



**UNIVERSAL ROBOTS**

WHITE PAPER

# THE CASE FOR AUTOMATION

AT COMPANIES OF ANY SIZE

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# INTRODUCTION

*Well into the 21<sup>st</sup> century, the case for automating manufacturing environments has been made many times over. As technology – specifically robotics – evolves to include robots designed to collaborate with humans rather than replacing us, the business rationale for automating production is stronger than ever.*

According to the *GE Global Innovation Barometer* report issued in February 2018, business executives around the world say that 40% of innovations over the last five years have had a positive impact on their company's bottom line. At the same time, nearly 75% of these business leaders believe a lack of skills is an issue facing their industry, while 64% say this problem is restricting their ability to innovate.

Since 2008, Universal Robots has been addressing both of these issues with the development and manufacture of the collaborative robot or *cobot*. Cobots are robotic arms designed to work in close proximity with humans. Benefits include a small footprint, ease of operation, deployment and re-deployment, and their ability to serve as tools that enable humans to do their jobs better and more easily. If necessary, however, they can also be used without human intervention.

At Universal Robots, we refer to environments where humans and collaborative robots work together directly as Industry 5.0, the next step in the industrial revolution after the automated "lights-out" factory that runs day and night with no humans involved—or needed.

In this paper, we outline the top six reasons why automation – specifically cobots – is a positive investment for manufacturing operations of any size in any location.



## COST EFFECTIVENESS AND VERSATILITY

Cobots have played a significant role in enabling companies that otherwise might not have been able to afford big-investment industrial robots to start automating their processes – on their own chosen terms and at their own particular tempo.

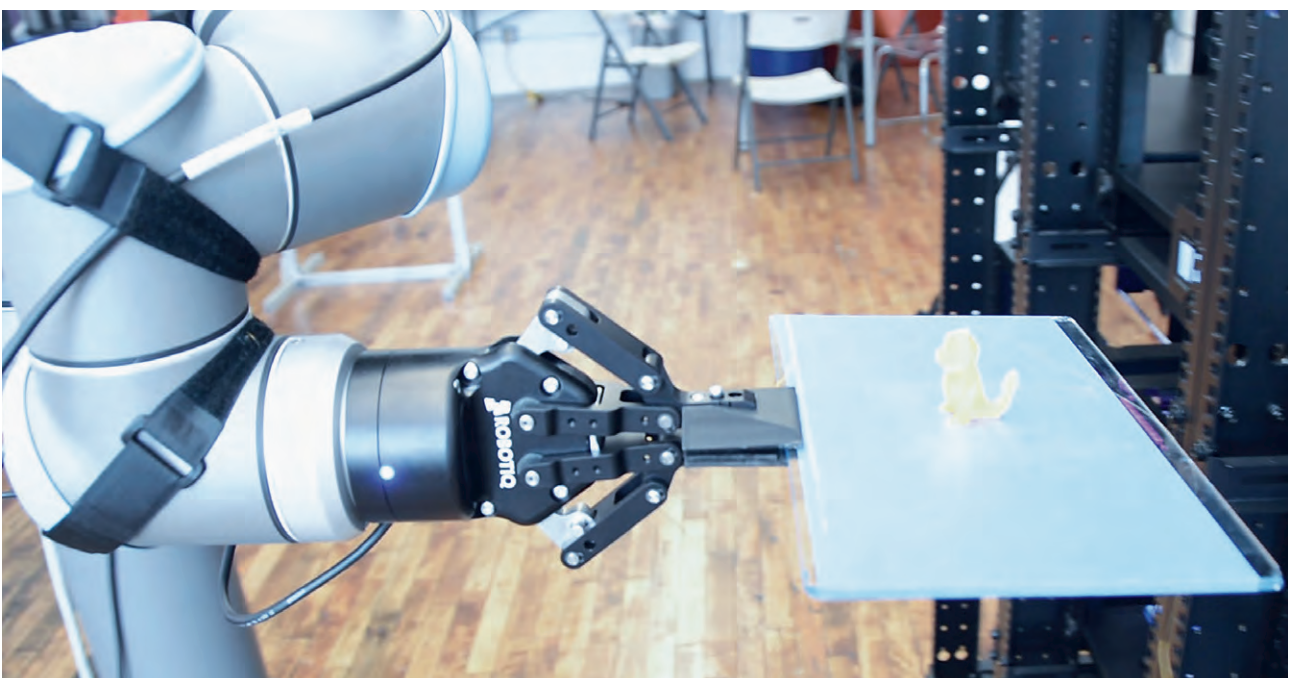
One example is Voodoo Manufacturing in the United States, which operates a printing farm scaling up to handle large production runs that compete with injection molding. Voodoo’s challenge was to find an easily programmable robot arm that also provided simple integration with a robot gripper as the end-of-arm-tool.

The company chose the Universal Robots UR10 because it offered a seamless interface with a two-finger gripper from Robotiq.

*“We got the UR10 out of the box and were able to get it running, adding the gripper at the end of the arm within just a few hours.”*

Jonathan Schwartz, Chief Product Officer,  
Voodoo Manufacturing

The company estimates that the cost of implementing a UR cobot was about five times less than a traditional industrial robot. This was largely due to the quick integration and the cobot’s collaborative safety features that also meant the company did not need to install safety cages, light curtains or any of the other safety measures usually needed when industrial robots work in a factory setting.



## RE-DEPLOYABILITY

Another advantage of using cobots is that they comply with recognized best practice for digital business models, featuring “life after the factory” and thus have long-term viability.

They can be programmed and re-programmed virtually endlessly. Cobots can be installed, re-installed and moved around with hardly any restrictions. They can be equipped and re-equipped with a wide selection of end-of-arm tools and supplementary equipment to meet changing needs and priorities.

In addition, cobots are designed to keep up with developing technologies and software capabilities as these emerge. They can be re-conceived, re-configured and re-deployed as other surrounding, interdependent processes and activities develop and change.

Each workshop, factory, service establishment, food emporium or care facility that uses cobots has free rein over their future uses. Their only limitation is the human imagination.

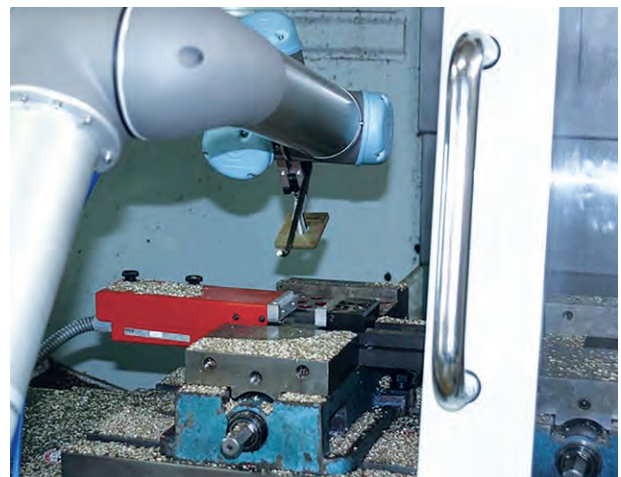
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## RE-SHORING OR REPATRIATION

In the early years of globalization, many companies found that they were able to make use of a low-cost and relatively unskilled labor force for a wide range of processes that could – and in many cases still can – be kept manual. As a result, the work ended up in other countries.

Re-shoring is now bringing manufacturing, assembly and finishing operations back closer to the markets in which their end products are to be sold.

Universal Robots helped the American company RSS Manufacturing, which manufactures plumbing fixtures and fittings for faucets. They needed to increase their monthly output of valves from 400 to 700. Instead of buying another costly CNC machine, RSS decided to install a Universal Robots UR5. The robotic arm was put to work 24/7 and within 11 days the order of 700 valves was ready to be shipped off. When the UR5 was deployed to feed tubes



into a mandrel tube bender, the RSS team was in for a surprise. It produced 1,500 pieces in 4 hours, a task that would have taken two or three days using manual labor.

Yet another benefit was that the UR5 opened up 30% more capacity on the company’s existing machinery, which makes them competitive with overseas competitors.



## BETTER JOBS

Contrary to widely held beliefs, increasing automation does not have to negatively impact employment. One of the big advantages of collaborative robots is that experience shows they don't actually displace human labor.

Instead, the introduction of cobots almost always results in net job creation, because the skills of the human workforce can be put to use creating greater value. The workforce usually ends up being "upgraded" and the company's market potential expands.

"Despite people's fears, the warnings, the hand-wringing of politicians, etc., history shows that technological advances – including those that give rise to industrial revolutions – are actually net job creators," says Esben H. Østergaard, co-founder and CTO of Universal Robots. "Even in my own experience at Universal Robots, I have seen how automation technology creates jobs. In fact, the factories that have deployed our collaborative robots have significantly increased their headcounts on average, not reduced them."







## PROXIMITY TO MARKETS

When a manufacturing, processing or assembly plant is located in the same country (or in close geographical proximity) as the recipients of its goods and services, the whole supply chain and logistics infrastructure is much shorter, easier to manage and has less of an environmental impact.

Cobot-enabled automation makes it easier for companies to produce goods close to consumers, which benefits the manufacturer, employees, consumers and local communities.

## FOR COMPANIES OF ALL SIZES

Collaborative robot arms like those from Universal Robots are making the once-costly benefits of robotic technology affordable for companies of any size, including small and medium-sized businesses (SMBs).

Due to their lower cost and smaller footprint, cobots enable even the smallest companies to significantly enhance their production capabilities without major facility renovations or expensive installations. For many smaller setups, cobot-powered automation has meant a decisive leg up on the competition, and the ability to compete with bigger players who would otherwise have had capacity, quality and cost advantages in the market.

*“For many smaller setups, cobot-powered automation has meant a decisive leg up on the competition.”*

In addition to their cost – which is only a fraction of the cost of a traditional industrial robot – collaborative robots offer benefits that really matter to SMBs. They can be unpacked, mounted and programmed to complete simple tasks in just hours. And the programming does not require special programming skills. In most cases, they operate safely right alongside workers, even in the smallest shops. And they are flexible, meaning they can be easily reprogrammed and redeployed for different tasks as new needs arise. It all adds up to a very fast payback time and strong return on investment.



One smaller setup that has benefitted from deploying cobots is Multi-Wing CZ in the Czech Republic. The company manufactures axial fan solutions for ventilation applications and needed to automate production within a very confined workspace to meet growing demand. Removing its old safety guard and installing a UR5 cobot from Universal Robots enabled the company to cut per-unit production costs by 10–20% and boost capacity by 336 hours per year.





## BRINGING BACK THE HUMAN TOUCH

For Universal Robots and Mr. Østergaard, collaborative robots are also at the heart of another broad consumer trend: A growing desire for all products – even when mass-manufactured – to *feel like they've been made by human beings*. “Ironically, at the very moment when “lights-out” factories have started to gain traction in actual manufacturing setups, a quite different global consumer trend has emerged,” Østergaard explains. “From craft beers to handmade and sometimes completely personalized luxury goods, products that feature the unambiguous imprint of *human involvement* are in demand like never before.”

“I think of this trend as ‘the return of the human touch,’ and I believe that demand for it is driven by the fundamental human need to connect with others,” he continues. “Not with *simulations* of others in the form of robots, artificial intelligence and so on, but actual human beings, with human bodies,

human experiences, human frailties and human stories to tell. This is something that technology cannot replace, because technical artifacts are simply not human.”

Cobots enable companies to pair the unique skills of craftspeople and other skilled human specialists with the technical capabilities and consistent repetitiveness of a robot in order to reduce production times, boost accuracy and improve product/finish quality.

This frees up human employees to apply their intangible skills and difficult-to-program creativity to more complex projects – or to notch up a considerable boost in productivity for their particular craft or skill. This in turn makes it possible to comply with new kinds of market requirements and consumer expectations, often involving greater personalization to individual preferences.





## CUSTOMER CASES

*See concrete examples of how cobots from Universal Robots have helped companies like yours.*

### Companies with 1 – 50 employees

Read what cobots are doing for small businesses around the world

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Learn about what cobots are doing for large enterprises around the world

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### Companies with 50 – 500 employees

Cobots are also benefitting medium-sized companies worldwide

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