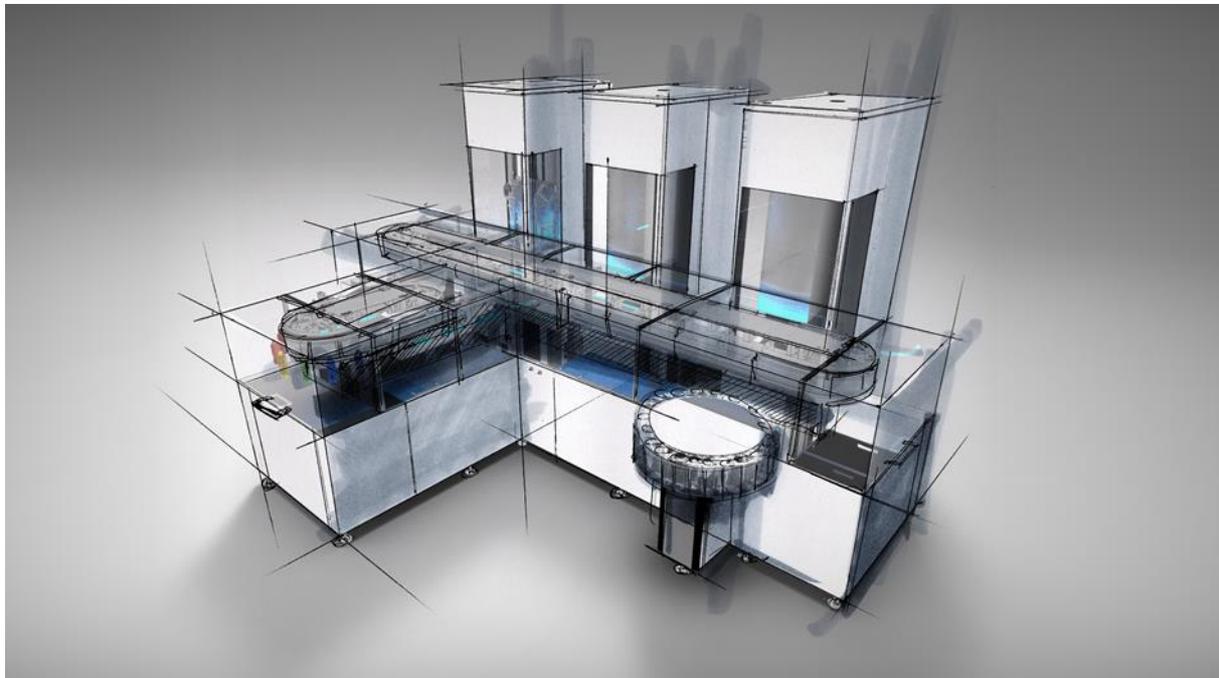


Krones Bottling on Demand concept study: The way to ultra-flexible production

The Bottling on Demand concept study is tasked with re-exploring the limits of flexibility. Because Bottling on Demand denotes an ultra-flexible line that at the touch of a button

- fills PET containers differently,
- dresses them individually,
- provides them with a personalized RFID code and
- assembles them into mixed pallets directly at the line.



Individualized filling without change-overs

Its core elements include a newly developed filling valve, where the bottle is pressed against the valve, and allows the product to flow gently downwards along the container's wall. So far, so familiar. But what differentiates this filling valve from all the others is its exceptional versatility. It's supplied through one main and up to four secondary channels, each of which can be individually dosed. Depending on the filler's intended purpose, this creates three highly disparate advantages:

1. You can do without a mixer

Soft drinks and other mixed beverages can be produced directly in the filler itself: the water content enters the valve through the main channel, while the individual aromatic components are each dosed through the secondary channels in the correct quantities. This means it's no

longer necessary to blend the finished beverage in an upstream mixer; all that's needed is the requisite pre-treatment of the water and the aromatic components involved.

2. Product change-overs without make-ready

There's also an option for feeding in different final syrup variants via the valve's secondary channels. This enables the client to switch back and forth between different products without a make-ready routine being required. Nor is a protracted cleaning procedure needed, since for every product variant the main channel delivers only water. The syrups enter the machine through separate channels, and are not dosed until shortly before filling. The new valve counters the risk of aroma entrainment with a sophisticated seal concept.

3. Customising recipes

For everyone who wants to exploit product individualization to the full, the system features an additional option: individually customized combinations of different constituents – and thus actual production of batch size 1. It's possible, for instance, to provide different components via the valve's secondary channels, and to determine individually the precise composition of the beverage for each bottle. "Here we're thinking primarily of the premium or luxury segment at brand owners," explains Stefan Pöschl, Head of Technology Development at Krones. "It would be conceivable, for instance, to adapt the recipes of sport or medicinal drinks to precisely suit the consumer's needs and preferences." This does not entail any problems in terms of evidencing the constituents involved: direct printing on each bottle enables the client to individually identify what recipe the consumer ultimately holds in his/her hands.

Batch size 1

The Bottling on Demand concept study enables the precise composition of the beverage to be separately specified for each bottle. Krones has thus taken a major step forward in the thrust for individualized beverage

Mixed pallets without order-picking

How specifically the principle of Bottling on Demand is implemented in a line will depend upon many different factors, particularly the products and goals of the plant concerned. The concept study follows the principle of maximized flexibility, and accordingly incorporates:

- a filling station,
- a direct printing module,
- a newly developed, ultra-flexible conveyor system,
- tracking and identification of containers by means of RFID codes, and
- linkage to an ordering system, enabling the product and dress of each container to be selected individually.

Bottling on Demand enables a broad spectrum of beverage variants to be produced on a single line – in minimized batches and in swift succession. In conjunction with an appropriate dry end,

the bandwidth of applications is extended to include an additional option: creating mixed pallets directly at the line, so as to dispatch them immediately afterwards – without any detours to the warehouse, and without order-picking.

And this is what the development people have to say



“The Bottling on Demand concept study maps out the options we’re going to have for filling lines of the future: not only will they be able to significantly reduce the change-over times customary at present, but thanks to direct printing and flexible filling valves to change over seamlessly to different products. For example, mixed pallets can be created directly in the line, matched to the purchasing behavior of the consumers involved. So there are some exciting times ahead for the beverage industry. Bottling on Demand’s newly developed conveyor alone opens up more options than we can conjecture at present. But what can unequivocally be stated is this: the conveyer possesses so much potential that it will definitely find a permanent place in individual machines as well.”

Klaus Voth, Technology Development Mechatronics



“Due to accelerating digitalization, consumers’ behavior patterns are changing too: app orders featuring personalized, individual wishes have become everyday routine, thus increasing the speed that’s expected when business processes are being handled. This is then reflected in the corresponding requirements posed for modern-day machinery. In the shape of Bottling on Demand, a concept has been developed that besides individualization also enables beverage producers to respond swiftly to customers’ wishes – and nevertheless maintains the overall production output at high levels of efficiency.”

Andreas Gschrey, Digitalisation and Data Technology, Corporate Research and Development



„The ‘on demand’ principle is also reflected in the data flow. Because in contrast to conventional lines the data are not specified in advance, but only when they are actually needed. Since each bottle is given its own personalized RFID chip, all the articles can be unambiguously identified. The result: high production dependability thanks to full-coverage tracking – from beverage production and subsequent transport all the way through to the point of sale. For marketing purposes, too, the RFID chip offers quite a bit of potential, since it can additionally be provided with information that is relevant for consumers. It’s precisely this individualization of the product that may prove to be a highly attractive option in the future, not least for health drinks or customized mixed sports drinks.”

Jennifer Schöffel, Control Technology, Corporate Research and Development



“As our concept study shows, market- and demand-responsive production is no longer a futuristic fantasy. On the contrary: the technology behind Bottling on Demand grants enormous freedoms to the clients concerned in terms of production planning: even just-in-time bottling on high-speed lines is a viable option. In the context of ongoing technological and development trends, the concept constitutes a path-breaking step towards the future, no doubt about it.”

Stefan Pöschl, Technology Management

Further information and contact

KRONES AG
Peter Moertl
e-mail: peter.moertl@krones.com
URL: www.krones.com