

Filling

Faster, smaller, safer

Today's bottler needs maximum flexibility to fill all types of packaging faster, maintain and monitor quality standards and fit each essential part of the line into the smallest possible space. Changeover times need to be as rapid as possible to enable just-in-time delivery of a wide range of products and to allow for the trend towards limited edition products. **Water Innovation** magazine takes a look at some case studies and some recent developments in filling – faster, smaller and safer.



SMI's cost saving bottling line

The **Stella Alpina** mineral water spring is located in the Orobic Alps, 50km north of Bergamo in Italy. It has installed a new bottling line from **SMI Group**, called 'SACS' (Stella Alpina Cost Saving) – devised, designed and created by SMI, covering just 800m² and capable of producing up to 14,400 bottles per hour in a more efficient and economical way compared to the pre-existing bottling plant at that spring.

The two companies worked together and collaborated with **SIAD** and **PE Labellers**, to create a new production line which would use more advanced technological solutions to significantly lower the costs of production for every single bottle of still or sparkling water and would respect the surrounding environment, allowing maximum product traceability thanks to laser marking.

To achieve these objectives, SMI designed two new ultra-light

PET bottles – 50cl and 1.5 litre with preforms of 11g and 23g respectively and both with the Alaska267 thread (previously, Stella Alpina used 15-16g preforms for 50cl bottles and 30-31g preforms for 1.5 litre bottles).

The SACS project includes the use of a new generation PE Labeller based upon 'Adhesleeve' technology which allows for pre-glued labels to be applied without having to use hot glue.

SMI achieved up to 50% reduction in secondary

packaging material by equipping its own shrinkwrapper with a new knife with a motorised blade controlled by digital servo-drivers, which allows for the use of shrink film with a thickness less than 30 micron (as against the 50-60 micron previously used by Stella Alpina) for the 3x2 format of 50cl bottles.

To deliver up to a 20% reduction in the purchase cost as well as

well as running and maintenance costs, SMI's designers focused on creating a very compact system, made up essentially of just two blocks: the unit for primary packaging; and another for secondary packaging. The former is made up of a system of stretch-blow molding, filling / capping and labelling, known as Ecobloc Plus, which allows for the complete cycle of primary



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packaging to be managed by a single system, from the preform to the filled, capped and labelled bottle. Also, in the Ecobloc Plus system, bottle movement occurs through direct star-star transfer, allowing for significant savings in terms of initial investment, maintenance costs and energy consumption. The secondary packaging unit, designed by SMI, is an innovative shrink film packaging system.

The new facility enables a 90% reduction in water used for cleaning the plant. The 'baseless' technology applied to the filler allows for the base of the machines to be freed from moving components and mechanical parts, where dirt and waste from the production process usually accumulates.

Energy consumption is also reduced by up to 15%. This was achieved by SMI through:

- the integration of an SIAD 'oil free' high pressure compressor into the blow molding system;
- an ARS air recovery system, assembled as standard on the blow molder, which allows for up to a 40% reduction in consumption of high pressure compressed air;
- the recovery of heat from the blow molder and air compression systems, partly used for pre-heating the preforms and partly discharged to the shrinking oven in the end of line shrinkwrapper;
- the use of lighter preforms (11g for 50cl bottles and 23g for 1.5 litre bottles) and thinner shrink films (less than 30 micron) which require less heat

during the stretch blow-molding and shrinking processes and therefore allow for a significant reduction in the electrical energy required to heat the blow molder and shrinkwrapper ovens;

- less wear on the components, thanks to the reduction in moving parts and the use of more resistant materials;
- the use of high energy efficiency motors on the conveyors.

Finally, CO₂ emissions have been reduced by up to 50%. This has been achieved through a reduction in energy consumption throughout the whole plant deriving from the use of machines with high energy efficiency, the lightening of the primary and secondary packaging and the future use of 'green' polymers. ■

