featuring three vacuum compensation panels around the circumference to keep the bottle in shape as the contents cool after filling.

The new bottle design features four panels to provide even more stability. Each panel is an isosceles trapezoid, although at first glance it looks more like a triangle. Each panel is upside down with respect to the two either side of it. The overall effect is to make the bottle look very "chunky." And brand owners have plenty of space to put on their logos and information labels.

The bottle looks great, and it performs extremely well too: it can be filled at up to 90°C without deforming afterwards.

The original 500-mL design, bottle with a 33-mm neck finish, weighs about 24g, which is noticeably lighter than traditional hot-fill bottles. It's 214 mm high, and has a maximum diameter of 66.7 mm. The design can be also applied to formats ranging from 250 ml to 750 ml.

Whatever the size, all the bottles can be produced at high output rates on rotary stretch-blow molding machines equipped for the hot-fill process.



FEM HELPS SIPA DESIGNS BETTER BOTTLES MORE EFFICIENTLY

When SIPA's engineers and designers want to identify the best candidate design for a new bottle, they call on FEM, the Finite Element Method, to help them do it as efficiently as possible.

SIPA's design experts use FEM as a powerful assistant in obtaining the best properties with the least amount of material. In their skilled hands, FEM can verify if a proposed design will be able to meet or even exceed the client's specifications very early in development, and before going to the physical prototyping process.

SOLVING PROBLEMS IN STRUCTURAL MECHANICS

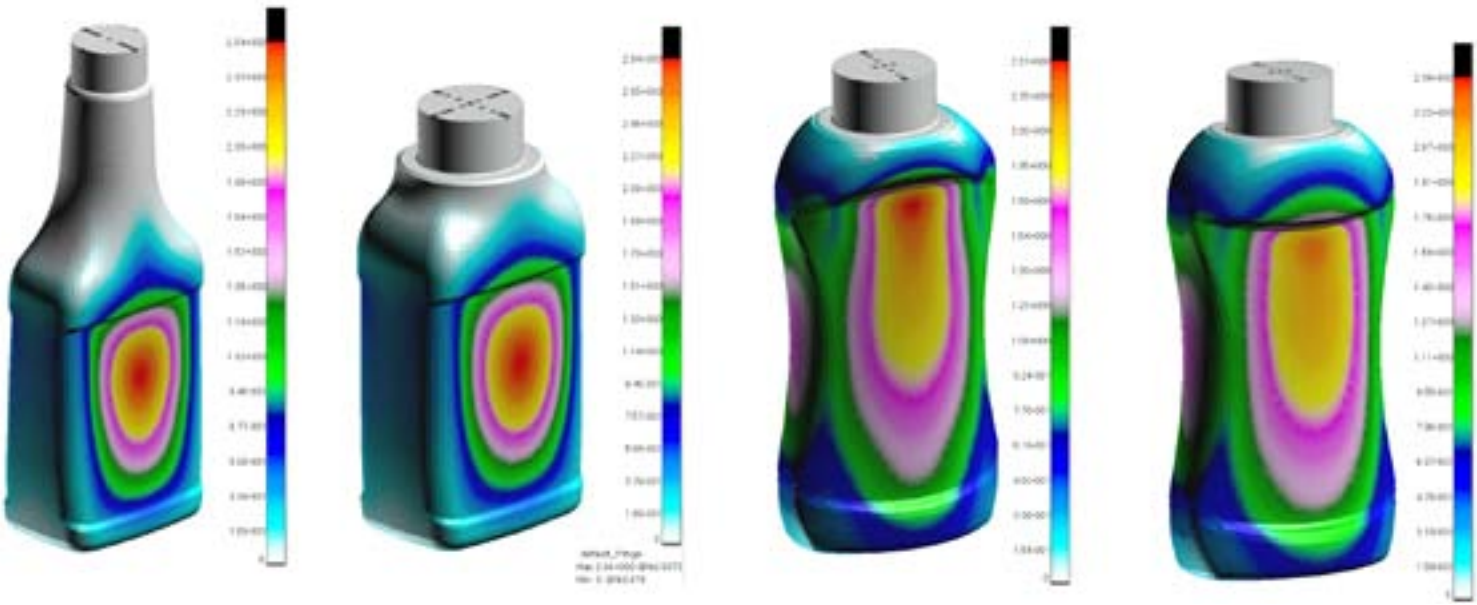
FEM was originally developed to solve complex problems in structural mechanics, and it remains the method of choice for complex systems. The structural system is modelled by a mesh, a set of finite elements interconnected at points, or nodes. These elements may have physical properties, such as thickness, coefficient of thermal expansion, density, flexural and shear modulus, which define how the structure will react to certain loading conditions.

LESS NEED FOR PHYSICAL PROTOTYPES

Structural analysis with FEM—or Finite Element Analysis, FEA—makes it possible to study the behaviour of a system as if it were already in an operating condition, showing up its points of strength and its points of weakness. With this information in hand, it is possible, even at the earliest design stages, to carry out optimization steps that otherwise would have to be done on physical prototypes—something that obviously would take up much more time, effort, and money.

CALCULATING RESISTANCE TO LOADS IN THE VIRTUAL WORLD

SIPA uses FEA at various points in the product development process. For example, to calculate top load strength on the bottle when it is full and when it is empty; to analyse the



effect of hot-filling the bottle; to see if and how a partial vacuum inside the bottle affects its dimensions; to see how dimensions are affected by internal pressure from a carbonated drink; and to predict the results of drop tests. FEM is not infallible of course, and so there is an ongoing process of validating its predictions with results from actual products that helps fine-tune the process.

STUDYING MORE SOLUTIONS TO A SINGLE PROBLEM

FEM simulation and analysis make it much easier to create innovative solutions, to analyse physical phenomena that may be difficult to observe in actual objects, and to study projects before they become real. With FEM, SIPA can cost-effectively study multiple solutions to a single problem, and have a very high confidence that what they create in the virtual world will work in the real one. The company can put the performance of the product at the centre of its sights, and be sure that form really does follow function.

THE CUSTOMER BENEFITS

What does this mean for you, the customer? It means that the time-to-market of your project can be minimized. It means that less physical prototyping iterations are needed, which means that your prototyping project costs you less at the end.
It means that product design can be done more quickly.
And it means that SIPA can deliver to you the product that best meets your needs.

SIPA SETS TO WORK ON MAKING SMARTCOAT SMARTER

The high-barrier PET bottle is something of a Grail among technology developers.

Various ways have been tried to obtain it, coinjection, spray coating and plasma treatment among them. SIPA's chosen route is Smartcoat, a "dip and spin" technology that involves immersing blown bottles up to their necks in special liquids, removing the excess by centrifuging them, and then curing the coating in infrared and ultraviolet radiation. The process is done twice: once to apply a coating with a barrier to oxygen and carbon dioxide, and once to apply a coating that provides mechanical and chemical protection.

PROCESS TECHNOLOGY IS READY

The coating process is state of the art, and SIPA believes it has important advantages over rivals.

Smartcoat has been conceived as a modular coating production line with an output varying from 12,000 to 42,000 containers per hour. The process was developed in collaboration academia and other industrial partners.

The main limitation in the way of commercial success is the sensitivity to moisture of the barrier coating in very hot and humid conditions, which until now has been one of the key challenges to overcome for a more global acceptance by customers. SIPA is now working hard to get the chemistry right.

BOTTLES ARE FULLY RECYCLABLE

"The big advantage of the Smartcoat technology is that the barrier coating is applied onto the external surface of the bottle, which means no contact between the coating material and the liquid in the bottle," says SIPA Innovation Director Laurent Sigler.

"Moreover, the properties of the barrier material do not affect the full recyclability of the PET bottles, which means that they can be integrated into the "normal" bottle-to-bottle recycling stream.

AIM IS TO INCREASE RESISTANCE TO HUMIDITY AND HEAT

"The main objective of our current development program is to develop solutions to improve the barrier resistance of the barrier material in environments with very high moisture levels, up to 80%, and at high temperatures. It's a hard nut

to crack, we know this, but we are sure we are on the right track.
"We are confident we will soon be able to deliver a robust and sound solution that stand up to such environments. Then, Smartcoat will be the most convenient technology available on the market today.
It will be the only technology on the market that can combine a fully recyclable packaging together with an economically viable barrier solution."

TOTAL SYSTEM WILL BE OPTIMIZED

Sigler says his team is aiming to develop a barrier coating with a new chemical formulation with much higher resistance to humidity and heat than previous offerings. "We will then optimize the top coat formulation as well, to improve adhesion between the two layers. The performance of our overall barrier solution is going to be significantly improved!"

Smartcoat produced by SIPA is transparent, no yellowish effect, 100% recyclable.

RETURNS COME QUICKLY WHEN YOU INVEST IN CAPPELLO RETROFITS

For the last two years or so, SIPA has been incorporating the Cappello preform base design created by Milan company Concordia Development into its preform molds. This highly popular design, now used by several major brands around the world, makes it possible to reduce the overall weight of a PET bottle by around two percent.
As we said when we announced the news of the agreement with Concordia in SIPA Magazine back in 2012, customers can expect a very fast return on investment when implementing Cappello.
We said this is because of the material savings that processors obtain by implementing the design, and because of the limited changes that need to be made to existing injection molds.

MINIMAL CHANGES TO THE INJECTION MOLD

Implementation of the Cappello design requires modification to the core and the gate insert, as well as to the cooling insert of the take-out tube – and nothing else. SIPA can modify existing molds that it has produced itself, as well as molds from third parties. (It can also incorporate the Cappello base design into new molds of course).
We want to provide some detail as to how the ROI comes so quickly. Let's assume you have a 96-cavity mold for 21-g preforms for CSD bottles. If you are running your injection molding machine on an 11-second cycle, you should be making around 235 million preforms in a year. Normally, that would require around 4950 tonnes of PET.

CAPPELLO - QUICK ROI ASSESSMENT	
Annual preform production	+/- 235,000,000
Quantity of resin used over 1 year (tons)	+/- 4,950
Quantity of resin saved thanks to Cappello tip design (2% of the total preform weight)	+/- 95
Amount of money saved thanks to Cappello (Euros)	+/- 130,000
Return on investment (ROI) based on mold conversion investment cost to convert existing mold to Cappello design	7 to 8 months max.

Assumptions:
96 cavity mold producing a 21g CSD preform
Cycle time of 11s
System running 8,000 hours/year @ 95% efficiency
Resin price of 1,400 Euros/ton

By implementing the Cappello design, you will save around 95 tonnes of PET.

BIG SAVINGS IN MATERIALS

At a current price of 1400 euros/tonne for PET, that's a saving of some 130,000 euros. Based on the cost of converting your mold to the Cappello design, you will recoup your investment in no more than eight months.
The Cappello base design leads to better material distribution in the base of the finished bottle. It has a slightly more pointed profile that standard designs, providing material savings around the injection point, in an area where there is usually excess of amorphous material on a blown bottle.

BLOW MOLDING LINE ALMOST UNALTERED

There are normally no changes required on the blowing process side – possibly fine tuning to the reheating process – and no changes at all to the stretch-blow molding hardware; the new preform tip still has the required mechanical resistance to the stretch rod during stretch-blow molding. The finished bottle has mechanical properties undistinguishable from bottles made with standard preforms. Indeed, in CSD applications, performance may be even better, especially in terms of stress cracking resistance.
The Cappello design has been proven to be suitable for carbonated applications from 0.33 liter to 3 liter, and for non-carbonated applications from 0.33 liter to 20 liter.

TALKING TABARRO

Look up the word Tabarro in an English-Italian dictionary, and you'll find the word "cloak," or possibly "long, heavy cloak." But the Tabarro is much more than that. Think of it as a way of wrapping up some of Italy's rich history.

The Tabarro began its life way back in time, but down through the years, it has remained virtually unchanged. Cut from six meters of cloth, with one seam down the back and with a single fastening point under the chin, it is one of the simplest pieces of clothing imaginable, and yet it appeals to the most sophisticated tastes.

Throughout history, this classic cloak has had a place in the hearts of the people of the area of the Venetian Lagoon in particular. Its fascination is not only in its simple aesthetics, it has a cultural and social value too. Its copious characteristics have been found useful for all sorts of reasons, ranging from the simple need to keep warm, to its ability to cover up jewellery and valuables as the more well-off passed among the poor. But to a trained eye, it took just a small change in the detail of the cloth, the length, or just the way it was worn to identify the type of person it concealed.

THE HISTORY

The Tabarro may be derived from the toga worn by Roman senators. In the middle ages it was worn by knights during their investiture, while doctors and other pillars of society used it in everyday life. But then during the Renaissance it fell almost completely out of favour among the aristocracy and bourgeoisie, and was taken up by artisans and members of the rural community. In the Venice of the 1600's, the Tabarro was a symbol of simple folk, but young patricians wore it too on their night-time adventures – something that was strongly disapproved of by the Most Serene Republic of Venice, which imposed sanctions on its use among noblemen until 1762. Then the fashion spread to the ladies, who used the cloak's beautiful folds to add to their grace.

A century later, the Tabarro achieved fame when used as part of a disguise with a black tricorne hat typical of Carneval. It was appreciated by men and women alike to guarantee anonymity and also to hide jewellery and other valuables that were actually banned by the Republic. As one writer put it, the Tabarro could cover up "the greatest

nobility, the most vile rabble, and the most distinguished informers."

TABARRO TODAY

In the 19th century, the Tabarro was worn more by the dandies of the time, while into the 20th century it became mostly a feature of the countryside, with its use restricted to the winter months. And during the years of fascism, it was considered an element of anarchist inspiration, as the result of which it was practically forbidden to be worn in towns and cities.

And then, just as it seemed as if the Tabarro had been consigned to history, it was once again plucked from obscurity by such people as Sandro Zara in the Veneto region and Tiziano Spigariol in Treviso. They opened up special workshops – Tabarrifici – to make the clothes again, using handicrafts just as in the old days.

And now the fashion is catching on big time, with exports to New York and Tokyo, where it is almost a cult object, valued for its unmistakable Italian style and for its fascinating historical value.

The Tabarro continues to intrigue us, with its impeccable elegance and its romantic recollection of times gone by.

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