

Collaborative robotics in science and research.

Industry e-book

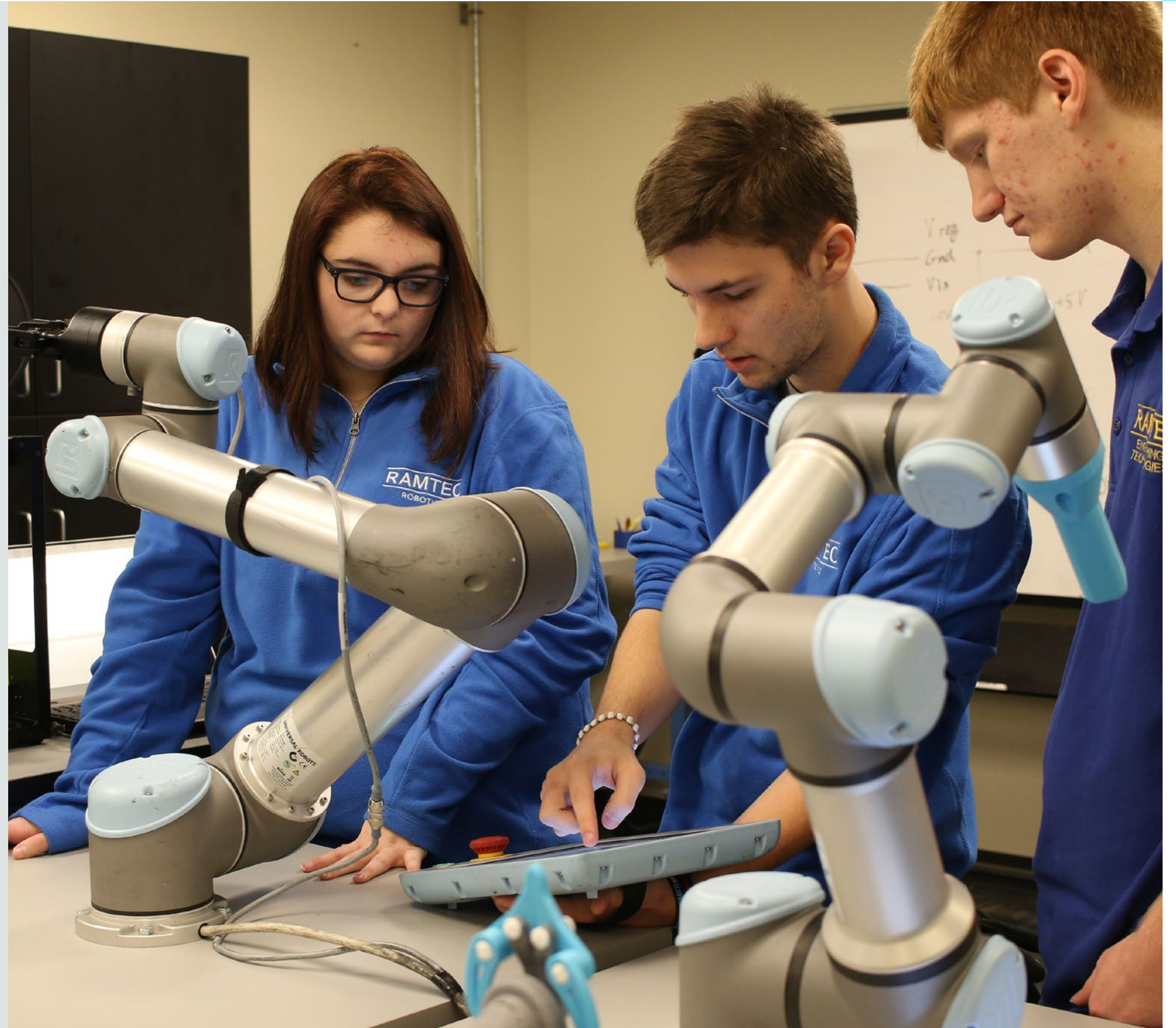
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01

Activities in science and research.

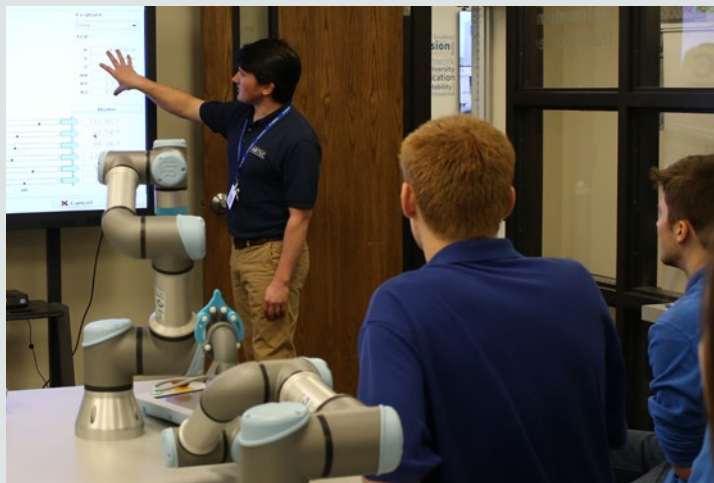
Data collection from long-term analysis and testing is one of the cardinal principles in science and research. Collaborative robots help automate analysis with high precision delivering as much repetition as is necessary. Individual automation solutions minimize the time required for research teams, freeing up time for inspiration and innovation.



02

Stay competitive and boost productivity.

Collaborative robots (cobots) provide attractive opportunities for automation in science and research 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 science and research.

Science and research activities involve precise analysis and time-consuming data collection. High test repeatability plays a major role in the quality of the results. Collaborative robots give measurements precision and reliability, and are also compatible with a variety of laboratory peripherals while also saving space.

Our cobots are extremely quick to implement and adapt to different processes. They provide a variety of automation solutions in every-day activities:



Lab Analysis & Testing

Collaborative robots help automate complex research projects; they work 24/7 while maximizing efficiency in the space available. Seamless integration with laboratory peripherals rapidly increases repeatability in test analysis while ensuring consistently quality.



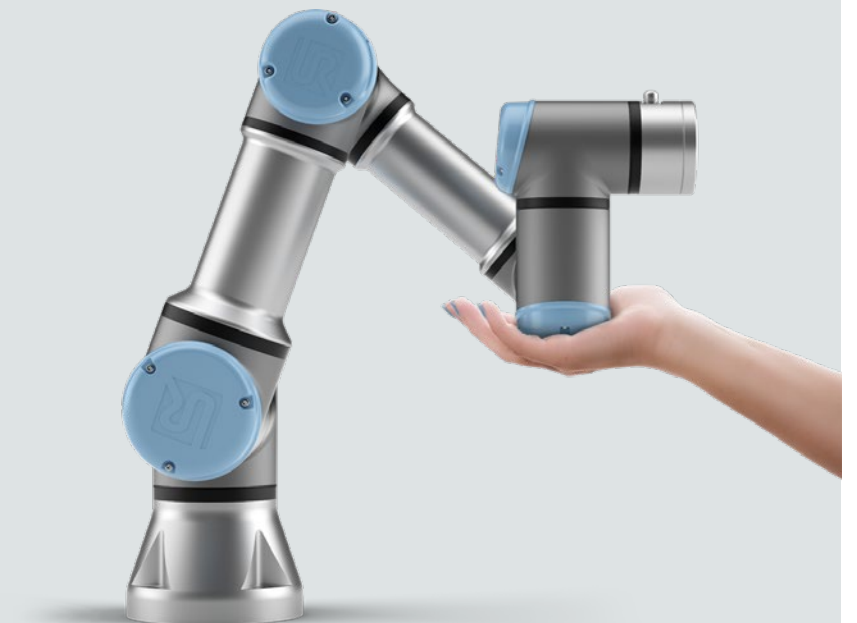
Pick & Place

Collaborative robots boost process accuracy and cut down on waste. Cobots allow for complete automation in pick-and-place processes to work additional shifts. The lightweight design and small footprint mean that the robotic arms are suitable for operation and retooling for various processes in constricted spaces.



Machine Tending

Cobots increase production rates in this monotonous activity while relieving employees from this unergonomic task.

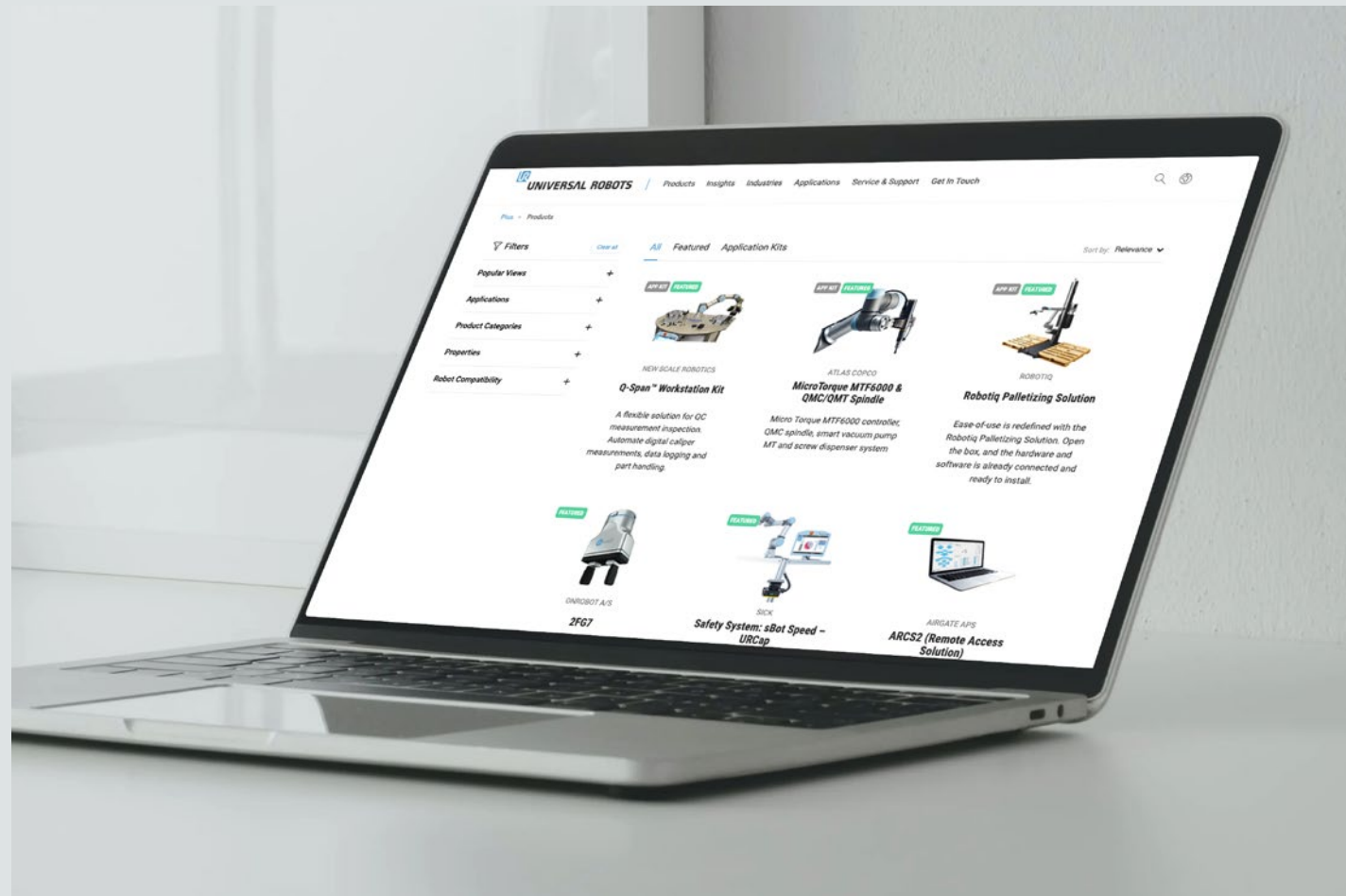


04

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:

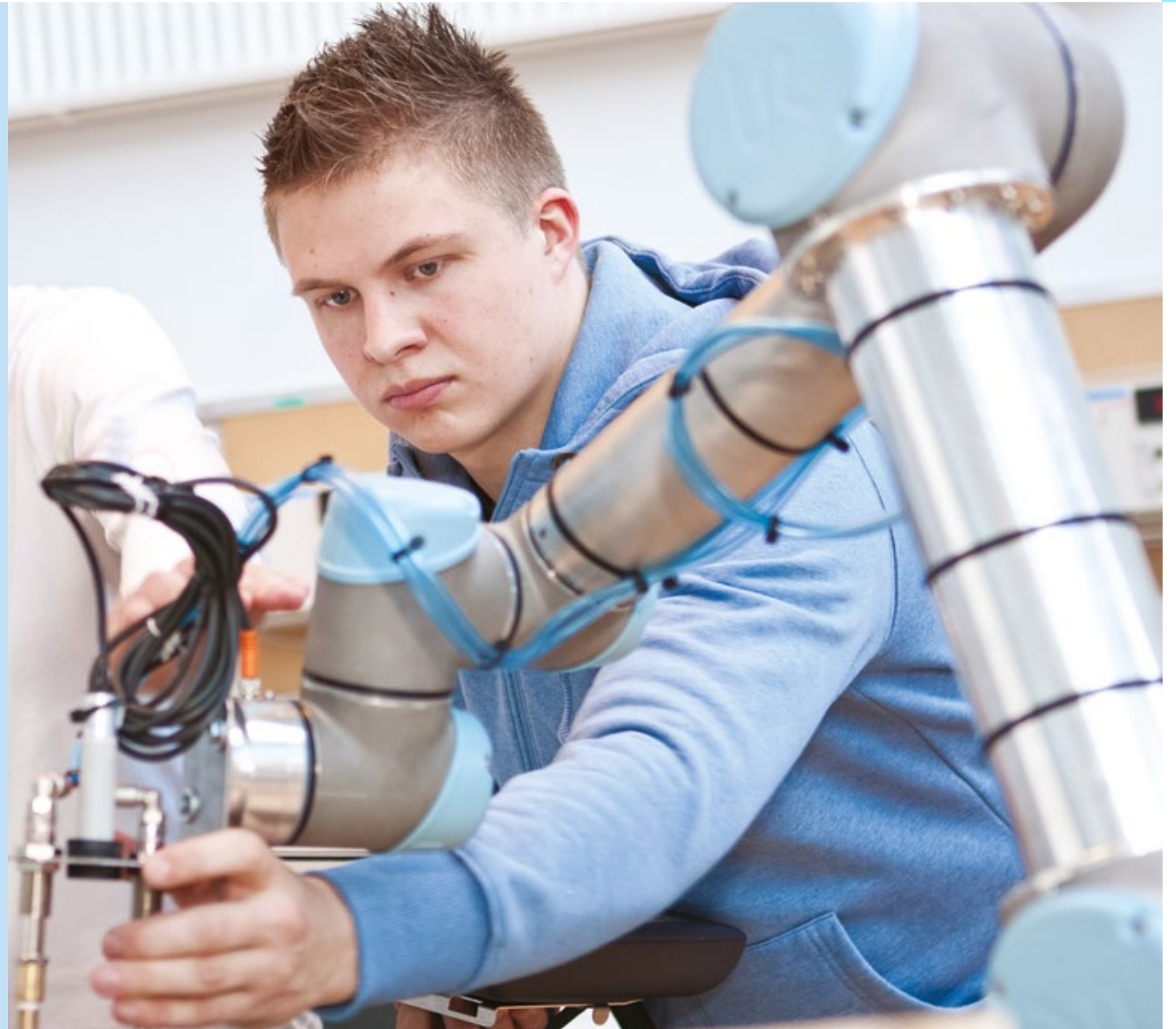
- Grippers
- Vision Systems
- Software
- Process Tools
- Hardware



universal-robots.com/plus

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**Science and research
case stories**
from around the world.



Denmark's Jydske Haandværkerskole (DJH) vocational college has invested in collaborative robots to introduce its students to the world of automation.

DJH



“ The robot is unique in our learning institution. It doesn't have to be fenced off and it's safe for our students to work around it. It's easy to move and integrate into systems with other devices, allowing students to select the exact project they have planned.

Anton Lejsgaard
Teacher

The Challenge

The vocational college aims to include robotics and automation in its curriculum in order to introduce students to this technology during training. The school needs to find user-friendly, intuitive, mobile and affordable industrial robots in order to provide a solution to be integrated into various study projects.

The Solution

The college has purchased one of our robotic arms at a third of the price charged for similar solutions on the open market. The students use only their creativity and the robot's graphical user interface to program it to pick goods from storage and distribute them across three different stacks at high precision. The students are able to implement the projects they have envisaged quickly and at a high level of accuracy using the intuitive user interface and integration with other peripherals.

The Result

The success of the project has led to plans for the school to purchase additional cobots for a new specialized technical training programme. As a training institution, DJH aims to follow the latest developments in preparing its students for the reality of everyday life in industry. This is relatively easy to achieve with our robots.

AGH University of Science and Technology is Poland's largest university. The university has integrated collaborative robotics into its everyday research activities with two innovation projects at once.

AGH University

The Challenge

AGH is working on developing a specialized robot station for gynaecological and urological treatments. The purpose of the robot is to implant stem cells into the body. The process requires extremely high precision and reliability that humans can hardly achieve. The university is also testing robots for the production of cytotoxic drugs. Staff members are only allowed near these highly toxic substances for a few hours at a time. The aim of using a robot is to increase efficiency in manufacturing these materials.

The Solution

AGH University decided on a UR5 cobot for its simple use combined with its high precision and safety. The robot's ability to compensate for the influence of gravity also clinched the decision – a unique feature in the UR5 robot that allows it to keep its position even when it is switched off. This is especially important when the cobot needs to measure and reproduce hand movements such as in medical treatment.

The Result

After completing the project at the gynaecological and urological ward, the UR5 remains at the university for use in teaching. We invite students to add more functionality to individual projects and expand the range of applications for our robot. This also gives students and research staff a unique opportunity to develop their own innovative approaches.

“ We chose the UR5 robot from Universal Robots for its unique features such as gravitational compensation, which allows it to keep its position even when it's switched off. This is especially important for us when using robots to measure hand movement trajectories in actions that require precision, accuracy and safety.

Grzegorz Karpiel, Ph.D. Eng.
AGH faculty of mechanical engineering and robotics



The RAMTEC Career Center, Ohio, is the largest robotic training centre in the United States. The centre provides courses for students at middle school as well as industry experts hoping to counteract the skills shortage in the US.

RAMTEC



“ Robots from Universal Robots do not need to be fenced in so we can purchase several models at the price of one industrial robot with a safety cage. We can move them around between tasks as there are so many things our students can do with a cobot.

Ritch Ramey
Robotics Coordinator

The Challenge

The training center aims to keep one step ahead in production developments and provide its students with the best possible preparation in using industry-standard equipment. RAMTEC also aims to counter the skills shortage at two million unfilled vacancies projected in the US as a production location. According to RAMTEC, an ideal training program for the manufacturing industry should include robotics.

The Solution

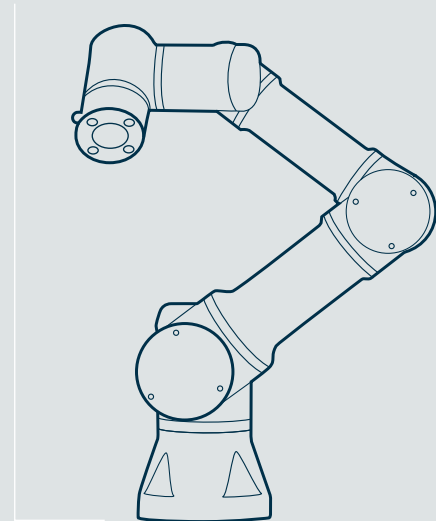
The center opted for our collaborative robots to familiarize trainees with robotics. Our cobots can be reprogrammed and adapted to the level of the operator within minutes. This allows a broad range of ages and capability profiles to use the robot; from fifth-graders to qualified technicians. The cobot's safety features eliminate any concerns at students programming a genuine industrial robot at RAMTEC.

The Result

The intuitive user interface in combination with our extensive free online training courses help thoroughly prepare our trainees at RAMTEC for a future in industry. Cobots allow the training center to teach groups of people with extremely diverse capabilities to operate robotic equipment cost-efficiently with little effort.

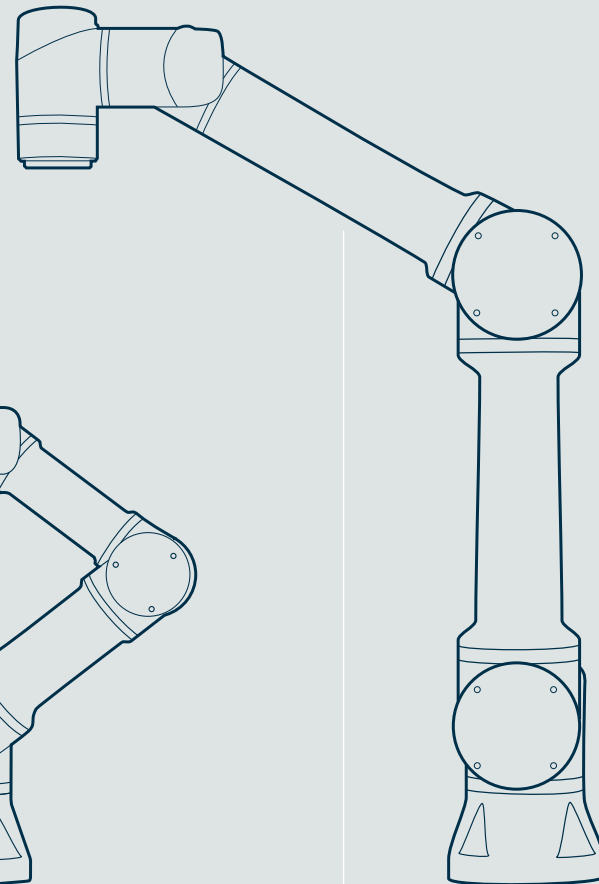
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Our cobots at a glance.



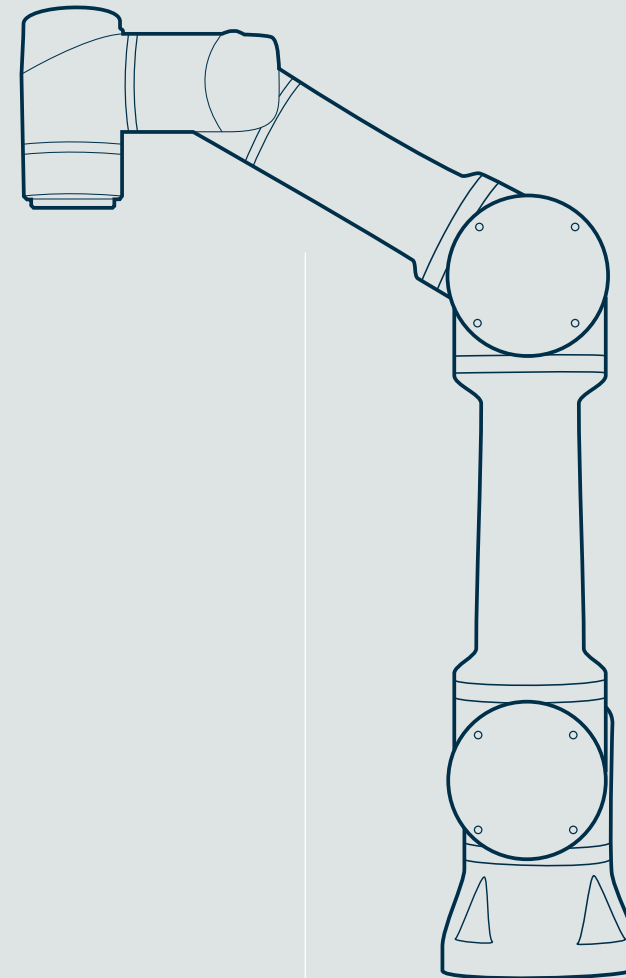
UR3e

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.



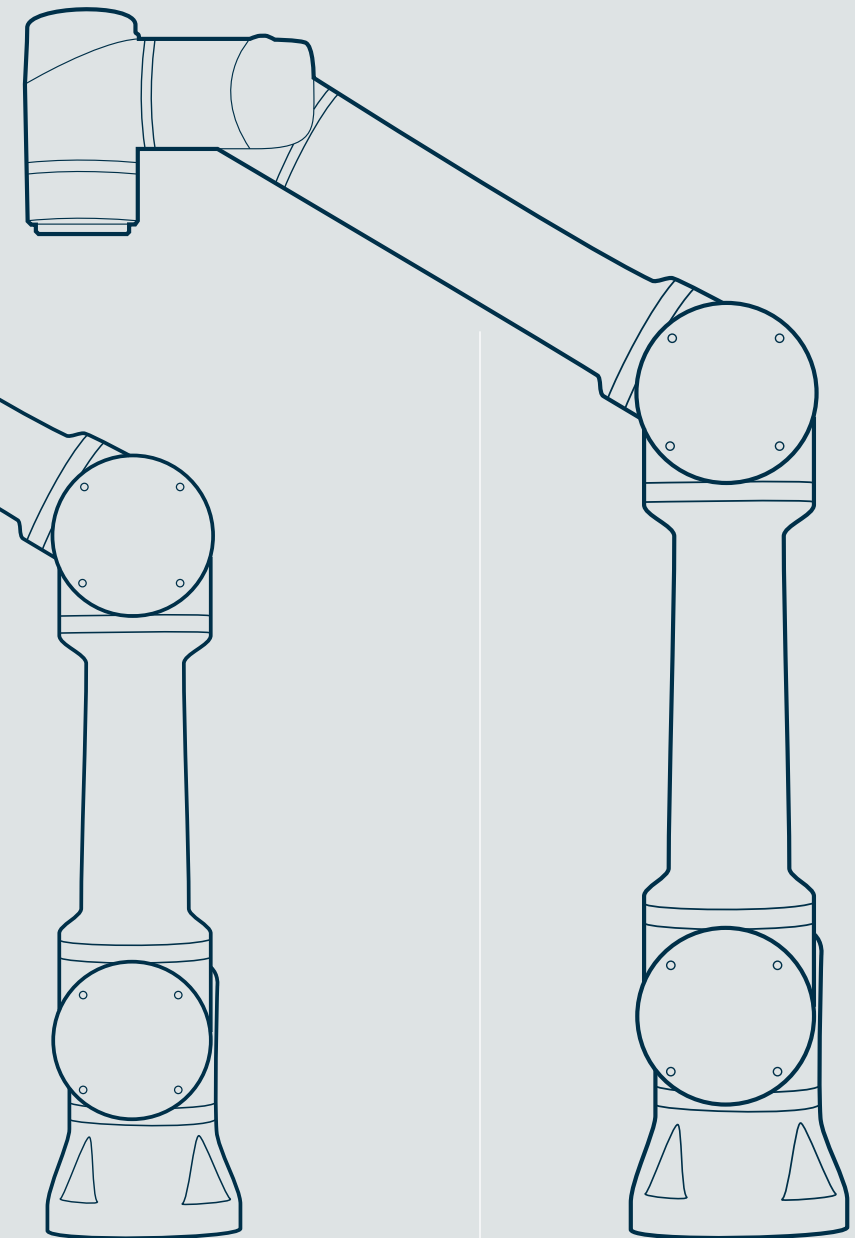
UR5e

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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