
FORMIC
WHERE MANUFACTURERS ARE USING ROBOTS IN THEIR OPERATION

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AUTOMATION IS A KEY PILLAR FOR GROWTH STRATEGY

OVERVIEW

In today's world, manufacturers still depend heavily on the working hands of people. The skills that are in demand are extremely repetitive and potentially dangerous. With the added effect of current labor struggles, keeping talent in this environment is difficult to maintain. According to The Workforce Institute at UKG, 4 in 5 U.S. manufacturers are having difficulty keeping up with demand due to staff shortages and supply constraints[1]. In real time, if a skilled worker decides not to come to work, eight hours of production time is wasted. These losses can be catastrophic for small to mid-sized manufacturers trying to keep up with demand while also attempting to outcompete global competitors.

Automation is now a key pillar for a manufacturer's growth strategy, a necessity for seamlessly filling these open roles while also driving up production. The organizations that will succeed now and into the future are those that seek to automate the dull, repetitive tasks on their shop floor. To start, this whitepaper identifies all of the most common programmable tasks and how you can begin mobilizing your automated workforce at the lowest cost and highest productivity.

> "4 in 5 U.S. manufacturers are having difficulty keeping up with demand due to staff shortages and supply constraints[1]."

In recent years, automation technology has proven itself to be useful in multiple use-cases due to its capabilities in end-of-arm tooling, weight handling capabilities, and mobility. This technology has permeated every sector within manufacturing, including metal fabrication, consumer packaged goods, chemical manufacturing, pharmaceutical manufacturing, and food and beverage.

Taking a step back, discover the multitude of automation applications available today.

Additional Benefits to Automation

- Decrease cycle time
- Ensure quality control
- Reduce risk of injury
- Reduce cost of manufacturing
- Attract new talent by having the latest technology
- Repurpose existing workers

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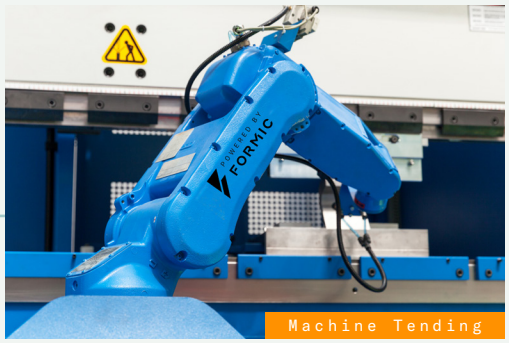
REAL-WORLD APPLICATIONS



Machine Tending

Machine Tending

An extremely popular robotic application in metal fabrication, machine tending systems are responsible for loading and unloading a given machine with specific parts or materials. They are perfectly equipped to work alongside injection molds, press brakes, CNC lathes, and mills. Machine operators are relieved from a physically demanding position with a lower risk of injuries.

+ Machine Tending Overview

ANY MACHINE Lathes, mills, stamping, punching, trumming, molding, and more	ANY MATERIAL Metal, plastics, rubber
FLEXIBLE Fixed or mobile to attend multiple machines	DURABLE Perfectly designed for rough jobs and environments

Palletizing

Palletizing, the process of placing cases of finished goods onto pallets, carries with it many ergonomic concerns. Often done manually, the repeated effort to pick and drop weighted boxes onto a pallet puts workers under duress. Today's palletizing robots have evolved to be highly flexible, reliable, and fast, perfectly fit for a manufacturer's production needs without risking physical harm to workers.

+ Palletizing Overview

ANY OBJECTS Boxes, bags, cases, and more	ANY BUILD PLAN Single SKU Multi SKUs
HIGH TRHOUGHPUT Up to 15 cycles per minute Multi-pick up to 60 CPM	FLEXIBLE Large scale palletizing cells to small robots to fit wiithin a smaller footprint

Case Packing

In factory packaging lines, there is still a heavy dependence on manual labor to pick, sort, and place products from the conveyor belt into cases. Shifting to a robotic case packing line automates the process, allowing workers to focus on higher-level tasks.

Case Packing

+ Case Packing Overview

ANY OBJECTS
Gentle handling of pouches, cartons, wraps, trays, and more

ANY CONTAINER
Cases, trays, crates and cartons

HIGH TRHOUGHPUT
Fast while ensuring worker safety and product quality

FLEXIBLE
Single or multi-pick
Quick changeover

Welding

An automated welder takes the form of a robotic arm with a high-heat torch. Today's refined and advanced robotic welders allow manufacturers to increase welding precision and to double the output. With the right tooling, the robotic arm can reach tight corners, moving fluidly across complex geometries. Moreover, operators can monitor the system without any exposure to hazardous fumes and other safety risks.

+ Welding Overview

ANY TYPE Arc, spot, TIG, MIG, laser	ANY MATERIAL Chrome, aluminum, steel
EASY TO USE Programmable for various jobs	FLEXIBLE Semi-automatic or fully automated

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WHICH TASKS TO AUTOMATE

Other than the applications listed above, how do you know if a task is a potential candidate for automation from both an engineering perspective and an ROI perspective? One clear determiner is if the task is both repetitive and predictable. With easy-to-use Human Machine Interface panels for changing over programs, even high-mix/low-volume production is now more cost-effective when it's automated, offering new capabilities for small manufacturers. If you are still unsure, here are a few question you can ask yourself:

Q. DOES THE TASK TAKE MORE THAN THREE SECONDS OF THINKING BEFORE EXECUTION?

If the answer is no, it could be a good candidate for automation. However, some "thinking" processes can be managed with sensors or performed with a high degree of predictability, so they should be considered in the evaluation. Some examples in this area might include quality inspection, testing functions, and machine monitoring.

Q. HOW PREDICTABLE IS THE TASK?

If the activity is somewhat unpredictable, it might not be the best candidate for automation. To determine value, consider whether automation improves worker safety, reduces costs, improves quality, or increases flexibility. Physical tasks like welding, soldering, and product packaging can be automated if the conditions are consistent and predictable.

Q. HOW MANY HOURS PER DAY IS THIS TASK OCCURRING?

The greater the usage, the higher the ROI will be for automation. If a task only occurs for one hour per week, there's little to gain by automating. However, automating a task that is occurring many hours per day will make a noticeable impact on your OpEx savings.

Q. DOES THE TASK RELY ON FLEXIBLE OR PRECISE DEXTERITY?

Dexterity is a big part of what makes robotic processes so valuable. Manual processes that require a high level of dexterity also tend to have an increased incidence of error. Robotic automation improves quality, accelerates the process, and provides a more predictable outcome. As long as the task is repeatable, it can be automated.

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GETTING STARTED WITH AUTOMATION

OVERCOMING THE BARRIERS TO ENTRY

Demand for robots has grown significantly, with a record number of 29,000 robots ordered in the first nine months of 2021, a 37% increase on the previous year, according to Association for Advancing Automation[3]. The desire to implement automation is there, but many barriers exist before manufacturers of a smaller scale are capable of making this decision, such as the lack of investment capacity[4]. It can take up to a full year for manufacturers to secure financing, hire engineers, choose vendors and then integrate robotics, without even mentioning potential maintenance issues or system failures down the line.

In order to overcome these challenges, financial models such as robotics-as-a-service have emerged to support leading small and mid sized manufacturers to make that necessary step to automate parts or even end-to-end production lines. Jose Figueroa, plant manager of a family owned and operated metal fabrication facility in Chicago, turned to robotics-as-a-service to execute and finance a machine tending application. Robotics-as-a-service offered Figueroa an opportunity to deploy automation at minimal risk without any capital expense. In his own words, “If we didn’t automate, we would not be in business. We cannot compete if we cannot produce.” In search of reliable productivity, innovative leaders like Figueroa have gravitated towards robotics-as-a-service.

CONCLUSION

Production is ramping up, and major subsectors are projecting growth through 2022. Deloitte anticipates GDP growth in manufacturing of 4.1% for 2022[5]. Robotic automation can help. Manufacturers must take a moment to look around their shop floor and to investigate how robots could improve their bottom line. Evaluate existing production lines and determine which operations are a good fit for automation. Once that first step is complete, build relationships with automation experts and partners to find new avenues to optimize production. Discuss the risks, the benefits, and consider the transformative potential robotic solutions could have on your organization.

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HOW TO LEARN MORE

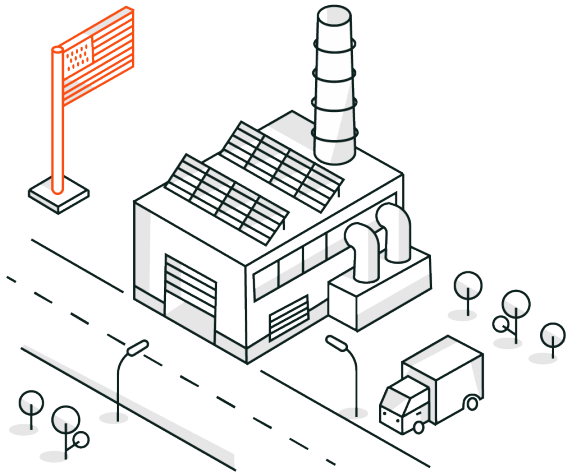
ARE YOU READY TO CONTINUE ADVANCING YOUR BUSINESS?

Among all the projects you are juggling, RaaS is designed to eliminate one from your list - automation management. RaaS partners assume the cost and risk so that manufacturers can confidently focus on their business.Despite unprecedented challenges, contract packaging has a bright future ahead. As global competition icreases each day, improvements made today are paramount for long term sustainability and competitiveness.

Our domestic U.S. manufacturing industry is at a crossroads. The packaging industry and American consumers are depending on continued innovation in the CPS production chain. As David Gray, CEO of GreenSeed Contract Packaging said “We think differently about who we are and the role we play in the supply chain.”

HOW DOES YOUR COMPANY THINK?

To learn more about how you can reap the benefits of RaaS, check out Formic and schedule your free consultation today.



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ABOUT FORMIC

FORMIC is an automation service provider, focused on unlocking robotic automation for small to mid-sized American manufacturers. Our innovative “Robotics-as-a-Service” model combines financial innovation wiht a firm understanding of robotics to enable manufacturing customers to deploy and scale automation quickly and with minimal risk.

Our mission is to make “building things” trivial and easy. Every factory should have access to unlimited “labor” through automation without the traditional barriers to entry.

AS FEATURED IN

Bloomberg Business

WIRED

REUTERS

Robotics247

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