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#AnugaFoodTec2027

Aseptic, minimal processing and flexible lines: Anuga FoodTec shows how the next generation of beverage technology functions

Sensitive beverages are changing filling. Inline-dispensing is increasing in importance

Under the key theme of "Navigate Complexity. Smart. Safe. Sustainable.", Anuga FoodTec 2027 will show how beverage and liquid food production are developing further in terms of technology. Sensitive formulas, smaller batches and increasing requirements for flexibility are changing process management and line concepts noticeably. The focus is on aseptic process chains, automated format changes and procedures of "minimal processing" - from dry aseptic PET lines through inline dosing systems to HPP and PEF technologies.

Aseptic filling technologies are currently continuing to develop dynamically. Especially with sensitive beverages like plant-based drinks, drinkable yoghurt or protein-rich ready-to-drink products, the requirements for product safety and line performance are increasing. One example of this are dry aseptic PET lines, in which stretch blowing, filling and sealing are integrated into consistently sterile process chains. Modern systems achieve performances of up to 72,000 containers per hour. Preforms and closures are sterilised with gaseous hydrogen peroxide, while sterile isolator concepts secure the complete process chain. Interim sterilisations for format changes only require around 30 minutes.

Increasing requirements for flexibility

Aseptic lines used to often be designed for clearly defined product categories. "Today, beverage producers must increasingly cover different formulas and packaging concepts on the same systems - from sensitively filled juices to carbonated refreshment beverages", says Carola K. Herbst from the DLG (German Agricultural Society). Modular filling systems, strict hygiene concepts and automated format changes should make it possible to master this complexity. New gripper systems prevent bottle rotations when sealing and support automated changes between different bottle formats with identical neck finish.

This is especially apparent with PET lines. While 28-millimetre mouths are mostly used for carbonated soft drinks, aseptically filled juices or milk mixture beverages often require 38-millimetre openings. The change between both formats to date often meant several hours of retooling - especially at the stretch blowing machine. New concepts reduce these retooling times. KHS has thus presented a system that accelerates the mouth change on the stretch blowing machine "InnoPET Blomax" including preform feed. The extent to which the industry is developing in the



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direction of integrated platform concepts is also shown by aseptic lines for different packaging materials. The "Unibloc Flex" from **GEA** enables the processing of sensitive beverages in both PET and aluminium bottles on a common line.

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Continuous sterility as target parameter

The focus is thus shifting increasingly to continuous process chains. "Aseptic has long since begun to impact more than only the filler. Economic efficiency and process security can only be ensured when sterilisation, stretch blowing, bottle handling as well as filling and sealing technology work together as an integrated, complete system", Roland Thiemann, Director of Anuga FoodTec, emphasises. This is especially apparent with sensitive beverages with functional ingredients or carbonated formulas. For flavoured mineral water, mixing technology, degassing, carbonising and aseptic processing must be precisely coordinated with one another. Used here are continuous mixing systems like the Contiflow mixer from **Krones**, in which mineral water with flavourings and additives like vitamins or caffeine are mixed.

Also increasingly gaining in importance are aseptic inline dosing systems. Heat-sensitive ingredients like vitamins, flavourings or enzymes are thereby first added directly prior to filling after the heat treatment. Modern systems enable dosages in the range of a few grammes per litre for product flows of up to 20,000 litres per hour. This means that losses of sensitive ingredients are reduced and formula changes can be designed more flexibly. For the manufacture of lactose-free UHT milk, the downstream dosing of lactase can considerably reduce the use of enzymes. Additional storage tanks, cleaning cycles and downtimes of classic batch processes are also dispensed with.

Minimal processing expands process options

In addition to thermal processes, non-thermal technologies for preservation are gaining in importance in the beverage and liquid food industries. Drivers are requirements for freshness character, preservation of nutrients, clean label concepts and high quality sensors. Keepability and product safety must thereby be guaranteed without thermally damaging sensitive ingredients. One example is high pressure processing (HPP). Food is thereby treated with pressure of up to 6,000 bar - without high temperatures or additional preservatives. Treatment takes place directly in the sealed end packaging, for example, in MAP packages or PET bottles. Microorganisms can be reduced in this way, while flavour, colour and functional ingredients are for the most part preserved. The keepability thereby increases clearly in some cases.

PEF technologies (pulsed electric fields) are also in the meantime used in other areas of beverage and food production. Brief high voltage pulses make targeted cell structures permeable. Cell ingredients are released in a targeted fashion and extraction processes change as a result. Applications can be found in the manufacture of wine or virgin olive oil, among other areas, in order to more efficiently extract value-adding ingredients.

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international leader in organising trade fairs in the field of food and beverage processing. Anuga FoodTec, ISM Manufacturing (formerly ProSweets Cologne) and ISM Ingredients are established, world-leading trade fairs, hosted in Cologne/Germany. In addition to the events at its Cologne headquarters, Koelnmesse also stages further food technology trade fairs with different sector-specific areas of focus and content in key markets across the world, including Brazil, Colombia, India and Italy. These global activities enable Koelnmesse to offer its customers bespoke events and leading regional trade fairs in a variety of markets, thus creating the foundation for sustainable international business. Koelnmesse is also ideally positioned in the field of food and beverages with its leading international trade fairs Anuga and ISM and its global network of satellite events.

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