

# rPET bottles for the **circular economy**

The use of r-PET (recycled PET) for manufacturing new bottles is the core of the concept of circular economy, and SMI offers its latest products featuring the best smart and green technologies

**T**he environment has become a collective asset that everyone must take care of and this aim can be achieved by investing in industrial plants equipped with "green" technology, which save energy and reduce the environmental impact of production, like **SMI** stretch blow moulding machines in stand alone version (**EBS ERGON** Series) or integrated with an electronic filling and capping module (**ECOBLOC® ERGON** Series).

Companies in the food and beverage industry are reviewing their production processes to make them as eco-sustainable and competitive as possible by making use of "smart and green" technologies of industrial automation and recyclable and biodegradable packaging. The sustainability of entrepreneurial activity is a demanding and strategic choice, made up of large and small objectives that are achievable thanks to a particular cultural attitude and continual investments,



in new plants equipped with IoT (Internet of Things) technology, that allow the machinery to improve and adapt independently to the new production requirements of the 21st century.

#### Packaging sustainability

Packaging sustainability is a key issue, in particular for the beverage industry, in which more and more questions have been raised about the material to be used for safe packaging, with limited impact on the environment.

Recent studies have shown the benefits arising from the use of plastic bottles, since this solution is unbreakable, safe, with great barrier properties, lightweight and above all recyclable! In comparison with other packaging materials, such as glass or aluminum, PET has a good environmental profile, mainly thanks to its lightness that translates into less material to produce, less material to dispose of, less energy used to

manufacture it and less fuel used for transporting packed products. Thanks to its recyclability and its great weight-capacity ratio, many producers of mineral waters and soft drinks promote and re-evaluate PET and r-PET as convenient and win-win solutions from the environmental sustainability point of view.

The use of **r-PET** (recycled PET) for manufacturing new bottles is the core of the concept of **circular economy**, that consists of collecting materials after they have been used and processing them, so that they can be reused or recycled. Every time a PET container is recycled, its oil reserve is recovered and reused, eliminating the waste and reducing the packaging environmental impact, provided that efficient systems for managing waste and recycling exist.

**rPET is processed on SMI stretch blow moulding machines** in stand alone version or integrated with



an electronic filling and capping module and shows no significant restrictions in terms of quality, safety and workability.

#### The case of Eaux de Volvic

When we talk about water purity, it is inevitable to think of the accurate work carried out by the Société des Eaux de Volvic, company part of the Danone Group that has continuously invested in new solutions for preserving the quality. To achieve these goals, the company decided to invest in high tech machines and installed a **SMI's ECOBLOC® ERGON HC** integrated system for stretch-blow moulding, filling and capping 8 L containers, with a square bottom, in 100% recycled plastics (rPET).

Designed to ensure respect for the environment, the new eco-friendly bottle is the result of joint work between the specialists at Danone and at SMI, which has allowed to develop a preform able to guarantee the constant resistance of the container during the stretch-blow moulding process.

By using recycled PET in beverage bottles, every company can contribute to respecting the environmental and in developing an eco-friendly bottle suitable for the circular economy.

The complete Volvic production process was designed so that every step of the bottling is kept under constant control, because 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 sophisticated inspection systems, which, starting with the preforms, carry out a long series of checks to maintain the quality and purity of the spring water.

#### Smart and green technologies

Main advantages of the integrated system of **ECOBLOC®** series:

- 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 fillers, through a jet of high pressured, sterile air in excess of 5Pa, which guarantees a clean, hygienic filling system. The air flow, through 4 units of Galvani filters (HEPA filters) situated on the top part of the filler area, spreads around all the interested area to avoid contamination, acting as a "clean room". In addition, the filling valve is controlled by an electronic flowmeter.





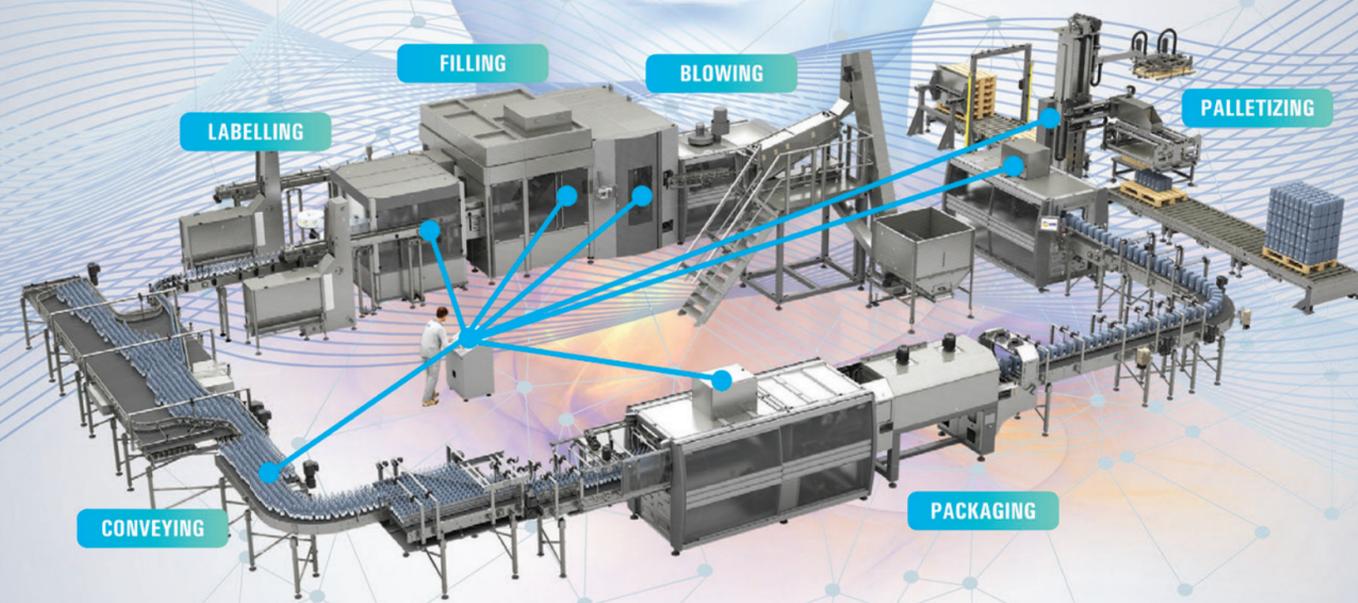
- application of various accessories to guarantee that the filling system is extremely clean and easy to sanitize with advanced cleaning systems
- innovative preform suction system, situated on the oven in-feed star, to remove any tiny impurities that could be on the inside of the preform itself. The 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. The system combines blowing air into the preforms with the following vacuum suction process.
- 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 motorized stretch rods and the use of high efficiency valves with flowmeters,
- 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,
- filler area compatible with COP (Cleaning Out of Place) and equipped with optional system of stainless steel bulkheads to separate the "wet" area of the filler with the "dry" area of the blower during maintenance or cleaning operations. The bulkheads can easily be installed on the filler in-feed, with a star on the blower

- that can be disassembled, and on the out-feed, on the channel of the bottle out-feed,
  - electronic components positioned on the inside of the panels to make sure they have greater protection from the damp,
  - base of the filler area is made in stainless steel 316 and slightly sloped to ensure that any leak liquids go down the drains,
  - electronic capper equipped with cap orienting during application, system to control correct positioning of cap and a rejection system for overturned caps,
  - cap sterilization through jets of ionized 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.
- Top quality bottle means excellent preform and bottle inspection system**
- The increase in production speed of bottling lines, the use of lighter containers, and the change in laws that are stricter, in terms of food product quality and integrity, force companies in this sector to use cutting edge technology equipped with advanced inspection systems for preforms, bottles and caps, this way preventing any non-compliance issue or contamination. To satisfy the quality standards of the Danone group, the ECOBLOC® HC ERGON supplied by SMI, is equipped with sophisticated Pressco inspection systems, leader in the inspection sector for containers in PET and reference point for all the companies which, like Volvic aim at having excellent quality standards.

## INTERCONNECTED INTELLIGENCE BETWEEN YOU AND YOUR FACTORY



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## the new age of smart manufacturing

SMI is specialized in designing, producing and installing complete lines for food & beverage bottling & packaging.

SMI turn-key systems feature Industry 4.0 and IoT technologies and an output rate up to 36,800 bottles/hour.

**THE FACTORY OF THE FUTURE IS ALREADY A REALITY**

