Industrial operations, including distribution centers (DCs) and manufacturing facilities, have been long on growth in recent years. The sustained growth economy has made hourly labor in industrial facilities hard to find and retain, while customer demands for on-time, accurate deliveries continue to rise.

These pressures are reflected in MHI’s 2019 Annual Industry Report, based on a survey of more than 1,000 supply chain professionals. Conducted jointly with consulting firm Deloitte, the survey’s top industry challenge was “hiring qualified workers,” followed by “customer demands for lower delivered cost” and “customer demand for faster response times.”

It’s not just survey data that points to a serious labor crunch. Across industries, the U.S. Labor Department reported in August 2019 that job openings stood at 7.35 million jobs, or 1.37 million more job positions than those considered unemployed. The result is that companies with warehousing and materials handling operations face an extremely tight labor market, and need to find ways to quickly automate to keep pace with order volumes and customer fulfillment requirements.

“When you look at what is happening in the current environment, there has been a large shift in labor,” says Melonee Wise, CEO of Fetch Robotics, a pioneer in autonomous mobile robot (AMR) solutions. “To begin with, there is a large labor shortage, and difficulties with turnover, which creates fallout in areas like being able to meet commitments during peak seasons. We’re also seeing an aging of the workforce. As they age, it becomes harder and harder for many workers do some of these physically demanding jobs.”

The result of these labor-related challenges, notes Wise, is that continuing to rely on heavily manual processes in DCs or manufacturing plants, or on inflexible automation projects, leaves operations at risk of not being able to cope with the pace of change.

“The labor shortage situation is pretty bad,” says Wise. “We had one customer tell us that on every shift they are supposed to have about 160 people, but they typically only can get in about 130 people to execute all the work. As a result, operations must scramble to try to meet cut-off times. This can be costly if it involves more overtime, and longer term, it bottlenecks the ability of a company to grow.”
Even DCs that don’t directly fill e-commerce orders increasingly feel more pressure to fulfill orders faster and in smaller quantities. DC operations with a business-to-business (B2B) focus also compete with major e-commerce operations for hourly labor. These fundamental market shifts are driving the need for greater labor efficiency, while causing many operations to revamp their DC networks to position goods closer to customers.

“The changing nature of distribution networks, coupled with the labor shortage, increases the need for automation, but that automation needs to be flexible in nature and quick to deploy,” says Wise.

Logistics and manufacturing facilities have a long and successful history in using automation. Solutions like conveyor/sortation systems, automated guided vehicles (AGVs), and digitally controlled automated storage and retrieval systems have been around for decades and are widely deployed.

These systems, however, are typically hard wired and fixed to a spot in the building, or in the case of AGVs, require special, fixed guidance infrastructure like magnetic tape or code stickers on the floor. What’s more, some larger systems require a significant amount of physical infrastructure like racking, or motors and cranes, involving significant lead-time to acquire and install.

Many automation solutions also require information technology (IT) infrastructure such as servers or a local database. While fixed automation solutions are becoming more modular, in general, fixed automation systems can take several months or longer to acquire, install, and test, and once deployed, changing them isn’t exactly easy.

AMRs differ from automated guided vehicles (AGV) in that they don’t require special guidance cues such as magnetic tape or coded stickers to navigate. They use onboard sensors to map a facility, and during tasks, leverage these sensors to navigate safely among human workers, obstacles, and vehicles.

Unlike early generations of robotics, today’s mobile robots don’t need to be cordoned off for safety reasons. They can work collaboratively with human workers, moving goods to a point of need in a warehouse or manufacturing plant, or navigating in aisles in warehouses.

AMRs powered by a Cloud-based platform encompass a different approach to automation—one that doesn’t require IT infrastructure or lengthy projects to install and test bolted down hardware components. Cloud robotics can basically be thought of as a mobile robotics software solution that runs in the Cloud—where users can quickly make adjustments and gain operational insights and use the Cloud software to scale or change the solution as needed.

Reasons for changing a mobile robotics solution might include seasonal peaks at DCs, business growth, expansion into new markets, or simply the desire to switch the workflow that a robot is currently assigned to.

The outcome of prevailing conditions like the labor shortage and increasing business volumes and cycle times is that operations need to automate to increase productivity. What’s more, because of pressures around seasonality and the pace of change in business, automation solutions need to be flexible and scalable.

The good news is that with AMRs and Cloud robotics software, automation can go in quickly and easily scale up or down as needed. In short, the days of high unemployment when hourly labor could be easily added may be gone, but so is the era when a materials handling automation project took months to deploy and years for payback.