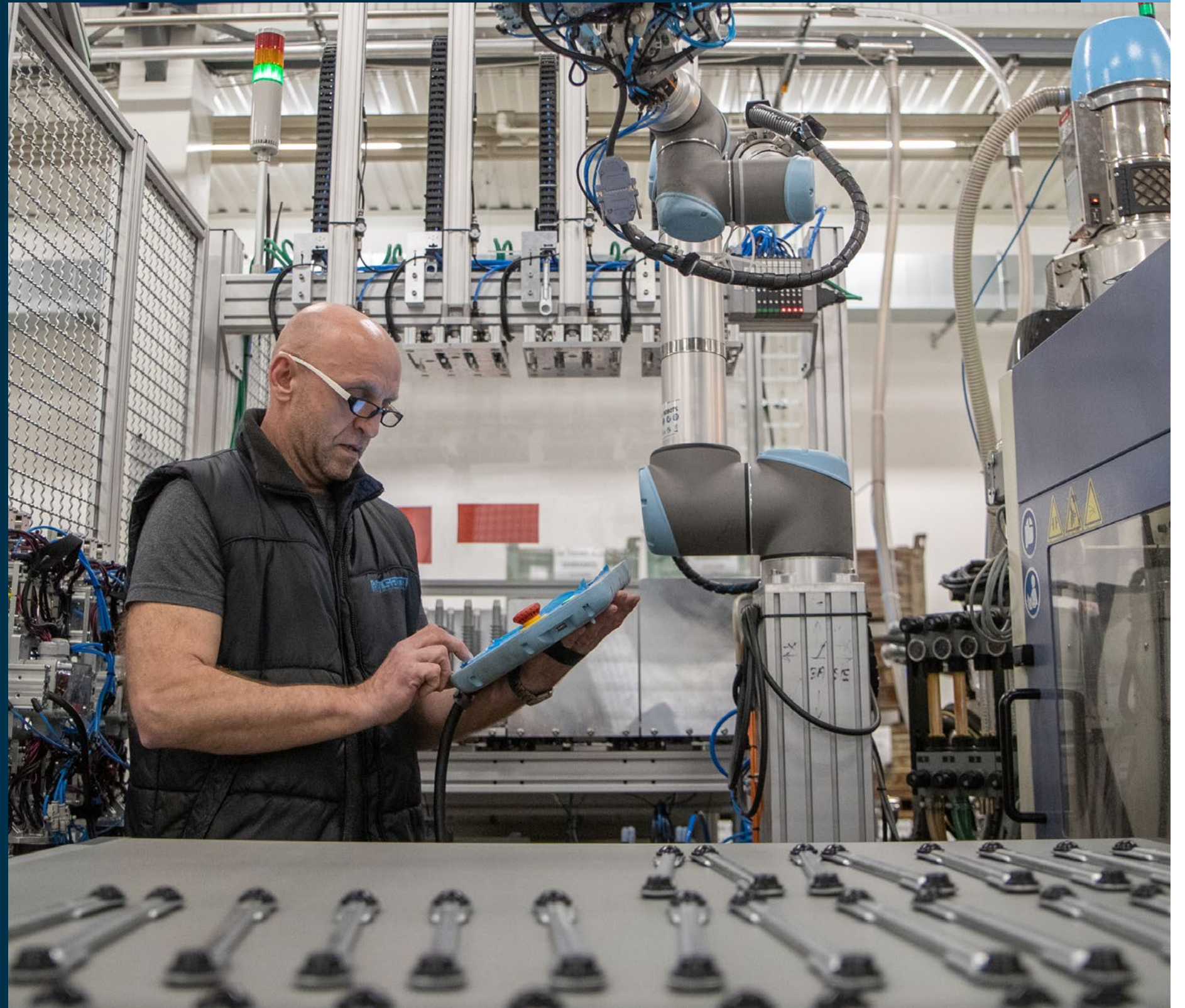


Collaborative robotics in the plastics industry.

Industry e-book

Published November 2021



01

Collaborative automation in the plastics industry.

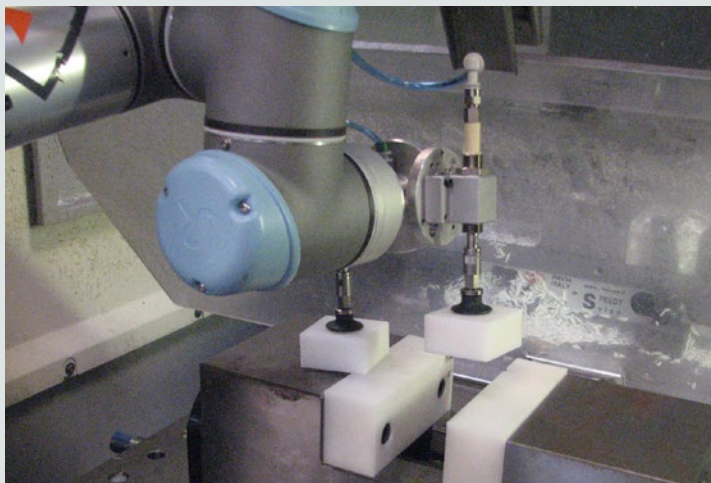
Small batches and a high degree of flexibility play a major role in production in the plastics industry, where manufacturing processes vary widely depending on the material. Collaborative robots provide the best way of increasing productivity even in small batches, while also relieving staff from repetitive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



02

Stay competitive and boost productivity.

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



>50k

Massive installed base

Universal Robots' 50,000+ cobot solutions have been deployed around the world in both tier 1 automotive suppliers and small machine shops, and thousands of facilities in between.

1/2

Simple to redeploy

Cobots can be reconfigured and programmed for a new task in as little as half a day.

90

Easy programming

After an online 90-minute course on [UR Academy](#), anyone can become a certified cobot programmer. There are even in-person classes for hands-on learning.

17

Collaborative-ready

The e-Series 17 standard adjustable safety functions effectively and easily mitigate risk in a work cell, following a risk assessment.

1

Quick payback

UR cobots routinely deliver payback within a year.

03

Significance of human-robot collaboration in the plastics industry.

Processing different plastics and polymers requires adaptation to manufacturing processes. Robotic arms are light; 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 Moulding

Cobots allow for almost complete automation in injection moulding applications while also saving space. They also guarantee uniformly high quality as well as constant dosing after many repetitions. quality even in rough and dirty environments.



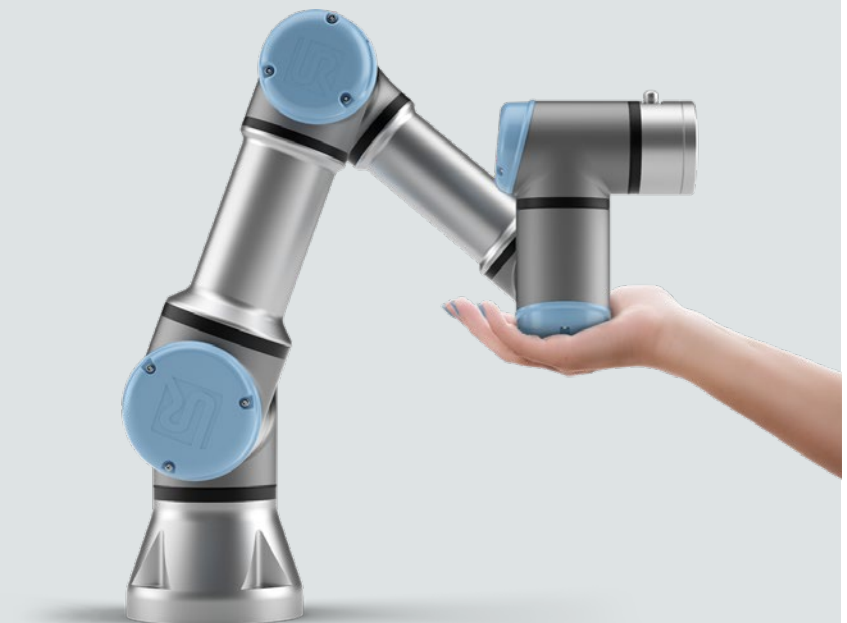
Pick & Place

Collaborative robots boost process accuracy and cut down on waste Cobots allow for complete automation in pick-and-place processes to continue on potentially 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.



CNC

Automating CNC machine tending allows quick reprogramming on robotic arms where needed, as well as mounting different end effectors and image processing systems.

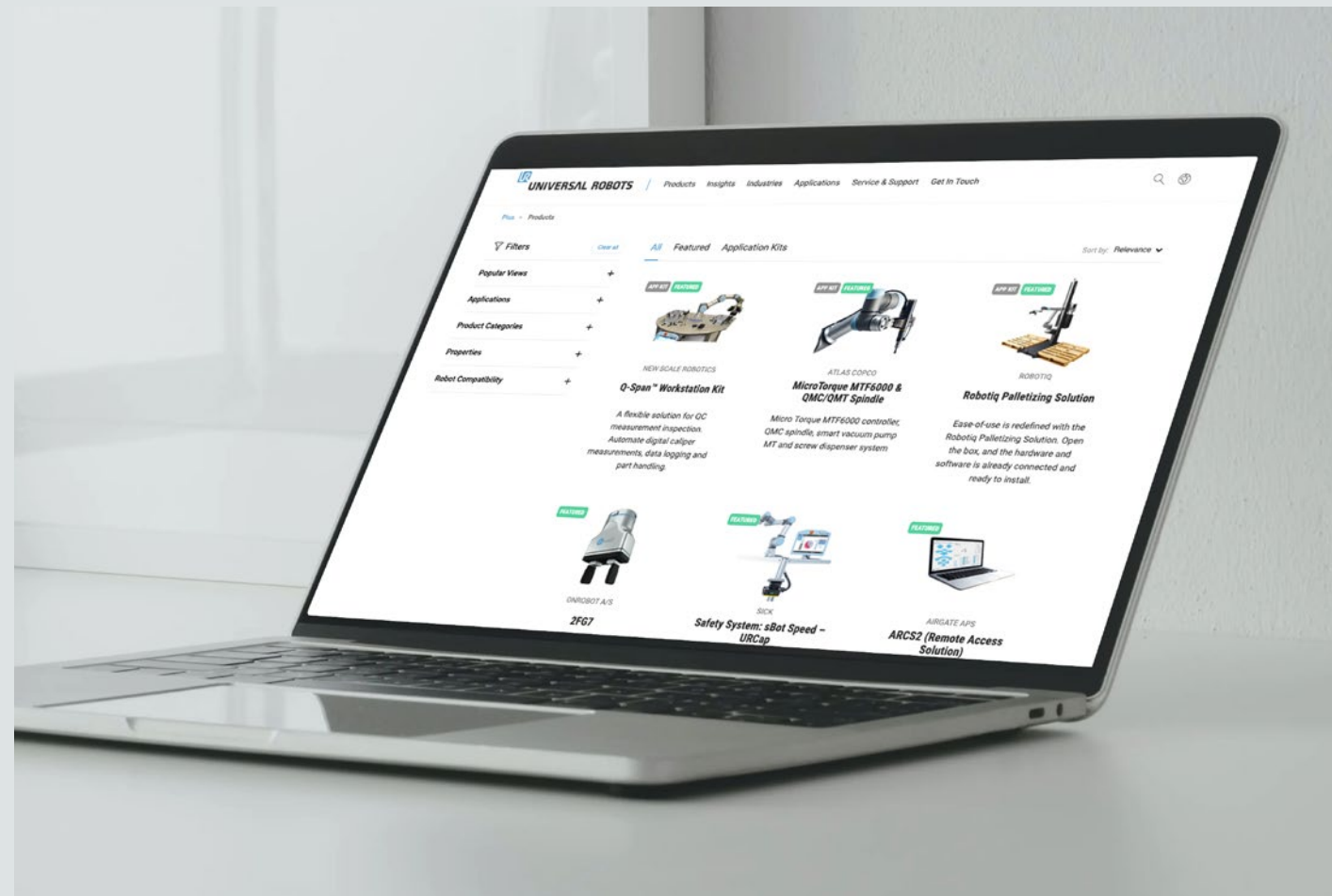


04

Automate easier than ever with UR+

The Universal Robots+ (UR+) ecosystem ensures smooth integration of 3rd 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 & Produce compatibility for guaranteed immediate deployment.



Plug & Produce

compatibility

Explore UR+ for a range of:

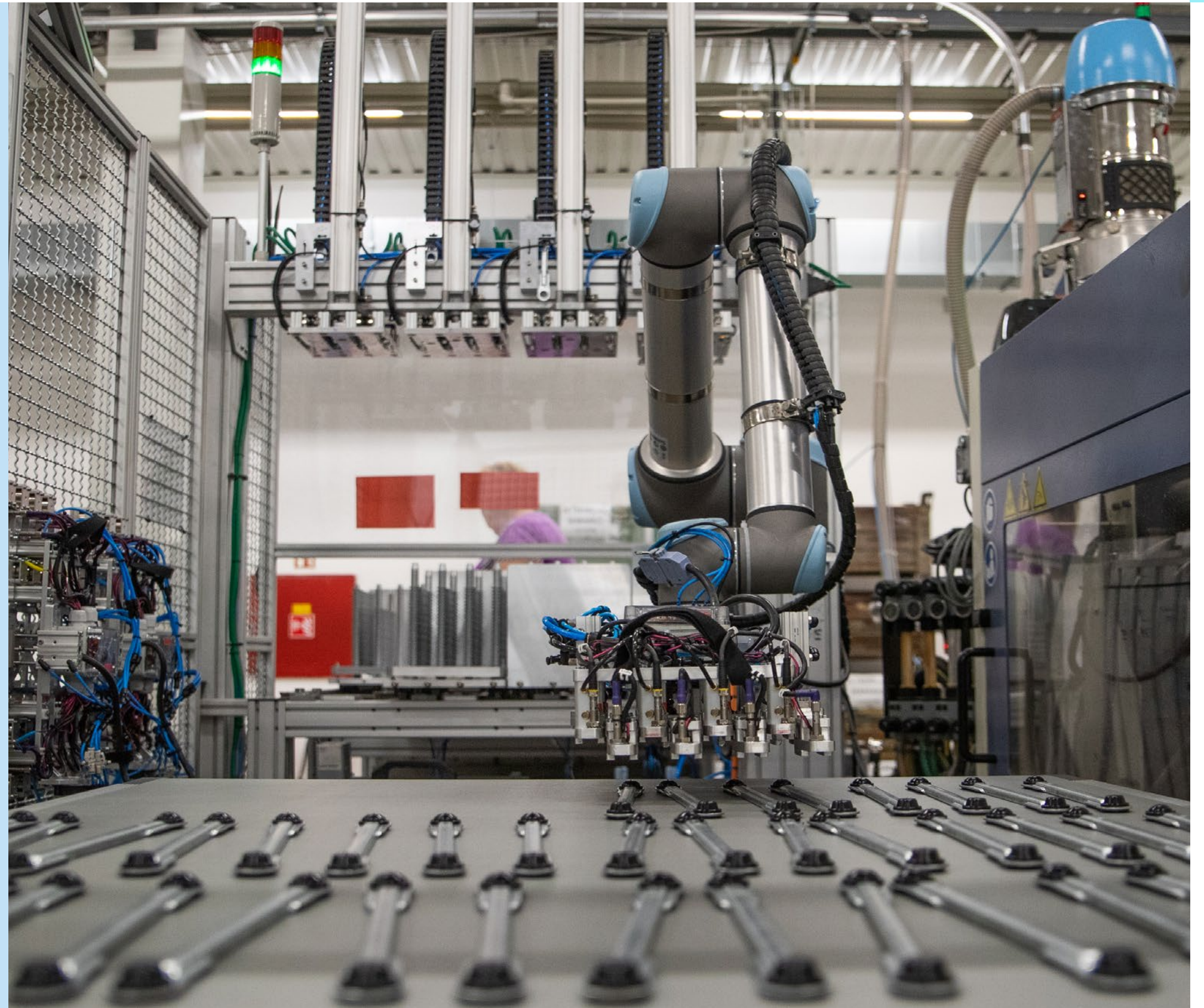
- Grippers
- Vision Systems
- Software
- Process Tools
- Hardware



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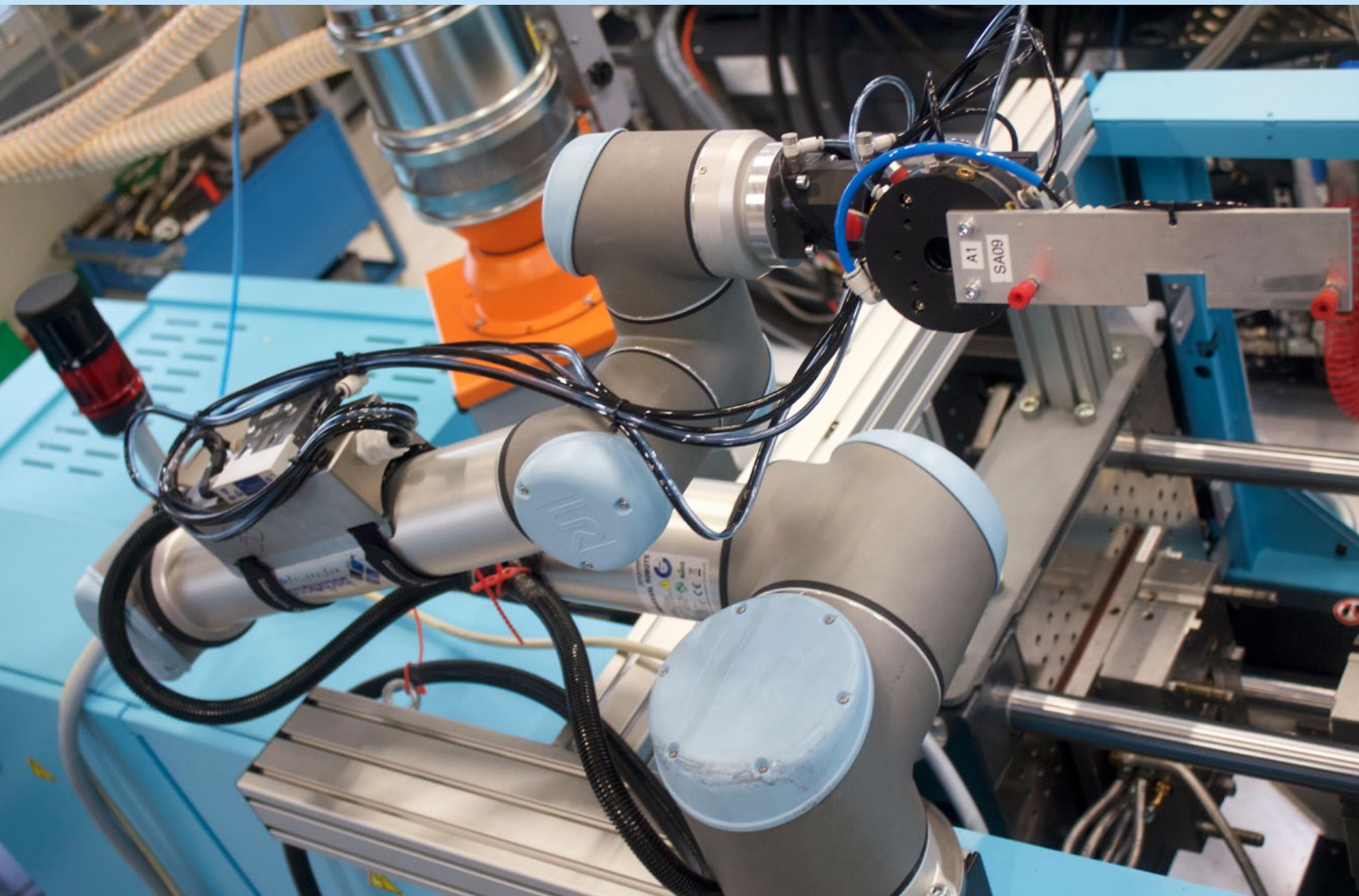
05

Plastics case stories
from around the world.



Founded in Malans, Switzerland, in 2003, Profatec AG has been supplying plastic solutions in bespoke forms for a variety of industries from automotive to pharma for more than a decade.

Profatec



“ We would not have had a chance against the low prices from China without our robots. It has made us so much happier to be able to move in a direction that will keep jobs in Malans while also relieving our employees from repetitive tasks.

Chris Battaglia
CEO

The Challenge

The company opted to include injection moulding in its range of services in 2007. One of the aims of deploying the cobots was to keep production in Switzerland and eliminate the need for solutions from outside markets. The robotic arms were required to tackle two major challenges: First, all the machines in production needed to be adapted in the shortest possible time for injection-moulding new plastic parts. Second, Profatec required short implementation times to make small production batches profitable.

The Solution

After intense negotiations and successful risk assessment, the company finally opted for a UR5, which is currently flexibly used on five injection-moulding machines and is easy for staff members to reprogram.

The Result

The UR5 has helped Profatec respond to orders more quickly and process them more profitably. In view of this success, the company invested in two more UR10s to increase production while reducing costs and further improving profitability. These automation solutions have allowed the company to keep its location in Switzerland and secure jobs.

OTV Plast is a Danish mid-sized plastic parts manufacturer that serves a variety of industries.

OTV Plast

The Challenge

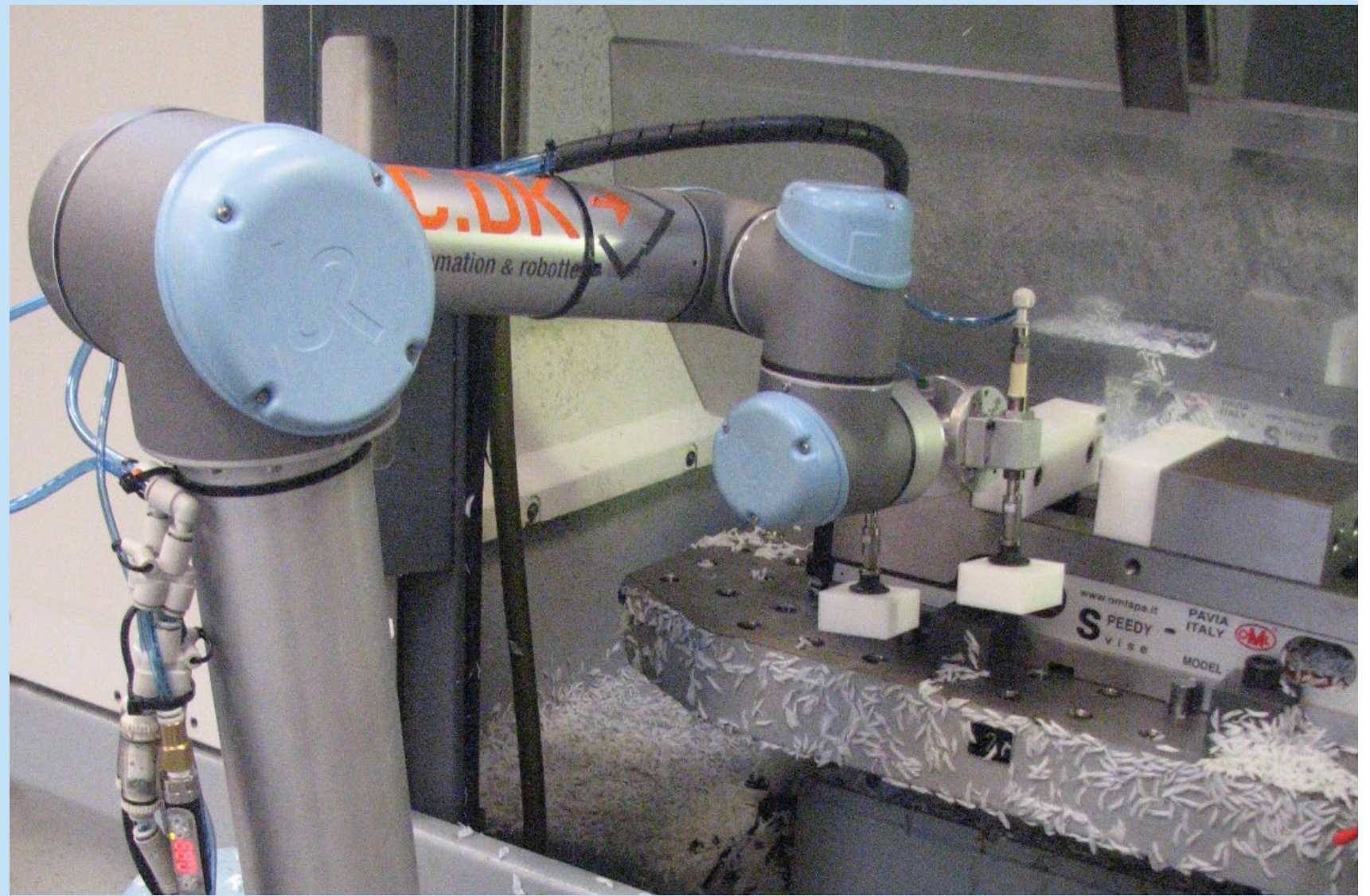
OTV Plast was looking for an automation solution that would help increase productivity throughout the company's operations. The robots would have to be compact enough for the limited space available while remaining affordable with a short amortization period in order to fulfil the specific requirements of the company. Apart from that, the robots would have to be deployed near staff members without requiring unwieldy safety fences and barriers.

The Solution

After taking all the criteria into consideration, our cobots were the only option to satisfy all the company's requirements. OTV opted for a UR5 that currently automatically tends a milling machine, relieving the employees from this repetitive and ergonomically adverse task.

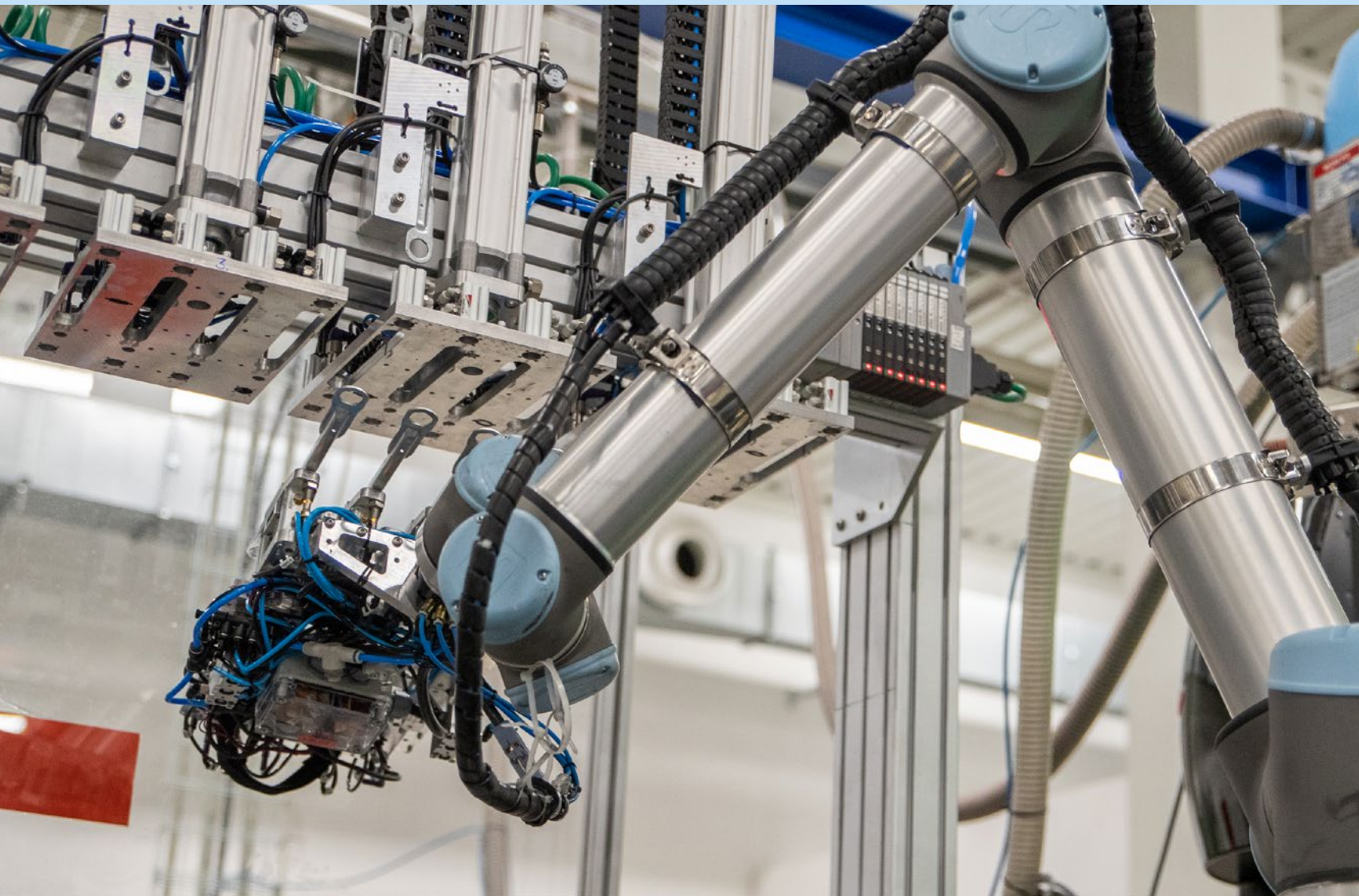
The Result

OTV saw an almost immediate increase in productivity – after integrating the cobot, the company saw output increase to 35% in total. This new technology has enabled the company to tender for projects that would previously have been out of reach. The mid-sized manufacturer has relieved its employees from heavy and repetitive work while also protecting its Danish location thanks to our cobots.



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

2K Trend



The Challenge

The skills shortage has also left its mark on the manufacturing industry in the Czech Republic. The plastics manufacturer 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

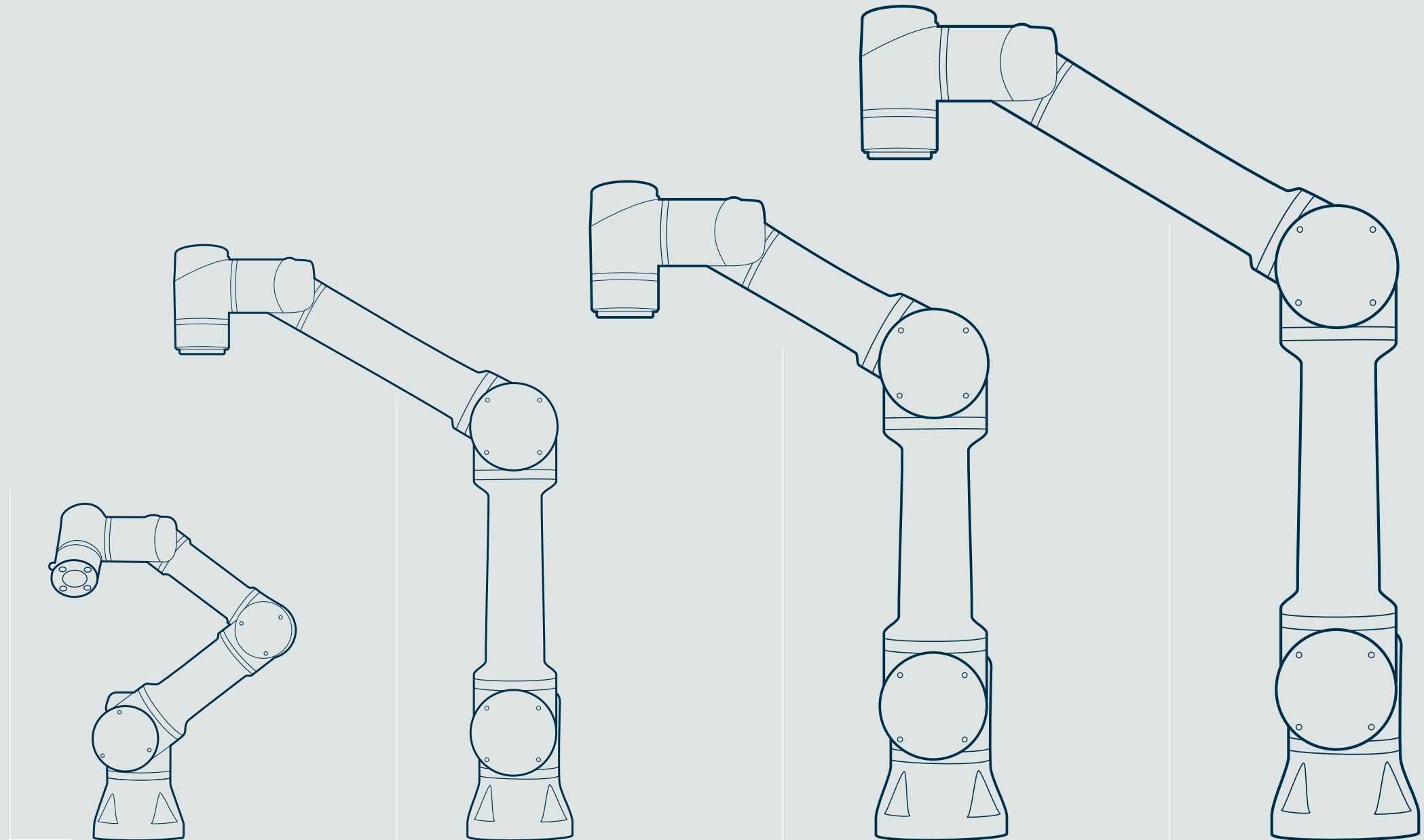
With the various requirements in mind, a collaborative robotics solution was the obvious choice for 2K Trend. The company opted for a UR10, which is able to work with employees without requiring a safety fence. The cobot currently secures the entire operation of the injection-moulding machine by taking the plastic granules and placing them into the injection form, thus setting off an injection- moulding 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.

06

Our cobots at a glance.



UR3e

Small but powerful, the UR3e has a payload of 3 kg and reach radius of 500 mm. With 360-degree rotation on all wrist joints and infinite rotation on the end joint, this tabletop cobot handles high precision tasks and light assembly tasks with ease.

UR5e

The medium-sized member of the Universal Robots family is ideal for automating low weight processing tasks with its 5 kg payload and 850 mm reach radius. Easy to program and fast to set up, the UR5e strikes the perfect balance between size and power.

UR16e

With its 16 kg payload, the UR16e helps reduce the costs, injuries, and downtime associated with heavy part handling. A small footprint and 900 mm reach make the UR16e ideal for applications such as heavy-duty material handling and CNC machine tending applications, including multipart handling.

UR10e




Capable of automating tasks up to 12.5 kg with the same reliability and performance characterized by the e-Series, the UR10e has a reach radius of 1300 mm. This enables it to carry out tasks like packaging and palletizing in facilities where there is a greater distance between different operating areas.

Ask our experts
to find out more
about automating
using our cobots.

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