



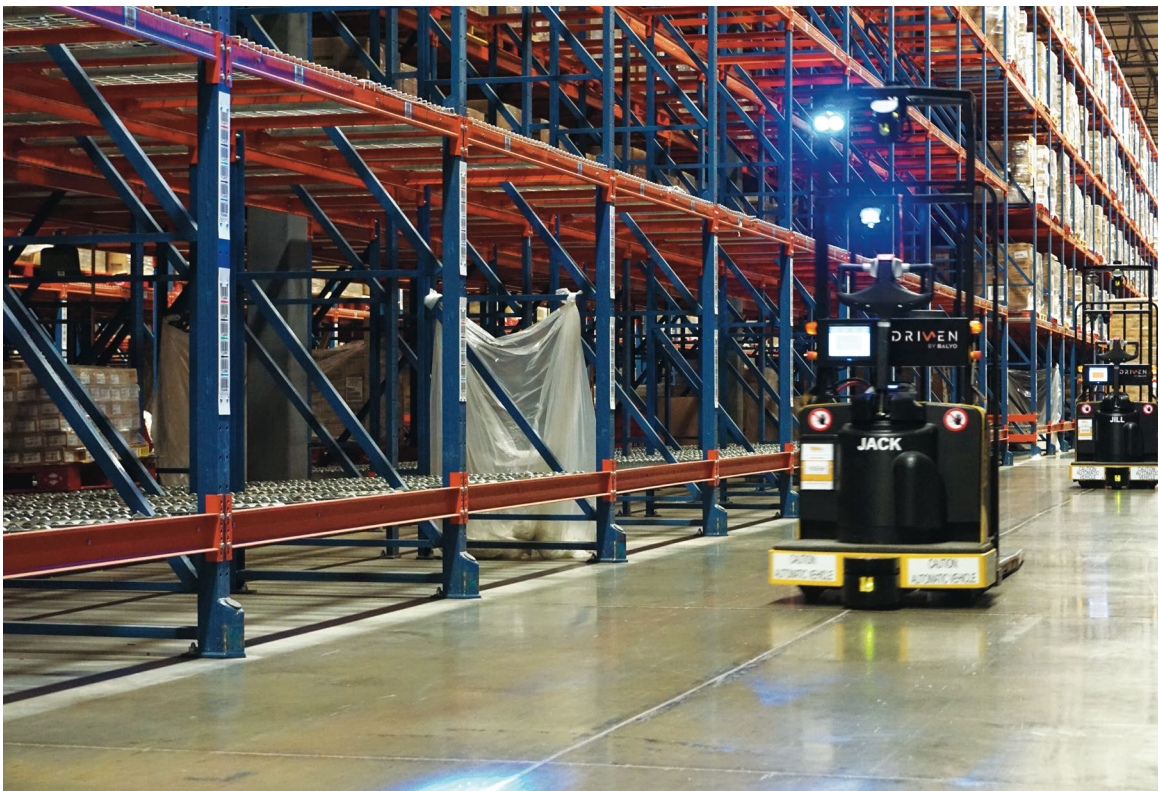
A practical approach to robotics implementation



Supply chains have warmed up to the idea that robotic solutions make real business sense for warehouse and manufacturing operations. While some may have eyed robotics as laden with future potential, for many, underlying trends and unexpected events have accelerated their timeline for warehouse robotics, from an opportunity for tomorrow to an essential for today.

Labor costs and challenges [persist](#), customer [expectations](#) continue to raise the bar for performance and social distancing brought on by the COVID-19 pandemic has introduced fresh hurdles to the already demanding task of staffing supply chain operations.

Modern robotics can spare operations the major investment of installing fixed infrastructure, with autonomous navigation technology enabling relatively quick deployment. But implementation still comes with numerous questions, from ROI and safety to IT, integration and planning. As facilities fast-track robotic adoption in response to the tyranny of the urgent and to position themselves for long-term competitive advantage, careful preparation can smooth the path to successful implementation.





Evaluating your operation as a candidate for robotics

The first step to successful robotics implementation is understanding where and how your operation best stands to benefit – essentially qualifying your operation. Robotics are not a one-size-fits-all solution, so setting the stage for a tailored approach requires working with a trusted partner to first assess which applications in your facility are best suited for automation. This process covers the environment in which robotics would operate, the types of tasks they must complete and characteristics of the loads they must handle.

The following characteristics typically indicate an operation is well-suited for mobile robotics:



Challenges sourcing and retaining labor



Indoor work setting



Two-, three- and four-shift operations



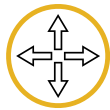
Clean, smooth, dry floors



Repetitive tasks



Ramps or inclines less than 3 degrees



Long horizontal runs or vertical movements

Another important step is defining success — in other words, what level of return is necessary to make the investment worthwhile, and over what time frame? The all-in burdened labor cost against the cost of augmenting operations with robotics is core to answering this question. But hourly labor rates are not the full story. For example, in industries like warehousing where average employee turnover is [high](#), finding and replacing employees involves considerable time and [expense](#), while damage to the facility, equipment and product due to operator error can all add up.



Making the numbers work

Is a significant CapEx budget a necessary prerequisite for automation projects? Not necessarily, as rental and lease options that essentially provide “robots as a service” would suggest. Return on robotics investments can also come more quickly than many operations may think possible. How soon? Most two- and three-shift applications can see a fairly common ROI timetable of less than two years.

When automating processes and calculating the associated payback, direct labor savings are obvious wins, with expenses like hourly wages, overtime and holiday pay rising to the top. But automation drives savings in other indirect ways by drastically reducing costs associated with retraining and re-education, workers’ compensation, lost time due to illness or injury and long-term wage increases. The Material Handling and Logistics U.S. Roadmap 2.0 supports this, stating that “automation will likely continue to become less costly, while wages and benefits for human workers will increase over time.”



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– Material Handling and Logistics U.S. Roadmap 2.0

Enabling successful implementation

New technology can only be effective in so far as it is accepted, so introducing employees to their new robotic co-workers is an important step and opportunity. Proactively inform teams about any changes to the workplace involving robotics. Share how workflows will change and reinforce the meaningful [benefits](#) for your employees — less repetitive work, allowing them to focus on more engaging value-added responsibilities.

As with all tools, proper safety training and protocols are essential. Train all employees on proper procedures for working around robots and collaborating with them in cobotic workflows. Robotic lift trucks offer a unique capability for operator interaction, as they can be switched from automatic to manual mode. This dual-mode capability enables operations to adapt to unexpected circumstances, with employees able to simply engage the controls as they normally would to take control just as they would standard lift truck equipment.



IT is also an important consideration. While integrating robotics software with the facility's WMS is not a requirement, it can enable more seamless operation and tightly managed workflows. Enlisting IT early in the process helps determine requirements or can reveal any potential capacity issues that could make deferring WMS integration to a later phase a more attractive approach. Robotic lift trucks for instance, can handle basic point-to-point transportation tasks without requiring such a software integration, enabling operations to get robotics up and running quickly and more simply.

Navigation technology is another important consideration for startup cost and time. While traditional automatic guided vehicles (AGVs) require guidance infrastructure to be installed, mobile robotics do not share this requirement, instead using existing structural features like walls, columns and racks. They require a “walk” of the facility to create an internal map to reference against what they see in real time to self-locate and navigate.

Beyond initial implementation: Keeping the future in mind

With fluctuating demand and a constantly evolving warehouse environment, automation investments must have the flexibility to meet the challenges of today – and tomorrow. For example, robotics that can be easily re-programmed and re-deployed in different settings can easily adapt to renovations, new workflows and other changes as business dictates. But the adaptability of individual robotics investments is only a piece of a complete plan for the future.

Beyond the initial robotics investment, operations can think of automation as a phased journey. Both the challenges that drive businesses to look for automated solutions and the capability and cost of robotic technology keep evolving. Incorporating robotics and automation into long-term strategic planning discussions can position operations for future competitive advantage while also providing a framework to adapt should conditions change – accelerating timelines or adjusting plans to fit the needs of the business.

Yale's robotics and automation experts can help you navigate the road to robotics for your operation. [Contact an expert today.](#)

