UNIVERSAL ROBOTS

Collaborative robotics in the **metal industry.**

Industry e-book

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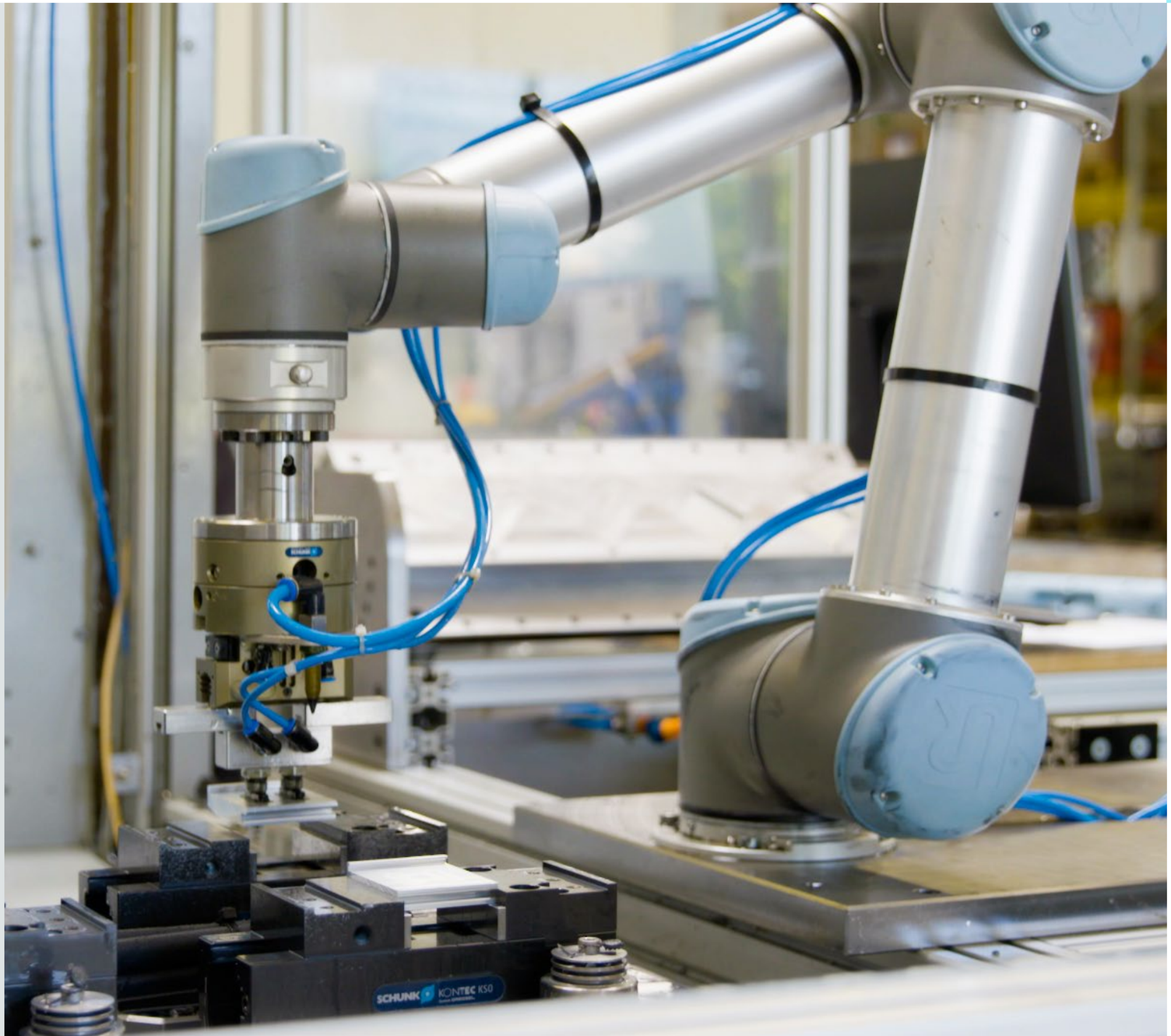
01

Collaborative automation in the metalworking and machining industry.

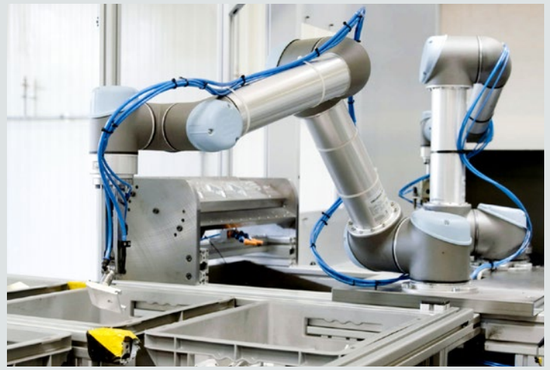
Constant industrial and technological progress have made the metalworking and machining industry highly competitive. The new challenge is to increase productivity without compromising on quality. The field of collaborative robotics provides one of the most promising avenues in meeting this challenge.



02

Stay competitive and boost productivity.

Collaborative robots (cobots) provide highly attractive opportunities for automation in metalworking and machining 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 metal industry.

Metalworking and machining involve a variety of repetitive tasks using heavy machines that place physical strain on employees. Automation using collaborative robots is an ideal way of relieving employees from this strain while also giving production added value.

Our cobots can be used in a variety of automation solutions and are quick and easy to adapt to different machinery and activities, making them ideal for small-series production runs.

Assembly

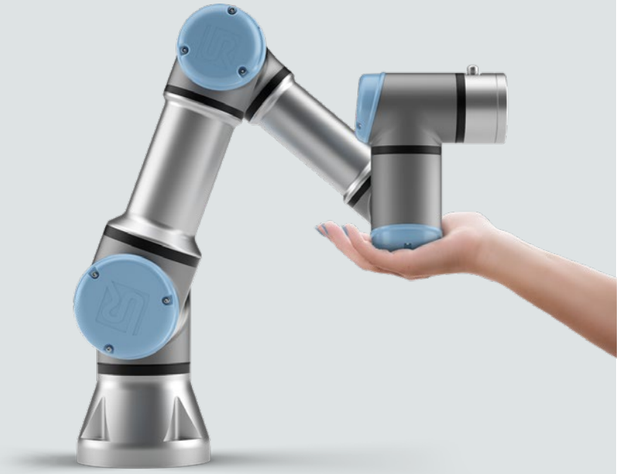
Our cobots are ideal for increasing production rates and process quality while lowering the risk of accidents for employees working near heavy machinery.

CNC

Automating CNC machine tending is fast and efficient, with quick reprogramming on robotic arms where needed, as well as the ability to mount different end effectors and image-processing systems.

Gluing, Dosing & Welding

Cobot arms work with high precision, which increases efficiency in gluing and welding while reducing waste.

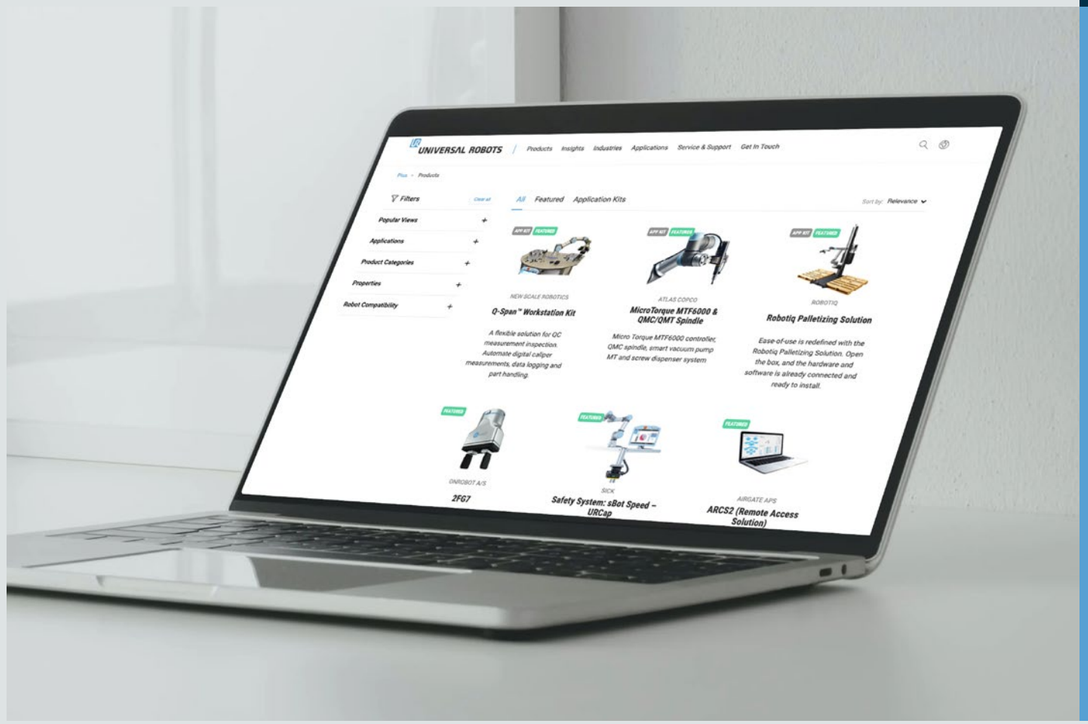


04

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

universal-robots.com/plus

05

Metalworking and machining case stories from around the world.

Automation is an integral part of the production strategy at Fluidics Instruments, an oil burner component manufacturer based in the Netherlands.

Fluidics

Cobots have not only helped us rise to the challenge presented by the skills shortage, they also give us the opportunity to inspire our staff with exciting and challenging new projects at Fluidics and boost staff loyalty.

Jan van Dongen
Technical Director

The Challenge

Companies in the metal industry need to prove their innovative acumen to face off the ongoing skills shortage. Increasing productivity and turnover without hiring new staff requires creative automation solutions. However, industrial robots are largely unsuitable for increasingly variable production batch sizes.

The Solution

Fluidics has put twelve UR cobots to flexible use. If one of the CNC machines is temporarily out of operation, the robotic arm simply tends to a different machine. Two UR5 models and one UR10 were mounted onto mobile workstations to achieve this level of flexibility. The smallest of our cobots is also in operation with a total of seven UR3 cobots manufacturing oil jets out of eight small parts at one assembly station.

The company also uses a UR5e equipped with a camera system to pick up sensitive work-pieces from a CNC machine.

The Result

These cobots allow Fluidics to supply customers Dutch-made quality products while expand-ing on their production opportunities regarding batch sizes and product range. The company always factors in the integration of a new cobot when purchasing new equipment.

The special-purpose machine manufacturer with an in-house design office began as a two-person company and has since developed into a manufacturing operation with fourteen employees, its own CNC machines and a UR cobot.

Endutec

The Challenge

Endutec once had to rely on purchased parts to build its special-purpose machines. The company purchased a CNC machine in order to become more independent and increase its influence on production quality. However, the machines needed regular retooling and reprogramming to make individual parts and small batches, and this required two-shift operation. The skills shortage meant that the machines were standing idle at night, forcing the company to look for automation solutions.

The Solution

Endutec opted for a UR10e to automate CNC machine tending; the cobot's simple programming and integrated force-torque sensor allows precise workpiece placement.

The company developed a bespoke loading station to go with the automation solution – the cobot picks the workpieces from a shelf and puts them back after machining. Even bulky parts are ideally positioned for the cobot to pick them up and set them down with ease. The cobot loading station saves space; its flexible set-up allows it to be moved quickly using a lifting cart for it to tend to another CNC machine.

The Result

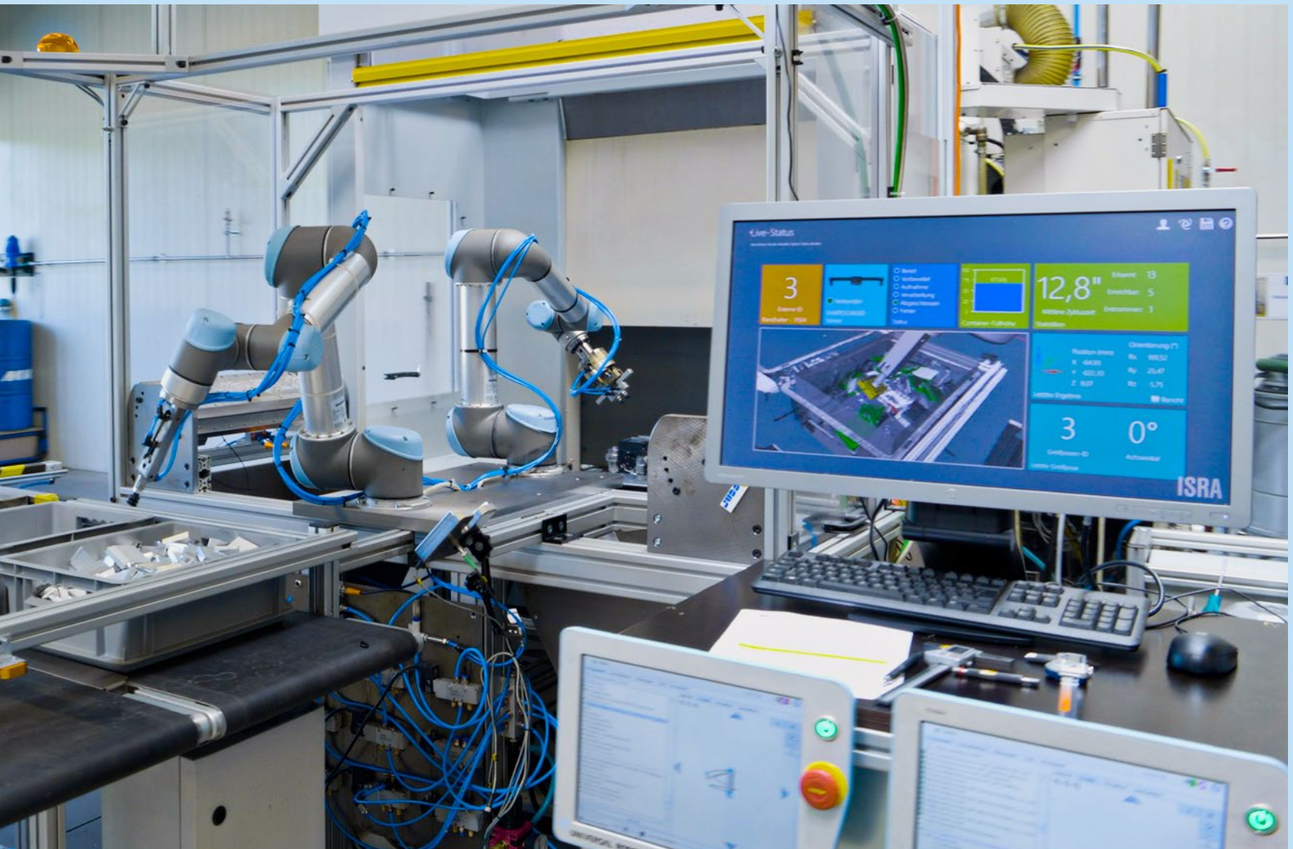
The cobot not only takes care of the night shift but also relieves its human counterparts from the monotonous job of tending the machines during the day. The employees use the time gained to set up new CNC programs, thus avoiding errors and making substantial improvements in efficiency.

> **"The beauty of the cobot is that our employees see it as a colleague. Before finishing up for the day in the evening, they simply transfer the remaining jobs for the robot to deal with overnight. What's not to like about this kind of colleague?**

Andreas Flieher
CEO

Jenny | Waltle has been making parts in aluminium, metal and plastic for more than thirty-five years.

Jenny | Waltle



> **We've seen an unbelievable increase in quality by using cobots from Universal Robots. We haven't made a single faulty part since installing the cobots. This will enable us to supply our customers with products in top quality in the future as well.**

Daniel Waltle
CEO

The Challenge

Achieving growth while also designing production processes to cut down on waste has been proving increasingly challenging to the company due to the skills shortage. Fast retooling for new jobs as well as a high degree of flexibility play an essential role in producing small batches.

The Solution

Jenny | Waltle currently has two UR5 cobots tending a CNC milling machine using bin picking; the cobots work right next to their human counterparts. The cobots handle up to 2,400 aluminium parts per day in two shifts.

One of the cobots is connected to a 3D camera system to visualize the complex surface structures and exact arrangement of the workpieces. The vacuum gripper on the cobot then picks each part from the box. If the cobot picks one of the parts out the wrong way around, it puts it back into the box and tries again after the next scan. Once the part is correctly seated, the UR5 places it into another tray where the second cobot brings the components into exact position in the CNC milling machine's hydraulic vice. After the machine has processed the part, the cobot picks up the part and places it into the last tray for the first cobot to place into an empty box.

The Result

After commissioning the two UR5 cobots, Jenny | Waltle programs the system for new jobs and continuously optimizes the grippers, vices and trays. The company has given the cobots' workplace a modular design with programs for twelve different aluminium parts stored and ready to use on the cobots.

Using the robotic arms, the supplier increased output by 11% within twelve months in this application area while also achieving zero-defect production.

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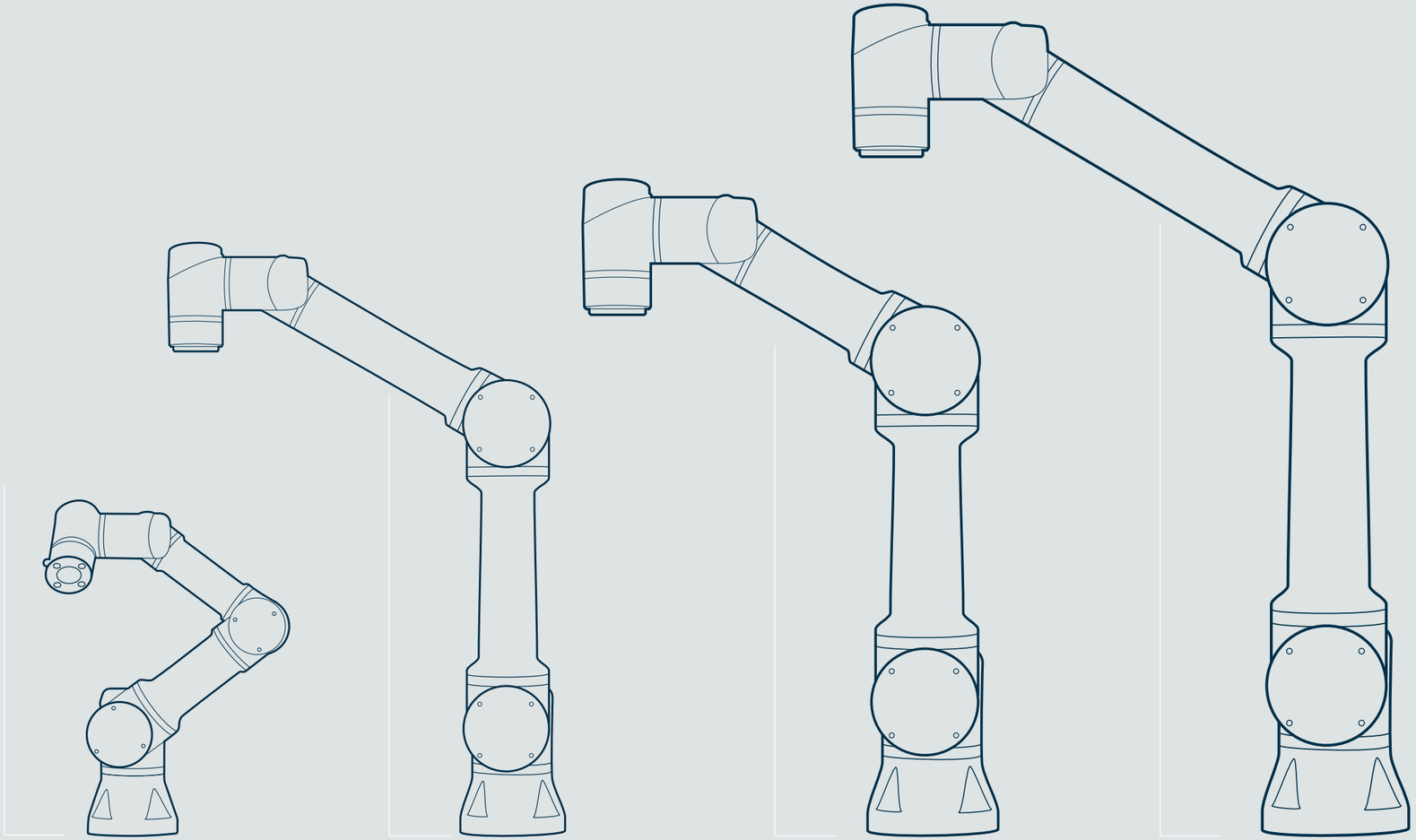
Our cobots at a glance.



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.

Contact

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