

Embracing the Possible

New German deposit rules force Brauerei Martens to rapidly deploy recyclable PET.

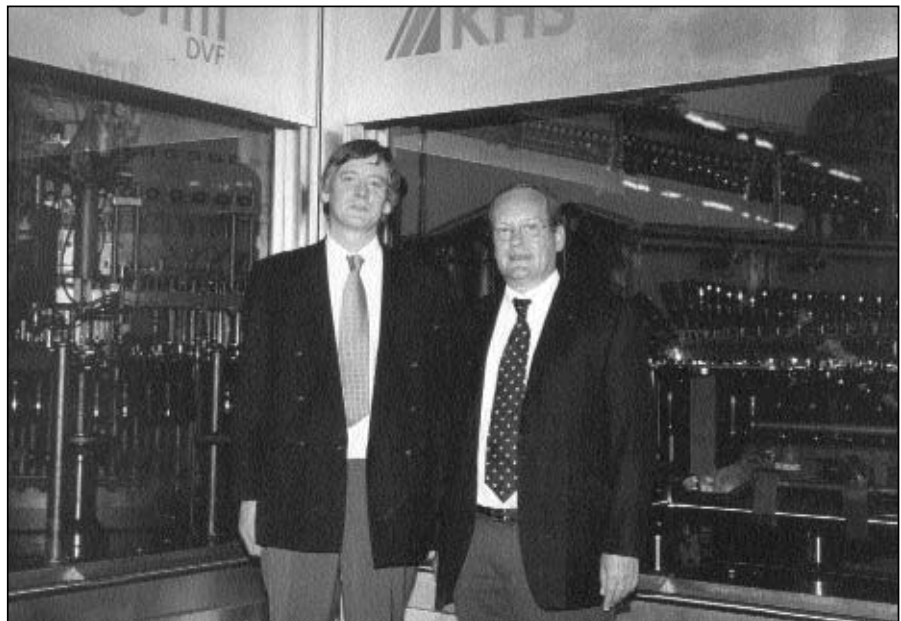
Belgium is beer country. At the beginning of the 19th-century, there were more than 3,500 independent breweries in Belgium of which 120 remain. Therefore, in relation to Europe, Belgium is well in the lead and, after Germany, boasts the largest number of breweries. One of these breweries is the Brauerei Martens in Bocholt, whose history began as a domestic brewery in the year 1758.

Today, with an output of 1.5 million hectoliters of beer, Brauerei Martens is one of the largest members of the Belgian brewing sector. The brewery is managed by Frans, Fons and Jan Martens—the 8th generation of the Martens family to operate the brewery. It is they who in recent years have helped write the brewery's success story.

The company's basis for success has included a willingness to innovate and a proportionate sense of responsibility with regard to the family inheritance. It was just these points that were taken into account in the latest decision: the decision to supply the Aldi chain in Germany with beer in PET bottles and to acquire a new KHS PET line especially for this purpose. According to industry observers, this decision has revolutionized the German and European brewing industry to such an extent that beer in PET bottles is gaining significantly in popularity with the consumer as a result.

Within the history of the Brauerei Martens, there have been a number of stories in which the brewery has managed to make the impossible possible. Among them is an interesting episode from the year 1910, which, at first glance, appears to have little to do with brewing in Bocholt.

The church in Bocholt was to be increased in size. The Bocholt parishioners did not want



Jan Martens and Frans Martens of Brauerei Martens with their new KHS packaging equipment.

to make it wider and it could not be made longer due to existing limitations. The solution to the dilemma: The whole building would be moved in order to make an extension possible. The move was sponsored by the Brauerei Martens. In 1910, this project was considered a very significant engineering achievement, and the successful relocation of the church was heavily reported by the press of the time.

It is not unlike the decision to embrace PET, which is an indicator of pioneering work and, at the same time, the placing of conventional convictions about the brewing sector to one side. If one believes in history repeating itself, then this new campaign should also be crowned with success.

The day everything changed

Until the middle of December 2002, Brauerei Martens supplied the Aldi chain in Germany with beer in no-return glass bottles and in

cans. Then, the compulsory deposit regulations came into force and everything changed from one day to the next. Aldi consequently removed no-return bottles and cans from stock. Brauerei Martens was requested to come up with an Aldi-specific no-return PET concept that was to take the following conditions into account: outstanding product quality, provision of a large volume of beer in PET bottles, identical price structure to that which had previously been accepted for beer in non-returnable glass bottles and one hundred percent recycling capability of the PET material.

These factors have been assured today. Now Brauerei Martens is supplying Aldi branches throughout Germany with 0.5-liter PET bottles in shrink-wrapped 6-packs, filled with pilsner, and brewed in accordance with the German purity laws.

The newly developed 0.5-liter PET bottle

has an Aldi logo embossed within a shoulder area of pearly appearance. Designed as a longneck bottle, the bottle has a very typical beer shape. The typical beer appearance was also one of the focal points of the development activities. At the same time, the octagonal petal-shaped base also communicates a beer-like impression in addition to an important practical aspect: high stability and pressure resistance. Also typically beer-like is the bottle dressing. Instead of a wrap-around label, Brauerei Martens relies more on shoulder, back and neck ring labels.

The 0.5-liter PET beer bottle weighs 28 grams and the Actis method from Sidel gives the bottle excellent barrier properties. In this process, the inside walls of a single-skin PET bottle are coated with amorphous carbon, which is highly enriched with hydrogen. According to the company, the barrier action against the pickup of oxygen is increased by a factor of 30 compared with conventional single-skin PET bottles; the risk of CO₂ loss is seven times smaller in comparison. A shelf life of the beer of at least six months is guaranteed.

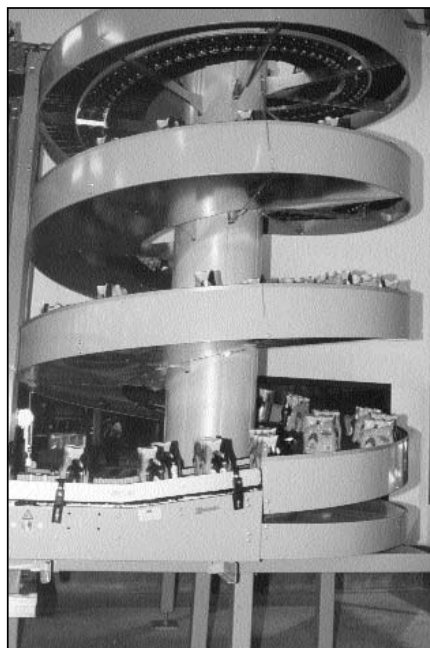
The bottles are 100 percent suitable for recycling. Up to 75 percent of the PET materials produced can be reused in the manufacture of preforms.

Basis of Success

When—as put into practice by Brauerei Martens—a complete PET concept is to be produced within the shortest possible time, the help of strong partners is in great demand. It is of particular importance if partners are able to call upon comprehensive know-how based on practical experience. This was the case with the partnership between Martens and KHS. As an internationally active manufacturer of filling and packing equipment, KHS has experience in the filling and packing equipment sector for PET bottles.

The partnership between Brauerei Martens and KHS is a mature partnership in the truest sense of the word. The cooperation with KHS started as long ago as 1968. For the new PET non-returnable line, the capacity of which is 40,000 PET bottles per hour, the task was to produce a concept that ensured the highest product quality and gentle handling of the PET bottle and, at the same time, guarantee the attractive presentation of the product at the point of sale.

The new equipment is today integrated into a building, which had previously been used by Brauerei Martens as a logistics center. There is still ample space available here—for



Shrinkpacks are conveyed by an elevator to approximately the four-meter level.

possible future PET projects as well.

PET bottles are produced directly in the brewery, provided with the appropriate internal coating, palletized, and subsequently fed directly to the new KHS line. The first step here is the gentle depalletizing process. The four-sided enclosed pushing system of the Innopal AL depalletizer offers maximum reliability during the depalletizing process. All those surfaces of the depalletizer exposed to the PET bottles are covered with plastic plates to prevent damage to the sensitive containers. An automatic inserted liner remover picks up the cover frames and inserted liners with vacuum grippers and places them in separate magazines provided for this purpose. The Innopal AL has a high, single-lane container discharge.

All of the advantages of the modular design KHS dry area concept are implemented in the palletizing as well as depalletizing areas of the modern dry area. Only toothed belts are used to generate horizontal and vertical movement that, aside from decreasing the noise level, means low-maintenance and gentle handling of materials during processing. Servomotors shorten cycle times and ensure high performance coupled with exact adherence to the so very important positioning accuracy.

Extremely gentle pressure-free combining of the light PET bottles is followed by discharge onto the Innoline LTR air conveyor. The air conveyor is comprised of individual sections. Each section is equipped with a radial ventilator that forces air into the air duct and determines the bottle conveying speed. The various operating points of the ventilator

can be set by means of a frequency controller. The speeds can thus be optimally regulated according to the weight and shape of the bottles being conveyed. The Innoline LTR provides a high level of flexibility. Should Brauerei Martens decide to process other sizes of PET bottles in the future together with the 0.5-liter size, then this will be possible without any difficulty. The neck ring is the only fixed constant.

At Brauerei Martens, the wet and dry areas are physically separated, among other things, for hygienic reasons. The air conveyor therefore feeds bottle materials through an opening leading into the wet section and from there directly into the rinser-filler block.

Flexible Filling System

A mechanically controlled Innoclean FR-EM single-channel rinser cleans the bottles with sterile water to reliably rinse out any contamination such as particles of dust.

A computer-controlled pneumatic pressure Innofill DVF filling system, which implements volumetric filling in an extremely gentle manner using long filling tubes, is used to fill the PET bottles. At 0.02 mg/l, the oxygen pickup in the product is extremely low due to the bottom-up filling process, which is quite a decisive factor in the quality of the beer. At the same time, the CO₂ consumption is only 600 g/hl and ensures specific cost savings. The Innofill DVF filling system stands for a maximum future-safe investment providing highest possible flexibility. The system can be programmed completely individually for filling a wide range of different bottles sizes and bottle shapes. The appropriate filling program is called up at the press of a button. Due to the use of the highly flexible filling system, all options are open for Brauerei Martens in the future—right down to filling of the most individually shaped contour bottles.

In order to avoid contamination between the bottle mouth and the screw cap, water is sprayed specifically to the neck of the bottle following the filling process.

Screw Caps or Crown Corks?

Screw caps or crown corks—for Brauerei Martens this was a philosophical issue. Although crown corks give a typical impression of beer, the decision was finally made to use screw caps—for reasons of hygiene. Not because of hygiene in the bottling operation, but hygiene in the commercial operation. When PET bottles are fitted with screw caps, they are usually returned to the retailers with the screw caps in place. A very important

aspect that avoids handling unclean bottles leaking residual beer.

After the capping process and filling level check, the PET bottles move onto a buffer table. This buffer table is a newly developed KHS buffer system, which equally ensures the gentle handling of the containers and the optimum utilization of the production operation areas. Several drives ensure an optimum scaling down of the conveying speed and a low-pressure transfer of the PET bottles onto the buffer system outfeed. If PET bottle accumulation becomes necessary, then the pressure is relieved by gently pushing the bottles onto reduced-speed or stationary conveyor belts. The buffer system works without slip. A sustained conveying of the containers is guaranteed, which means a reduced fault rate caused by bottle fallovers and the related higher system efficiency.

The PET bottles are dressed with shoulder, back, and neck ring labels by a KHS Innoket KL 2060 cold-melt labeler. The Innoket KL 2060 is characterized by ease of operation and low maintenance. The extensive use of stainless steel parts stands for top hygienic conditions. The KHS labeler has an automatic head height adjustment facility so that no manual activities are required when the style of bottle is changed. The labeling stations operate according to the principle of rotation. Optimum label extraction and uniform glue transfer are a matter of course. The use of two automatic label magazines means minimum machine operator effort. Along with the flexible option of processing different bottle sizes, and shapes, the Innoket KL 2060 also features other flexible configuration options. For example, the size of the pitch circle diameter enables Brauerei Martens to add an additional pressure-sensitive labeling station in the future. It would then be equally possible to apply wet glue labels and pressure-sensitive labels to the bottles or even a combination of wet glue and adhesive labelling.

In the labeling process, among other things, it is important to take particularly careful note of the special requirements that PET bottles and labeling material impose with regard to the glue to be used. As a turnkey supplier, KHS provides the glue that is exactly matched to the specific application in the form of the Innocoll labeling adhesive. As well as a qualitative evaluation of labeling materials in KHS' own laboratory, which included testing the interaction of bottle, glue and label, consultation on site and a test run under practical conditions also took place before the

labeling adhesive was put into use.

From the labeling machine, bottles are fed onto a buffer table. Here, too, exceedingly gentle conveying characteristics come into play alongside the space-saving components.

Attractiveness at the Point of Sale

The next step in the process is the shrink-wrapping of the PET bottles into 6-packs by two-lane KHS Kisters Innopack SP 060 shrinkpacker. Printed plastic film is used, which effectively attracts attention to the product at the point of sale. Along with the machinery, KHS Kisters also provided know-how with regard to appropriate plastic film. The grade and thickness of the film required for the application is determined based on extensive field tests. The printed plastic films are positioned exactly by servo drives and special sen-



All surfaces that come into contact with the PET bottles are covered with plastic plates to prevent damage to the containers.

sory equipment. After they are wrapped in film, the packs are conveyed to the shrink tunnel by a speed compensation belt, where temperatures are accurately adapted to suit the film and the size of pack. The shrinkpacker also features a high level of flexibility. Format changeovers can be easily programmed as required and are completed quickly.

An elevator conveys shrinkpacks to approximately the four-meter level and subsequently feeds them to the dry area where they are palletized by the Innopal PM that in the case of elevated container feed, operates with a pallet lift and two-piece shuttle platform. Like the depalletizer, this too is designed using an innovative modular dry-area concept. As is generally the case with the innovative KHS modular dry area concept, the entire dry section area is controlled by means of a PC-based control computer. Unlike the control concepts of the past, this solution uses one intelligence to transmit information to all system components via modern bus equipment thus ruling out all interface problems. Interface problems are thus a thing of the past.

A step forward

With new equipment, Brauerei Martens has taken a decisive step towards its own future and, at the same time, is influencing the future of the whole brewing industry. Even today, Brauerei Martens has already received a number of European and international inquiries for beer in PET bottles ranging from the subject of plant engineering to the possibility of bottling under contract. Frans Martens: "We are proud that, by supplying PET bottles to the Aldi group throughout Germany, we are simultaneously setting a trend in the industry extending even beyond national borders. In this regard, we are also proud of a KHS system concept, which exactly meets our requirements and without which a future for us in PET would not have been possible."

However, it is not only recently that the brewery has been a player on the international stage. Export activities began as early as the beginning of the 1960s. Today, 75 percent of the total beer output is exported. Along with European countries such as Germany, The Netherlands, France, Spain, England, Italy, and Sweden, the European market as well as Japan, Hong Kong, and Israel, are also showing increasing interest in Martens private brands and trademarks.

Brauerei Martens today produces ten kinds of beer. The main focus is on Pils, which accounts for 90 percent of the total volume. The brewery produces 35 percent of its output in the form of private brands whereas 65 percent relates to trademarks and filling under contract.

A few more figures document the fact that Brauerei Martens has certainly chosen the right path with its objective trademark and no-return policy. Just ten years ago, at 750,000 hl, the brewery's output was only just half of today's volume. Five years ago, the first million-hectoliter mark had not yet been reached. This means an increase in output of about 500,000 hectoliters in the last five years.

Jan Martens says he is optimistic when it comes to future plans. "We have placed high hopes in PET," he reports, "and we assume that we will be able to continue to present ourselves as a specialist for filling beer in PET bottles."

When one considers that historically one of the specialties of the Brauerei Martens has been to make the impossible possible, following the initial successful PET campaign, this should certainly be one of the easier exercises for Martens. ■