

- Malé Water ■ Mai Dubai
- Sirmakeş ■ Cervejas da Madeira

smi NOW

Magazine 2014/13

MALDIVES & DUBAI

bottling in paradise

Smiform

NEW SOLUTIONS
TO REDUCE ENERGY
CONSUMPTION

SMI Headquarters

INNOVATIVE TECHNOLOGIES
TO PROTECT THE
ENVIRONMENT
AND SAVE ENERGY

www.smigroup.it



“ Innovative technologies to protect the environment and save energy ”

All SMI Group's business decisions translate into a number of operating strategies that reconcile our growth targets with the economic and environmental sustainability of the products we make and the territory in which we operate. Our commitment in this regard is expressed each and every day in our intensive research and development of new technologies, to offer bottling and packaging solutions to our customers which comply with the increasingly stringent parameters of production cost reduction and energy saving. The centrality of the issues concerning sustainable development and energy conservation has also affected the entire organizational structure of our company. In fact, SMI completed its move of offices and production departments to the new industrial location, obtained from the redevelopment of the historic buildings and paper-mills of the former Cartiere Cima (Cima Paper Mills) in San Giovanni Bianco, last June. SMI Group's new headquarters, extending over an area of 30,000 m², is a unique example of zero impact buildings, built in accordance with "Architecture and Environment" guidelines. During the restoration and renovation of the old mills, we adopted a wide range of innovative solutions to minimize the environmental impact of our production activities and achieve significant energy savings in the management of our facilities. Among the most appreciable interventions, I recall the plants' photovoltaic roofs, which can generate up to 726 MWh/year of electricity and reduce CO₂ emissions into the surrounding environment down to about 320 tons per year, and also the hydroelectric power plant installed in the new location, which can produce up to 6 GWh/year of clean and renewable energy. Moreover, in the summertime air is conditioned through the use of heat pumps, which replace traditional electrical equipment, while in wintertime the buildings are heated through latest generation high efficiency heat generators. Thanks to all this, the SMI Group tangibly testifies how the smart integration between technological innovation and strategic vision can lead to fully sustainable models of industrial development from an economic, social and environmental point of view.

Paolo Nava,
President & CEO
SMI S.p.A.

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Contributors to this issue:

Malé Water - Mai Dubai
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Product pictures in this issue are shown for reference only.

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Water is an exceptionally important resource. For this reason, companies that bottle and package water are increasingly committed to protecting and preserving the environment and adopting eco-friendly packaging, processes and technologies.

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High-performance reflective thermal panels to heat the preforms
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MALÉ WATER

WATER SECTOR

Malé Water and Sewerage Company Pvt. Ltd.

Malé, Maldives

Group: Sewerage Company

❖ 14,000 BPH PET LINE:

- Smiform ECOBLOC® 8-36-8 VMAG integrated system
- Rotative labeller
- Smiflexi LSK 25 F shrinkwrapper
- Smiflexi LWP 30 casepacker
- Conveyors Smiline & subsupplies
- Smipal APS 1035 P palletizer



VIDEO



GEO LOCATION

INSTALLATION / Malé Water



There aren't many places that evoke the image of paradise on earth in each of us.

The Maldives is surely one of them, especially the natural beauty of its landscapes, the beautiful white sandy beaches and spectacular coral sea.

The Maldives, an archipelago of 1,200 coral islands in the Indian Ocean, combine the experience of a dream vacation with breathtaking views and offer everything you need for a truly relaxing stay.

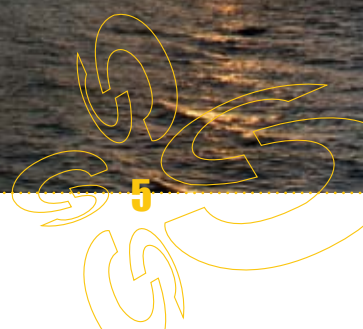
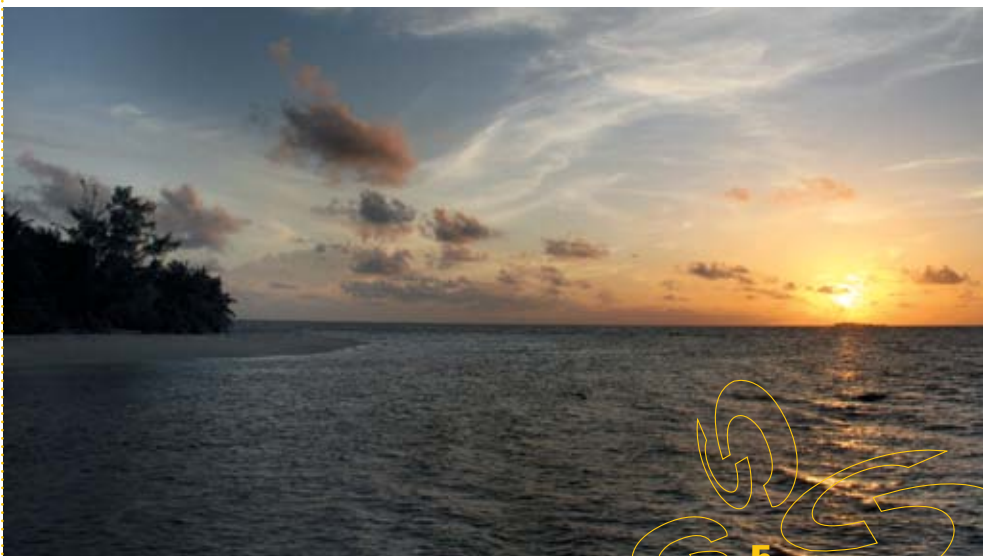
However, behind this "postcard" image, the Maldives conceal lesser known aspects, though equally important, for the economic development of this paradise on earth which attracts more than 10,000 tourists every week.

The Malé Water & Sewerage Company Pvt. Ltd. (MWSC) is an example of a hidden resource.

Founded in 1995, with the main goal of solving the growing water needs of its capital city, Malé, MWSC is now a leading light in the local economy.

What aided the rapid success of this company was the substantial and continued investment in advanced technologies, the implementation of its facilities' scheduled maintenance plans and the professional growth of the company staff.

Such a mix of resources allowed the Malé Water company to respond quickly and effectively to market demands in terms of quantity and quality of the product offered, demands that can be met even better thanks to the new complete 14,000 bph line, provided by SMI and recently installed in Malé for the bottling in PET containers of the Maldivian company's mineral water branded TaZa.





MALÉ



smi
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ENVIRONMENTALLY FRIENDLY MODERN TECHNOLOGIES

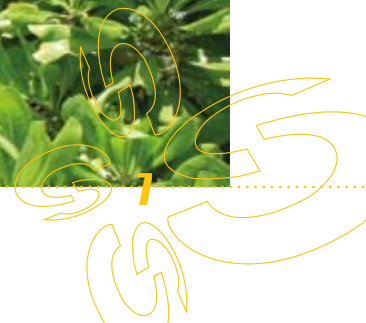
Nature directly affects all activities of Maldivian life, which revolves around the protection of its beauties to preserve the magic of the ecosystem of these beautiful islands.

The environmental protection issue holds great importance also within the industries located in the Maldives, among which MWSC is one of the main ones.

Hence, the adoption of cutting-edge manufacturing technologies, such as the machines that make up the bottling line recently provided by SMI, is one of the cornerstones of Malé Water's corporate social responsibility. Smiform's ECOBLOC® 8-36-8 VMAG integrated system installed at the mineral water factory of Malé is the heart of the new production line conceived, designed and implemented

by SMI to bottle up to 14,000 bottles per hour automatically.

This is a state-of-the-art plant that makes use of compact machines and newly developed technical solutions to significantly reduce the production costs of every single still water bottle that leaves the factory and safeguard the integrity of the surrounding environment.





MWSC's new production line features very compact dimensions compared to traditional bottling plants, thanks to the fact that the ECOBLOC® integrated system brings together in a single machine the stretch-blow moulding, filling and capping functions for the 0.5-liter PET bottles.

This solution also allows reducing the purchasing, management and maintenance costs of the machines up to 20%.

Even the consumption of the water used to clean the system is reduced by 90% thanks to the "baseless" technology applied to the filler.

This solution offers the great advantage of leaving the machine's base (where dirt and waste from the production process usually build up) devoid of components and mechanical moving parts, making it easier to restore, carry out maintenance and clean that area.

Energy consumption can be significantly reduced thanks to the ARS (Air Recovery System) mounted on the stretch-blow moulding module, and also to less wear and tear of mechanical components, the use of more durable materials and high energy efficiency motors on the line's conveyor belts.

The Air Recovery System, available as accessory equipment, consists in two exhaust valves installed on every single stretch-blow moulding station; the first valve lets air into the system's recovery tank while the second discharges air that cannot be recycled.

This eco-friendly technology allows both the reduction of energy costs by as much as 20% and high-pressure compressed air consumption up to 40% compared to systems not equipped with such technology.

In fact, part of the air of the stretch-blow moulding circuit is recovered and

“ The environmental protection issue holds great importance also within the industries located in the Maldives ”

reused to feed the pre-blowing circuit at low pressure and the machine's service circuit.

The working pressure of the pre-blowing circuit is controlled by an electronic regulator while that of the service circuit is regulated by manual reducers.

If the pre-blowing or service circuit does not exploit all the air obtained through the recovery system, the latter can also be used to feed the low-pressure line of machine's external utilities.



VERSATILE AND COMPACT END OF LINE

SMI has paid special attention in designing the plant in Malé, implementing innovative solutions and choosing only latest generation machinery.

The secondary packaging is performed by a Smiflexi LSK 25F shrinkwrapper and an LWP 30 wrap-around case packer, which package Taza water's 0.33-liter, 0.5-liter and 1.5-liter PET bottles coming from the ECOBLOC® integrated system, alternately in shrink film only or in wrap-around cardboard boxes.

The decision to install two separate secondary packaging machines meets Malé Water & Sewerage Company's needs to have a comprehensive packaging line that is both reliable and flexible, which can easily adapt its production to changing market needs.

The LSK 25F shrinkwrapper packages the 0.5 and 0.33-liter PET bottles in the 6x4 collation in film only and the 1.5-liter bottle in the 4x3 collation in film only, while the LWP 30 case packer packages the 2 smaller bottles in 24-piece cardboard boxes in the 4x6 collation and the 1.5-liter bottle in the 3x4 collation.

The foregoing packages are then conveyed by Smiline belts to the inlet of the Smipal APS 1035 P automatic palletizing system, which stacks them on 1000x1200 mm pallets.

The automatic palletizer installed in the MWSC facility is a single-column system with two Cartesian axes, where the vertical axis consists of a fixed column on which the horizontal beam slides on guides with recirculating balls; instead, the horizontal work axis consists of the



beam on which the gripper slides also on guides with recirculating balls.

Packs arriving on the single-lane infeed belt (located at operator height) are grouped in the row pre-composition area and are arranged in one line, oriented in the same direction (all are fed either on the long side or the short side), therefore creating the palletizing row.

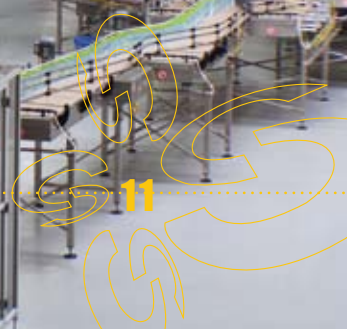
The row thus formed is picked up by the gripper that, with fast and precise movements, places it on the pallet in the desired point; the sequential repetition of this operation allows you to form a complete layer in a very simple way.

The middle column of the Smipal palletizers is driven by brushless motors which ensure precise and smooth movements in all the machine's operating axes, while system automation and control are performed by the PC-based MotorNet System®, which runs on Sercos fieldbus and "industrial Ethernet" communication protocol.

The use of this technology in the field of palletizing systems, characterized by repetitive actions, is synonymous with high reliability, less maintenance and low operating costs.

In addition, system management is facilitated by a simple and user-friendly human-machine interface panel, with advanced 3D graphics, touch-sensitive screen and a wide range of diagnostics and technical support in real time.

The APS 1035 P system installed by SMI in the Malé Water bottling facility is equipped with a pads magazine and a pad-inserter for inserting flat cardboard inter-pads between the layers of the plastic pallet.



THE MALDIVES BETWEEN PAST AND PRESENT

The origins of the Maldivian Islands are lost in time. All archeological findings in the Maldives date back to periods after 1500 BC. It is argued that the archipelago was uninhabited before then. The current population (about 350,000 inhabitants) descended from the peoples of the Buddhist religion who migrated from southern India and Sri Lanka around the fourth and fifth centuries. When the Arabs began to frequently travel the trade routes to south-east Asia, the Maldives became an important stopover. Arab traders exerted a strong cultural influence on the local population which gradually converted to Islam in the eleventh century. In 1153 the Maldives became a sultanate. In the sixteenth century, European powers

began to threaten these islands; the first to conquer the archipelago were the Portuguese, who created a settlement in 1558. However, they were driven out in 1573 by the indigenous people of Devehi led by Muhammad Thakurufar Al-Azam. The sultanate then remained independent until 1887, the year in which it was declared a British protectorate. The independence from the United Kingdom was ratified on 26 July 1965 and in 1968 the sultanate became a Presidential Republic. Malé, the capital of the Maldives, is one of the smallest cities in the world since it was built on an island of only 2 Km². The term Malé is derived from the Sanskrit "Maaliu", which means "big island" or "main island"; in the past, the city was called "Mahal" or "island

of the palace" as it was the center of power that ruled the Maldives. Unlike all the other islands of the archipelago, famous throughout the world for their long white beaches and pristine turquoise sea, Malé is characterized by a highly urbanized city center with paved roads and tall buildings, home to government offices and trade companies. In the old bazaar area, center of wholesale and retail trade, the alleys are so narrow that a vehicle might not even pass. Space available to citizens has now reached the least bearable, to the point that a new island was built from scratch, Hulhumalé, by reclaiming the reef of the Hulhulé islet that houses the city's international airport. This islet, renamed 'Ibrahim Nasir International Airport' in 2011 in

“ Malé is one of the smallest cities in the world since it was built on an island of only 2 Km² ”

SMI ASIA SERVICES SDN BHD



SMI is constantly committed to ensuring its Asian customers fast and efficient local support, able to respond adequately to the specific demands of a rapidly evolving market. This commitment led SMI, in 2012, to the decision of setting up the SMI Asia Services Sdn Bhd company, based in Kuala Lumpur, Malaysia. The Malaysian branch of the SMI Group is located between the port of Kuala Lumpur (Port Klang) and the city center, and occupies a two-story building housing a warehouse of 700 m² and commercial/administrative offices covering an area of 300 m². In Malaysia, SMI Asia Services directly employs a team of 16 people, including 8 technicians in charge of the after-sales service, and manages others who work in the neighboring states of the Philippines, India and Indonesia. The new facility in Kuala Lumpur was founded to meet the goal of improving the technical-sales service offered to the many existing customers in Southeast Asia (who own a total of over 300 SMI packaging machines) as well as the potential ones. The countries covered by the Malaysian branch of the SMI Group are: Malaysia, Indonesia, Singapore, Thailand, Myanmar, Cambodia, Laos, Vietnam, Philippines, India, Bangladesh, Sri Lanka and Maldives. The capillary network of motorways and airports makes Kuala Lumpur a hub for the communications and logistics of the whole Indo-Chinese area and allows SMI Asia Services to carry out technical assistance and the supply of spare parts promptly and efficiently. The professionalism and helpfulness of the staff of the SMI Group Asian branch are an important resource for the quality of service offered to the customers in the area, who can speak with the SMI team in English, Indonesian, Malay, Mandarin Chinese, Italian and Tamil.

memory of the second President of the Maldives, is the main access route to the archipelago for over 600,000 tourists who land here every year after their long trip from Europe, the Middle East and Asia on board large airliners or charter flights.

THE ADVANTAGES OF SMI'S “LINE ENGINEERING” SOLUTION

The solution of the complete line installed at MWSC in the Maldives consists in a system created ad hoc, able to fully satisfy the technical and economic expectations expressed by the customer to SMI's engineers in the preliminary stages of the new project.

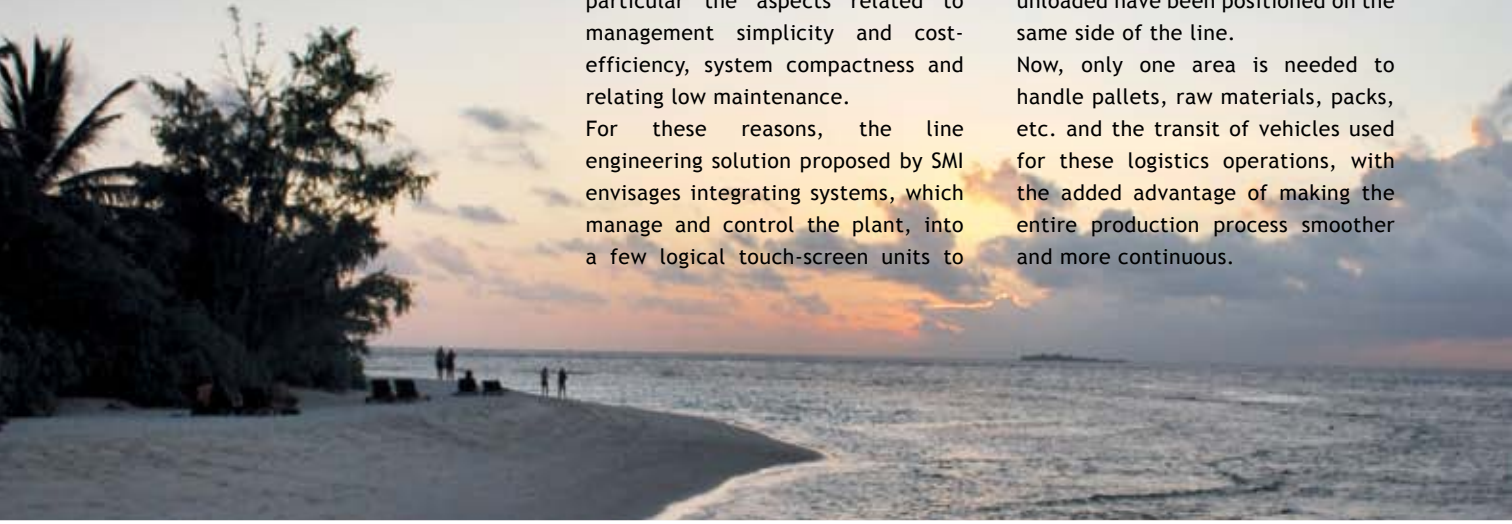
After careful analysis of Malé Water's needs, the experts of SMI's System Engineering Dept. submitted a proposal to the Maldivian company tailored to the parameters formulated by the company for the new production facility in Malé, in particular the aspects related to management simplicity and cost-efficiency, system compactness and relating low maintenance.

For these reasons, the line engineering solution proposed by SMI envisages integrating systems, which manage and control the plant, into a few logical touch-screen units to

allow the management of the entire bottling line by only a few operators. Thanks to this compact configuration, which features greater physical proximity between the individual machines, it was also possible to centralize the storage of all the raw materials needed to make up for the plant's daily output, with the great advantage of simplifying and speeding up their supply.

In fact, the area in which the preforms, caps, labels and other raw materials are loaded and the area where the finished products are unloaded have been positioned on the same side of the line.

Now, only one area is needed to handle pallets, raw materials, packs, etc. and the transit of vehicles used for these logistics operations, with the added advantage of making the entire production process smoother and more continuous.



THE WORD TO THE CUSTOMER

Interview with Ahmed Mujthaba, Engineering Manager of Malé Water & Sewerage Company (MWSC)



The mission of Malé Water & Sewerage Company (MWSC) is to offer a wide range of reliable, environmentally-sustainable water services, respectful of the surroundings.

Could you explain how you pursue these objectives on a daily basis?

“For over 15 years MWSC has been providing water services of the highest quality, the result of the company’s efficient management, high level of professionalism and responsibility of all the people who work there; other factors equally important in the pursuit of our mission are the constant introduction of advanced technologies in the production processes and the implementation of scheduled maintenance programs for the systems, together with the growth of the individual skills of the entire company staff thanks to the many in-house training programs”.

Malé Water & Sewerage Company has recently invested in a new line for bottling TaZa still water in PET bottles provided by SMI.

What are you asking your bottling and packaging machine suppliers in terms of efficiency, flexibility and innovation?

From the left:

Khamar Shahimi, SMI Asia’s Service Manager; Abdulla Nazih, Project Development Manager of MWSC; Davide Danna, SMI Asia’s Managing Director; Ahmed Mujthaba, Engineering Manager of MWSC and Mircea Vrednicu, SMI’s Service Area Manager.

"MWSC is an industry leader in the bottling of mineral water and, as such, wants to provide its consumers with a high quality product at a competitive price.

To achieve this goal, the new bottling line must be able to operate at maximum performance for long periods of time, minimizing downtime for repairs and maintenance.

The technological innovations available in the bottling system that SMI supplied to us ensure optimal management both of the raw materials and the production cycle and, therefore, a satisfactory level of profitability of operations".

What are the factors that have led Malé Water to expand its facilities by choosing SMI technology?

"The need to increase our production capacity is derived both from changes in the lifestyle of the local people, who



increasingly favor the consumption of bottled drinks, and the strong demand generated by the international tourism the Maldivé Islands attract.

These factors offer great opportunities for development for the bottled water market and Malé Water wants to be ready to play a leading role in the years to come.

Therefore, MWSC chose to upgrade its production facilities by installing a new fully automated bottling line, choosing SMI, one of the leading manufacturers in the bottling & packaging machine market sector, as the supplier of the entire system.

In particular, we enjoyed the benefits of the technology used in Smiform's ECOBLOC® integrated system, which allows us to group together in a single machine all the primary packaging functions and manage them easily and efficiently thanks to a user-friendly HMI".

Which should be the role of MWSC's ideal supplier during the process



of strong growth that you are experiencing?

“Malé Water’s ideal supplier must ensure high efficiency of the systems provided and an impeccable after-sales service, with special attention to the easy availability of parts and on-line assistance; in addition, it is important that our trusted suppliers enable us to maximize our production facilities for many years, thanks to technical training programs which keep them updated with the technological developments in this sector”.



Malé Water & Sewerage Company contributes to the ongoing development of the Maldivian society, improving the quality of life of local populations through the provision of water services of the highest quality. How important is the eco-friendliness of the products offered by your trusted suppliers for your business?

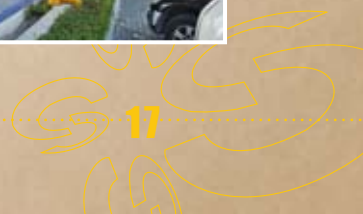
“As said before, MWSC is one of the leading companies in the Maldives and, therefore, the use of environmentally friendly technologies fall within our social responsibility.

In order to respect this essential principle, Malé Water asked SMI to provide a bottling line designed especially focusing on environmental compatibility and energy efficiency. SMI has fully centered this target by implementing a number of innovative solutions on its own machines such as, for example, the compressed air recovery system mounted on the Smiform stretch-blow moulder, which allows to recover a portion of high-pressure compressed air and, therefore, consume less electric energy in the PET bottle production process. Choosing eco-friendly production systems is one of the company’s footholds of our company’s expansion program, which fully embraces the goal of the Maldives to become a “carbon-free” country by 2020”.

“As our company is based in the Maldives, in the middle of the Indian Ocean, it is clearly very important to be able to count on the support of a SMI representation in Asia that is able to respond more quickly to our needs, especially as concerns the supply of spare parts, than what the SMI headquarters in Italy would be able to. In fact, the time difference between Europe and Asia can make communication difficult during emergencies, so being able to have a direct service in Asia greatly simplifies this type of problem. A big plus for Malé Water”.



How important is it for Malé Water for SMI to be present with a branch in Asia?



MAI DUBAI

WATER SECTOR

Mai Dubai LLC

Dubai, United Arab Emirates

Group: DEWA (Dubai Electricity & Water Authority)

- 12,000 BPH PET LINE for 0.5 L containers:
 - Smiform ECOBLOC® 6-24-6 H P VMAG integrated system
 - Smiflexi LSK 25T shrinkwrapper
 - Conveyors Smiline & subsupplies
 - Smipal APS 3050 P palletizer
-
- PET line for 5-gallon containers
 - PET line for plastic cups



VIDEO



GEO LOCATION





The Electricity & Water Authority of Dubai (DEWA) was formed on 1 January 1992 by virtue of a decree issued by His Highness Sheikh Maktoum bin Rashid Al Maktoum, who ordered the merger of the Dubai Electric Company with the water department.

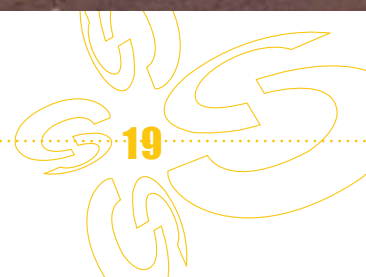
Mai Dubai LLC came into being on 19 December 2012, a company created by DEWA to build and manage a new water bottling plant in the UAE.

Mai Dubai LLC is a new, exciting and daring commercial initiative in the

mineral water bottling sector and launched its production business at the beginning of 2014.

This new company's goal is to quickly reach positions of primary importance in the industrial reference overview.

For this reason Mai Dubai LLC is planning major investments in technology and people, which will enable it to obtain a product that will live up to the reputation of the brand that produces it.



BLUE GOLD:

AN IMPORTANT SOURCE OF WEALTH

The production of drinking water is undoubtedly the biggest challenge for a place like Dubai, which does not have a river system and has limited rainfall; challenge that DEWA decided to face, to expand in the promising market for the production and bottling of the so-

called "blue gold".

The Mai Dubai project is part of a broader strategic vision of the company's mission of providing products and services of high quality.

Desalinated water is now the main source of drinking water in the United Arab Emirates, the demand for which is growing rapidly, and therefore requires massive investment in advanced systems and technologies.

Since sea water is desalinated using special equipment owned by the customer, SMI's supply begins from the treatment that makes desalinated water potable and ends with the palletizing of the finished packs, ready to be distributed and sold on the market.



From the left:

Fabio Sisimbro, SMI's Sales Area Manager, and Saeed Bin Ghanam, Mai Dubai LLC's Sales Officer.



The system for the desalinated water treatment provided by SMI is produced by the French company I.C.E., one of the main references in the field of technologies for the treatment of water and bottled soft drinks, which SMI chose as partner in this project since it guarantees the high quality of products supplied, thanks to the excellence of its machinery.

The I.C.E. system installed by SMI in the Mai Dubai plant is very sophisticated as it must make drinkable sea water from which salt and minerals were extracted.

As a result of this treatment, water is subjected to an enrichment process with chemical elements provided by a specific formula determined by the customer, the composition of which varies according to the characteristics and taste that the "blue gold" must have in the end.



THREE PRODUCTION LINES FOR THREE MARKET NEEDS

The agreement between DEWA and SMI was signed in 2013 after a long selection process that took place through a bid issued by the Emirates. In the end, the latter deemed that SMI was the supplier that best reflected the qualitative, economic and technological characteristics required by the invitation to tender. The turnkey solution proposed by SMI for Mai Dubai also includes, besides the actual bottling plant, all the ancillary equipment necessary to run the production lines, from the desalinated water treatment system to the palletizing of the finished packs. With this new investment, Mai Dubai Water aims to become one of the leading companies in this sector. The company's goal is to win significant market shares both from the private consumer - to which the 12,000 bph PET line is dedicated for the bottling and packaging of 1.5-liter, 0.5-liter and 0.33-liter PET bottles - and from the industry and service sector - to which the production of bottled water in 5-gallon containers is intended. Finally, Mai Dubai also aims at the airlines' niche sector through the production of the line that packages water in small plastic cups.





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SR6
ECOBLOC

Reepack

A NEW CHALLENGE FROM THE CITY OF A THOUSAND CONTRASTS

Nothing ever stops in Dubai. Dubai is the city of the future and many contrasts, which continues to grow and collect one record after another, such as the one DEWA - the Dubai Electricity & Water Authority - recently achieved and which designed and built from scratch, in collaboration with SMI, a new plant for the production, bottling and marketing of a new brand of still water: "Mai Dubai".

It is a very ambitious project and one of a kind, implemented in style just like all the great works that take shape in this amazing city.



A LARGE-SCALE TURNKEY PROJECT

Dubai is one of the richest cities in the world, where glitz coexists with tradition and skyscrapers overlook the desert. It is the throbbing heart of the United Arab Emirates and the city of the future for anyone who wishes to dream, desire and contemplate changes in his/her life. In Dubai you can feel the thrill of

being able to achieve your goals, the excitement of continuous innovation, the certainty of a country that devotes everything to the well-being and safety of its citizens and visitors: in other words, a magical and exotic place.

Dubai is the city of wonders: the beauty of many sights with an oriental flavor, fun in the glow of the evening,

the endless number of buildings and clubs, the grandeur of the most amazing works of architecture and the tranquility of an enchanting sea. It is the city of greatness and challenges.

This is why DEWA (acronym for Dubai Electricity & Water Authority) - decided to build a plant from scratch to bottle drinking water, for the



Mai Dubai
water is life

production of 12,000 bottles per hour. The development of the entire project, which was named Mai Dubai, was entrusted to the SMI Group in San Giovanni Bianco (Italy) as sole supplier.

The only exception are the desalination plant and the factory building, which the company of the Emirates provides for directly.

The task entrusted to SMI designers soon turned into a big challenge: to design, implement and install a complete turnkey system comprising the entire process, filling, storage & distribution technology as well as all the relating management and control systems.

SMI proposed itself as the sole supplier to handle all the major stages regarding the design and construction of the plant, with the primary objective of providing a first-class product and demonstrating its technical and managerial skills to the customer.

Mai Dubai commissioned SMI both for the technical design of the bottling line and the construction of the plant that houses the line, supervised by the SMI Group's QHSE (Quality, Health, Safety & Environment).

The priorities highlighted by the company in the bid mainly concerned the timing involved in the implementation and start-up

of the new production lines as well as the technological content of the machinery making up these lines; all this to achieve a state-of-the-art plant in the UAE that would ensure constant and efficient production flows of excellent quality in all three bottling lines installed in the new plant of 22,123 m².

SMI completed the plant's construction work, which lasted about one year, within the deadline agreed with the customer.

The first 12,000 bph production line, intended for bottling water in the 0.33-liter / 0.5-liter / 1.5-liter PET collations, came into operation in May 2014.



“ Customer priorities: meeting deadlines and quality excellence ”



Novadim food technology

In the UAE SMI is represented by Novadim Food Technology, the company managed by Pierre Anid that efficiently cooperated with both SMI and the customer Mai Dubai LLC for the successful supply of the new water bottling plant. Novadim Food Technology, headquartered in Beirut, Lebanon, has been working in the food & beverages sector for 20 years. Thanks to the expertise of its staff composed of 6 people, the company offers sales support and technical assistance to more than 200 SMI machines installed in Lebanon, Syria, Kuwait, Bahrain, Qatar, UAE, Oman, Yemen, Ethiopia, Uganda and part of East Africa. As far as the project of the new complete line installed at Mai Dubai is concerned, Pierre Anid, Managing Director of Novadim, stated: "I would like to thank all the people who believed in this project. Just two years ago it simply was a plot in the middle of the desert. Today it epitomizes a success both for Mai Dubai and SMI".



☺ From the left:
Pierre Anid, Managing Director of Novadim,
and Fabio Sisimbro, SMI's Sales Area Manager.



THE ADVANTAGES OF SMI'S SOLUTIONS INSTALLED IN MAI DUBAI

The multi-sectoral experience gained by SMI in over 25 years of business allowed us to propose a comprehensive solution to DEWA which would coordinate, thanks to latest generation automation systems, the installation requirements of the systems, process logic, technical sizing of the utilities, logistics and storage technologies.

The 12,000 bph bottling line (dedicated to the 0.33-liter / 0.5-liter / 1.5-liter PET bottles) consists of: Smiform's integrated ECOBLOC® 6-24-6 HP VMAG stretch-blow moulding, filling and capping system, Smiflexi's LSK 25T shrinkwrapper, Smipal's APS 3050 P automatic palletizing system and a few other machines supplied by trusted partners with whom SMI has been working with for some time.

For this production line, Mai Dubai LLC opted for a compact stretch-blow moulding, filling and capping system of the ECOBLOC® series because it is the ideal solution for achieving high output efficiency at low cost.

The 0.33-liter and 0.5-liter water bottles are blow-moulded, filled and capped by the Smiform ECOBLOC® integrated system and subsequently packaged by the Smiflexi shrinkwrapper in 24-piece tray + film packs in the 6x4 collation while the larger 1.5-liter bottles are grouped in packs of 6 pieces, always in the tray + film formation.

The packaging process ends with the palletizing of the packs on 800x1200 mm Euro-pallets for the final distribution and marketing stages.





CONNECTING MINDS, CREATING THE FUTURE

The Expo 2020 theme proposed by Dubai, i.e. "connecting minds, creating the future", fosters global development according to three very concrete sub-themes: mobility, sustainability and opportunity. These are the key principles behind the incessant economic activity of this unique Middle East city, a very popular and glamorous destination visited by travelers worldwide; a true miracle in the desert waiting to shine even more when the World Expo will be staged in 2020. In Dubai, everything is designed to amaze in size, uniqueness and luxury. A typical example of this vocation to excel is the "Burj Khalifa", a super skyscraper with 163 floors, which became the tallest building in the world in 2010 when it touched the sky with its 828 meters, Dubai's new icon. The plan of the building, which is surrounded by smaller facilities, is inspired by the shape of a Hymenocallis flower, a genus of plants also widespread in Dubai, where it is particularly popular. The Burj Khalifa skyscraper has the fastest elevator in the world,



moving at 18 m/s (64.8 km/h), and its interiors, which houses shops, offices, hotels and private apartments, were decorated by Giorgio Armani. Other monumental works, decided on and implemented in record time, have contributed to make Dubai the best known and most visited Arab emirate in the world,



INSTALLATION / Mai Dubai



which is also an extremely important trading port (the third of the planet) and a unique tourist destination, thanks to its infinite shopping malls (where you can buy anything at very competitive prices). This miracle in the desert was also made possible by a “magic potion” called fresh water; a precious commodity taken from the sea and placed inside huge desalination plants, a “blue gold” that irrigates thousands of flower beds, lush gardens and a multitude of magnificent golf courses.



DIFFERENT BOTTLES FOR DIFFERENT NEEDS

In addition to the 12,000 bph PET line, the turnkey system SMI provided to Mai Dubai also includes a second bottling line for 5-gallon (19 liters) returnable polycarbonate containers, implemented in collaboration with the Bardi company, and a third line for packaging water in small single-serving plastic cups, implemented in collaboration with Reepack.

The plastic cups are grouped manually into cardboard boxes and sold primarily to airlines, especially to the Emirates airline company (with which Mai Dubai has signed a commercial agreement).



INSTALLATION / Mai Dubai

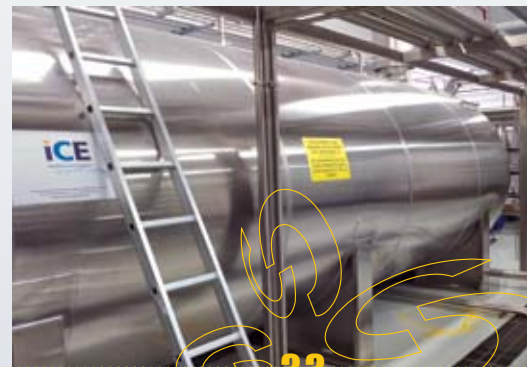




SMI's supply includes all the utilities necessary to run the three production lines: high-pressure compressor, low-pressure compressor, compressed air piping, chiller, boiler, diesel tank, water and steam piping, etc.

SMI's experience and expertise in the packaging industry were made available to DEWA also to study the shape and characteristics of the bottles to be used for marketing the Mai Dubai water.

The installation of the new bottling lines was completed in May 2014 when the SMI Team supplied Mai Dubai with an as built drawing of the plant in virtual three-dimensional format.



Dubai

SUSTAINABLE CITY FOR EXPO 2020

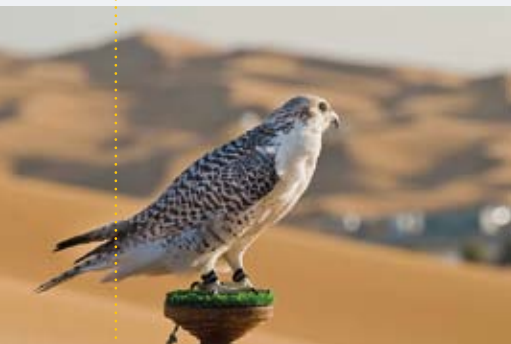
Dubai's government authorities have set up a committee of experts to study and introduce green programs in Arab territory regarding energy efficiency, renewable energy production and green building projects. Solar energy street lights, green



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building codes and high-efficiency LED-based systems are just a few examples of ambitious measures that Dubai has taken to become by 2020 one of the top 10 cities in the world as far as environmental sustainability is concerned. Ongoing preparations also for Expo 2020, when Dubai will welcome millions of visitors. Although 2020 is still far away, in

the emirate people are talking about the World Expo as an impending event and its connection with the Expo 2015 in Milan, with which a "Memorandum of Understanding" was signed as an agreement that opens important perspectives for Italian companies in view of Expo 2020 and which confirms the great interest of the United Arab Emirates for products and technologies "made in Italy".





COMPLETE LINES FOR EVERY NEED

SMI designs and manufactures complete systems and plants for the bottling and packaging of food products and beverages, cleansing agents, personal care products, chemicals and pharmaceuticals. The complete bottling and packaging lines proposed by SMI are ideal for production requirements ranging from 4,800 to 50,000 bottles/hour and are based on technologically advanced choices that ensure high efficiency, great management flexibility, low energy consumption and a quality/price ratio among the best on the market. In terms of turnkey systems, SMI's proposals range from compact "essential" and "energy-saving" lines to complex solutions, with a wide array of intermediate products able to satisfy any present and future requirement in terms of production speed, product to be packaged, automation level and energy saving. Each complete line project includes a careful assessment of all the logistical aspects of the new system, a detailed study of the interactions between the machines and the equipment that make up the production line (whether produced by SMI or other trusted OEMs), as well as a thorough analysis of cost dynamics (TCO - Total Cost of Ownership) related to the purchase and management of the new supply.



THE WORD TO THE CUSTOMER

Interview with Jay Andres, Chief Operating Officer of Mai Dubai LLC



What were Mai Dubai LLC's expectations when it issued the tender for the new bottling plant?

"First of all the quality of the proposed solutions, followed by tight deadlines, an absolutely excellent after-sales service and, last but not least, a good quality/price ratio. In fact, this investment is only the starting point for our company, since we are already thinking about future developments based on positive feedback from the market".

What are the main reasons that prompted Mai Dubai to cooperate with SMI?

"We needed a reliable partner, able to provide a complete turnkey line, capable of meeting our timetable and coordinating the installation of all the systems and machines required to implement the new production facility. In addition, we wanted a supplier who, acting as prime contractor, would manage the four main aspects of the project: water

treatment plant, cups line, 5-gallon container line and PET line. Among the companies that participated in the bid, SMI ranked first in meeting all our selection parameters, thereby winning the order to build the new plant”.

What do you expect from your suppliers in terms of efficiency, flexibility and technological innovation?

“A rapid process of growth and expansion is part of our company’s development plans. For this reason, we want our suppliers to be able to grow with us. Mai Dubai LLC firmly believes in long-term cooperation with its business partners and the mutual benefits that may ensue. When we decided to invest in a new bottling plant, we set the very quick delivery of the entire system as a non-negotiable condition. As such, only a supplier like SMI could hit this target due to its innovative ideas and flexible organization. After all, Mai Dubai’s mission is that of being “a sustainable and innovative company, a regional leader in the bottled water sector”. In this regard, for example, we are constantly striving to reduce CO2 emissions and pursuing a strategy for environmentally sustainable expansion in agreement with the Dubai Electricity and Water Authority (DEWA), owner of Mai Dubai LLC”.

What role does a supplier like SMI play in this growth process?

“Suppliers play a key role since it is up to them to provide Mai Dubai

with the best technical solutions available on the market, taking into account the following priorities: meeting customer needs, providing high quality products and offering solutions that will ensure excellent return on investment”.

How important is sustainable development for Mai Dubai LLC?

“As producers of a good that uses various resources available in nature, we have specific responsibilities towards the environment in which we work. Therefore, we must constantly seek solutions and opportunities which allow us to reduce the consumption of energy, water and all the raw materials that are necessary for producing, bottling and marketing our products”.

What are your company’s expectations in regard to this new supply?

“We place great emphasis on the potential of the new bottling plant provided by SMI, which for us is the foundation on which to build further developments. Just think that Mai Dubai LLC is a company that was established in 2013 without any employees, but our growth plans envisage a workforce of 200 people by the end of 2014. The market’s initial response to the marketing of Mai Dubai water was very good; consumers expressed their high satisfaction with the quality of the product, the design of the bottles used in the packaging and the brand designed for the commercial launch. We are pleased with our company and

proud of it, built with commitment and dedication, and we wish to share with our customers the passion we put into our work through modern social media such as Facebook and YouTube, where you can find pictures and videos of our production site”.



SIRMAKEŞ

WATER SECTOR

Sirmakeş

Beykoz, Istanbul, Turkey

Smiform SR 10 stretch-blow moulder

Smiflexi SK 600 F shrinkwrapper

Smiline conveyor belts



GEO LOCATION



Asia and Europe are like two lovers who want to stay together but cannot because of the Straits. Istanbul is the city which brings them together. For thousands of years this city has managed to combine the two continents and their different cultures. While on the one hand it gives life to the mystery of Asia, on the other hand it lets you get to know the European part. While in one corner you can see the mosques, the symbol of Islam, in the other you can admire the churches and synagogues, and the squares are filled with old buildings standing next to modern ones. The Beykoz neighborhood-district, located at the northern end of the Bosphorus Strait to the Black Sea, will put another spell on you.

This big neighborhood offers fabulous natural landscapes, where peace and tranquility reign among waterways, forests and the sea. The Sirmakeş water originates in these forests of unique beauty and purity, a water rich in tradition, which still maintains the goodness and purity of its origins, dating back to over a hundred years ago. Purity and goodness guaranteed not only by nature but also by the high-tech bottling plants provided by SMI to the Turkish company for the 18,000 bph production line of Beykoz: a Smiform SR 10 rotary stretch-blow moulder for the 0.33-liter, 0.5-liter and 1.5-liter PET bottles, a Smiflexi SK 600F shrinkwrapper and Smiline conveyor belts for handling loose bottles and packs.



“ The purity of the Sirmakeş water has been handed down from generation to generation ”



THE PURITY

OF NATURE WITHIN EVERYONE'S REACH

The area in which Beykoz is situated had been inhabited since ancient times for its strategic position and natural beauty, combining the modernity of Istanbul on the one hand to the lush forests on the other.

This is exactly where the Sirmakeş forest is located, owned by the well-known novelist and journalist Ahmet Efendi Mithat Beykoz, where water bearing his name has been flowing since 1900.

The Sirmakeş water continues to flow even today, always in the same place and in the same village of Beykoz,

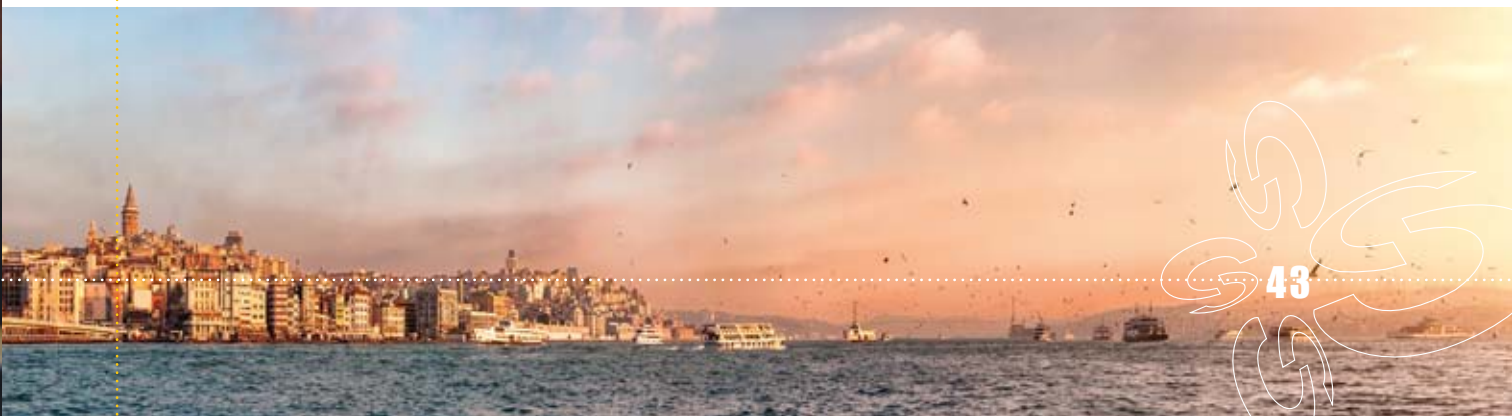
from the stream that is a veritable paradise of natural beauty.

The purity of the Sirmakeş water has been handed down from generation to generation and is a true symbol of the tradition of the people who made the history of Turkey.

The classic demijohn of Sirmakeş water was a precious gift that the Ottoman Empire used to send to other countries, which always accepted it with gratitude and which was used during the grand palace banquets, when ice cubes made only with this water were offered to guests.

Today the times and customs have changed, people have changed, Istanbul has changed... but the Sirmakeş water has remained unchanged, its taste is still pure and its appearance crystal clear, as at the time of its origins.

This drink is now on the market in different types of bottles, both glass and PET, with diversified shapes and capacities, able to satisfy the needs of consumers at any time of the day and at any event.



ISTANBUL: BETWEEN ASIA AND EUROPE

Napoleon Bonaparte once said: "If the world were a single State, its capital would be Istanbul".

The capital of the empires ... the city that dominated a continent ... the cradle of civilization ... a meeting point of cultures and continents: these are just some of the many ways Istanbul can be described.

But words are not enough to describe this magnificent city, just as it will not suffice to read books about it to fully understand its uniqueness and charm.

Istanbul is Turkey's largest and most developed city, a unique place in the world with a special magic that drew entire states and empires to it over the centuries.

Many wars were fought in Istanbul, lasting many years, between those who wanted to take over it and those

who did not want to give it up.

Throughout its long history, this city (called Byzantium until 330, then Constantinople until 1453, Istanbul or Constantinople until 1930 and from then only Istanbul) was the capital of four empires: Roman, Byzantine, Latin, and Ottoman.

Also known by the name of "second Rome", Istanbul was one of the largest cities of Christendom until the Ottoman conquest in 1453, later becoming for almost five hundred years the capital of one of the largest empires in history as well as the crossroads of cultures.

Its rich history left significant archaeological and architectural treasures that make it a tourist center of global prominence and one of the most fascinating cities in the world where different cultures, populations and religions had the chance to meet.





THE BEYKOZ DISTRICT AND THE MAGIC OF THE BOSPHORUS

The Beykoz district, considered one of the 'coolest' ones in Istanbul, is located on the Anatolian side of the northern end of the Bosphorus and extends to the opening of the Black Sea. It is one of the most pleasant and calmest areas of the Turkish capital, surrounded by greenery, and is the home to luxurious villas inhabited by movie stars, members of Parliament and wealthy industrialists. In addition to being one of the most strategically important crossing points of history, the Bosphorus has always stimulated the imagination of its inhabitants, so much so that in ancient times it was the favorite place for rituals and sacrifices. In Greek, "Bosphorus" means "the passage of the heifer" and alludes to the myth that one day Io, the girl whom the god Jupiter (Zeus) loved, was stopped by Zeus while she

was returning to her father's house. He declared his love to her and asked her to make a home in the woods where no one would have harassed her and where he could go and see her any time he wished. Frightened, Io began to flee but Zeus chased her in the form of a cloud and coupled with her by wrapping himself around her. When Era, wife of the god, saw that strange and fast-running cloud, she instantly understood the betrayal of her husband but Zeus sensed her presence and had the time to turn the young Io into a white heifer. However, this subterfuge did not deceive Era, who sent a gadfly to torment Io with its bites, to the point that she jumped into the sea to escape Era. Io swam across Greece all the way to the Strait between Europe and Asia, which was named Bosphorus (the heifer's ford) in remembrance of her passing.

WHEN THE BOTTLE is the corporate image

In a market where bottled drinks have reached levels of consumption of several billion pieces per year, it is clear that this industry's offer is so vast and different that it requires careful analysis of the final consumer's tastes and preferences to optimize marketing and sales strategies.

One of the main tools bottling companies have to retain existing customers and attract new ones is the container through which their product is offered to the market: shape, color, material, functionality, innovation, ease of use, eco-friendliness, etc. are all key aspects in defining the right mix that leads to the successful sale of a drink and the success of a brand. To support its customers in this delicate phase, SMI provides an advanced CAD center for the drawing, 3D design and graphics processing of bottles and containers developed in collaboration with the customer's marketing and sales teams.

After a careful analysis of the needs and demands that emerge in the meetings between the two companies, the idea of the container

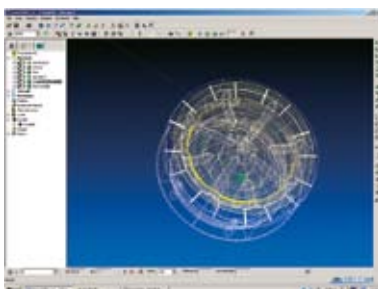
takes shape, it is enriched and refined and finally converted into a detailed design and, if necessary, into an actual pilot sample.

The large-scale production of the bottle/container chosen by the customer is performed by the moulds made of special aluminium alloy mounted on the Smiform stretch-blow moulders made by Smimec, a company of the SMI Group.

Smimec has a specific department for manufacturing moulds and mechanical components, which is equipped with an FMS line consisting of 12 CNC machining centers.

These are technologically advanced, fully automated machine tools running nonstop 24/7, even unmanned, which follow predetermined production programs (CAM).

The 12 machining centers at the Smimec plants have a production capacity of over 15,000 moulds per year, are equipped with linear motors running at speeds of up to 80 meters per minute and fitted with spindles that reach speeds that reach speeds of 30,000 rpm. Consequently, the excellent finish and quality of the moulds is always guaranteed.



THE ADVANTAGES OF SMI STRETCH-BLOW MOULDING TECHNOLOGY

S miform's SR series rotary stretch-blow moulders provide impressive performance in the production of PET, PEN and PP bottles at the max speed of 36,000 bottles per hour.

These containers are mainly used in the bottling processes of the food & beverage industry but also apply to the chemicals, pharmaceuticals and detergents sector.

This series' high technological content, low cost of operation and maintenance, as well as the excellent quality/price ratio, are the ideal solution for producing plastic containers from 0.25 to 3 liters, with shapes ranging from the simplest to the most innovative and



sophisticated.

Thanks to the cutting-edge technological solutions developed by Smiform designers, the stretch-blow moulders of the SR series rely on the accurate and precise heating profile of every single preform, which allows producing nearly perfect bottles even at high speed.

In addition, before entering the heating module, equipped with infrared lamps, the preform is subjected to two different checks: the first one detects its size and vertical position, automatically rejecting all preforms that do not meet preset parameters, while the second one measures its temperature, stopping

the stretch-blow moulder in case the temperature of a certain number of preforms is outside the admissible range.

At the exit of the heating module, a sensor detects the preform's temperature, compares it with the temperature set point and, if the two values do not match, increases or decreases the power of the heating module's lamps. "Intellicavity" technology makes it possible to manage and check each mould and, consequently, each cavity.

The stretch-blow moulders of the Smiform SR series, available in models from 4 to 20 moulds, are also characterized by the low total cost



of operation and maintenance of the production plant.

In fact, for example, the constant rotation of the blowmoulding carousel produces almost null inertial loads and helps reduce the consumption of electric energy whereas compressed air consumption can be limited thanks to the optional air recovery system.

Thanks to the integration of the electrical panel in the heating module, the SMI-produced stretch-blow moulders feature a compact structure and don't take up too much space.

This solution also allows eliminating the connecting cables (either hanging or on the floor) between the machine and the electrical panel, avoiding energy dispersion and making the workplace safer.

QUALITY FIRST OF ALL

In addition to the material and finish of the blowing moulds, the quality of the bottle or container produced by the Smiform stretch-blow moulders also depends on careful tests and inspections performed on the preforms. Therefore, thanks to a modern laboratory equipped with the most sophisticated technologies, the preforms supplied to the customer enter the stretch-blow moulding process only after passing through quality control tests. Among these, for example, checking the size of the preforms via a camera and special parameterized comparison software is crucial, as it measures the preforms' thickness by means of infrared rays and also checks the homogeneity of the polymer through polarized light equipment. In addition, the containers are subjected to specific thermal control and mechanical tests at the end of the production process, to ascertain their suitability for the subsequent bottling, capping, labeling, packaging and palletizing stages. The Smiform laboratory devotes considerable resources to experimentation with new materials and applications, especially in the stretch-blow moulding of multilayered, eco-friendly, biodegradable preforms and in the field of nanotechnology.



THE WORD TO THE CUSTOMER

Interview to Emre Karabacak, Managing Director of Sirmakeş



From the left:

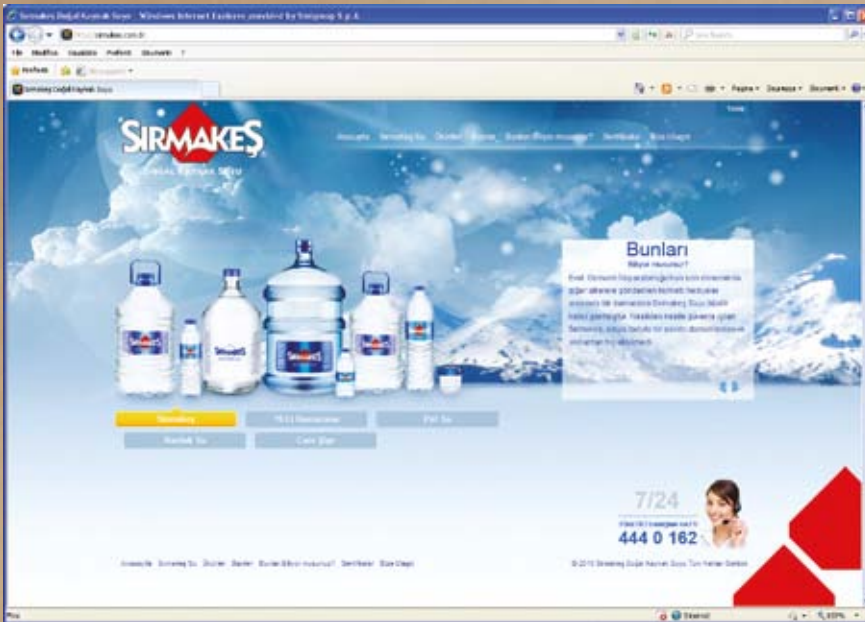
Zafer Özcan, Sales Area Manager of SMI, with Refik Karabacak, Managing Director of Sirmakeş.

The starting point of Sirmakeş' success dates back to 1900; ever since, in just a few years it became, and still is today, a leading company in the production of bottled water. What is the key to this outstanding success?

"When Sirmakeş established its business in this sector the number of competitors was very limited

and, hence, being among the earlier operators in the bottled water market gave us a remarkable edge; however, a key role in Sirmakeş' success was played by the features and the quality of our products as well. Turkish consumers, indeed, have very different tastes as far as mineral water is concerned, but the water we produce can satisfy them all".





What are the main factors that pushed Sirmakes to invest in the purchase of an Ecobloc® integrated system and in an end-of-line equipment supplied by SMI?

“The reason why we decided to invest in the purchase of a Smiform SR 10 stretch-blow moulder is the advanced technology that machine is equipped with and the full confidence we have in SMI; the latter, indeed, is a renowned and trusted company in Turkey and Sirmakes is very satisfied with “the made in Italy” machinery this manufacturer has installed in our production lines”.

Environment care, product quality and customer's wellness are the strong points of Sirmakes. How important is the support given by technologically advanced machinery to the achievement of your goals?

“It is extremely important, since you have to invest in new technologies continuously if you want to win in

a highly competitive market; the introduction of innovative solutions allows us to improve our operating efficiency, adapt our production lines quickly to customers' changeable requests, provide high quality products and keep manufacturing costs low”.

What role does the partnership with SMI play in the success of Sirmakes?

“As already said before, one of the reasons standing behind our decision to invest in SMI's products is without doubt their remarkable technological content and the cutting-edge solutions they are equipped with, without forgetting, of course, the very good relationship I have with Zafer Özcan (SMI's Sales Area Manager for Turkey) and Paolo Nava (SMI's President and CEO)”.

How important are for your company the support and the expertise provided by SMI?

“SMI is a company with a very strong sense of duty and work ethic; therefore, it invests every year huge resources to enhance its product range constantly. That allows SMI's customers to benefit anytime from the newest and most advanced technical solutions in the sector, so that they can run their production lines in a cost-effective, efficient and sustainable way”.

What is your opinion on the future of Turkey's bottled water industry?

“A lot of market surveys, carried out both by government-backed institutes and private research companies, highlight a year-on-year growth of about 20% in the consumption of bottled water. One of the main reasons standing behind such strong a rise is the fact that Turkish consumers are becoming more and more aware of the benefits the consumption of bottled water brings to the human body; in addition to that, the strategical location of Turkey between West and East is an outstanding catalyst for both tourism and international trade, with a positive effect on economy growth and domestic consumptions”.



CERVEJAS DA MADEIRA

BEER SECTOR

Empresa da Cervejas da Madeira Lda (ECM)

Madeira – Portugal

Group: Grupo Pestana

Smiflexi WP 800 casepacker

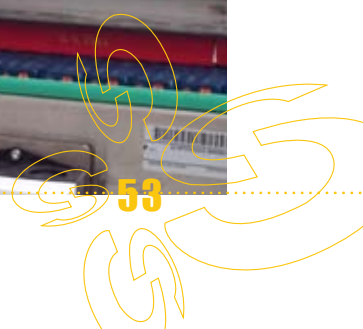


GEO LOCATION



The tropical archipelago of Madeira is known to all as the “pearl of the Atlantic”, thanks to its wonderful subtropical climate and breathtaking views. The inhabited islands of Madeira and Porto Santo are part of this archipelago, as well as another small group of uninhabited islands, the “Desertas” and the “Selvagens”. The island of Madeira is the largest of all and is famous for its embroidery artisans, exotic flowers, tropical fruits, exceptional landscapes, spectacular New Year’s fireworks, considered the hugest in the world by the Guinness Book of World Records, and Coral beer, a lager produced by Empresa de Cervejas da Madeira (ECM). ECM uses only top quality malts to produce its Coral beer and adopts a series of production techniques that enhance the quality of the finished product. To this end, the Portuguese company continually invests in new technology

for its own bottling and packaging lines. For example, ECM turned to SMI, with which it has collaborated since 2009, for the installation of a new model WP 800 wrap-around case packer, equipped with the innovative “Easy-Load” automatic magazine, which packages the Coral beer bottles both in kraft board boxes and in standard 3-mm thick corrugated cardboard boxes.



THE PEARL OF THE ATLANTIC INVESTS IN TECHNOLOGY

The packaging solution chosen by ECM



Never as in recent years has the packaged beverage industry come to know such strong and diversified development. Empresas de Cervejas da Madeira certainly stands out among the companies of this sector which have shown they know how to seize the opportunities offered by the market. This company soon became a leader in the production of beer, soft drinks and water, with its Coral beer being the consumers' first choice today. In addition to product quality, ECM's marketing dept. pays great attention to the characteristics of the package that encloses the product, because an attractive packaging, abreast of the times, easy and safe to use, is often a key element in the successful sale of a product. Product and package are increasingly integrated with each other and should address, in a targeted manner, the senses, sensations, tastes and expectations of each category of consumers, sending them a message of exclusivity, positivity, happiness. To achieve the ideal mix you must have very flexible and versatile packaging machines,





BOXES MADE OF KRAFT BOARD AND MICRO-CORRUGATED CARDBOARD

The technology used in the “Easy-Load” automatic loading system present in the WP 800 case packer installed in the Madeira production plant offers the great advantage of ensuring the smooth and constant pick-up of a wide range of cardboard blanks with thickness between 0.5 mm and 5 mm.

ECM, in fact, packages glass bottles both in kraft board boxes and in 3-mm thick “micro-corrugated” cardboard boxes, for the purpose of differentiating the packages presented on the market even more and meeting consumers' so many different demands.

The solution proposed by SMI to Empresa de Cervejas da Madeira is the most innovative you can find in the wrap-around case packers field and, unlike similar and more traditional solutions, also allows the use of kraft board as packaging material; the latter is an eco-friendly solution (less amount of raw material used) and a great benefit for the packaging of the product, since the producer can customize the package with graphic motifs of great visual impact.

From the left:

Pedro Marcos, Avanco Tecnica Lda's Managing Director; Bruno Sousa, Maintenance Vice-Director of ECM; Nuno Branco, Production Manager of ECM; Roberto Cavagnis, Sales Area Manager of SMI and Alessandra Paderno, Service Area Manager of SMI.

capable of adapting easily to the changes imposed by the user's sales & marketing strategies. In this regard, Empresas de Cervejas da Madeira recently purchased Smiflexi's new WP 800 case packer which offers a highly effective solution for the high-speed packaging of beer bottles (max. 80 packs per minute) in wrap-around corrugated cardboard boxes in the 4x6 collation (24 0.2-liter, 0.25-liter and 0.33-liter bottles), and in wrap-around kraft board boxes in the 2x5 (10 0.2-liter bottles) and 2x3 (6 0.25- and 0.33-liter bottles) collations.

CORAL BEER

THE CHOICE THAT SUITS EVERY PALATE

The careful selection of raw materials and the stringent checks performed throughout all the stages of the production process give Coral beer a unique set of characteristics, such as its pale gold color, a clean, gentle and aromatic taste, a lightweight body and a pleasant aroma, making this the ideal choice for a cool drink to quench your thirst and accompany your meat or fish or, simply, wet your appetite. It all began in 1872 when Henry Price Miles, a young Briton who settled in Madeira, founded the "H.P Miles & Cia, Lda" company that in 1932 merged with another brewer, "Araújo, Tavares and Passos", giving life to the Empresa de Cervejas da Madeira, which soon became the first factory in Portugal to produce beer on an industrial scale. In 1969 the launch of Coral beer laid the groundwork for the Madeira company's expansion of sales and product portfolio, which now includes, in addition to numerous brands of beer, a wide range of mineral waters, isotonic drinks and carbonated soft drinks. Since 1999, ECM has been part of Grupo Pestana,

one of the largest hotel operators in Portugal. The company continually invests also in new bottling and packaging equipment.

In choosing suppliers of new technologies, it has always paid special attention to innovative packaging solutions that enhance the



quality of the product, maintain its integrity during storage and transport and, last but not least, appeal to the final consumer.



MADEIRA: ISLAND OF ETERNAL SPRING

The Official story is that Portuguese captain João Gonçalves Zarco and his assistant Tristão Vaz Teixeira discovered the island of Porto Santo in 1418. The following year, while they were beginning to colonize the island, they noticed a big black cloud on the south-west horizon. As they sailed towards it, they discovered another beautiful island that they called "Madeira", i.e. "the island of wood". The island of Madeira, where it's spring all year round, is a true miracle of nature in the middle of the Atlantic. A place of striking beauty with an exotic aura, Madeira has a radiant flow that enhances the exuberant landscape of its mountains that steeply dip into the sea. On the inland, the high peaks surround inaccessible valleys, covered with lush vegetation in a magnificent

setting, where countless streams rush everywhere forming waterfalls of all heights. The "Levadas" are another peculiarity of the Portuguese island, a dense network of irrigation canals that run through the remotest and wildest recesses of the island, flanked by fifteenth century paths that originally had guaranteed their maintenance. As you follow the Levadas, you will find yourself in Madeira's most secret core and be able to stop and take a swim in one of the many hot water pools scattered everywhere, up to the tallest mountains from where the sunset is an unforgettable spectacle in an almost surreal landscape. This area is full of contrasts, where the differences between the south and north coast and between the inland and coastal towns are so big that you almost have the impression of being on different islands.



FUNCHAL: CITY OF MANY RESOURCES

With its relaxed atmosphere and sophisticated lifestyle, the cosmopolitan capital of Madeira, Funchal, is the largest city on the island, its main trade center and one of the most famous harbors of the Atlantic Ocean for cruise ships. Today, Funchal is a modern city, located in a unique area, where its geology creates a natural amphitheater that surrounds the entire city, starting from the port and reaching up to the 1,200 meters of its highest slopes. This natural protection attracted the first settlers who formed the initial core of Funchal, which has been the capital of Madeira for more than five centuries and which takes its name from the word "funcho", which in Portuguese means fennel, a

plant that is abundant on this island. Funchal has a rich cultural heritage, nestled in a busy and colorful city, and each year attracts thousands of tourists in search of art, history, relaxation, spa treatments, shopping and many other things to do and see. An excellent starting point for exploring this city is the vibrant "Mercado dos Lavradores", where you can buy a variety of exotic flowers and local crafts, tropical fruits, vegetables and fresh fish. The main access point to the island of Madeira is the capital's international airport, well-known among airline pilots both for the strong gusts of wind that make landing there particularly challenging and for the runway built on pillars overlooking the sea.



EASY-LOAD

THE INNOVATIVE AUTOMATIC LOADING SYSTEM



The main novelty of the WP 800 wrap-around case packer installed by SMI in the Empresas de Cervejas da Madeira factory consists in the innovative automatic loading system of the "Easy-Load" cardboard blanks magazine. This new device features considerable advantages from an operating and functional point of

view. The machine operator can easily load the cardboard blanks, stacked horizontally in uniform groups, because the magazine's feeding belt is set at the same working height as the packer's infeed belt, rather than under it, as occurs in traditional systems. The ingenious solution devised by SMI eliminates the disadvantages related

to the loading of the cardboard blanks magazine, which force the operator to bend his/her body continuously to place the blanks in the bottom part of the machine. The "Easy-Load" system is made up of a series of conveyor belts, fitted with motorized rollers, which feed the packer's cardboard blanks magazine. The stacks of cardboard blanks are

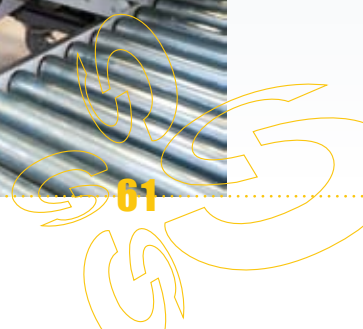
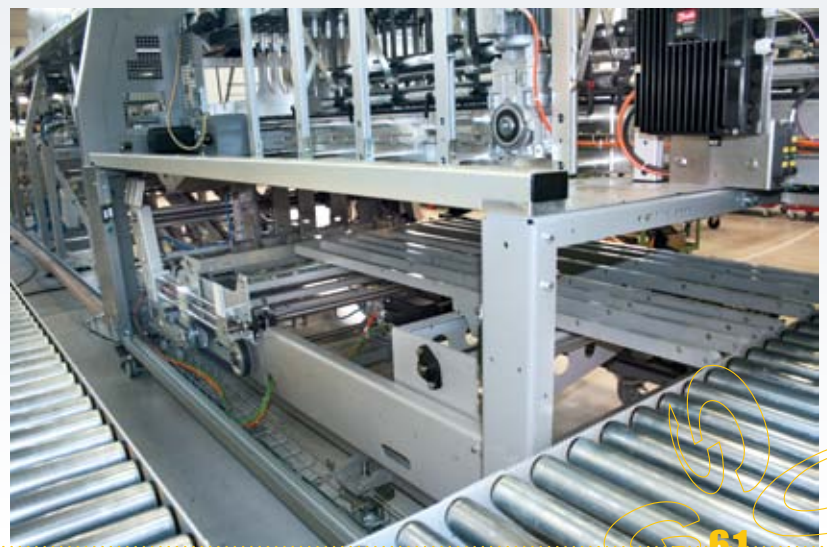


INSTALLATION / Cervejas da Madeira

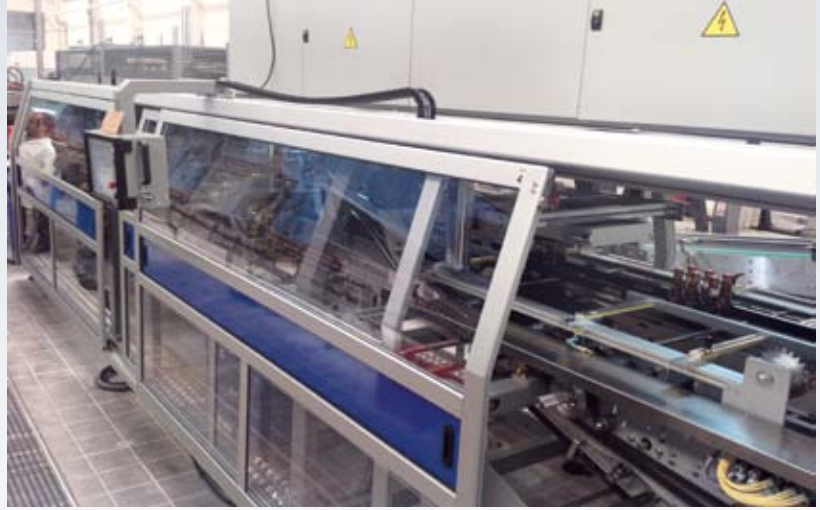


carried on these belts up to the area in which they are translated, and then continue up to the collection system at the infeed of the Smiflexi wrap-around case packer. The

operator simply places the stacks of cardboard blanks on the outermost roller conveyor so that the automatic control system can perform all the subsequent steps. Thanks to specific sensors, the arrangement and feeding of the cardboard blanks on the conveyor belts fitted with the motorized rollers and their loading into the packer's magazine is, in



fact, fully automated. The central section of the loading module is made up of a system that transfers the stacks of cardboard blanks from the feeding belts to the machine's actual magazine. This section is made up of a series of shifting belts that pick up the stacks of cardboard blanks from the feeding roller conveyors and carry them rapidly to a collection area. In this area, special side plates compact the blanks stacks, keep them in place and then lower them gradually for the next pick-up operation. The pick-up takes place by means of a group of suction cups that slide out the individual blanks from the bottom of the stack and place them on a group of chains that transfer them to the cardboard blanks climb. From here, the blanks go up to the machine's main work surface for the packaging operations.



A SUCCESS STORY ... CONTINUES TO GROW



Empresa de Cervejas da Madeira, Lda (ECM) is the leading company in the beverage industry in the autonomous region of Madeira which deals with the production and distribution of soft drinks, beer and water, marketed under its own brands and also third-party brands (especially for spirits, wines, etc.). The Portuguese company belongs to Grupo Pestana, the main Portuguese hotel group, whose substantial international investments are a key element in the quality assurance of ECM products (on the market for over 130 years). The latter employs approximately 250 people, serves about 3,500 customers and covers 100% of the Madeira region, offering high-quality customer service. The origins of Empresas Cervejas da Madeira date back to 1872, when Henry Price Miles, a young Briton who had settled on the Island of Madeira, founded the Atlantic Brewery, the first factory in Portugal

to produce beer on an industrial scale. Since, at that time, only a few locals knew the beer produced by this company, the Miles family came up with the brilliant idea of distributing free jugs of beer on the streets of the capital city Funchal to convince them of the goodness of their product. ECM was born in 1934 from a merger of different breweries operating in the region of Madeira and soon became one of the most dynamic industries in the

archipelago. This Portuguese company's best known product is the Coral Lager beer, launched on the market for the first time in 1969. Moreover, ECM is also the largest producer of alcoholic and non-alcoholic beverages in the autonomous region of Madeira and since 1977 has been the official bottler of The Coca-Cola Company. Thanks to the strong growth in sales volume, a new production facility was opened in 1996 in the industrial park of Câmara de Lobos, in the western area of Funchal.





SMIFORM



The growing awareness of companies, involved in the bottling and packaging of food and beverages, to environmental protection and energy conservation issues has led the manufacturers of filling and packaging machinery to find increasingly innovative technical solutions able to respond effectively to the market's new demands. In

terms of reducing the consumption of electricity in its production lines, SMI has installed a series of devices in its machines that allowed it to achieve interesting results; the main innovations regard the stretch-blow moulding systems which produce the PET bottles. Due to the heating of the preforms by means of IR lamps, these machines are among those

that consume the highest amount of energy within a bottling plant.



HIGH-PERFORMANCE

REFLECTIVE THERMAL PANELS TO HEAT THE PREFORMS

Among Smiform's main actions to reduce energy consumption, the one that stands out is the innovative thermal reflective panel system mounted on the stretch-blow moulders both on the front and at the rear with respect to the infra-red lamps designed to heat the preforms.

These panels, made of composite material, highly reflect the heat generated by the lamps, which operate at given wavelengths.

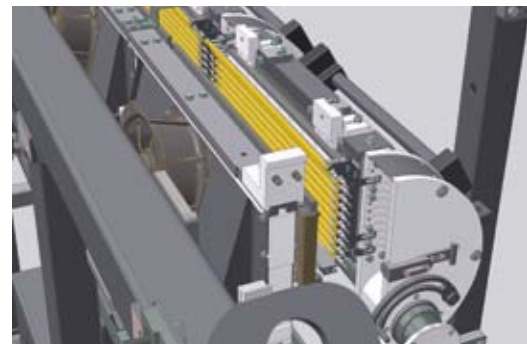
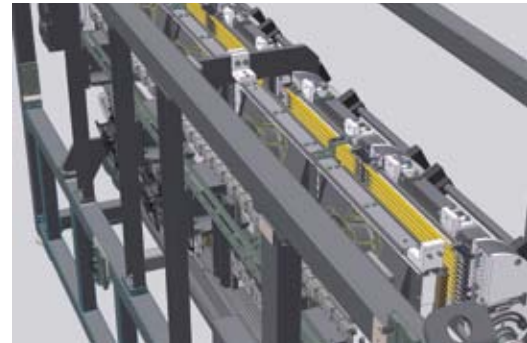
The reflection process increases the intensity and quality of the thermal radiation to which the preforms are subjected, allowing a more even heat distribution over their entire surface and, consequently, the reduction of the number of lamps installed in the machine, as compared to traditional heating solutions.

The greater energy efficiency of the foregoing innovative solution allows the end user to reduce the consumption of electricity related to the power supply of the preforms' heating lamps, with absolute advantages from an economic and environmental standpoint.

The use of high-performance reflective thermal panels allows the managing of the preforms heating process with energy savings of up to 30% compared to traditional systems not equipped with this technology; of course, the actual saving depends on system performance, size of the bottle to be produced, grammage and color of the perform used and other environmental and productive variables.

The new thermo-reflective panels introduced by Smiform are part of a series of accessory devices, available for the heating module (shrink tunnel) of SMI's rotary stretch-blow moulders.

Their implementation on new or pre-installed machines allows everyone to benefit from the advantages of the latest technological innovations.



SK SHRINKWRAPPERS

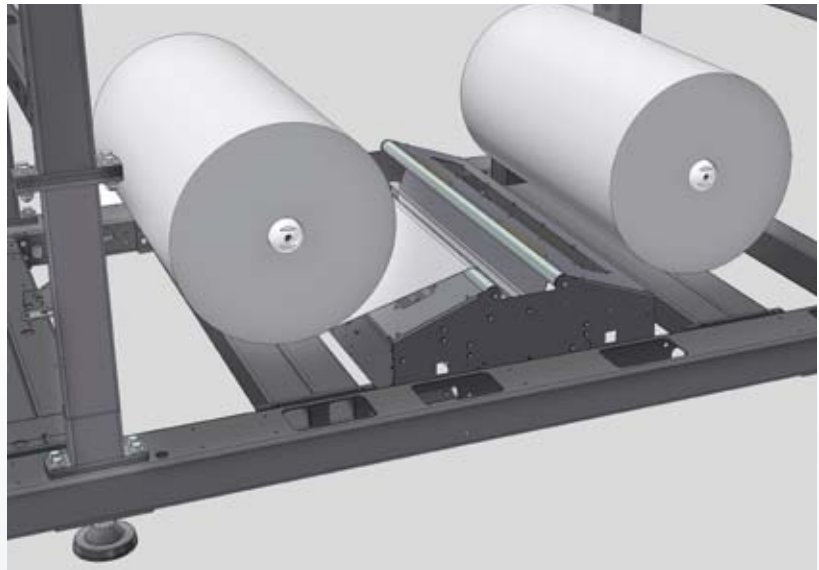
A PRODUCT THAT IS CONSTANTLY RENEWED!



The Smiflexi SK series of shrinkwrappers can be equipped with an accessory device for the automatic splicing (sealing), by means of hot blades, of the shrink film reels mounted in the machine; this device works film with thickness between 30 and 80 microns, both neutral and printed.

When the reel with the film in use is about to run out, the machine slows down and stops for a few seconds so that the final edge of the finished reel can be spliced automatically, via the hot blade, with the initial edge of the new reel, previously prepared by the operator; once spliced, the machine restarts automatically and reaches full production conditions immediately.

Compared to manual sealing systems, which take about 2 or 3 minutes, the automatism of this Smiflexi accessory device allows you to splice the two overlapping edges (about 6 mm long) of the two reels in a matter of seconds, virtually eliminating machine downtime and ensuing production losses arising from this operation.



The automatic splicing system with the hot blade also works with printed films thanks to the presence of a sensor that detects the mark, therefore ensuring the correct overlapping of the two film edges.

SMI's new SK series shrinkwrappers are also equipped with an innovative system that unwinds the reel and tensions the film, featuring a continuous movement



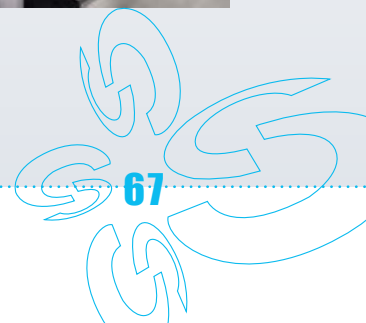


that is much smoother than the “pulling” movements generated by conventional systems that do not have this technology.

Therefore, the new film unwinding & tensioning device mounted on the new SK shrinkwrappers eliminates the physical stress to which the shrink film is usually subjected during this stage of the packaging process, increasing machine efficiency and the appearance of the final package.

A further improvement in the quality of the new SMI shrinkwrappers is the new system for adjusting the machine's main mechanical units; in fact, the threaded shafts on which the guide and chain adjusters slide, are housed in a protected environment to prevent any contact among moving components and the packaged product in case of any, albeit rare, losses or leakage of same from the containers.

Moreover, the threaded shafts' protection from dust and dirt deposits improves adjustments accuracy, allowing you to perform format changeovers quickly.





SMIPACK manufactures and markets a wide range of shrinkwrappers, the result of the substantial investments made in new machines and innovative technologies every year, used in various areas both in the food and non food sector.

2014 was marked by SMIPACK designers' intensive research & development, which led to the creation of the new β P ALX range of shrinkwrappers without sealing bar. The new β P ALX shrinkwrappers, available for sale at the end of 2014, are especially suited to

production needs of up to 25 packs per minute (depending on the type, size and stability of the product to be packaged) and are characterized by their modular and innovative design, which ensures high operative flexibility and customization of the packaging process.

BP SERIES

NEW SHRINKWRAPPERS WITHOUT SEALING BAR: SIMPLICITY AND COMPACTNESS AT THE CUSTOMER'S SERVICE

The shrinkwrappers of the BP series are SMIPACK's flagship and continue to record increasing success among end users who can now cope with the many and variable packaging solutions demanded by the market thanks to the use of this type of machine. For these reasons, the BP (short for "BetaPack") range was further expanded and innovated. Now, in addition to the historical version with the sealing bar, you can also choose the version called "ALX", which features in-line infeed and a packaging system without sealing bar.

The design of the new BP ALX shrinkwrappers without sealing bar is innovative and features technical cutting-edge solutions, which ensure excellent performance and high reliability for film only and pad+film packaging (depending on the machine model) of multiple products, whether round or rectangular; when the rectangular or oval ones reach the BP ALX shrinkwrapper, they have already been routed by means of the appropriate automatic divider.





THE ADVANTAGES OF SMIPACK'S NEW SOLUTION FOR THE SHRINKWRAPPING WITHOUT SEALING BAR

- High degree of customization: the BP ALX shrinkwrappers can be equipped with a wide range of accessories, to easily adapt to the end user's specific needs; in this regard, an example is represented by the option of processing printed film.
- High quality of the final pack: compared to the traditional version with the sealing bar, the new BP ALX without sealing bar allows to improve the appearance of the final packages, thanks to the fact that the seal of the film's overlapping edges remains in the lower part of the pack and not on the sides.
- High operational reliability, thanks to the use of high-quality electronic components, operator interface with 7" color panel PC touch-screen, Flexmode® system for controlling and managing the machine.
- Greater operative flexibility, thanks to the solutions through which the product enters the line, which can be easily adapted to any logistic requirement.
- Greater production efficiency, due to the fact that the products are grouped automatically and, as such, the packaging process can be carried out at higher speeds.
- High versatility: the BP ALX shrinkwrappers are able to respond to many market demands, packaging different types of 40-mm diameter containers in the film only or pad + film configurations (depending on the machine model).
- High accuracy in the count and dimensional control of the processed items, thanks to the distribution of products on multiple rows by means of an electromechanical system controlled by inverters and encoders and to their transfer performed by motorized conveyors (also controlled by inverters and encoders).
- Smoother packaging process, thanks to a check sensor at shrinkwrapper infeed, which keeps the flow of the accumulating loose products regular and constant, to exert adequate feeding pressure on them at machine infeed.



SMIPACK designed the new range of BP ALX shrinkwrappers to simplify the operations performed by line operators and to facilitate format changeovers. For example, the motorized line infeed conveyor, controlled by an inverter, is equipped with a speed change sensor and an electromechanical sorter that allows you to route loose products, arriving from a single-row conveyor belt, on maximum 8 rows at machine infeed. The range of BetaPack shrinkwrappers with sealing bar is equipped with product infeed guides, adjustable in width and height, and a separator equipped with a synchronized pneumatic press with motorized chain pusher (controlled by inverters and encoders).

The unwinding of the film reel, located in the lower part of the machine, is controlled by an inverter and a potentiometer to ensure constant film tension.

A part of the film is wrapped around the product to be packaged and overlaps at the bottom of the pack before it enters the shrinking tunnel, thus obtaining a package with an excellent visual appeal (the film's splicing area remains at the bottom of the pack so that there will be no wrinkles at the top and at the sides).



Main features of the BP ALX machine

- » Production capacity: up to 25 packs per minute (*)
- » Pack typology: film only and pad+film
- » Height of workable product: up to 380 mm
- » Minimum workable diameter: 40 mm
- » Tunnel conveyor: fiberglass bars

(*) according to container and pack configuration.

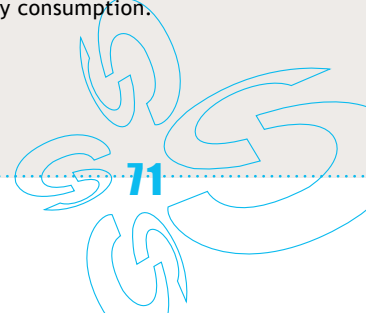
To facilitate reel change operations, the machine is equipped with a support for the second lower reel.

The BP ALX 25P model, specifically designed for pad+film processing, is equipped with a vertical pneumatic system for taking the flat cardboard pads, whereas the pad conveying system is motorized, self-centering and controlled by inverters and encoders.

The pads, inserted below the products to be packaged, are synchronized with the arrival of the products on the conveyor belt, thanks to the electronic pad insertion device.

If necessary, the pad insertion system can be easily and quickly deactivated to perform packaging in film only, a feature that greatly simplifies all format change operations.

Another innovative aspect of the BP ALX range is represented by the double-chamber shrinking tunnel that, thanks to a control system of the differentiated airflow and regulated by independent flaps placed at the beginning and at the end of the tunnel, allows the perfect shrinking of the wrapped product, provides excellent performance and saves on energy consumption.





SMI annually invests a large portion of revenues from sales and services in Research & Development projects, creating innovative projects characterized by the use of advanced technologies, energy savings and respect for the environment, which cater both to the product range and the workplace in which this range is designed and built. The redevelopment project of the industrial location, which had hosted the Cima Paper Mills in San Giovanni Bianco from 1907 to 2004, stemmed

from SMI's aforesaid continuous commitment to innovation. This location recently became the new headquarters of the SMI Group. The strong link with the territory of the Valle Brembana (the Brembana Valley) is one of SMI's hallmarks. In over 25 years of business, SMI has made a number of substantial investments, locally, among which the acquisition of the former Cima Paper Mills in 2004 stands out, the paper production and marketing business of which definitely ceased in 2009. The entire industrial

area of about 30,000 m² is part of the architectural heritage of this location and is one of the most significant aspects of the strong economic development experienced in the Brembana Valley in the late nineteenth and early twentieth centuries; hence our idea of renovating this location through the major restructuring and modernization of all the factories and buildings that had been part of it, preserving its historic facilities and improving the huge indoor and outdoor spaces.

SMI GROUP'S NEW HEADQUARTERS

Our redevelopment project of the former paper mills, which started in late 2011, involved the full reorganization of the old factories and the office buildings, with a focus on sustainable development.

The renovation project was based on a careful study of environmental issues and impact on the territory, which focused on the "Architecture and Environment" combination, which led to the adoption of a set of innovative solutions to minimize energy consumption as well as the environmental impact of SMI's new industrial complex.

The new assembly plants are equipped with a photovoltaic roofing,



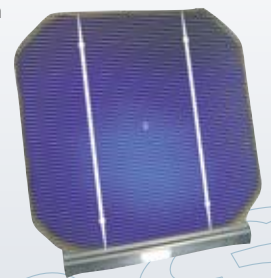
capable of producing electricity for 726 MWh/year, allowing us to reduce CO2 emissions in the surrounding environment by about 320 tons per year.

Among the high energy efficiency facilities installed in the new headquarters, there is also a solar thermal system for heating the water used in the company service areas (bathrooms, gardens, etc.).

There is even a hydroelectric power plant inside the building, operated by

the SMI ENERGY company, which has a top production output of 6 GWh/year of "clean energy" derived from the Brembo River that flows nearby.

The power plant was boosted through the installation of a new Kaplan turbine, which exploits the water's descending leaps and pressure.



THE IMPORTANCE OF THE ARCHITECTURE AND ENVIRONMENT COMBINATION



Refurbishments were carried out in steps, to allow for the gradual transfer of the business from the old location to the new one. SMI started moving its offices and production departments in the second half of 2013 and ended in June 2014.

In the summertime, air is conditioned through the use of heat pumps that have replaced the conventional electrical conditioners, whereas latest generation heat generators were installed for winter heating, featuring high efficiency and performance.

In order to avoid losses of hot and cold air from the offices and production departments, an innovative centralized cooling system was implemented, which intakes outdoor air, filters it and then circulates it indoors.

SMI Group's new headquarters also feature a number of innovative solutions to achieve maximum energy saving:

- the new floor heating system in buildings, which uses low-temperature water from a condensation boiler (the energy efficiency of this type of boiler is higher than that of normal heat generators);





INNOVATIVE TECHNOLOGIES TO PROTECT THE ENVIRONMENT AND SAVE ENERGY

The technological innovations introduced in the SMI Group's new headquarters reaffirm the company's awareness to the issues of renewable energies, which are inexhaustible and have no environmental impact since they do not produce greenhouse gases or harmful pollutants to be disposed of.



In fact, the industry keeps looking to the green economy with increasing interest at global level, due to the significant advantages it offers in terms of low cost energy supply and environmentally sustainable growth of production activities.

Another green aspect of SMI's new production unit is represented by the indoor and outdoor lighting system.

Room lighting was exploited where possible, thanks to the installation of large windows, but the lighting systems were made using LED lights, a low-energy consumption solution which, being directly managed by a centralized supervision system, gradually and fully automatically self-regulates the lights, according to the intensity of the natural light.

An inverter-based technology was applied to the production system's utilities (such as compressed air, for example), which allows the use of reduced power consumption systems.

The innovations adopted also provide a series of measures to reduce the costs of waste management; an example is the installation of a PET shredder inside the machine testing department, which allows us to dispose of the plastic packaging material used in the in-house testing of SMI-produced machines.

Thanks to this technology, PET waste to be disposed of has been completely eliminated because PET is first treated and then shredded, thus becoming the raw material to be sold to the moulding industry and to produce the preforms.



- building insulation, which reduces heat loss from the building's shell and acts on floors and false ceilings, with the consequent reduction of the primary energy needed to heat the rooms;
- complete renovation of the lighting systems, with the introduction of an advanced home automation control system that allows you to turn on all or just a few lights, depending on the number of people present in a certain room and the amount of natural light coming through the windows and the solar tubes installed.

Thanks to such energy-saving works and to Sansaving company's consultancy, the GME ("Gestore dei Mercati Energetici", i.e. the Italian authority managing the electricity market) has granted SMI a certain number of "Energy Efficiency Certificates" and a precise reckoning of savings deriving from those works. These Titles, also known as "White Tags", are a public incentive, paid in the form of financial contributions to





companies which undertake energy efficiency measures to reduce fuel consumption and achieve the best use of available resources; they are used in the United States and in many EU countries, where they are known as "Energy Savings Certificate (ESC)", "Energy Efficiency Credit (EEC)" or simply "white tags".

The implementation of the foregoing eco-friendly solutions will allow SMI to obtain energy savings, on a yearly basis, in the consumption of natural gas estimated at about 24,500 €, 70,000 scm (standard cubic meters) or 57 TOE (Tons of Oil Equivalent) and gain 167 EEC (Energy Efficiency Credits).

SMI's new facility, between history and modernity



When SMI decided to take over the former production site of the Cima Paper Mills in 2004, it started the actual process of renovating an industrial center that had made the history of the Brembana Valley and which had determined its economic and social development in the two decades between 1895 and 1915 (one of the most important in the history of this territory). The arrival of the railroad in 1906, hydroelectric and industrial development, the boom of spas and elite tourism in the town of San Pellegrino Terme, as well as the emergence of a new social consciousness, marked a period of transition in actual fact, allowing the Brembana Valley to come out of the deep backwardness and geographic isolation besetting the nineteenth century.

The synergy created between the initiative of some "foreign" entrepreneurs and the courage of local communities enabled acquiring, interpreting and implementing the ideas brought on by the new times, making it possible to launch major industrial initiatives in the towns of the Brembana Valley. This was the context in which the Cima Paper Mills of San Giovanni Bianco were founded in 1907. Today, 114 years later, this industrial area shines once again and people are talking about it thanks to a combination of solutions of great architectural value, carried out in full respect of the environment and according to sustainable development dictates. The recovery of the hydroelectric power plant deserves recognition among the most significant interventions. This plant was used by the old paper mills and produced current from the water leap of the Brembo River, from which the valley takes its name. Thanks to the installation of a new Kaplan turbine, SMI has given new life and "energy" to one of the oldest power plants of the Brembana Valley, preserving the original structure and modernizing its plants and premises.



**Images by courtesy of Elio Gianoli Collection*



RENEWABLE

ENERGY PRODUCED BY SMIGROUP FROM THE WATERS OF THE BREMBO RIVER



The hydroelectric power plant managed by SMI ENERGIA converts into electrical energy the hydraulic energy of the Brembo River watercourse and consists of a series of hydraulic engineering works, positioned in a certain sequence and coupled to a series of machines suitable for producing electrical energy from masses of moving water.

The produced energy is the renewable type since the water can be reused unlimited numbers of times for the same purpose without the need for a purification process.

The power plant includes the damming of the river and a dam, which intercepts the watercourse and creates a reservoir where the water level is kept constant.

There is a "grid cleaner" at dam entrance, which is an electromechanical device designed to remove waste from the river, thus ensuring proper water cleaning.

Waste removed from the grid is conveyed on a conveyor belt to a special area where it is disposed of.

Water is conveyed to loading tanks through a series of canals and tunnels and then reaches the turbines,



through penstocks, which rotate by means of the water's thrust.

There are several sluices along the canal that eliminate any excess water and stabilize its volume so as to supply the power plant with the max admissible range of flow.

The Kaplan turbine, developed in 1913 by the Austrian professor Viktor Kaplan, is an inward flow reaction turbine that exploits small differences in level up to even a few dozen meters, but with high flow rates.

Constructively speaking, it is a propeller-type water turbine which has adjustable blades that, when the water flow changes, allow achieving and maintaining efficiency over a wide range of flow up to 20-30% of the nominal flow rate.



The water reaches the turbine through a scroll-shaped tube that wraps around the turbine's wicket gate and is then directed tangentially through the wicket gate and spirals on to a propeller shaped runner, causing it to spin.

The turbines' speed is generated by a difference in height of the water flow, called "leap", which translates into hydrodynamic pressure at the lower level where the Kaplan turbine is located.

An alternator is directly connected to the turbine; the former is an electrical rotary device that transforms the mechanical energy transmitted from the turbine into electrical energy.

The hydroelectric power plant installed in SMI Group's new industrial

site has a maximum production capacity of 6 GWh per year; all the information related to daily output, max output, etc., is displayed on the touch-screen of a computer located in the power plant's premises which allows controlling it "remotely", i.e. unmanned.





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