



## Digital Manufacturing

### Make Smarter Automation Investments

With labor shortages exacerbated by COVID, many middle market manufacturers are giving automation technologies more than a cursory glance. While it's exciting territory, it can also be a slippery slope. Making automation worthwhile requires a strategic approach that ensures the technology can solve specific business problems and deliver the gains that will justify the investment.

#### Key takeaways:

- Automation is garnering more attention from middle market manufacturers looking for ways to keep businesses running profitably and meet delivery requirements in the aftermath of the pandemic.
- While automation has the potential to solve many business challenges and improve throughput, quality, and safety while cutting costs, many manufacturers overlook their greatest opportunities for gains, leaving value on the table.
- Using performance data to develop your business case for automation, properly vetting potential solutions, and adopting a “prove and move” implementation strategy will help your business fully capitalise on automation investments.

11/09/20 | Ken Koenemann

### Improve Your Business—and Do it Faster—with the Right Approach to Integrating Automation

Even before COVID, middle market manufacturers struggled to find qualified people to get the work done. Throw a global pandemic into the mix, and escalating absenteeism makes it more challenging than ever to keep lines staffed and operations humming along, especially for businesses that have seen their demand skyrocket during the coronavirus crisis. Amidst all these challenges, many companies, including those that have historically approached automation conservatively, are starting to give advanced technologies a second look as they explore new ways to keep up with demand and keep their operations profitable now and into the future.

For manufacturing leaders who have (or always have had) visions of lights-out factories dancing in their heads, pursuing automation can be exciting. And in many cases, there are simple, quick-to-implement, and highly cost-effective automation options that can drive real value for your business and do so in short in order. Keep in mind, however that automation can quickly turn into a rabbit hole. Like all technologies, if it's not approached strategically, it can fail to return any business results that actually matter.

Avoid the common pitfalls and ensure that automation meshes well with your current and long-term business objectives.

### 3 Keys to Ensuring Automation Works for Your Business

1. Make a clear business case for automation
2. Apply design thinking to identify and vet process automation solutions
3. Get to the gains quickly with a “prove and move” approach

## 1. Make a clear business case for automation

### BEWARE OF THE COOLNESS FACTOR

Like any other sound business investment, automation needs to have a pay-off. And preferably sooner than later. While all business leaders understand this fundamentally, we've seen many well-intentioned operations managers get sidetracked by the siren call of the newest and coolest bells and whistles available through advanced manufacturing technologies.

We are currently working with a food manufacturing company that is trying to move closer to a lights-out environment. During the technology vetting journey, they've become enamored with the unique capabilities of visioning technologies combined with AI. The challenge is that the technology is expensive, which makes finding and justifying the value more complicated. We are working with the company to explore alternatives that will address the company's business issues and generate the desired results using visioning technologies in the most effective way.

In this example—and in all cases—the important thing to remember is that just because something can be done, it doesn't mean that it should be. Always considering technology investments through the lens of the business problems they will solve and the value they will generate will help you stay focused on the right solutions for your business.

### LOOK FOR YOUR BIGGEST OPPORTUNITY FOR RETURN

Another common automation pitfall we see is the tendency for companies to want to add automation to the value-added portions of their processes. While automation may make some of these already-good inputs marginally better, the real opportunity usually lies in the (admittedly less sexy) non-value-added territory.

Amazon, for example, found that the biggest source of waste in its warehouse was the time employees spent walking from one point to another—a part of the operations process with zero value for the business or its customers. The company invested in robots to pick up shelves and bring them to the packers. It probably wasn't the most dramatic or exciting use of automation technology in their facilities. But it sure did have a significant impact on efficiency and the bottom line.

### REVIEW THE DATA AND EXPLORE ALL OF YOUR OPTIONS

As with the Amazon example, your business performance data can tell you where you have waste or other business problems lurking in your operations. These areas are typically prime candidates for successful automation because they present an existing business issue that can be improved with the use of technology.

In our experience, the best problems/opportunities often fall into four areas:

**Delivery.** If you can't meet demand, it may be a people problem. Automating tasks traditionally performed by humans reduces dependency on resources that may not be available for one reason or another. Beyond directly reducing headcount, automation can also alleviate bottlenecks in your process and make each employee more efficient and productive, thus driving throughput without increasing headcount. For example, using cobots—collaborative robots that interact with people—on automobile assembly lines has long been shown to dramatically simplify and expedite the process of installing the instrumentation panel on a vehicle, a historically labor-intensive and time-consuming task. Today, there are many newer technologies that increase productivity and throughput of people and process, enabling businesses to better meet their delivery goals.

**Quality.** Quality issues, especially those driven by operator error, are excellent areas to consider bringing automation into your business. After all, robots don't suffer from fatigue and they can keep doing the same task, over and over again, with the same high degree of precision, improving your company's consistency and accuracy rates. Automation technologies can help with quality inspections, too, doing the job more quickly and more thoroughly than people can do it, and even spotting defects that are often missed by the human eye. Using such technologies early on in the process, when quality issues can be identified and corrected before escalating into major problems, can further enhance the value of your investment. You can use data analysis to help pinpoint the root causes of quality problems in your plants and see where the problems originate, information that can help you hone in on the best tasks and places for automation.

**Safety.** Dark, dirty, and dangerous jobs such as working in a paint booth (which requires technicians to wear complicated and heavy PPE) or driving a forklift (responsible for some of the most severe injuries in a factory) are often better performed by machines than by people. Automated guided vehicles (AGVs), for example, can eliminate or reduce forklift traffic and make a job that requires little human decision making skill much safer, more consistent, and more predictable. Highly repetitive tasks, too, which can lead to stress injuries, can often be automated, leading to multiple benefits. But automation does not necessarily have to replace a person with a machine.



It can also be used to make tasks safer for people to perform, for example by preventing operators from moving too close to machinery or by automatically stopping and restarting equipment in response to problems or emergency situations, without requiring human intervention. Take a look at your accident reports to identify key culprits behind mishaps within your facilities. Or just ask your employees—are there particular parts of the process that no one is eager to handle and that often present a staffing challenge? In these cases, bringing automation into the process may solve more problems than one.

**Costs.** In many cases, automation can reduce costs associated with various parts of your process. Again, check your data for insight into major areas of expense or any significant or recurring cost issues that could be addressed through automation. Keep in mind, however, that whenever cost reduction is the prime impetus for automation, you need to understand the total cost of the automation beyond the upfront investment in the new equipment. We worked with a company that recently purchased a \$3 million machine that reduced the number of required operators on a process from four to one, generating significant labor cost savings. However, the business had to add an additional three maintenance technicians to keep the new machine running. The net effect of the automation was probably neutral at best.

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## 2. Apply design thinking to identify and vet process automation solutions

Once you understand your automation opportunity and have quantified what you hope to achieve from your automation investment—the business case—then it's time to take a closer, in-depth look at your potential solutions. Applying design thinking to your manufacturing processes is an invaluable exercise in this effort. Ultimately, thinking through your options in this way helps you uncover the best possible arrangement of people, material, machines, and methods

within a work area to improve productivity, quality, and on-time delivery while controlling costs and eliminating waste.

Start by having a team define at least seven different ways to improve a process in order to solve a specific business problem, such as a delivery, quality, safety, or cost issue. At this point, everything is on the table including technical and non-technical solutions. Remember, automation isn't always the best answer. For example, a line that runs a high mix of SKUs is very difficult to automate, and another solution, such as a quick-change method, would deliver better results in such a case. Proving that automation will or won't work in a specific scenario requires seeing how it stacks up against other viable options. To do this, evaluate alternatives side by side against a standard list of criteria to determine which workable ideas rise to the top and should be further examined. Then, simulate the top three alternatives either manually or digitally to help your team see how they will work and pinpoint the best available solution, which can be further refined as needed.

We successfully used this design thinking approach in our process improvement work with a leading global manufacturer of pressure gauges and other critical measurement instruments. The company needed to reduce its order-to-shipment lead times to help prepare for a 25% increase in sales volume that would largely come from customers placing a larger number of smaller orders. The company wanted to handle the new volume—and pick and pack twice as many line items—without adding any people or floor space.

As part of the solution, we facilitated kaizen events in which cross-functional improvement teams evaluated options for simplifying order picking, packaging, and shipping processes. Using cardboard mock ups to test potential scenarios, the team showed how reorganising workstations and making some key changes to the material flow could immediately cut work-in-process inventory in packaging from two hours to less than 30 minutes. The new solution required a \$100,000 capital expense for the installation and setup of new conveyors, which the CEO approved the next day based on the cost justification plan and an estimated 10-month payback period. Ultimately, the company improved productivity by 17%, reduced pick and pack errors by 43%, and was fully prepared to handle the new sales volume.

### 3. Get to the gains quickly with a “prove and move” approach

Analysis is good, as long as it doesn't turn into paralysis. While using design thinking to vet potential solutions is a smart strategy, it can be easy to fall into the trap of developing and implementing the “perfect” solution. Remember, perfect is the enemy of good. As with all digital manufacturing technologies, starting small, evaluating as you go, and building on successes at each step is often the wiser, more rewarding approach to integrating automation than an all-in, step-change investment.

Prove and move lets you know when you're on the right path. Maybe even more importantly, it tells you when you're on the wrong one. Consider this example: a consumer product company we work with is interested in IIoT. The company put a pilot project in place that included implementing OPC capabilities to connect to equipment, passing information along to a database, and then leveraging [Dploy Solutions digital manufacturing software](#) to display real-time information to the processes. At first, the solution worked fine. Then, a few weeks into the process, the company found that the data was not being passed in a timely matter and the delay was sometimes two hours or more, undermining the value of the entire solution. Starting slow and implementing the pilot project in one area of the plant has given the company the opportunity to correct the issue and refine the solution before rolling it out to the entire facility.

### Put your automation options to the test

For middle market manufacturers, automation is very often a justifiable solution that can quickly contribute to business performance gains. But it can also turn into an expensive, complicated, and time-consuming pursuit that can suck up resources without returning tangible results. If you are giving serious consideration to introducing automation into your business, it's worth the time to work through our three keys to success. When you have a solid business case, you've evaluated automation against other options, and you have a strategic implementation plan, you can automate away with confidence that your investment will soon generate the gains you expect.

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