Strategy & technology for the industry

FOOD & BEVERAGE Reporter

including PACKAGING Reporter

April 2012

SWEETENERS
Aligning SA's regulations with global best practice

PROCESSED MEAT
New regulations promote affordability

AFRICAN FOCUS
SCP eyes higher value, shelf-stable products with export potential

R13.9M PROJECT IN LIMPOPO
New plant oils research facility

SUPPLY CHAINS
SA's competitiveness: opportunities and threats in Africa

ECOBLOC® baseless technology by SMI: cost-saving innovation for PET bottling lines

Baseless filler and the Ecobloc®

innovative technologies with multiple advantages

Floh Thiele, director of sales and marketing at Caltech Agencies, SA's agent for the SMI Group, says: "Today, SMI is the world's largest producer of shrink wrappers and offers arguably the best price to quality ratio for complete beverage lines".

This dynamic manufacturer has pioneered a number of technologies in a water bottling plant close to their own head office and factories near Bergamo, Italy. Its bottling line is a technological marvel, unlike any other facility in the world. It is energy-efficient, eco-friendly and highly automated. A baseless filler, integrated in the blower-filler-capper-labeller Ecobloc®, the heart of the SACS (Stella Alpina Cost Saving) plant.

Thiele explains the many benefits of the baseless technology: a single transfer star-wheel between blower and filler; easy access to blower and filler for maintenance and cleaning; reduced footprint and cost; and a modular design which allows a wide range of customised options. The area underneath the bottles is completely clear, ensuring a contamination-free and high-hygiene environment; while motors and transmissions in the "ceiling" of the machine are kept dry and easy to inspect.

"SMI invests 7% of its 100m Euro turnover in R&D, and SA benefits from its global expertise with successful installations across all industries. Whether as part of an Ecobloc® integrated system or as a stand-alone, we employ exclusively state-of-the-art filling technologies with the following benefits: fully electronic management of the filling cycle; high filling precision; simple-design and easy-to-clean filling valves; and easy, fast format changeovers with no mechanical changes required."

Thiele explains that the pioneering SACS plant with a surface area of just 800 sq metres, produces up to 14,400 bottles per hour, and was designed and created by SMI with six core objectives:

1. Up to a 30% reduction in primary packaging material, that is, the plastic used to produce PET bottles. SMI achieved this objective by designing two new "ultra-light" containers, one for 0.5L and the other for 1.5L, obtained by stretch blow moulding preforms of 11g and 23g respectively, both with Alaska267 thread (previously 15-16g preforms were used for 0.5L bottles, and 30-31g preforms for 1.5L bottles).

Just as they did for this project, the SMI in-house lab is currently busy assisting with the design of new bottles for our local clients, says Thiele. "The focus is on the ergonomic handling of the container, improving its intrinsic properties in terms of rigidity and manageability throughout the filling, capping, labelling and packing process, and further down the supply chain. After producing a first batch of bottles in the lab, these can be tested in our local conditions, while the new bottling line is still being built," he states.

2. Up to a 50% reduction in secondary packaging material; SMI achieved this objective by equipping its own shrinkwrapper with a new knife with a motorised blade controlled by digital servo-drivers. This allows for the use of shrink film with a thickness of less than 30 micron (as against the 50-60 micron previously used) for the 3x2 format of 0.5L bottles. This technology is available as an upgrade for existing installations, and is in the process of being installed at a Cape Town-based carbonated soft drink plant.

3. Up to a 20% reduction in the purchase, running and maintenance costs of the machines on the bottling and packaging line. More specifically, 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-moulding, filling/capping,

and labelling, known as Ecobloc® Plus. It's one compact unit incorporating a stretch-blow-moulder, baseless filler, capper, and labeller.

4. Up to a 90% reduction in water used for cleaning the plant. The "baseless filler technology" allows for the base of the machines to be free from moving components and mechanical parts, where dirt and waste from the production process usually accumulates.

5. Up to a 15% reduction in energy consumption of the whole production line. This objective was achieved by SMI through the use of:

- SIAD "oil-free" high-pressure compressor integrated into the blow moulding system
- ARS air recovery system, assembled as standard on the blow moulder, which allows for up to a 40% reduction in consumption of high-pressure compressed air
- Recovery of heat from the blow moulder and air compression systems, partly used for pre-heating the preforms and partly discharged to the shrinking oven in the end of line shrink-wrapper
- Use of lighter preforms and thinner shrink films which require less heat during the stretch-blow-moulding and shrinking processes, and therefore allow for a significant reduction in the electrical energy required to heat the blow-moulder and shrink-wrapper ovens
- Less wear on the components, thanks to the reduction in moving parts and the use of more resistant materials, as well as highly energy-efficient motors on the conveyors.

6. Up to a 50% reduction in CO2 emissions, due to a reduction in energy consumption throughout the whole plant deriving from the use of machines with high energy-efficiency, the lightweight primary and secondary packaging, and the future use of "green" polymers.

- Caltech Agencies, established in 1990, is hands-on owner-managed, service focused, and backed by the 485 employees at SMI headquarters. With offices in Johannesburg, Cape Town and Durban, the company services clients across multiple industries in SA and sub-Saharan Africa as one of the leading suppliers of filling and packaging machinery, as well as food processing plants.

For more information, contact Floh Thiele: +27 83 609 8522; floh@caltechagencies.co.za or visit: www.caltechagencies.co.za F&B

Ecobloc® Plus - the ideal solution for producing up to 36,000 bph

SMI Group's Ecobloc® Plus is a modular system which combines, in a single machine, the functions of stretch-blow-moulding, filling/capping, and labelling, intended for PET bottling plants of up to 36,000 bottles per hour.

The integration between a rotary blow moulder, an electronic filler/capping machine, and an "adhesleeve" labeller allows for a significant reduction in the bulk of the system, thanks to the transfer of the bottles from one area to another directly, by synchronising the various modules. Further downstream, the shrink-wrappers (film-only, with pad or tray), trayformers without film, cardboard sleeve multipackers, wrap-around casepackers, and combined packers followed by the palletiser system, allows for the end-of-line machines to be significantly compacted.

Smiform's Ecobloc® Plus systems are suited for bottling still and sparkling soft drinks, as well as oil and milk, in containers from 0.2-3 litres, whose traceability in the phases of production, distribution and consumption is guaranteed by a newly-designed laser marking system.

The machine integration, the reduction in moving parts, the system's centralised automation, and the use of materials which are lighter than conventional materials, allow for production efficiency to be improved; purchasing, running and maintenance costs to be contained; and substantial savings to be made on packaging and energy consumption.

Smiform's Ecobloc® systems stand out for their compactness and the revolutionary "baseless filler" which ensures high levels of hygiene, ease of cleaning, and maintenance, thereby limiting the possibilities of contaminating the containers.