Here's why you should embrace robots in medical device manufacturing

By Matt Knutson
Vice President of Manufacturing Operations

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Whenever a new technology comes into focus, it seems many people are reluctant to embrace it. Robotic automation and artificial intelligence (AI) are the most recent technologies to revolutionize medical device manufacturing. Robotic technologies, once limited to high-volume production, have advanced to where flexible automation is now practical for medium- and low-volume runs, too.

Some fear these advances in manufacturing will lead to job losses, pushing out more expensive and less reliable human workers. But rather than fear it, medical device manufacturers and their workers should eagerly embrace it.

Here's five reasons why.

1. They help fill worker shortage gaps.

For decades, the medical device manufacturing industry has struggled to find enough skilled workers. With the advances in automation technology, fewer humans are needed in modern facilities, because industrial robots and collaborative robots (cobots) can step into the repetitive, precision-based roles that once relied on manual labor.

In some cases, a single automated robotic cell can do the jobs of several people, handling production, assembly and testing with more consistency and speed than humans. This boosts production, reduces errors and frees up human workers to focus on higher-value tasks. Plus, robots are becoming smaller – and AI is becoming smarter. Where robots once took up significant space, some can now fit in the palm of your hand, allowing more robots to be integrated into a single work cell. And programmed correctly, AI continues learning to increasingly minimize potential errors – more on that below.

2. They need humans.

A common concern is advanced technology will take jobs from people. While some tasks are becoming automated, many jobs are being transformed rather than eliminated. As industries adopt more advanced robotics, the demand for skilled labor increases, because people remain essential for operating, programming and maintaining these systems. So, the reality is both automation and human workers are necessary for manufacturing to operate efficiently, consistently and safely. Not every task can or should be fully automated, just as not every task can or should be done by humans. A balance between automation and human involvement is key for successful operations.

3. They help recruit and promote humans.

Finding skilled labor in a tight job market is difficult, and retaining talent can be even harder. With robots handling basic, monotonous tasks, human workers can focus on jobs that require applied science skills, critical thinking and decision-making. Think of technicians skilled in setting up and adjusting systems, and engineers who develop, troubleshoot and manage them. Skilled workers are also needed on production and assembly lines to oversee and operate the machines.

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In other words, automation increases the demand for skilled workers. After all, machines are only as effective as the people engineering, managing and operating them.

Another bonus is these more fulfilling roles offer prospects for continued learning and career advancement, which enhances recruitment and retention efforts. This also bodes well for future staffing. The next generation of workers, having grown up with ever-advancing technologies, will likely be more inclined to embrace automation and its digital interfaces.

4. They improve speed, quality and safety.

Robots offer a level of accuracy and reliability that is hard for humans to match consistently, especially in around the clock operations. They can perform 100% verification checks, automatically segregating nonconforming products (such as those with assembly issues, dimensional discrepancies or leak failures) – without tiring or losing focus.

Automation also can relieve workers from physically demanding or repetitive jobs, reducing ergonomic risks and improving safety.

And innovations like deep learning vision systems are taking robotic automation to the next level. By partnering with AI, these systems analyze hundreds of images, making decisions based on set parameters and consistently identifying nonconforming products or assembly issues that would be hard for a human to catch. Incorporating AI into robotics enhances quality control and ensures product consistency.

Robotic automation provides a major advantage in clean rooms, too, where humans are typically the largest source of contamination. Robots, on the other hand, can operate in these sterile environments without introducing particulate or microbial risks.

5. We need them.

Technology keeps advancing – and that's a good thing. As medical device quality and reliability expectations continue to increase, robotics and vision systems can consistently produce and verify critical product characteristics, removing potential human error from the equation.

The better, faster and more efficiently manufacturers can produce medical devices, the more people who need them can access life-saving innovations. The key is adapting to this evolving reality and ensuring that humans and robots continue collaborating for optimal results. Those who embrace this technology will thrive, while those who resist risk becoming obsolete.

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About the author

Matt Knutson is vice president of manufacturing operations, where he is responsible for production, manufacturing engineering and automation, quality, maintenance and facilities. He has held various positions in the custom injection molding and medical contract manufacturing industries over the last 25 years, including manufacturing engineering, quality management, and executive management.

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