

Bottling on Demand

Highly flexible line solutions for the demands of tomorrow



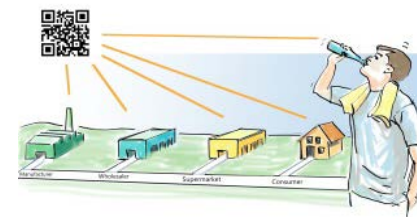
Production on demand? It is within our reach!

The provision of personalised and customised products is an unavoidable trend which is also increasingly shaping the food manufacturing market. The related interweaving of the consumer world with the production world is a pivotal challenge faced by this development. Current solution approaches in the Industry 4.0 environment offer major potential for creating customised, flexible production methods which are still economical.

The question is: can the smallest batches of up to batch size 1 be handled in a filling line? And so that the expenditure also makes economic sense? KRONES developers and the “Robofill” project team of the Bayerisches Forschungsinstitut (BFS = Bavarian research institute) believe yes and re-explore the limits of flexibility with the concept of a high flexible line.

At a glance

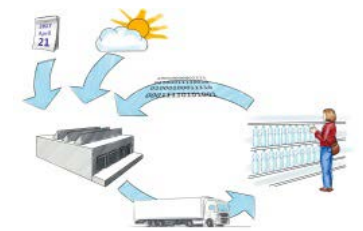
- Just-in-time filling of the smallest of batches
- Individualisation of beverages and packaging
- Product changes without change-over time
- Production of mixed pallets without warehousing and order picking



Tracking



Information



Planning



Production today versus the line of the future

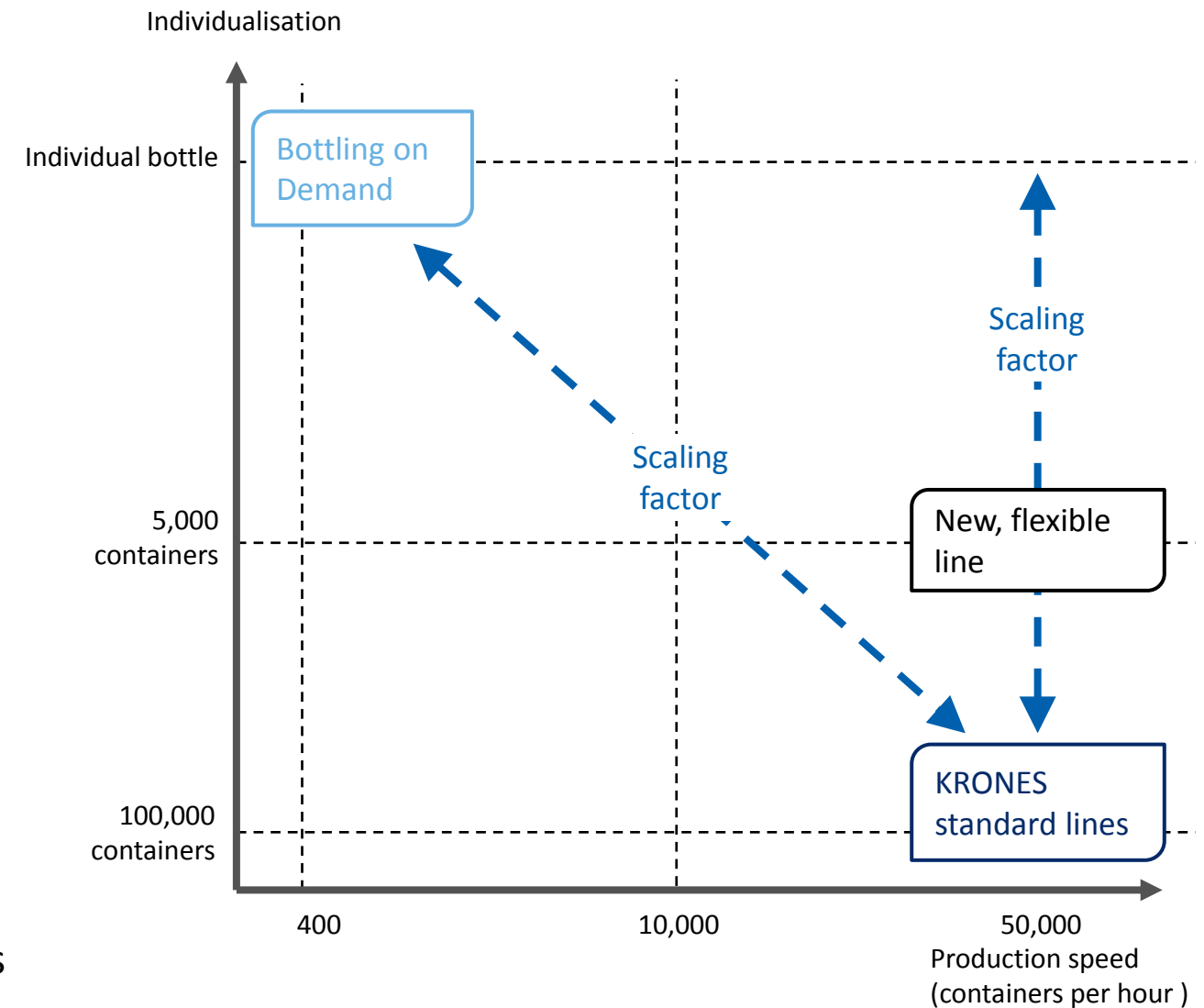
Today, one line processes one batch:

- One container size
- One neck finish shape
- One product
- One cap
- One label
- Pallets with one product type

In the future, a line will process the following for each batch:

- One container size
- One neck finish shape
- Several products or product variants, each with an individual composition
- Several caps of the same type with different colours
- Several decoration variants or individual artworks for each container
- Mixed pallets put together according to the customer's wishes

The next step: from concept to new line solution





The core technologies for Bottling on Demand: flexible filling

Technical features

- One main pipe
- Several secondary pipes
- Individual dosing of each individual pipe
- Gentle and foam-inhibited filling
- Protection against the transfer of flavours

Benefits to you

The mixer is omitted

Soft drinks and other mixed beverages can be produced directly in the filler: The water is supplied through the main pipe into the valve, each of the individual flavour components is dosed to the correct amount and added through the secondary pipes.

Product change-over without conversion

The valve's secondary pipes make it possible for different finished-syrup variants to be fed. This allows the equipment to be easily switched back and forth between the different products – without conversion.

Customising of recipes

How each container can be individually filled: Simply supply different ingredients via the secondary pipes of the flexible filling valve and determine their exact composition for each bottle.





The core technologies for Bottling on Demand: flexible capping

Technical features

- One capper head
- Several cap magazines

Benefits to you

Cap change-over without conversion

Different cap magazines with feed system allow the caps to be changed over without converting the equipment.

Each product with the correct lid

Regardless of which product or decoration is being processed, the containers can be sealed with caps in a matching colour.





The core technologies for Bottling on Demand: flexible direct printing

Technical features

- Container decoration using direct printing
- The colour can also be applied to structured surfaces and areas which are not suitable for labelling
- Fully automatic artwork change

Benefits to you

Packaging with a wow effect

In contrast to conventional labels, the targeted application of the direct print to grooved and relief structures is also possible. For consumer products, this opens up completely new opportunities to stand out from the masses – for example through the packs creating astonishing 3D effects or simulating the appearance of other materials.

Flexibility right up to the last minute

Instead of keeping prefabricated labels on stock and thus tying up valuable capital, the container decoration is not created until it is directly in the line. Those who wish to adjust the design or redesign the packaging can even do so during production.

Customising containers

The direct printing module creates variable and personalised printing data where necessary. There is a huge number of possible applications: The contents of individualised products can be exactly recorded or packaging can be enriched to create sought-after design objects.





The core technologies for Bottling on Demand: conveyor system

Technical features

- Conveyor speed of up to 4 metres per second
- Load capacity of up to 3 kilogrammes
- Wear-optimised shuttles with lubrication-free guidance
- High-dynamic, wear-free distribution gate branch
- Stationary and dynamic container transfers possible

Benefits to you

Easier application

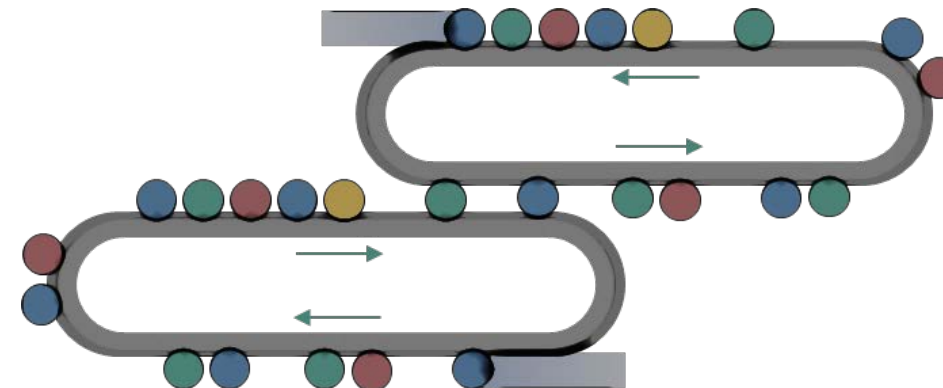
Modular designed conveyor sections with decentralised power electronics create the most diverse layout variants. Even complex process and logistics tasks – e.g. buffers or the control of several areas connected with the distribution gate – can be quickly implemented and easily mastered thanks to extensive system software libraries.

Higher line effectiveness

All of the containers can be influenced at any time thanks to controlled shuttles. Disruptive factors in conventional lines, such as a container conveyor with friction problems, are thus avoided. Critical process stations can be positioned in a parallel arrangement thanks to the distribution gate branch and thus provided in a redundant design.

Gentle on containers

Thanks to the defined single-container handling method, different container formats can be transported, each with its own optimum dynamics. This allows the avoidance of damage due to back-up sections.





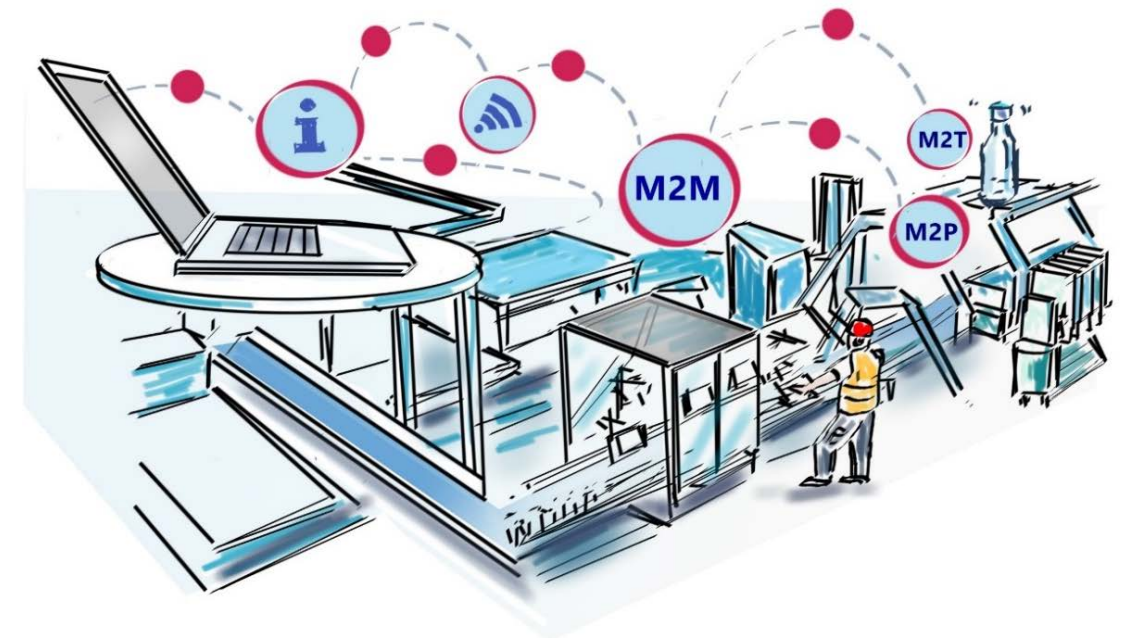
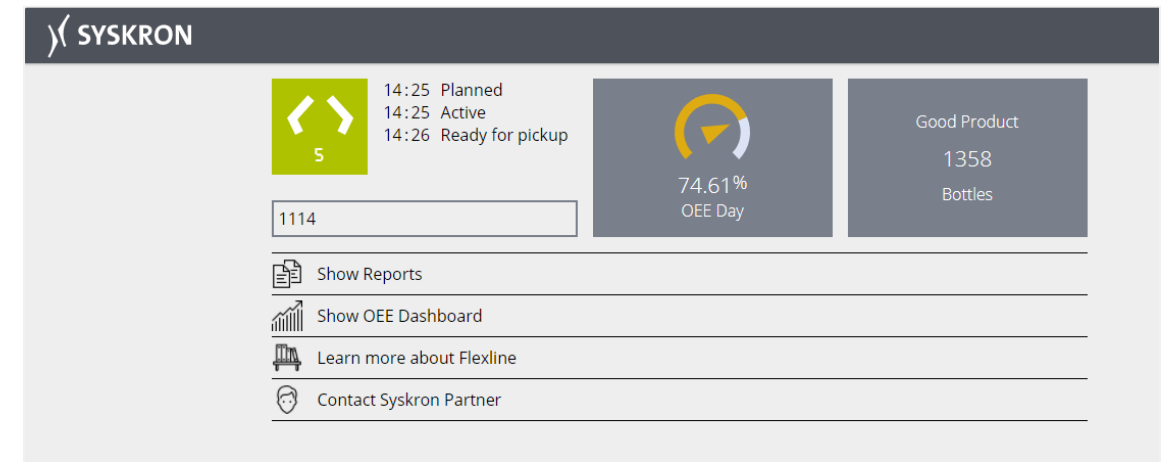
The core technologies for Bottling on Demand: process coordinates

Technical features

- Creation of new product batches while the order is running
- Decoration of each container with a unique identification
- Central controller for flexible connectivity and tracking
- Real-time notifications through the order status

Benefits to you

- RFID or 2D-code data handling
 - Visible or invisible
 - Temporary or permanent
 - Static or variable
- Integration in the existing IT infrastructure (ERP, MES, WMS)
- Tracking and tracing along the entire production route

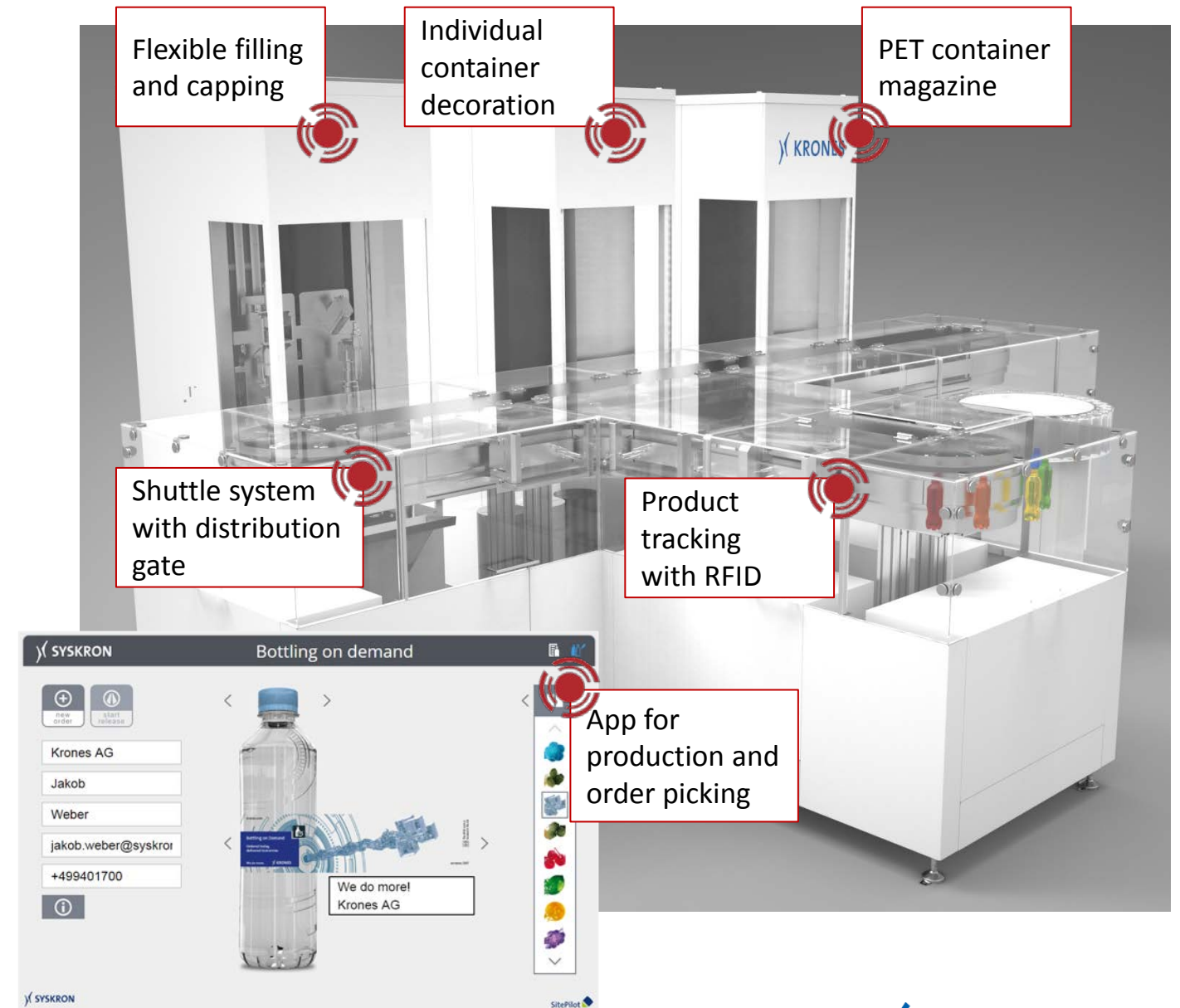




Bottling on Demand: the showcase

The aim of the Bottling on Demand concept study is to newly explore the limits of flexibility and to prepare the necessary technologies for series production. For behind it there is an ultraflexible line which, at the push of a button

- fills and caps PET containers differently,
- individually decorates them,
- conveys them gently and flexibly,
- applies a personal RFID code to them and
- manages production with flexibility using a mobile app.



Conclusion

Bottling on Demand allows a wide range of product variants to be manufactured on a single line – in the smallest of batches and in quick succession. When combined with suitable dry-end machinery, the range of applications is expanded to include an additional option: To create mixed pallets directly on the line for subsequent immediate dispatch – without taking a detour through the warehouse and without order picking.

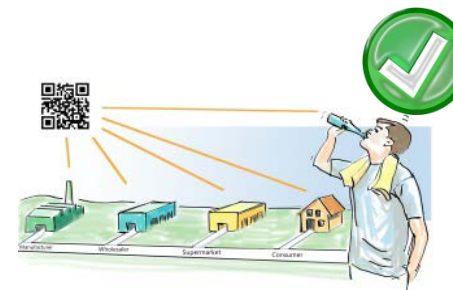
All in all, Bottling on Demand creates ...

- pallets with individually arranged packs
- containing individually filled bottles with
- individual artwork and
- individual product tracking.

Or quite simply: the real **batch size 1** for the **beverage industry!**



Individualisation and flexibility



Tracking



Information



Planning



Digitalisation



Process
technology



Bottling and
packaging equipment



Intralogistics



Lifecycle
Service

We do more.

 **KRONES**