



# The adaptive machine

Your competitive advantage

PERFECTION IN AUTOMATION  
A MEMBER OF THE ABB GROUP



Smaller batches, shorter product lifecycles and a shift toward online shopping – Today's consumer packaged goods companies face unprecedented challenges that require unprecedented flexibility. That's why today's most innovative OEMs are building a whole new breed of manufacturing technology: **the adaptive machine.**

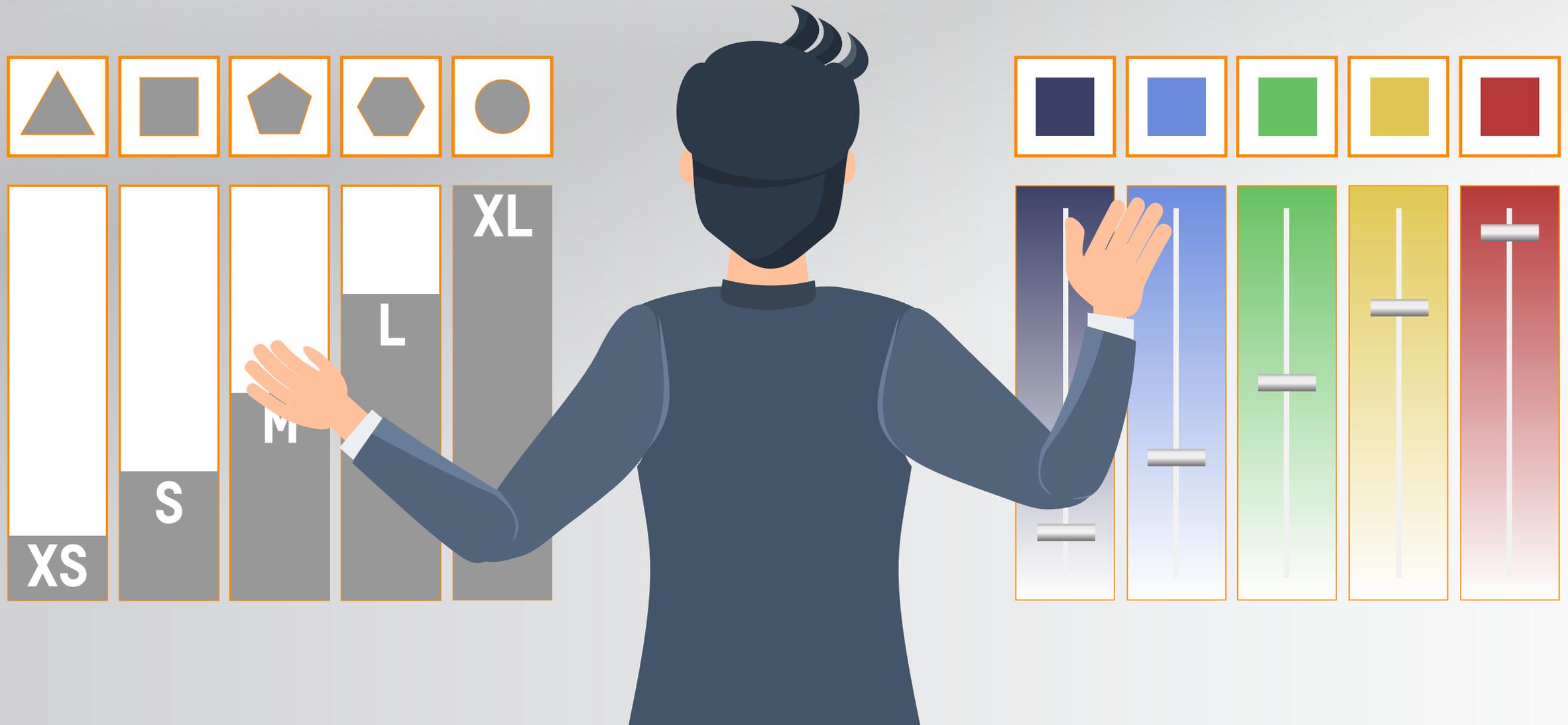
Machines that adapt to different products and packaging automatically and on the fly – but what exactly is it that makes a machine adaptive? And what does it take to go from cutting-edge technology to **your competitive advantage?**

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# The new consumer

Today's consumers expect to get the products they want, when they want them – often personalized to their individual tastes and preferences. With a generational shift in values and expectations comes a whole new set of challenges and opportunities.



# 4 challenges to master



→ Product proliferation



→ Mass customization

Consumer packaged goods companies face four main challenges.



→ Unpredictable demand fluctuation



→ Shorter product lifecycles

# 4 factors of adaptability



→ Zero-downtime changeover

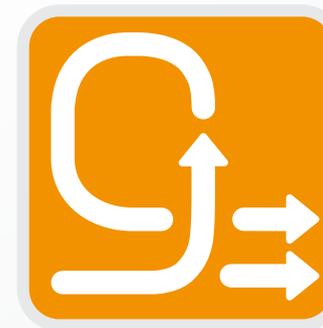


→ Profitable small-batch production

These challenges are driving the evolution of a whole new breed of manufacturing system: **the adaptive machine**. There are four key characteristics that set these machines apart from their predecessors.



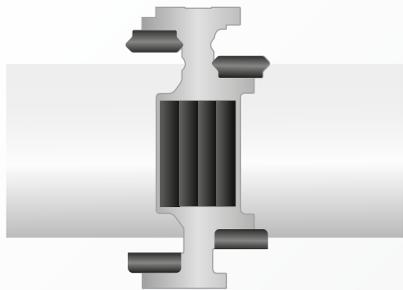
→ Accelerated product time-to-market



→ Ready for unknown future products

# 4 technologies to make it possible

The adaptive machine emerges from a synergy of new and existing technologies. The four with the greatest impact are:



## Track-based transport

Intelligent track systems enable independent control of each product's movement through the manufacturing process.



## Machine vision

Machine vision cameras automatically detect the shape, size and orientation of each product and pass that information on to a robot in less than a millisecond.



## Robots

Aided by machine vision, robots pick up products and place them on a track system shuttle with lightning speed.



## Digital twins

An exact copy of the machine in digital form makes it possible to produce new products with virtually zero downtime or physical prototyping.

# 4 solutions available today

This is more than just a dream. The technologies that enable the adaptive machine are available now from B&R:



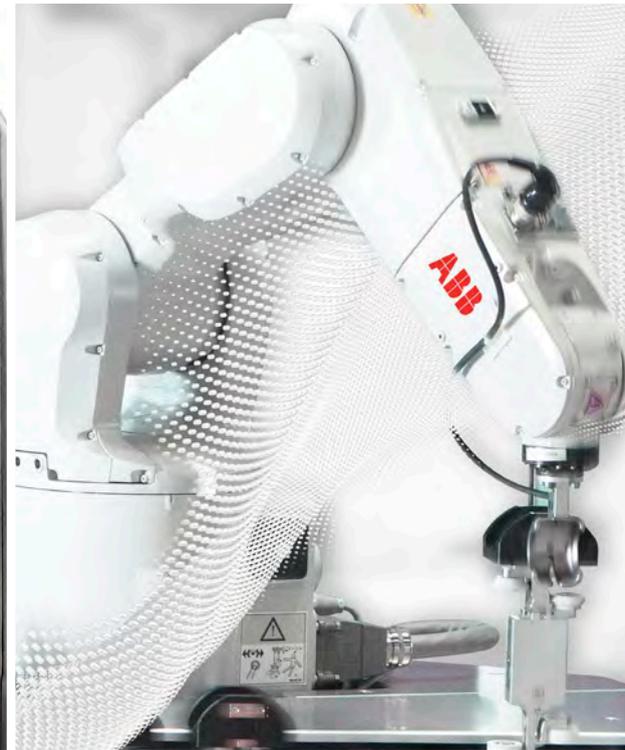
## ACOPStrak

The intelligent track system's unique electromagnetic diverters split and merge product flows at full production speed.



## Integrated machine vision

Fully integrated in the control system, B&R's machine vision enables synchronization with microsecond precision.



## Machine-centric robotics

B&R is the only controls manufacturer with a portfolio of fully integrated robots.



## Comprehensive simulation

Design, develop and diagnose without the cost and risk of hardware prototyping using a full array of B&R and 3rd-party simulation tools.

B&R also has a complete automation portfolio of PLCs, I/O systems, industrial PCs, safety, motion control and easy-to-use automation software.

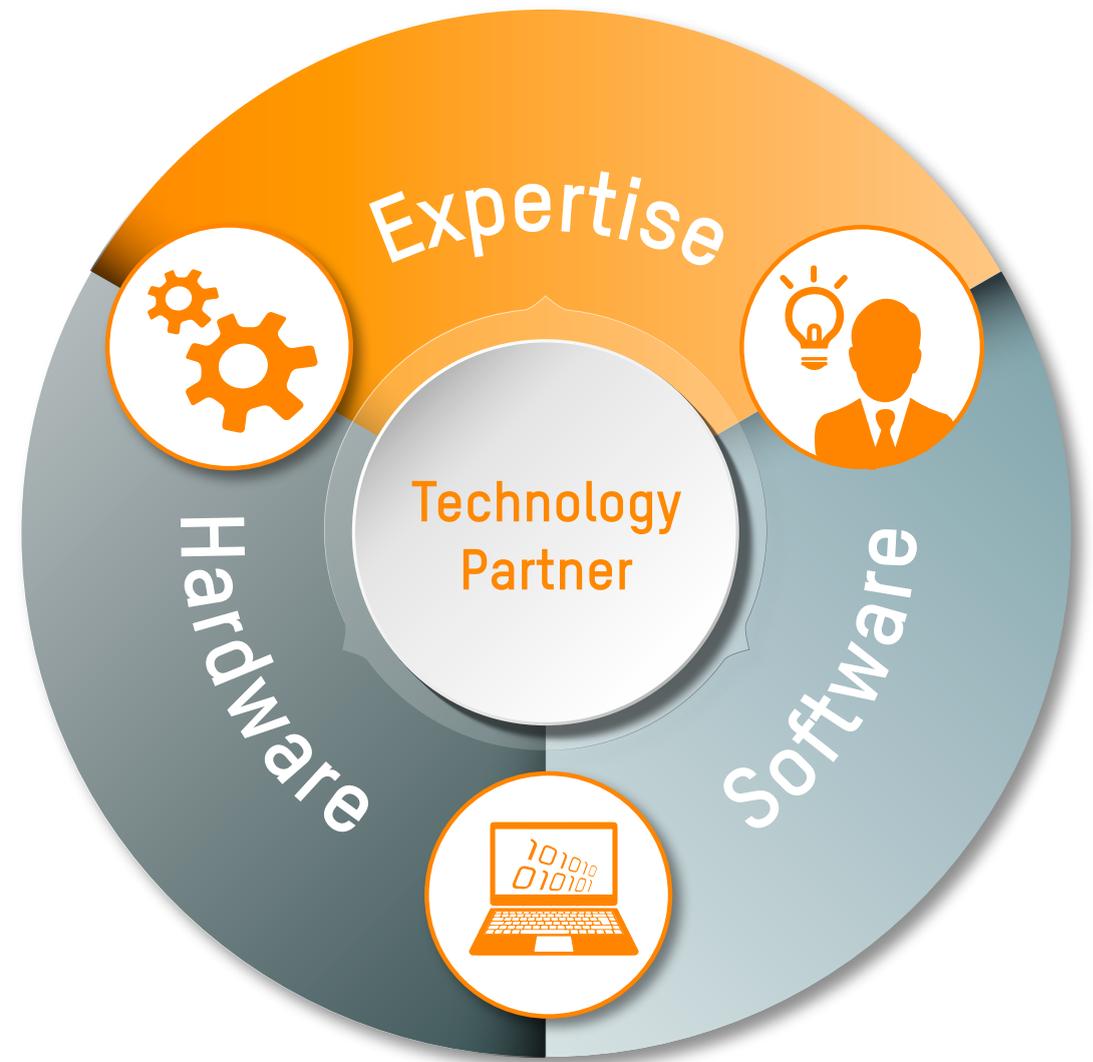
# Your partner for the adaptive machine

In addition to cutting-edge hardware and software, B&R customers also benefit from 40 years of automation expertise. A global network of local sales and engineering teams accompany customers through every step of their project – from conceptual design to after sales support.

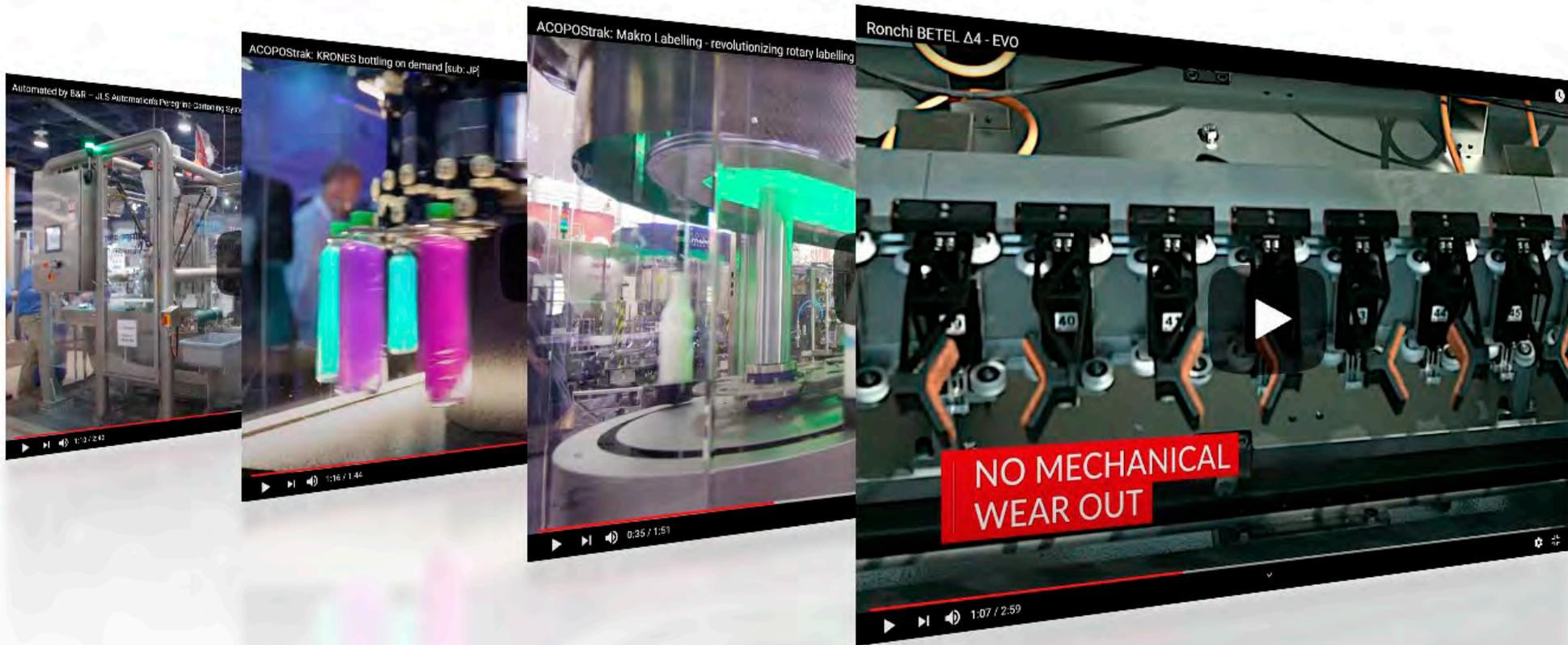
The **technology** to make it possible.

The **expertise** to make it happen.

Your **partner** for the adaptive machine.



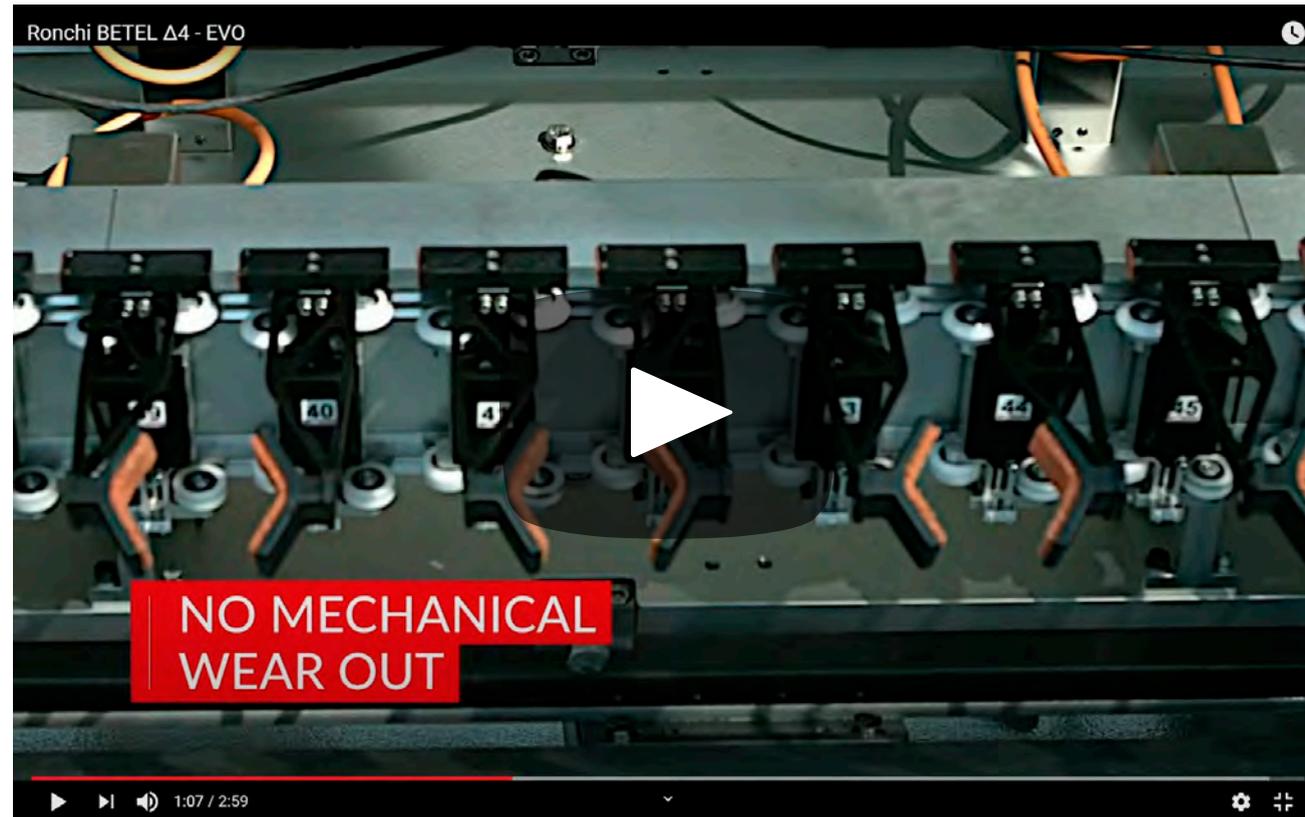
# Adaptive machines in action





# Changeover

## Ronchi Mario S.p.A



Designed for fast and frequent automated changeovers, the adaptive bottle unscrambler from Ronchi feeds bottles randomly to vision-guided robots. The robots pick, orient and place bottles onto an intelligent track system, where the independently controlled

shuttles are paired to serve as infinitely variable sized pucks accommodating rigid plastic containers of virtually any shape and size. Changeovers are pushbutton fast and fully automated, with no tools, change parts or human intervention required.



# Flexibility

## Makro Labelling S.r.l.



Makro's adaptive labeler utilizes two intelligent tracks – top and bottom – one securing bottle necks and exerting downward pressure, the other using synchronized pairs of shuttles, to serve as bottle plates and provide rotation for label application.

The Makro rotary labeler uses dual tracks to adjust container and label size on the fly. And because the track systems are modular, labeling stations can be readily added to increase capacity or run multiple container/label/adhesive configurations. Shuttles and stations can also be skipped for maintenance or replenishment.



# Performance

## JLS Automation



An adaptive cartoning system from JLS Automation uses vision-guided robots to load various sized cartons, on demand, to pairs of shuttles on an intelligent track system. Pairing the independently con-

trolled shuttles allows the adaptive machine to adjust on the fly to different carton sizes, effectively achieving batch-size-one packaging. No tooling changes or change parts are required.



# Personalization

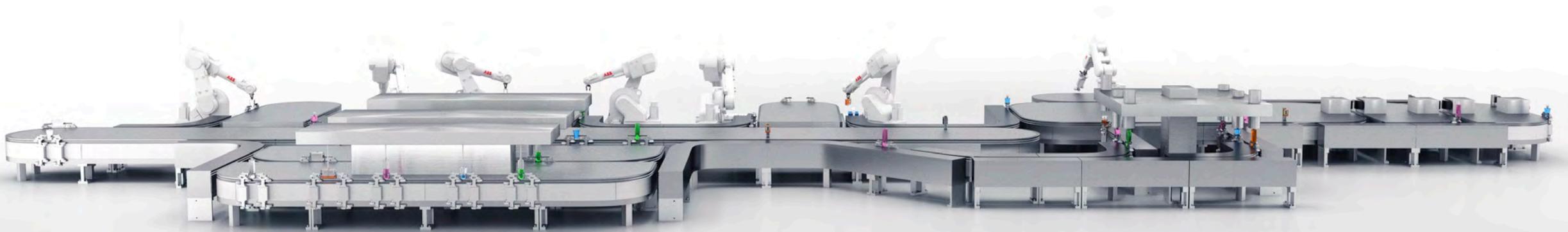
## Krones



“Bottling on demand” is an adaptive machine concept from Krones capable of batch-size-one formulation, filling, color-coded capping and labeling for beverage lines. It delivers an unprecedented ability to fulfill consumer demand for personalized flavors, portion sizes and even labeling with consumers’ names.

Each bottle is carried through the process by an independently controlled shuttle on an intelligent track system. Bottling on demand allows shipment of highly customized rainbow packs directly from the production line – eliminating the inefficient process of manually unpacking and repacking.

# Your competitive advantage



The adaptive machine gives producers and packagers 4 decisive advantages:

## **Changeover**

Change formats automatically on the fly – even after every product – with no compromise in productivity.

## **Flexibility**

Build flexible machines able to produce as-yet-unknown products at any time.

## **Performance**

From rigidly sequential to dynamically responsive – discover new dimensions of efficiency and productivity.

## **Personalization**

Easily handle the unprecedented levels of product personalization that come with the rise of e-commerce.

# Get inside the adaptive machine



Join us for a live 1-on-1 session  
to explore your adaptive future

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