Innovation and sustainability in the circular economy

The role of light and rPET containers

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 aluminium, 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 rPET as convenient and win-win solutions from the environmental sustainability point of view. The use of recycled PET (rPET) 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.

For large-scale productions at low cost of containers, SMI offers a wide range of rotary stretch-blow moulders from EBS Ergon range, available both in stand-alone or in EcoBloc version, integrated with the filling and capping modules for the production of PET and rPET containers as the system recently installed at Danone Group's Societé des Eaux de Volvic plant for the stretch-blow moulding, filling and capping of 8l containers in 100% rPET. Another strategy that contributes to the environmental protection is based on the design of even lighter PET containers, that allow to save on plastics and that, indeed, fully comply with the environmental policy of most manufacturers of beverages.

With its latest generation of tools, SMI states that is able to design, develop and virtually prototype a wide range of packaging solutions in rPET and PET, according to the customers' specific requirements, who asked first of all for safety, functionality, innovation and ergonomics. SMI uses a 3D CAD department for the design and graphic processing of the bottles. After an analysis of the customer's requests, the container idea is developed and turns into a detailed project. Up to now, SMI engineers have designed around 1,700 containers, featuring from the most simple to the most sophisticated shape.

The moulds mounted on SMI stretch-blow moulders, manufactured using a special aluminium alloy, are a "home-made" product. In fact, SMI relies on a special laboratory for the production of moulds and mechanical components, equipped with an FMS line consisting of 12 CNC machining centres: highly automated machines, running 7/24, operator-less, according to pre-set production programmes (CAM). The 12 machining centres can achieve an output of 15,000 moulds per year; they are equipped with linear motors with a speed rate up to 80 meters per minute and mandrels achieving a speed rate of 30,000 rounds per minute. The company says that as a result, top-level quality standards are constantly provided.

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EBS Ergon series

- rotary stretch-blow moulding system, equipped with motorised stretch rods
- compact design: the stretch-blow moulding, filling and capping operations as a single block
- precise and fast filling and capping process
- low energy consumption of the stretch-blow moulder, thanks to a preform heating module, IR lamps and to a double-stage air recovery system
- low running and maintenance costs
- fast format & mould change