DeGeest
EST. 1976
A STRONGER STANDARD

FIXING THE MANUFACTURING CAPACITY GAP

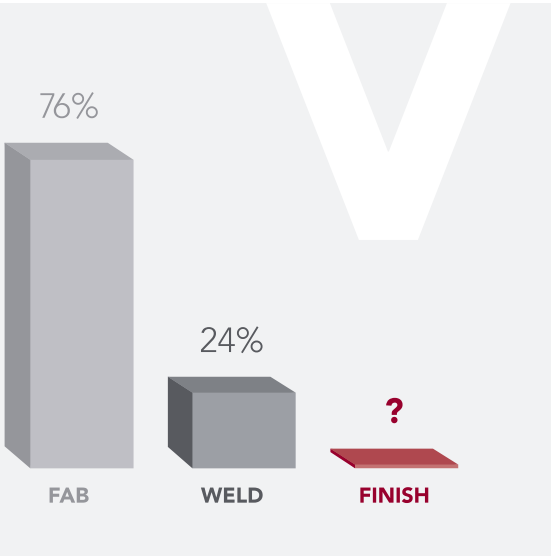
The storyline is all too common in manufacturing.

Increased customer demands for lower prices and shorter lead times have led to more and more automation being added to operations. With this increase in automation, there has been a dramatic increase in the velocity in which parts are produced.

A recent study by Canadian Fabricating & Welding and The Fabricator has shown the greatest level of automation is occurring in cutting (58%), welding (24%), and bending (18%). As a result, everything on the production line is moving faster and faster.

> PARTS BLAZE THROUGH FABRICATION AND WELDING, **THEN COME TO A SCREECHING HALT WHEN THEY HIT FINISHING.**

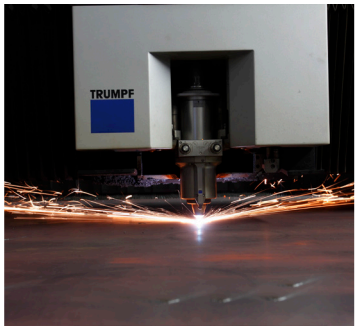
But then the inevitable happens. Parts blaze through fabrication and welding, then come to a screeching halt when they hit finishing. Think about it: if a part isn't finished, it can't be shipped. Meaning all this efficiency in other parts of the manufacturing process has not really gained any additional throughput.

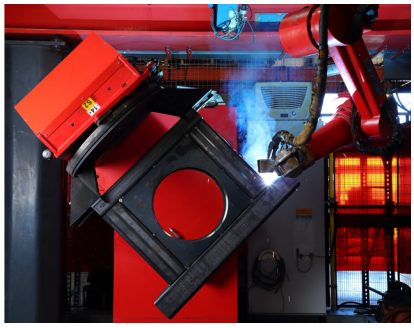


AUTOMATION GROWTH
HOW WILL FINISHING KEEP UP?

There's automation everywhere. So, why not more in finishing?

When it comes to welding, bending, and cutting, it's easier to add more capacity by adding another machine or replacing an old one. But in finishing, there are multiple larger pieces of legacy equipment connected together, and often times this equipment is built into the facility. Typically, every part a company makes has to go through one finishing line, and companies cannot afford to disrupt the system they have. Because there isn't physical space to add capacity in finishing, updating finishing departments ends up on the back burner because there isn't a quick fix.





Or it's believed more labor can be thrown at the problem. But that's not likely because positions have become increasingly difficult to fill, not to mention retain.

Think about it logistically. A robotic welding or packaging cell typically does one or two specific things. But on a paint line, there are often dozens, if not hundreds, of different parts that need to be painted. It's easy to write off automation by thinking a robot would never be able to handle such diversity of parts. As a result, general manufacturers are at a breaking point when it comes to keeping up with capacity demands.

> **THIS TYPE OF ROBOT IS UNIQUE** IN THAT THEIR MOTORS CAN BE EASILY DISENGAGED TO ENTER INTO A FREE-FLOAT MODE.

Self-learning robotics is making finishing automation possible.

The belief has always been that finishing automation makes perfect sense for manufacturers such as large automakers. In this environment, the same large parts such as doors, hoods, and quarter panels are painted over and over, so a painting robot only needs to be programmed to paint a limited variety of parts. Self-learning robots break down the barrier to entry for general manufacturers. This type of robot is unique in that their motors can be easily disengaged to enter into a free-float mode. When in that mode, a person "teaches" the robot how to paint a part in real time. Unlike a collaborative robot that is programmed point-to-point, a self-learning robot records the uninterrupted human painting path along with the painter's spray patterns and techniques to create a program with fluid, human-like movement. These movements, and ultimately the painter's knowledge, are then replicated as a saved program on all future parts.

With self-learning robots, a manufacturer no longer needs to shut down the entire finishing line every time a program needs to be created to paint a new part.

The best time to plan for finishing automation is before it becomes a crisis.

Automation in finishing is not always a quick fix solution. There are complexities such as the possibility of adding on to a building or system that require careful planning.

This was the case at DeGeest Corporation, which started as a contract job shop. With automation being added in welding, its manual paint line became overloaded and couldn't keep up with capacity. After a worldwide search, DeGeest found the perfect automation solution in Milan, Italy with Lesta. Today, this self-learning robotic technology is available in North America under LestaUSA, which is integrated and supported by DeGeest.

For many, a solution for finishing can take as little as three months. Or it could take as long as a few years. Because finishing automation is not a one-size-fits-all situation, it's important that planning happens before production hits a breaking point.

For example, DeGeest wanted to automate their finishing operation to increase production. They also wanted to increase the size of parts they could paint for customers. So, they designed a system around the new part size and production goals. The manual line kept running uninterrupted as the new system was built, and after completion, larger customer parts were added into the new system, and the manual line was transitioned over. After six months, the manual line was torn down and the space was reallocated for other manufacturing processes.

> **WITHOUT AUTOMATION IN FINISHING,** PRODUCTION CAPACITY CANNOT GROW, WHICH CAN LIMIT REVENUE POTENTIAL PER EMPLOYEE.

Stagnation is the result of limited capacity.

Manufacturing seems to be focused on a "skills gap" as the root cause of production capacity issues. While that may be true, it cannot be fixed without also addressing the lack of balanced automation throughout the manufacturing process. Without automation in finishing, production capacity cannot grow, which can limit revenue potential per employee.

In fabrication, increasing throughput using automation will ultimately drive increased revenue. Automation creates momentum. It shows a company is not sitting still; it's actually growing and looking to the future. It allows a manufacturer to keep up with increased customer demand while reducing stress on its workforce.

Increasing production and revenue without increasing head count.

Here's a snapshot of how the addition of finishing automation led to an increase in Revenue Per Employee at DeGeest Corporation. In 2018, robotic welding was added to help with capacity, which moved the production bottleneck to painting. In 2021, self-learning finishing robots were added to eliminate the painting bottleneck, which then allowed for the addition of more capacity in welding. With balanced automation, DeGeest was able to increase production capacity in every department while increasing revenue per employee by 82.8%. This has allowed DeGeest to strike the balance of keeping and attracting our talent while also providing more value to customers in an increasingly competitive industry.

INCREASING REVENUE PER EMPLOYEE BY 82.8% BY ADDING ROBOTICS + AUTOMATION

>	FAB	WELD	FINISH	% INCREASE IN REVENUE PER EMPLOYEE
2015	MANUAL + AUTOMATION	MANUAL	MANUAL	BASE LINE
2018	MANUAL + AUTOMATION	MANUAL + 4 ROBOTS	MANUAL	44.5%
2021	MANUAL + AUTOMATION	MANUAL + 7 ROBOTS	6 ROBOTS	82.8%

Increase part velocity, start to finish.

If a company is at risk of not meeting customer demands, it may be time to consider adding automation to its finishing operation. However, adding automation is more than simply adding a robot. It takes careful planning, but thanks to self-learning robotic technology, a high-mix, low-volume shop now has the option to do so.

What will it take for your operation? In order to keep up with the velocity of parts in other areas of your manufacturing process, it may be time to find out. ▮

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