Thirst for innovation

After a five-year hiatus, the world's leading trade fair for the beverage and liquid food industry returned to Munich in September. **Noli Dinkovski** and **Dominique Huret** pick out some of the show's highlights

LoopLite is 25 per cent lighter than market equivalents, claimed KHS

Faced with soaring input costs, ongoing supply chain disruption, and ever increasing legislative burdens, it's fair to say that the global food and drink industry has been under quite some strain recently.

At the recent Drinktec show in Munich, Germany, more than 1,000 exhibitors met with 50,000 visitors from 169 countries to showcase their latest wares and discuss how those challenges can be turned into opportunities. As ever, there were plenty of new innovations relevant to plastics packaging.

Two of the most notable PET bottle innovations came from two giants of the sector – KHS and Sidel. Lighting up the KHS stand was a new circular 500ml rPET bottle that includes a recyclable barrier for highly carbonated beverages.

An optimised container design and improved barrier have enabled the weight of the Loop Lite bottle to be reduced by up to 25 per cent compared with the current market standard, according to KHS. And, thanks to its new Plasmax SiOx coating, its shelf-life is around double that of today's conventional brand bottles, the company explained.

A specially developed low-pressure rPET bottle base allows for up to 15 per cent less blowing pressure energy consumption during bottle manufacture. There is also a new, light 26/22 thread and matching tethered cap, designed to establish a closed recycling loop.

It all amounts to a carbon footprint reduction of around 60 per cent compared with standard packaging systems comprising virgin, uncoated PET, KHS claimed. "Through our Bottles and Shapes consultancy programme, we develop and supply systems and solutions that save on material and facilitate full circularity with optional increased product protection – and Loop Lite meets exactly these requirements," said Frank Fretwurst, head of PET sales.

Label-less bottles have been gaining traction in the five years since the last Drinktec, and Sidel capitalised on the trend by unveiling 1Skin at the show.

Made from 100 per cent rPET, the l-litre 1Skin bottle achieves a lower environmental impact through its label-free design, meaning it is free of additional materials such as glue that can disrupt the recycling process.

It comes with tethered closures that comply with the European Single-Use Plastics Directive.

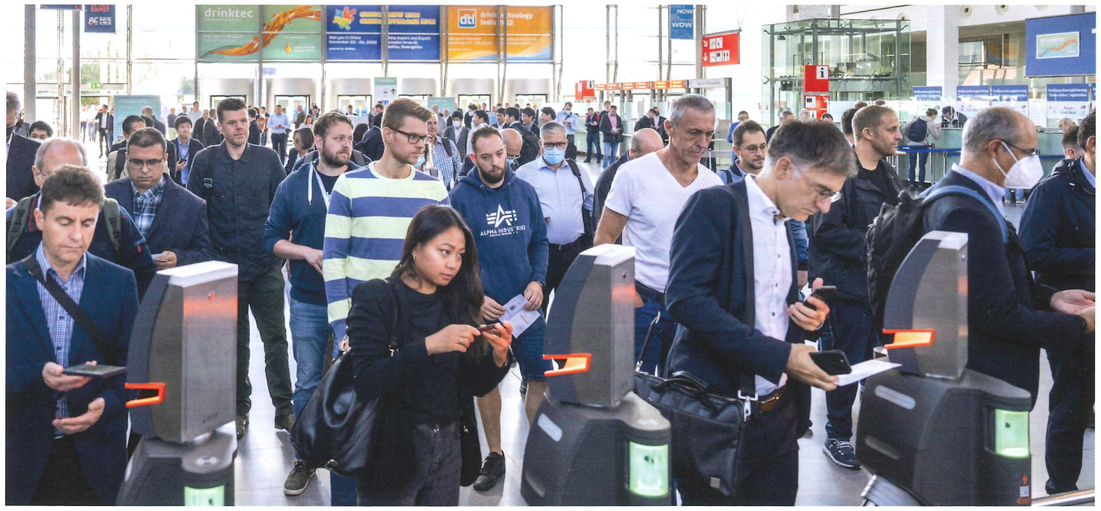
"We have completely removed the label, to speed up and improve the recyclability of the bottle," said Vincent Le Guen, vice-president of packaging, moulds and line solutions at Sidel. "It needed to be an iconic bottle, so our packaging design team pushed the boundaries to create a package that should stand out on shelf – even without the label."

Sidel maintained that the embossing did not compromise the thickness of the bottle. However, it acknowledged that it would be difficult to carry all the necessary information on bottles smaller than 1l.

The French company also revealed more details about its new Predis X4 blow-fill-cap line, first announced in July (see *Aseptic Filling*, p36).

As the market continues its transition to tethered caps (see box), Bericap used the show to launch the ClipAside generation of closures for its new GME 30.40 neck finish. The caps have a 180-degree opening angle with 'intuitive handling'.

Bericap designed ClipAside to allow customers to prepare for a fast and simple changeover to tethered caps, while continuing to manufacture closures with the current band geometry. With their use, the company claimed it is possible for filling lines to switch between standard and tethered caps without any modifications.



Bericap has been heavily involved in the Cetie (International Technical Centre for Bottling) initiative for the establishment of free voluntary standards for PET packaging, and has worked on the development of new neck standards to reduce both bottle and closure material requirements.

"We also studied the continuous optimisation of closure designs in conjunction with neck standard development," explained Pavlina Zabloudilova, senior manager for communication and marketing at Bericap. "This has materialised in the weight and material-saving evolution of the standard PCO 1810 neck finish to PCO 1881, and most recently, the new GME 30.40."

United Caps, meanwhile, promoted two tethered closure types in its 'Fit for a King' line – the Crown Jewel premium moulded solution and the No Drama Queens slitted solution. Both are available in a variety of sizes and colours to meet the needs of a wide range of product types, including still drinks, juices, carbonated drinks and dairy products.

United Caps' Pure-TwistFlip tethered closure has been designed for Elopak for use with its cartons. The Pure-TwistFlip 29i can be combined with any Pure-Pak carton, and is said to be United Caps' lightest screw cap to date.

The company was also keen to talk about its work with food packaging R&D specialist Mimica.

What started as a design project for Mimica founder Solveiga Pakštaitė, keen to make expiry dates inclusive to visually impaired people, became a collaboration with United Caps to provide freshness indication for perishable products.

Mimica Touchcap is composed of a 38 SOT neck, base cap and overcap, the latter consisting of an activator, a bottom foil, bump tray, gel and top foil. The gel in the cap is the essence of the innovation. If it remains smooth under the cap label, it can be consumed. If small bumps are felt, the food or beverage has expired.

"Up to 10 per cent of the world's greenhouse gas emissions are caused by food waste – and 83 per cent of the waste in Europe is still perfectly edible," explained Benedict Reimann, innovation manager at United Caps. "Consumers are often confused by best before and expiry dates, so helping them to keep food longer could drive loyalty."

Related to caps and closures, taking the eye on the Sacmi stand was the Italian company's new i-Slit model, where it was integrated on the company's 4.0 cap line.

The i-Slit is described as a tamper-evident band slitting and folding solution that maximises the performance of parts subject to wear. These include the slitting tools and, more specifically, the blade, which plays a key role in ensuring cap quality and, ultimately, a satisfactory customer consumption experience.

Sacmi claimed that with a better-quality cut, manufacturers could rely on consistent performance and enjoy greater scope for cap customisation. Repeatability, plus constant and measurable increases in performance and efficiency are the hallmarks of the i-Slit, it suggested.

The range consists of three product lines (Standard, Plus and Top), and Sacmi can help customers select the blade type that best matches their specific production needs. Both established customers that already have a slitting solution, and companies that use alternative moulding technologies, are welcome to test the i-Slit on their own lines.

From a plant engineering perspective, integration with the Sacmi PFM (pull force machine) is also possible. This machine is designed to perform inline sampling and testing of bridge performance at set intervals, enabling rapid detection of any production drifts, including those caused by damage or wear on the accessory. For the most demanding runs, the PFM can also be equipped with Sacmi's CVS (cut vision system), which performs a complete visual inspection of the entire outer surface of the cap.

Fellow Italian machinery maker Sipa used Drinktec to showcase its PET technology, from container design and engineering, to its preform injection capabilities and blowing and filling systems. A particular focus was the use of post-consumer recyclate.

Getting its world premiere at the show was the Xtreme Renew Sincro Cube system for creating filled and capped bottles from 100 per cent rPET flakes in a single step. According to Sipa, the line is the "ultimate demonstration" of its ability to engineer fully integrated and highly flexible lines.

"The system connects the melting phase, the making of the preforms, bottle blowing, and bottle filling, all in one pass," explained Sipa marketing manager Roberta Gualtieri. "Together, it offers major savings in space, personnel, and energy consumption – not to mention reduced distribution costs, because you don't have to store or ship the preforms."

The tethered caps time bomb

With the requirement for the tethering of bottle caps in the EU just months away, one capping machinery supplier fears packaging manufacturers risk missing the deadline.

Under Directive 2019/904 (the Single-Use Plastics Directive), all bottles and cartons under 3-litres sold in the EU have to have tethered closures by July 2024. However, Matthias Müller, chief commercial officer at Contexo, warned that a squeeze on supply chain lead-times is creating a "huge problem" for the sector to be ready in time.

"The pandemic caused a delay in projects, and that has been made worse by a slowdown in the supply of components in the machine-building business," he said. "Nothing's coming from China, and it's very difficult to get hold of the likes of vision systems. It's not even about price at the moment – it's all about availability."

Despite the challenging conditions, Müller predicted the market for tethered caps to be "extremely robust" over the next five years, adding that Contexo is likely to benefit from the relocation of manufacturing production capacity to Europe, along with the reduction in single-use plastics packaging in general.

The German company used Drinktec to showcase its all-in-one tethered caps assembly line. The line is based on a continuous motion rotary press, and has an integrated slitting unit, which eliminates the need for expensive and high-maintenance injection moulds. Up to five components can be handled on the machine, which can run at up to 48,000 parts an hour.

"Combining assembly and slitting on one machine bed offers huge benefits to the customer," said Müller. "Our standalone equipment is important for the premium segment, and the creation of special-shape closures and surfaces."

All bottles and cartons under 3-litres sold in the EU will have to have tethered closures by July 2024

Mimica's Touchcap relies on a gel that forms lumps in the cap when the product is no longer perishable

Left: *GEA's new filling valves tap into the 'food in a bottle' trend by handling solid particles delicately, suggested Massimo Nascimbeni.* ***Above:*** *Made from 100 per cent rPET, Sidel's 1Skin label-less bottle is free of materials that can cause problems in the recycling stream*

Running throughout the show was Sipa's latest stretch-blow moulder, an XTRA rotary system producing 100ml drinks containers. It can process 100 per cent post-consumer rPET, at speeds "never seen before", according to the company. Features include a simple and fast mould changeover, and a standalone XTRA HMI, aided by a Process Wizard. This feature is particularly important, given the continuing shortage of skilled personnel in the industry, Gualtieri explained.

Debuting on the GEA stand, meanwhile, was a new range of filling valves that incorporate magnetic actuators.

According to the company, the magnetic valves can be used for all filling platforms with a high hygiene level – in aseptic applications for dairy products, for example, as well as for extended shelf-life beverages.

A pneumatic drive, or optionally a servo drive, refines the lifting and lowering movements of the control and shut-off valves. This means that beverages are processed gently and very precisely, which is particularly important for viscous liquids or easily-damaged inclusions, such as fruit, cereals, nuts and seeds or fruit pulp.

"Instead of having bellows or membranes, which act as a boundary between the liquid and the external environment, there is no flexible component in contact with the product – so there is no threat of a leakage or breakage," explained Massimo Nascimbeni, product manager for blowing and filling at GEA.

By handling solid particles so delicately, the new-generation filling valves tap into the 'food in a bottle' trend, which Nascimbeni said was being led by Southeast Asian countries.

"Whether it's aloe vera, tapioca, or orange pulp, these particles are very valuable. So, a high dosing accuracy and a minimal destruction rate are very important – and our new filling valves achieve both."

Over on the Krones stand, a French producer of a low-alcohol wine-flavoured beverage became an early adopter of the Barifill Canto filler, which is aided by a multipurpose filling valve.

According to Italian subsidiary Kosme – which is responsible for the filler's development, construction and installation – the filling valve can accommodate beer, carbonated soft drinks, sparkling water, and sparkling wines in PET, can formats, and glass containers. This, it said, allows smaller craft brewers and wineries flexibility in packaging choice, without the need to invest in three different fillers.

Depending on the product and the machine configuration, the Barifill Canto can handle outputs as high as 17,000 bottles per hour, said Flavio Salvadori, Kosme's head of sales.

"It combines various technical improvements made to the Modulfill series with a level sensor for bottle filling," said Salvadori. "The machine can be equipped to handle plastics screw caps for PET containers as well as aluminium roll-on caps or corks."

Visitors to Husky Injection Molding Systems' stand were able to hear about the new HyPET Complete, described by the Canadian firm as a production line that transforms "variability into stability" throughout every stage of PET preform production.

HyPET Complete incorporates factory planning and tooling lifecycle optimisation, workforce training and development, and a fully digitised delivery model and OEM parts solution. It also features the company's recently introduced Advantage+Elite proactive, predictive and transparent monitoring tool.

All components are designed to work together to enable producers to successfully navigate today's most prevalent challenges, Husky said. This includes achieving circularity and sustainability, mitigating supply chain risks, preparing for skilled labour shortages, optimising material and operational efficiency, as well as offsetting rising material costs and inflation.

"To truly succeed in today's global climate, it has become clear that to be competitive, producers need to think beyond just hardware to a more holistic approach to manufacturing," said Robert Domodossola, Husky's president of rigid packaging. "HyPET Complete goes one step further, enabling producers to build more resilient, stable manufacturing models that are less affected by shifting external factors."

Bag-in-box innovation was also another highlight at the show. 'Recycle-ready' on account of its mono-material structure, the Liquipure ultra by Liquibox is composed entirely of LLDPE (dispenser and pouch).

The patent-pending flexible packaging eliminates the need for nylon to protect valuable liquids such as post-mix syrup, or for aluminium foil for wine.

"Liquipure ultra is a nylon and metPET-free option that offers medium- to high-barrier properties, perfect for juice, wine, water and post-mix-syrup, where an oxygen barrier is important," explained Walt Coleman, vice-president of sales at Liquibox. "Its mono-material structure meets design guidelines and is compatible with PE recycling streams, solving the multi-material packaging challenges faced by brands. It supports up to 10 per cent higher filling throughput to improve efficiency. We are looking at the personal care segment also."

Part of the portfolio is Liquipure Lite, which is an all-PE structure suitable for non-barrier liquid products, such as dairy and edible oils. EP

More information from:

Bericap	*bericap.com*
Contexo	*contexo-automation.com*
GEA	*gea.com*
Husky Injection Molding Systems	*husky.co*
KHS	*khs.com*
Kosme	*kosme.com*
Krones	*krones.com*
Liquibox	*liquibox.com*
Mimica	*mimicalab.com*
Sacmi	*sacmi.it*
Sidel	*sidel.com*
Sipa	*sipa.it*
United Caps	*unitedcaps.com*