

A man with glasses and a dark vest is looking at a small blue and red device in his hands. In the background, a large industrial robotic arm with blue and grey joints is visible, mounted on a metal frame. The setting appears to be a factory or workshop.

# COLLABORATIVE ROBOTICS

IN THE PLASTICS INDUSTRY



UNIVERSAL ROBOTS

# PRODUCTION IN THE PLASTICS INDUSTRY

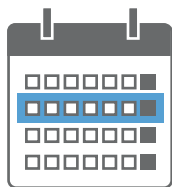
# 01

High mix and requirements for rapid changeovers play a major role in production in the plastics industry, where manufacturing processes vary widely depending on the material. Collaborative robots provide the best way of increasing productivity even in small batches, while also relieving staff from repetitive and physically arduous activities.

# 02

## COBOT BENEFITS

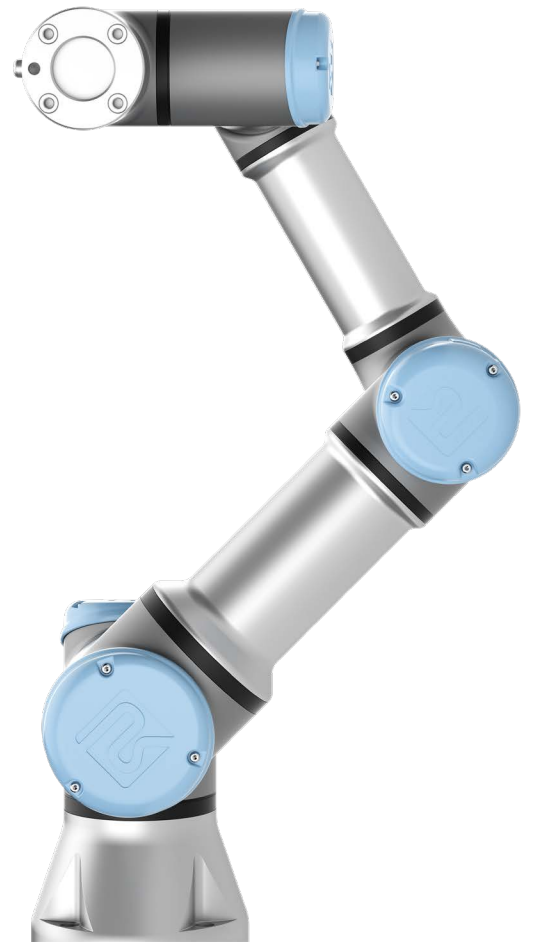
Collaborative robots (cobots) provide attractive opportunities for automation in a wide range of plastics industry applications and production facilities.



WEEKS

### FAST IMPLEMENTATION AND PROGRAMMING

Cobots from Universal Robots can be implemented quickly. Our cobots' arms can be easily deployed and programmed in-house for a new task in weeks, not months.



## INCREASED PRODUCTIVITY AND COST-EFFECTIVENESS

Collaborative robots cut production costs and increase productivity by keeping processes constantly running. Cobots are easy to reprogram and redeploy for different tasks without changing production layouts. This flexibility helps deliver fast ROI, with cobots routinely delivering payback within six to twelve months.



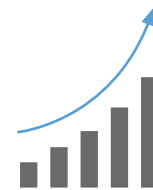
## PRECISION AND QUALITY

Cobots have high levels of repeatability, featuring down to  $\pm 0.03$  mm (30 micron) for precise, around-the-clock consistency. This enables precision assembly and metrology applications such as vision-guided parts inspection.



## EFFICIENCY AND WORKFORCE OPTIMIZATION

Collaborative robots relieve employees from monotonous, time-consuming tasks, giving them more time to focus on activities with higher added value. While human workers perform tasks ideal for their skills, cobots can perform physically demanding and dangerous activities, protecting workers from health risks due to poor ergonomics, unfavorable environments, repetitive stress, or injury from heavy or sharp workpieces.



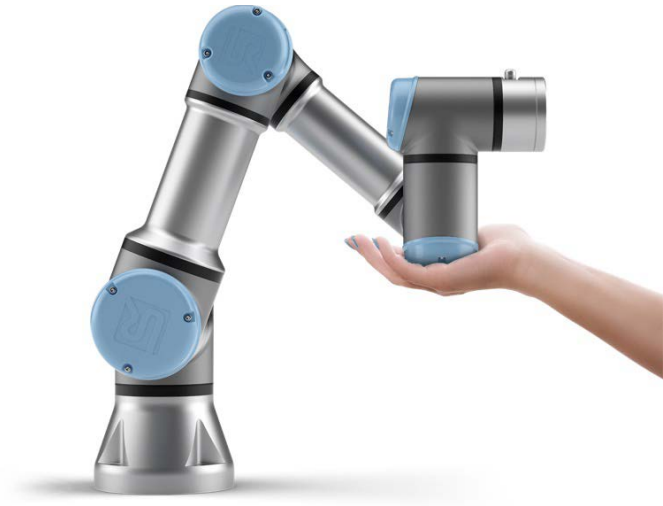
## SAFETY AND COLLABORATION

Our cobots are equipped with a certified force limiting safety system, that causes the cobots to automatically stop operating if they encounter obstacles in their route. That means the cobots can work beside employees without the need for safety guarding after risk assessment.



# 03

## SIGNIFICANCE OF HUMAN-ROBOT COLLABORATION IN THE PLASTICS INDUSTRY



Processing different plastics and polymers requires adaptation to manufacturing processes. Cobot arms are lightweight, compact and routinely do not require safety guarding, so they save space and are easy to implement in a variety of applications without requiring changes in production layout.

**Cobots can be quickly and easily retooled for small batches and different phases of operation. This ensures flexible automation for a wide variety of tasks in plastics and polymer production:**



### INJECTION MOLDING

Placing inserts into the mold means complex motions and demanding angles and positions perfectly suited for articulated six-axis collaborative robots.



### PICK AND PLACE

Collaborative robots boost process accuracy and reduce waste. Cobots allow for complete automation in pick-and-place processes, even for a second or third shift. The lightweight design and small footprint mean that the robotic arms are suitable for operation and retooling for various processes in constricted spaces.



### POST-MOLD PROCESSES

Degating, trimming, polishing, and decorating are tasks now increasingly handled by cobots, resulting in increased product quality and reduced scrap rates.



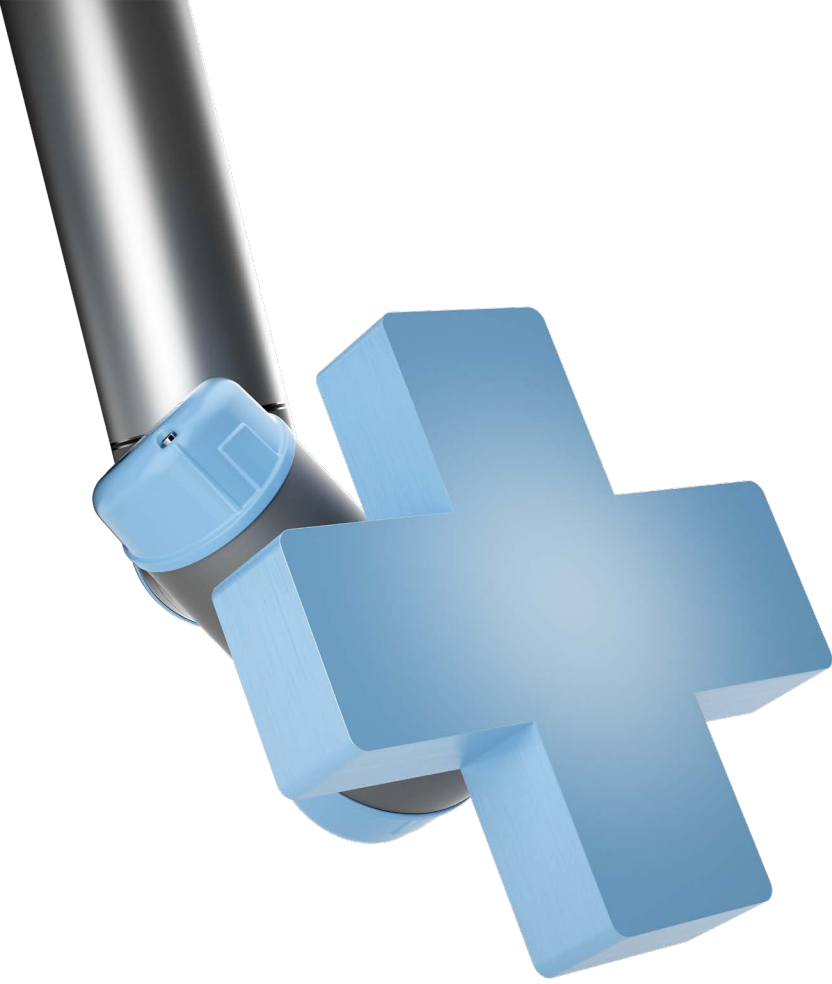
### PACKAGING

Manufacturing in smaller batches with shorter delivery cycles is a challenge to any packaging line. Cobots increase both flexibility and efficiency.



### PALLETIZING

Every retailer wants products delivered on different pallet sizes and patterns. UR cobots now power dozens of flexible, 7th-axis palletizing solutions with ability to palletize at two pallet locations for optimized operation.



# 04

## **THE IDEAL COBOT CONFIGURATION FOR YOUR NEEDS**

The UNIVERSAL ROBOTS+ (UR+) ecosystem ensures smooth integration of third-party innovative peripheral products and software to match your requirements for highly specific robot applications.

UR+ solutions are certified for our cobots and provide plug-and-produce compatibility for guaranteed immediate deployment.

# **UNIVERSAL ROBOTS+**

A detailed photograph of a robotic arm in a factory. The arm is silver and black, with a blue cap on its base. It is positioned over a blue conveyor belt that carries several black plastic components. In the background, a person is visible walking through a doorway. The text "PROLINE" is visible on a machine in the upper left. The overall scene is industrial and brightly lit.

**READ THESE  
CASE STUDIES FROM  
THE PLASTICS INDUSTRY  
AND SEE FOR YOURSELF**

**05**



# DYNAMIC GROUP

**Based in Minnesota, Dynamic Group is a privately owned contract manufacturer specializing in complex injection molded plastic components and assemblies and high-precision molds for plastic and powder. The company primarily serves the medical, electronics, and technology industries.**

## THE CHALLENGE

When hiring employees to fill injection molding jobs proved challenging in the area's tight labor market, Dynamic Group needed to automate repetitive manual tasks. The processes involve a range of challenges, including a heat-sensitive part that requires consistent cycle times, a molding application where parts risk damage in unloading, and a labor-intensive kitting application.

## THE SOLUTION

Dynamic Group installed three UR cobots. A UR10 tends a complete injection molding machine cycle with perfect consistency, while a second UR cobot degates and palletizes another molded part, and a third picks and places items in a fast-paced kitting application.

## THE RESULT

Dynamic Group quadrupled production in its machine-tending application, nearly eliminating scrap, and cutting labor by 75 percent. The other applications had similar results in improving output and quality, while reducing scrap and unsustainable manual labor requirements.

---

**»When I started looking, I assumed I was talking hundreds of thousands of dollars per installation. I was surprised to find that we could afford a six-axis robot and a collaborative one at that.«**

Joe McGillivray, CEO

---

[See the video case study](#) 



# EVCO PLASTICS

**EVCO Plastics manufactures plastic parts ranging from small medical devices to large panels for agricultural vehicles in multiple facilities in the US, Mexico, and China. Services include design for manufacturing and mold-making, injection molding, and secondary operations.**

## THE CHALLENGE

In its Wisconsin injection molding plant, EVCO faced the challenge of having to staff round-the-clock production with fast-changing processes such as dispensing, assembly, quality inspection, harvesting of 3D printers, and packaging. While familiar with traditional automation, the company needed a more flexible solution that could be quickly deployed and redeployed, and could integrate with a range of peripherals and other equipment.

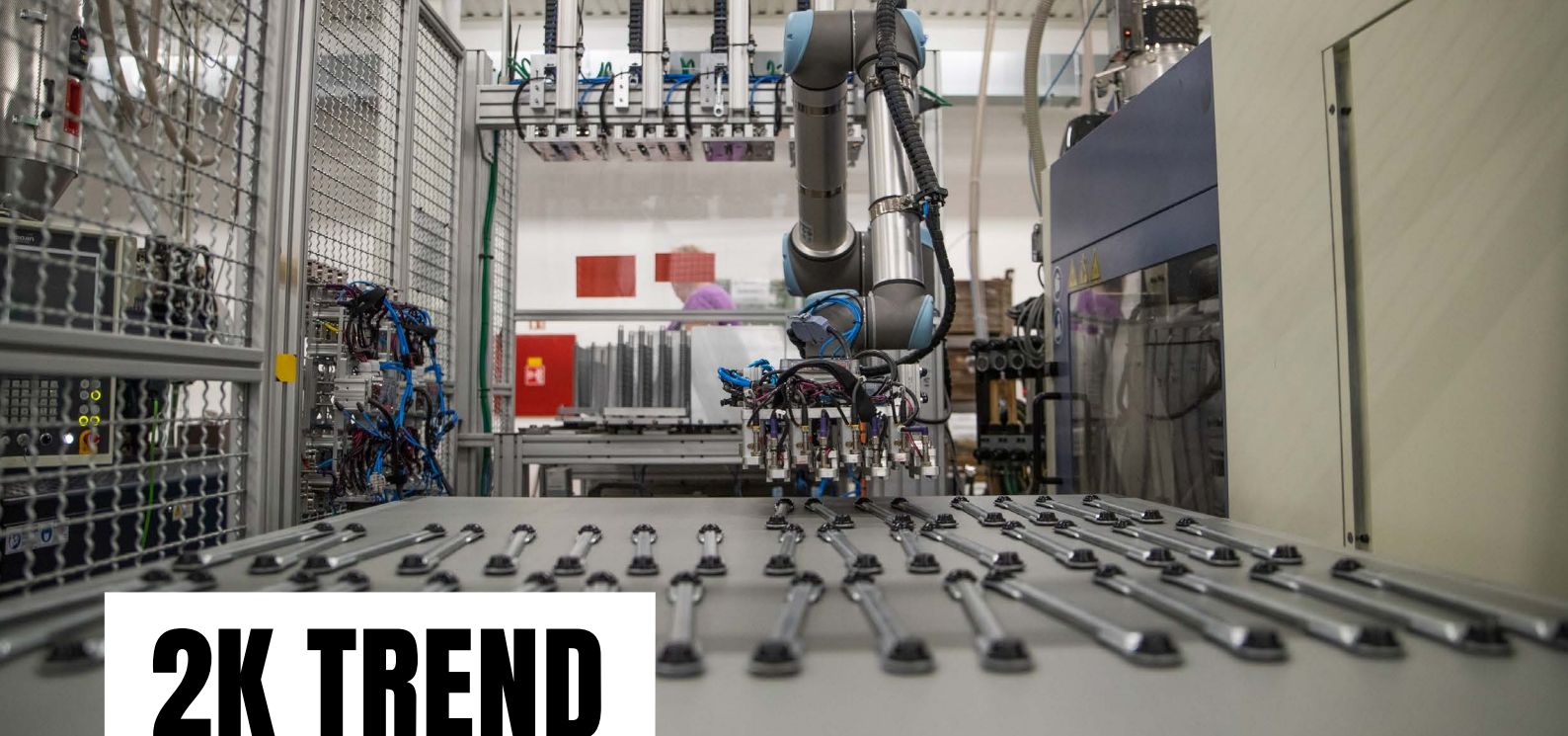
## THE SOLUTION

EVCO installed two UR5 and two UR10 robots that are mounted on wheeled carts so they can be moved around the factory floor to address different processes. One is deployed in an intricate assembly task that depends on integration with a UR+ certified force-torque sensor — a sophisticated application that was up and running in just two days. A packaging application uses the UR cobot's built-in palletizing wizard alongside injection molding machines, while a third application uses a UR cobot to harvest plates in EVCO's 3D printer farm.

## THE RESULT

EVCO saw ROI in six to nine months for its fleet of UR cobots, with additional savings in the reduction of workers' compensation costs due to repetitive injuries. Output and quality have increased, especially as EVCO can now easily run automated processes on a third shift with minimal human workers required — a key benefit when trying to hire for repetitive, boring jobs.

[See the video case study](#) ▶



# 2K TREND

**2K Trend AS manufactures high-precision injection-molded parts for major car manufacturers.**

## THE CHALLENGE

The skills shortage has left its mark on the manufacturing industry in the Czech Republic. Plastics manufacturer 2K Trend was forced to automate some of its production processes in order to organize its employees as efficiently as possible. However, the employees also needed to stay close to the pressing machine, so an industrial robot with a safety cage was out of the question. Additional requirements included stabilizing the manufacturing process and increasing productivity.

## THE SOLUTION

With the various requirements in mind, a collaborative robotics solution was the obvious choice for 2K Trend. The company opted for a UR10, which is able to work with employees without requiring a safety fence. The cobot currently secures the entire operation of the injection-molding machine by taking the plastic granules and placing them into the injection form, thus setting off an injection-molding cycle. At the end of the cycle, the robot takes the finished preforms and places them onto a conveyor belt for further processing.

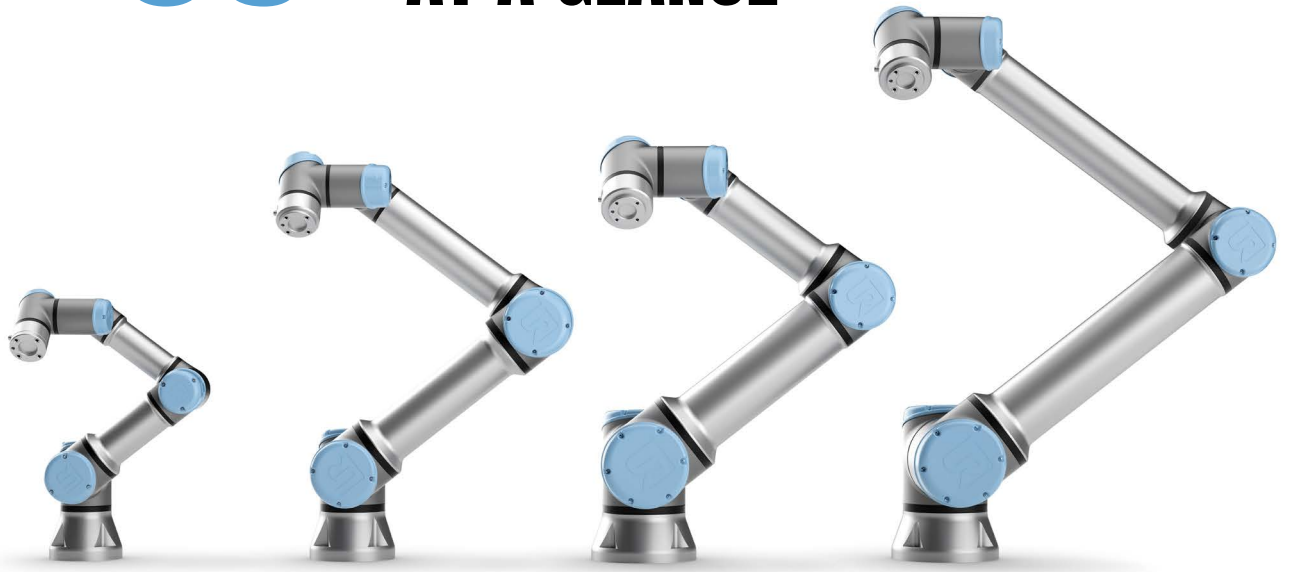
## THE RESULT

Integrating the UR10 has relieved the employees at 2K Trend from the complicated and repetitive tasks on the pressing machine as the cobot is able to operate the whole machine on its own. The UR10 cobot has since been dealing with repetitive activities that require high precision in handling completed preforms at 2K Trend for several years.

[See the video case study ▶](#)

# 06

## OUR COBOTS AT A GLANCE



### **UR3e** Small is beautiful

Our UR3e is a tabletop robot. Weighing in at just 11 kg (24 lbs), the UR3e is ideal for light assembly and workbench automation at payloads of up to 3 kg (6.6 lbs). Focus on the big picture and leave the UR3e to work on the details.

### **UR5e** The multi-tasker

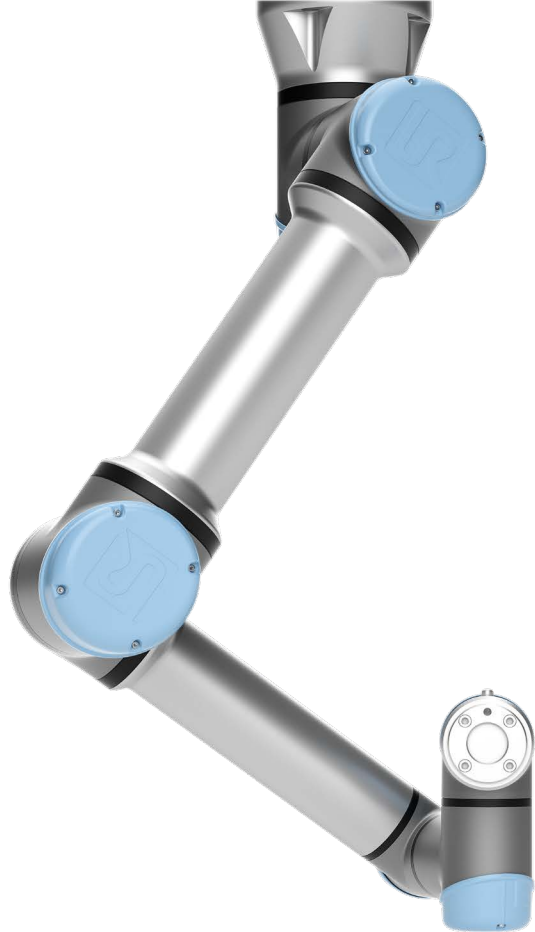
The UR5e has the inner poise to keep size and performance in perfect balance. The cobot combines a payload of 5 kg (11 lbs) and a reach of 850 mm (33.5 in), giving it enough versatility to tackle a wide range of applications with ease. Balance and versatility are the main strengths of our all-rounder.

### **UR16e** Built to do more

Our highest payload cobot is ideal for handling heavier payloads or several parts at once. The 16 kg (35.2 lbs) payload is more than any other cobot in this reach class of 900 mm (35.4 in).

### **UR10e** The workhorse

The UR10e offers the ideal combination of reach and payload, boasting a reach of 1.3 m (51.2 in) and a generous payload of 10 kg (22 lbs). The UR10 cobot has a reach comparable to a human operator.



# ASK OUR EXPERTS

TO FIND OUT MORE  
ABOUT AUTOMATING  
USING OUR COBOTS

## CONTACT

[ur.na@universal-robots.com](mailto:ur.na@universal-robots.com)

+1 844-462-6268

[www.universal-robots.com](http://www.universal-robots.com)

[blog.universal-robots.com](http://blog.universal-robots.com)

## FOLLOW US



**UNIVERSAL ROBOTS**