SMI S.P.A. INNOVATION AND SUSTAINABILITY IN THE CIRCULAR ECONOMY

By manufacturing machines with an innovative design equipped with IoT technology, SMI provides customers from all over the world with smart solutions, capable of satisfying their needs in terms of production efficiency, operational flexibility, energy saving and ease of use and monitoring of bottling and packaging lines.
The latest developments and the considerable and continuous investments in Research & Development have led to the launch of compact, ergonomic, eco-friendly machines, such as the ECOBLOC® ERGON integrated systems for the stretch-blow moulding, filling and capping of rPET containers recently installed at Danone Group's Societé des Eaux de Volvic plant.
When we talk about purity and quality, it is the accurate work carried out by the bottling company Societé des Eaux de Volvic that comes to mind. The whole bottling process undergoes careful controls to satisfy the high levels of quality required by the French company and its owner Danone, a goal that is achieved by protecting the water source and safeguarding the natural environment all along the distribution chain, till the moment the bottled product is consumed. All of this is taken care of in minute detail, involving partners and suppliers, as with the recent investment for the purchase of a new bottling line, for 8L containers in 100% recycled plastic (rPET), which involved SMI for the supply of an integrated system ECOBLOC® ERGON. The project is the result of a strong synergy between Volvic-Danone and SMI; both companies shared goals and expertise from the design phase to the installation works, with every choice rotating around the necessity to get higher than average bottle performance and quality, safeguarding the final product, eco-friendliness and operational efficiency of the whole production process.

From the source to the table: the quality is always under control

Sustainable development, respect for the environment and product quality and purity are the fundamental elements at Société des Eaux de Volvic SA, company, which has been part of the French Danone food and beverage group (water dept.) since 1992. The natural purity and unequalled quality of Volvic water begins by care-

fully protecting the source and accurately monitoring the natural environment from where this precious liquid flows. The water is conducted through stainless steel pipes from the source to the bottling plant, without any external contact; therefore from the depth of the volcanic stratum it reaches the protected environment of the inside of a sterile bottle. To protect the liquid from any external contamination, Volvic bottling plant was designed according to advanced automation and security criteria, fully satisfied by the ECOBLOC® ERGON integrated system supplied by SMI to the French company. The bottle has the fundamental role of maintaining the purity of the spring water and preserving the quality until the product is consumed; for this reason, the bottles blown, filled and capped by the ECOBLOC® ERGON system need to go through a long series of controls within the bottling line and every day undergo accurate tests carried out by Volvic Quality Laboratory.

100% rPET bottles

Volvic natural, mineral water arrives at the consumers' table as pure as when it flows from the source and is not treated in any way that can alter the taste; for this reason the container plays a vital role towards maintaining the purity of the water, from the source to when it is consumed. The most widely used material for bottling water is PET (polyethylene terephthalate), an unbreakable, plastic material that is lightweight and 100% recyclable. Volvic's high regard of environmental issues led the French company to develop modern solutions for the recycling of PET, so that a new bottle can be produced from an old one. Volvic was one of the first companies to use recycled plastic (rPET) to produce containers and caps, slowly increasing the percentage of rPET, until it hit 100% with the new 8 litre bottle. The 8L container with a square base, in the same style as the smaller Volvic bottles, was studied by a designer at Danone to create an extremely practical, home use, container-dispenser. Its shape, part of which is slightly tilted, ensures that the bottle can be easily positioned on a flat surface and, thanks to the special cap which is used as a tap, the supply of the product is convenient and easy. The new design of the maxi container was accurately reproduced by SMI, to create the moulds that are installed on the ECOBLOC® ERGON HC EV integrated system and which allow it to manufacture a harmonious bottle with a clean design, that perfectly mirrors the purity of the water that it contains.

Eco-packaging and eco-formats are concepts that have always been a part of Volvic. Recognisable by the green cap, Volvic 0.5 L and 1.5 L bottles were the first in France to be produced with a type of plastics that is 20% of vegetable origin, favouring the use of renewable materials. Furthermore, as large capacity formats use less plastics, Volvic has always tried to promote them and produce ecological formats, like the 8L bottle, bottled by the ECOBLOC® ERGON HC EV recently supplied by SMI.

SMI solutions for Société des Eaux de Volvic SA

To satisfy market request for bottled water, in 100% recycled PET (rPET) containers, the French company invested in the purchase of machinery from the ECOBLOC® ERGON HC EV range, supplied by SMI, the ideal solution to produce, fill and cap square based 8L containers in rPET, with a production capacity of up to 3,200 bottles/hour. The new investment was studied in detail, creating strong teamwork between the experts at Volvic and Danone and the designers at SMI. The complete production process was designed so that every step of the bottling is kept under constant control; indeed, it is here that the water coming from the deep underground comes into contact with

the external environment and is at a greater risk of contamination which would compromise the sensory, chemical, physical and microbiological properties. The Société des Eaux de Volvic SA, also, pays particular attention to everything that concerns sustainable development, environmental respect, product quality and purity; for this reason the whole bottling, packaging and distribution process was designed around these values and the machine supplied by SMI was integrated with sophisticate inspection systems, which, starting with the preforms, carry out a long series of checks to maintain the quality and purity of the spring water.

Main advantages of the integrated system:

- compact, flexible solution for stretch-blowing, filling and capping bottles in PET, with the advantage, in terms of reducing production costs, as the system does not need a rinser, nor conveyors between the blower and the filler or accumulation
- isolating system between the "dry" area of the blower and the "wet" one of the filler, through a jet of high pressured, sterile air in excess of 5Pa, which guarantees a clean, hygienic filling system
- application of various accessories to guarantee that the filling system is extremely clean and easy to sanitise with advanced cleaning systems
- innovative preform suction system, situated on the oven infeed star, to remove any tiny impurities that could be on the inside of the preform itself. The air that is inserted into the suction system is filtered, and is part of the air recovery system that comes as standard on all the range of SMI stretch-blow moulders.
- machine integrated with sophisticated inspection systems with cameras to guarantee the quality of the bottled water, monitor the production process and avoid particles and/or impurities being deposited on the inside of the unblown preforms
- the preforms are blown with sterile air in a sterile environment; this sterility is maintained for all the process of filling and capping
- precise and fast operation, thanks to the electronic, operation control, to motorised stretch rods and the use of high efficiency valves with flow-meters
- reduced energy consumption: the stretch-blow module is equipped with a double stage air recovery system, which allows the reduction of energy costs tied to the production of high pressure compressed air
- high energy efficiency, thanks to IR lamps fitted onto the preform heating module
- base of the filler area is made in stainless steel 316 and slightly sloped to ensure that any spilt liquids go down the drains
- electronic capping unit equipped with cap-orienting system during application, which controls correct positioning of caps, and a rejection system for over turned caps
- cap sterilisation through jets of ionised air on the cap channel
- washable cap accumulation table, in stainless steel, equipped with an optional system to suction the caps to remove any impurities that might have deposited on them while moving along the hopper
- reduced maintenance and running costs of the machine.

The SMI Group is today one of the world's largest producers of bottling and packaging plants for the food and beverage industry, PET Food, household cleaning and personal hygiene, chemical and pharmaceutical products, able to meet production requirements up to 36.800 bottles/hour.

With the launch of the ERGON technology, SMI has inaugurated the "new age of packaging" and "the new age of bottling", showing again the ability to bring to the market advanced solutions, offering complete lines and packaging machines featuring efficiency, flexibility, eco-friendliness, ergonomics, simple management and monitoring, even more inspired by the concepts of Industry 4.0 and Internet of Things (IoT).

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एस एम आई समूह आज खाद्य और पेय उद्योग, पालतू पशु का भोजन, घरेलू सफाई व व्यक्तिगत स्वच्छता, रासायनिक और दवा उत्पादों की बॉटलिंग और पैकेजिंग संयंत्रों की दुनिया के सबसे बड़े उत्पादकों में से एक है। यह कम्पनी प्रति घंटे 36,800 बोतलों तक की उत्पादन आवश्यकताओं को पूरा करने में सक्षम है।

एर्गन तकनीक के शुभारंभ के साथ, एस एम आई ने "पैकेजिंग के एक नए युग" और "बॉटलिंग के एक नए युग" का उद्घाटन किया है, एक बार फिर से उन्नत समाधान लाने की अपनी क्षमता का प्रदर्शन करते हुए। दक्षता, लचीलापन, पर्यावरण-मित्रता, एर्गोनॉमिक्स, सरल प्रबंधन और निगरानी की विशेषता वाली पूर्ण लाइन और पैकेजिंग मशीनों की पेशकश करने वाले उन्नत समाधान, जो की उद्योग 4.0 तथा इंटरनेट ऑफ थिंग्स (IoT) की अवधारणाओं से प्रेरित है।