

# Flip the script on manufacturing labor shortages.

Collaborative robots free skilled workers for high-margin work, letting you focus on productivity instead of labor.

## Reference guide

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# The labor shortage in manufacturing has become a long-term demographic issue, not a short-term problem.

**Collaborative automation lets you focus on your productivity needs, easing the impact of labor on your profitability and growth.**

Attracting and retaining a quality workforce is the number one challenge facing manufacturers according to two-thirds of respondents to the most recent National Association of Manufacturers (NAM) survey. The difficulty in hiring manufacturing workers predates the COVID-19 pandemic by nearly a decade and looks to be the new normal. A National Public Radio report in December 2020 showed 475,000 manufacturing job openings across the US, and nearly half of respondents to the NAM survey expect to increase their manufacturing staff by more than five percent in 2021.

The problem is finding people to fill those positions. Baby boomers represent 27 percent of the manufacturing

workforce in the US, but 10,000 of them reach retirement age every day. And for the most part, younger workers aren't interested in filling the gaps. The manufacturing labor shortage has become a long-term demographic issue that demands a new approach.

Cost-effective, flexible collaborative robots (cobots) ease labor's impact on manufacturing and give you an alternative approach to drive productivity within your current production layout and with existing workers. Cobots take on hard-to-staff, repetitive tasks; improve productivity, output, and quality; and provide desirable job opportunities for skilled employees.



↑ At Tool Gauge in Tacoma, Washington, two UR cobots deliver labor savings up to 75% while doubling production in glue dispensing and CNC machine tending applications.



**It became clear to us that the way that we can compete is not by adding more bodies but by adding more technology, and then adding more value using that technology."**

**Jim Lee**  
General Manager  
Tool Gauge

# Flip the script: replace labor issues with productivity goals.

**With business challenges that range from trade and supply-chain uncertainties to rising healthcare and insurance costs, you need to increase productivity to drive profits and growth.**

Automation allows you to flip the script by reducing the time and cost to convert raw materials and components to final products, without being limited by available labor for undesirable tasks.

By focusing on productivity, you drive value creation, which contributes directly to the bottom line. Of course, productivity issues vary by company and over time. Once you define the productivity challenge you need to solve, you can deploy the ideal cobot for your needs.

## What's your productivity goal?

- Increase output without additional labor costs
- Increase capacity and grow business with current customers
- Increase capacity to add new customers
- Increase machine utilization and overall equipment (OEE) and labor effectiveness (OLE)
- Maintain output and reduce overtime and hours worked
- Maintain output without additional machinery or increased floor space
- Maintain output without adding a second or third shift
- Maintain output while reducing overhead
- Lower costs, increase margin, or reduce prices to gain market share



"The UR5e does in 4 hours what it would take manual labor 2-3 days to accomplish. This progress has made it possible for us to compete with overseas manufacturers and bring back manufacturing jobs to the U.S."

**Geoff Escalette**  
CEO, RSS Manufacturing

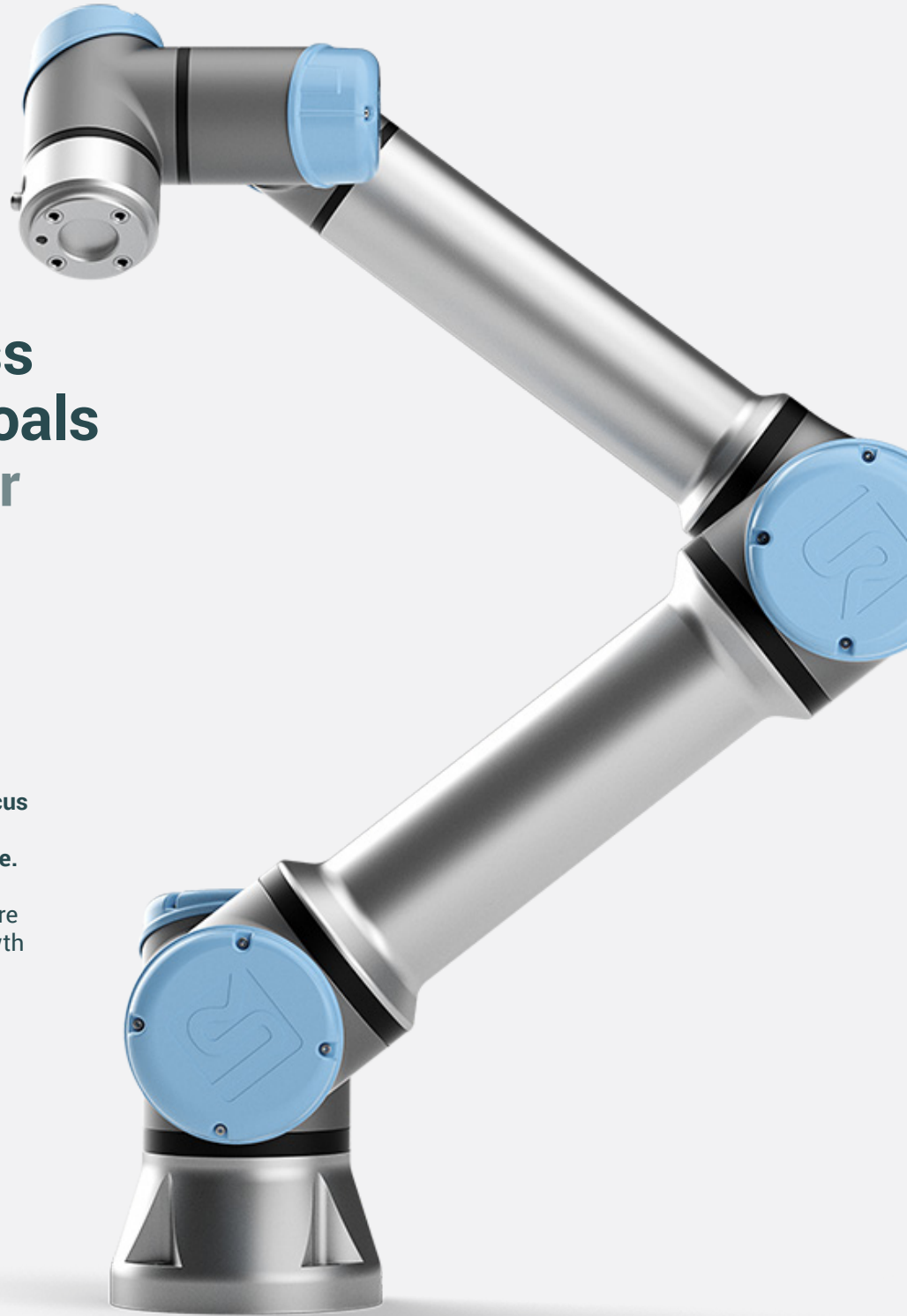


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## Cobots address productivity goals and bring labor advantages.

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**Collaborative automation lets you focus on productivity as a business driver rather than on labor as a limiting force.** But it can also help you improve the workplace—and develop new and more desirable positions—with career growth opportunities and higher satisfaction for workers along with safer, more ergonomic jobs.





# Free skilled workers for high-margin work.

**Labor shortages often force small and mid-sized manufacturers to turn away business. That's especially true in areas with very low unemployment and for specialty jobs such as welding. Cobots from Universal Robots (UR) let you automate jobs you can't fill and move skilled workers to higher-margin tasks.**

Wisconsin-based metal fabricator Processed Metal Innovators (PMI) was forced to turn work away because of a lack of welders. PMI implemented a UR cobot-based Botx Welder from Hirebotics that allowed the company to "hire" the robotic welding system. "Compared to what an employee would get for their hourly wage, plus all their overhead costs, you're probably saving half of what you would pay a normal welder," estimates Erik Larson, PMI VP of operations.

"With the new BotX system, we can bring in one robot and run it for three shifts and not have to hire three welders," Larson added. With the cobot handling repetitive welding jobs, experienced welders have more time for complex, higher-margin jobs. As an added bonus, Larson found that the robots appeal to younger workers who don't want manufacturing jobs, but are interested in positions as robotics and technology leads.

↓ Wisconsin-based metal fabricator PMI turned to the UR cobot-powered BotX Welder to dramatically increase productivity and profitability in a tight labor market.

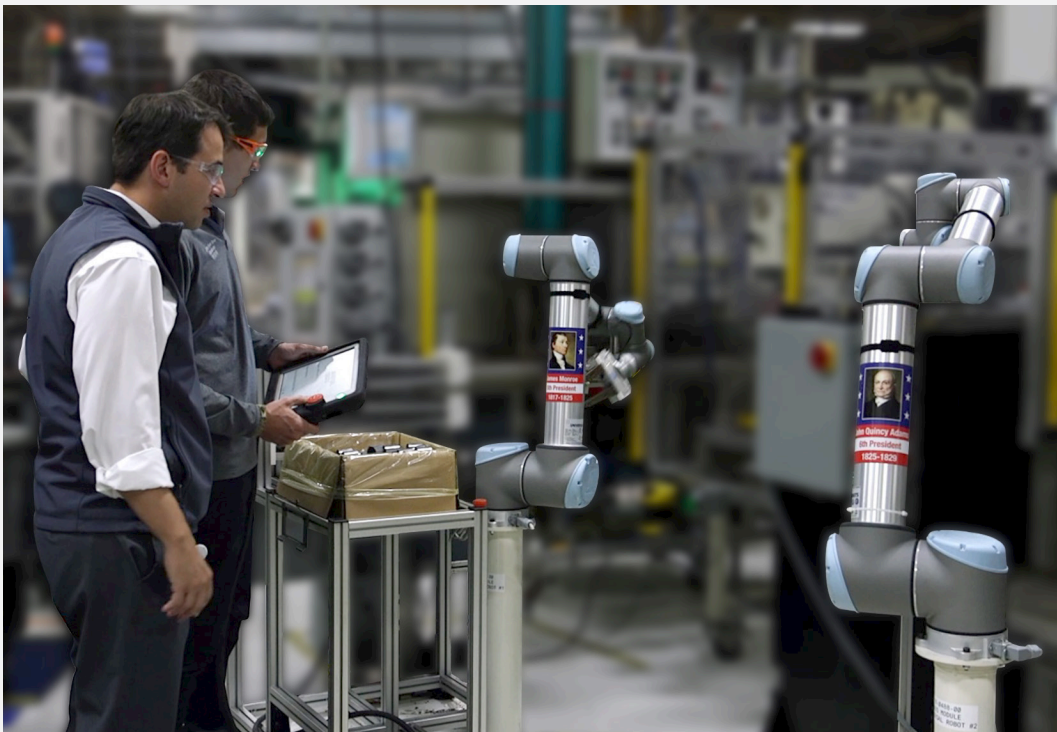


# Gain flexibility as employees gain valuable skills.

**John Griffin, director of operations at Oregon-based Darex, needed to add more products to his lines without hiring more people. That included fitting any automation solution into his existing assembly layout.**

UR cobots give him the flexible solution he needs. “We’re running about 30 percent more efficient,” says Griffin. “I have more flexibility as it takes less staff to run that line, so I can focus people into different areas and run different products. Before, we would only build two products per week; now we can build four products per week.”

Griffin also needed a dedicated staff member on the line to oversee robot operations. He challenged employees to use the free UR Academy online training and compete for the position. Twenty-six-year-old Brittany Mohrman won the programming contest. “It was really exciting to get the opportunity to do something different,” she says. “The UR training taught me things like understanding different program cycles, adjusting waypoint changes, and knowing where the tool center point of gravity on the robot is. My job is definitely more interesting now.”



← “The UR cobots gave us the opportunity to grow, expand, create more jobs, and move our most valuable resources—our human resources—into new projects, where the know-how was most needed. If we relied only on hiring new people, we would never be able to expand to three times the size we originally had.”

**Aldo Albieri**  
Operations Manager  
thyssenkrupp Bilstein

# More interesting tasks for workers leads to better output.

**Cobots relieve the need to hire and retain workers for boring, repetitive jobs. Workers can be moved to higher-value positions that take advantage of their creative problem-solving skills, or a single employee can manage multiple robotic work cells.**

At the Danish printing company InPrint, a UR cobot now handles repetitive, long-cycle-time tasks that left employees idle for long periods. Søren H. Nielsen, responsible for large-format print production, saw that operators were waiting four minutes during the process before replacing the plate and waiting again. "Standing by a machine waiting for it to say "beep" can drive you crazy," he says. "The person who used to wait for the machine now takes care of other important tasks."

Tomenson Machine Works in Illinois saw similar results. "Operating the engraver is tedious. It's not something people go by and say, 'Yay, I'm going to go run the engraver for eight hours,'" explains Geoffrey Rose, secondary operations lead and quality supervisor at Tomenson. Once the cobot was deployed, the pin stamp operator actually cheered. She now works in the shipping department, inspecting and packing parts, and the company has seen improved profit margins, especially on high-volume orders of small parts.

↓ At Tomenson Machine Works in Chicago, a UR3 handles the tedious task of loading parts into an engraver, freeing up operators to handle inspection and packaging.



**“ We saw a 60% profit increase on that job alone. Our spindle up-time has gone from about eight hours a day to about 20 effective hours.”**

**Gary Kuzmin**  
Owner  
All Axis Machining



# Right employees, right jobs.



**When labor is tight, you may have no choice but to put high-paid, skilled employees to work on repetitive processes such as loading and unloading machines.** Automation provides a cost-effective option, keeping your skilled employees more satisfied and more productive. Automation eases hiring and retention as well, helping manufacturers compete with other employers with more interesting, desirable positions.

PrecisionForm in Pennsylvania found its solution in the UR cobot-based ActiNav machine-loading system. Alex Corckran, president and CEO says, “A lot of these very repetitive tasks are intermittent, so we often find ourselves having to take a highly skilled person and put them on a very repetitive task. That’s not great for morale, and it’s not cost-effective either.” Following the ActiNav deployment, operators run three or four machines at a time and skilled workers are moved to higher-value processes.

With UR cobots deployed, Washington-based Tool Gauge was able to cut its need for 100 new employees in half, while hiring workers for jobs they want. The company was using journeyman CNC machinists to pull parts off the CNC chute and clean, rinse, dry, and box them—tasks now handled by UR cobots. CEO Debbie Lee says, “Before, we were hiring for machine operators, people that would just stand, swing a gate, and pull parts off the press. Now, with the robots coming in, we’re looking for that type of employee that is going to be able to do the programming and set the robots up and work alongside that robot.”

↑ “All of us manufacturers are fighting for skilled employees. We need to look at all the times where we can automate, especially in repetitive tasks.”

**Mike Higgins**  
Sales and Marketing  
Director  
RCM Industries



# Get the advantages of multiple shifts without the hiring woes.

↓ All Axis Machining has automated six different operations with UR cobots.

**For many manufacturers, growth is limited by the number of shifts it can run. But off-shift manufacturing jobs can be even harder to fill than day shifts.** When a large order prompted Washington-based Toolcraft to add a third shift for 24/7 production, the company quickly found that workers weren't interested in those jobs. By turning to collaborative robots, Toolcraft has saved 23 percent on production costs and increased throughput by 43 percent.

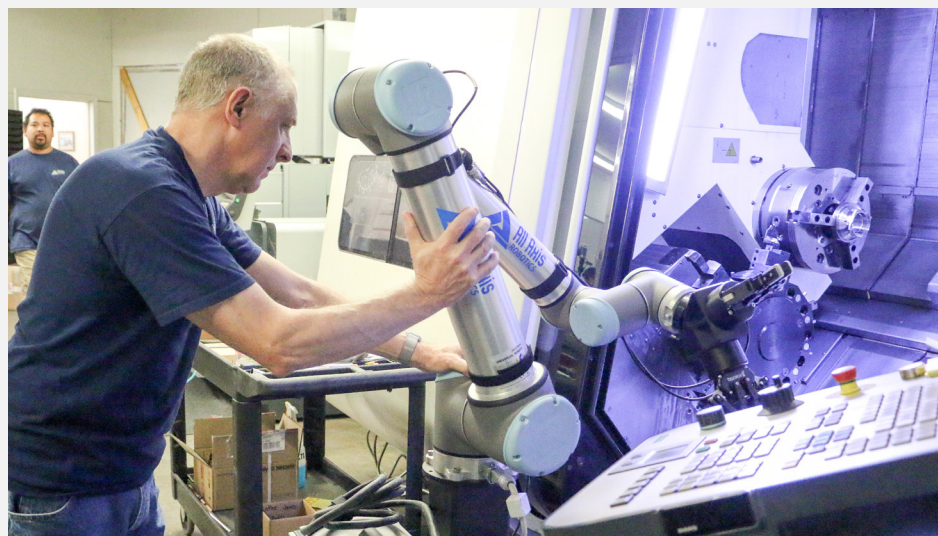
Director of operations Steve Wittenberg says, "Some of the benefits we've seen right off were a significant production increase. We went from producing 255 parts a week to 370 parts per week. Along with that, we're able to finish our year's production seven weeks sooner, thus freeing up that machine to produce parts on other jobs."

Gary Kuzmin, owner of All Axis Machining in Texas, had a small second shift but still couldn't meet customer demand. "After 5pm, we'd have a skeleton shift with only half the machines running," he says. "It was costing me orders that I couldn't get to my customers on time." With its first UR10 cobot, a job that was slated to take four to five months was delivered almost two and a half months early because of the additional machine time gained with the robot, with no additional staff.



**Say it's a Thursday and we get a hot order. We'll get the job set up and it'll be on the saw, and on Friday I can have second shift run the robot, just loading and unloading it. By Monday, we're already shipping the parts to the customer."**

**Geoffrey Rose**  
Secondary Operations Lead  
and Quality Supervisor  
Tomenson Machine Works

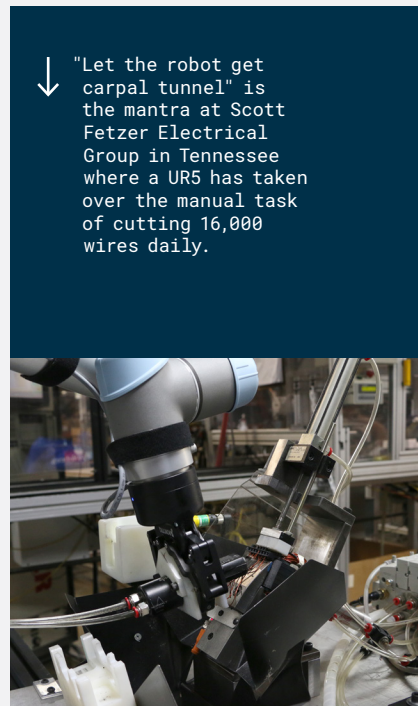


# Improved ergonomics builds a safer work environment.

**Manufacturing jobs can be hard on workers.** Injuries can come from heavy lifting, working with machinery, or simply performing repetitive tasks. Automating these jobs helps reduce injury risk, and improving safety is not only good for workers: It can also save manufacturers money.

At Scott Fetzer Electrical Group (SFEG) in Tennessee, cobots protect workers by performing monotonous and potentially hazardous tasks, while optimizing production by 20 percent. A UR5 robot cuts 16,000 wires daily. "It's a potential carpal tunnel syndrome application," says Matthew Bush, director of operations at SFEG. "So we thought that was a great place to put robots – let them get carpal tunnel!"

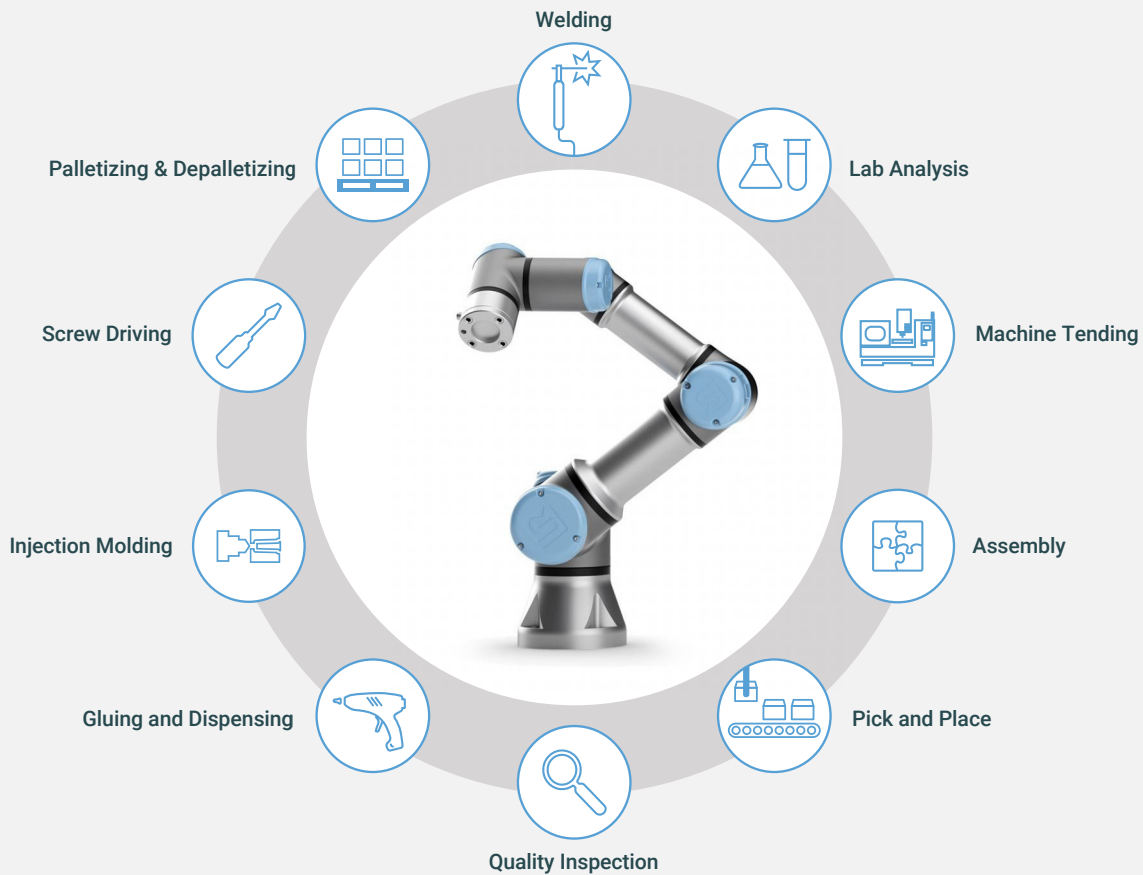
A L'Oreal India plant also improved ergonomics. Before the UR cobots took over palletizing, operators each lifted 8,500 kilograms of product per 8-hour shift. This Level 4 ergonomic risk, one of the highest levels of danger to the human body and posture, is now alleviated by automation.



↓ "Let the robot get carpal tunnel" is the mantra at Scott Fetzer Electrical Group in Tennessee where a UR5 has taken over the manual task of cutting 16,000 wires daily.

**“ We have seen a reduction in the Labor and Industry claims on our production floor, as robotics take over these monotonous tasks.”**

**Debbie Lee**  
CEO  
Tool Gauge



## What jobs can cobots take on?

**Automation gives you an alternative approach to drive productivity.** Rather than struggling to staff dull, dirty, or dangerous jobs (the “3Ds”), cost-effective cobots can take on those tasks so you can focus on filling more desirable positions with available workers. While traditional industrial automation is often out of reach for small and mid-size manufacturers, collaborative robots offer distinct advantages.

Unlike traditional industrial robots that can take months to deploy and require expert programmers to install and maintain them, cobots offer all the benefits of automation without the usual cost and learning curve. They can be quickly and easily redeployed for a wide range of tasks or products, making them ideal for high-mix, low-volume production.

Cobots drive production quality and throughput, with high repeatability that reduces scrap and improves consistency. Cobot-based automation is low-cost, flexible, and easy to implement within existing production workflows. For most jobs, cobots are safe to operate around human workers without bulky and expensive fencing. And cobots aren't limited to the day shift. Running unmanned automated tasks on second or third shifts can help you cost-effectively cut lead times and grow your business.

# The manufacturing labor shortage is a long-term demographic issue.

Collaborative automation empowers manufacturers to focus on productivity as a business driver rather than on labor as a limiting force. Cobots also help improve the workplace—and develop new and more desirable positions—with career growth opportunities and higher satisfaction for workers along with safer, more ergonomic jobs.



## About Universal Robots

**Universal Robots is the market leader in collaborative robots.** Since introducing the world's first commercially viable cobot in 2008, UR has developed a product portfolio including the UR3e, UR5e, UR10e, and UR16e, reflecting a range of reaches and payloads. Each model is supported by a host of Plug & Produce end effectors, software, and accessories in the UR+ certification

program, allowing for flexible redeployment of one robot into several diverse applications. Universal Robots has installed over 50,000 cobots worldwide, automating every manufacturing industry.

Headquartered in Odense, Denmark, UR operates out of 21 regional offices in the Americas, Europe, and Asia-Pacific.

**Find out more**  
Click here to learn even more about automation using cobots with Universal Robots.



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