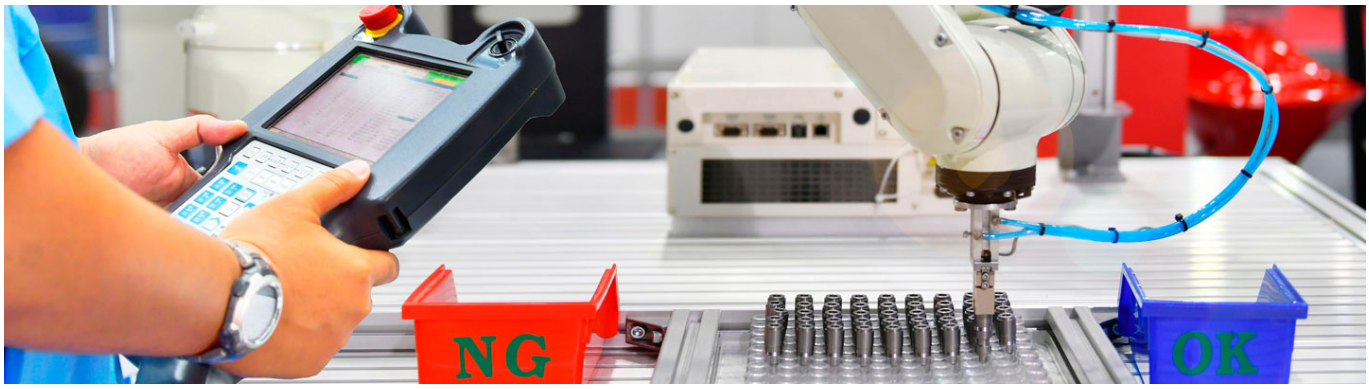

Technology

Cobots and Manufacturing: 3 Ways Collaborative Automation Can Help Your Shop

Roland Jones | Jan 28, 2021

As manufacturers look for ways to become more efficient, collaborative robots, or cobots, are becoming a popular way to get more done. Here are three ways some companies are using cobots to help them work more efficiently.

Robots have been a feature of manufacturing facilities for decades as companies have sought to maximize efficiency and create more products, faster.

Now those robots are breaking free from their cages and are starting to work alongside us on the factory floor.

Collaborative robots, or cobots for short, are designed to operate close to human workers. These small, lightweight devices are designed to be agile and able to perform complex tasks, but unlike the large robots seen in car manufacturing plants working at breakneck speeds, cobots are slow and methodical. One of their strengths is the ability to perform meticulous, repetitive tasks, freeing up human workers to focus on creating customer and business value.

> **"One benefit of using cobots for these tasks is that they can reposition their tools more quickly and more accurately than human workers, helping manufacturers increase their production output and improving product quality and consistency."**

The advent of cobots comes as the COVID-19 pandemic has intensified a desire for more automation on the factory floor, given the need for social distancing and the adoption of new digital processes to maximize efficiency, reduce errors and improve quality. Automation also enables manufacturers to keep production close to home, or to reshore it, avoiding the hazards that come with global supply chain interruptions and fluctuations in the global economy.

Read more: Robots, Cobots and Automation: Is the Pandemic Propelling a Wave of Change in Manufacturing?

After a sharp downturn in early 2020, ***the manufacturing sector is returning to life*** and is expected to

rebound from the pandemic-driven economic crisis by mid-to-late 2021. The market for collaborative automation is emerging as a fast-growing segment of the rapidly growing industrial robotics market and is ***expected to be worth $7.5 billion by 2027***, grabbing a 29 percent share of the overall global market for robots.

Is a Cobot Right for Your Shop?

A cobot may seem like a useful addition to your shop, but the truth is, automating manufacturing tasks is not so straightforward.

Some processes are ideal for cobots, while others are more suited to traditional industrial robots.

Before spending money on a cobot, assess the application you need it for and make an informed business decision.

While automation should, in theory, lower your costs, ***it's best to create a targeted plan for efficiency*** with a clear expectation of the investment's outcome, and build from there.

Start with the task you want to automate, and then look at the device's return on investment the same way you'd assess any new tool.

There are other considerations: the safety, contentment and even the sense of job security of your existing (human) workforce.

Unlike traditional robots that operate in cages to keep human workers safe, cobots work alongside humans, and so they incorporate sophisticated sensor technology to avoid collisions that could cause harm to the people working around them.

This may not be clear to your workers, who also may find your investments in automation a threat to their job security. Take the time to educate and train your staff about how cobots work, how to interact with them safely, and what their benefits and limitations are.

And as your workers begin to understand cobots, introduce them to the shop floor one by one to allow workers to slowly adjust to the new technology.

It's also important to consider the kinds of tasks you give to cobots: The best tasks are those that require repetitive, continuous actions and require accuracy and precision.

You can then delegate roles that require creativity and planning to your human workers.

Cobots are delivering efficiencies in many areas of the shop floor while improving safety because they take on jobs that require repetitive, continuous actions. They also work with a high degree of precision, and so they can be used to increase product quality.

Here are three of the most common cobot applications, from "pick and place" to assembly and quality assurance.

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No. 1: Pick and Place

Could anything be more mundane than a pick-and-place procedure, where an object is picked up at one location and shifted to another, repetitively? It's a task that often leads to mistakes when undertaken by human workers. Repetitive motions such as these also lead to strains of the hand and forearm, which are among the *leading causes of costly workplace injuries*.

Cobots can perform these pick-and-place tasks more efficiently, allowing humans to focus on the parts of their job that require more creative, critical thinking.

Cobots may also be capable of lifting, transporting or organizing objects independently, a task that is also prone to human error. Similarly, cobots can easily deal with the handling and moving of potentially dangerous materials, while robot platforms can lift and transport heavy materials across factory floors, avoiding potential injury to human workers.

No. 2: Quality Inspection

As we've seen, cobots are well-suited to repetitive tasks. This makes them ideal candidates for the precise operations involved in quality control procedures. These inspections are vital in manufacturing. Given the regulatory requirements for product creation, manufacturers need to ensure consistency in what they produce. And needless mistakes in production runs can lead to costly do-overs.

Cobots can easily shift from doing a pick-and-place job to handling the inspection of new parts, notes cobot manufacturer Universal Robots. This makes cobots "the perfect technology for both future-proofing inspection processes and ensuring business continuity in difficult times."

"If you need to ensure social distancing requirements at your manufacturing facility, for example, you could consider introducing cobots to your quality control lines," *the company notes in a recent blog*.

This is especially valuable to those manufacturers of limited means that are striving to meet the quality control demands of high-mix, low-volume production runs, Universal Robots says. Cobots are easy to incorporate into existing production lines and programming them is straightforward, handling optical or metrology inspections.

For example, the company's UR10 cobot equipped with a vision camera allowed Ohio-based contract manufacturer Comprehensive Logistics *to reach 100 percent quality in the subassembly of automotive engines*.

Read more: Skills Gap Analysis How-To: 5 Steps for Examining Your Training and Hiring Requirements

No. 3: Assembly Tasks

Unlike most human workers, robots are happy to do the same job over and over, for days on end, without tiring. This attribute makes the devices ideal for assembly tasks such as welding small objects together, or driving screws.

One benefit of using cobots for these tasks is that they can reposition their tools more quickly and more

accurately than human workers, helping manufacturers increase their production output and improving product quality and consistency.

According to Universal Robots, a ***cobot can now handle screw and nut driving tasks***, with advances in "force-sensing" allowing cobots to "feel" when tightening is complete, "eliminating the problem of over application of torque," which "happens all too often when screw driving tasks are manually performed."

Universal Robots cites as an example the automotive giant Nissan, which ***deployed two lines of UR10 cobots*** in its Yokohama, Japan, manufacturing facility. The cobots were first assigned to loosen bolts on cylinder head cam brackets. They were later used to assist with installing engine block intake manifolds, which meant working in close collaboration with human workers.

Nissan used the devices to solve the issue of cycle times for specific processes that would sometimes overrun, making it necessary to use relief workers, which in turn would lead to greater labor and personnel costs for Nissan. The company found it could improve efficiencies by taking the cobots to wherever it saw a time overrun.

Just as with Nissan, using cobots can enable manufacturers to quickly adapt to changing circumstances on the shop floor. This is a valuable asset in uncertain times, when being agile is vital.

How are you harnessing automation in your facility? Are you using cobots on your shop floor? Share your thoughts in the comments below.

