

PROFILE

NAME: Automation^{nth}
LOCATION: Nashville, Tenn.
and San Diego, Calif.
FOUNDED: 1999
WEBSITE:
<https://www.automationnth.com/>

CHALLENGE

Automation^{nth} not only needed high precision and accurate performance, but also time-efficient and high-value robots to meet medical device assembly customer's unique manufacturing needs.

SOLUTION

The combination of Epson G-Series SCARA robots for high precision and fast cycle times with Epson T-Series All-in-One SCARA robots for less complex tasks provided an ideal mix of automation solutions that deliver the right technology for the job that is high performance, easy-to-operate and provides exceptional value.

Innovative Medical Device Manufacturing Integrator Standardized on Epson Robots for High-Performance, Value-Driven Assembly

Epson Robots Assist in Improving Automated Manufacturing Processes for Automation^{nth}

[Automation^{nth}](https://www.automationnth.com/), known as an “Architect of Automation,” is an integration and machine building company based in Nashville, Tenn. Founded in 1999, it began its mission to enable its customers to be leaders in the global marketplace by providing world-class automated manufacturing systems and solutions. With more than 20 years in the industry, Automation^{nth} prides itself in building deep, strategic partnerships with its customers in order to give them a competitive advantage over other manufacturers. Not only does Automation^{nth} provide solutions that meet automated assembly requirements, but they also offer consultative services throughout its customers’ automation lifecycles.

“When a manufacturer comes to us with automation needs, it’s important for us to deeply understand their strategy and requirements,” said Greg Young, vice president, Business Administration, Automation^{nth}. “They could be transitioning from manual production to automation or might need to scale quickly. We help them go from a blank sheet of paper to complex automated assembly by working together to find the best solution that meets their long-term objectives – and, we also help maintain that equipment after it’s in production.”

With many years of working with customers in the Life Sciences industry, Automation^{nth} has established itself as a market expert in medical device assembly applications.

“During one of our consultations, we came across a unique



and challenging manufacturing problem,” Jeff Buck, vice president, Engineering, Automation^{nth}. “Not only did we need to provide high-precision and high-performance robots on the front of the line, but we also needed time and cost-efficient robots on the end of the line to integrate into a whole assembly system to meet our medical device customer’s specific requirements.”

High Precision. High Performance.

An established Epson customer since 2017, Automation^{nth} looked to Epson Robots to meet the needs of this application. High precision and small component assembly is where it typically found Epson to be a market leader.

“We were looking for a robot that had ultra-high precision capabilities. We found the Epson G-Series, and...[helped establish] an industry standard by which Epson robots are now widely used across many key Life Sciences manufacturers.”

- JEFF BUCK, VICE PRESIDENT, ENGINEERING,
AUTOMATION^{NTH}

“A particular application that we developed for this customer required super high precision. We were looking for a robot that had ultra-high precision capabilities,” said Buck. “We found the Epson G-Series, and that’s why we picked Epson.”

Epson [G-Series SCARA robots](#) feature a high-rigidity arm design that delivers high speed, high precision and low vibration. This line-up offers a wide variety of sizes from 175 to 1,000 mm in reach and payloads from 1 kg to 20 kg, plus cycle times as low as 0.29 seconds.

“With the G-Series, we were able to provide vision feedback to provide offset settings back to the robot,” said Buck. “This helped us establish an industry standard by which Epson robots are now widely used across many key Life Sciences manufacturers.”

New Approach to Discrete Automated Manufacturing

The same Life Sciences customer requested Automation^{nth} create another solution to manufacture a product with very small components. To build a final product the size of a quarter, the components had insertion tolerances of 20 μ m XY and 1.5° angular. The accuracy required for this high-precision task was $\pm 21\mu$ m, and a robot with movement of $\pm 5\mu$ m accuracy.

Automation^{nth} was up for the challenge.

The solution they created combined a parts feeding system with Epson G-Series robots to identify and handle different components not visible to the human eye. In addition, Automation^{nth} employed its FLEXBASE configurable, modular platform allowing for more flexibility and cost-efficiency when handling a task this meticulous with accuracy, functionality and speed.

Available in 4’ or 6’ models, and ergonomically designed to accommodate a standing or sitting operator, FLEXBASE can be configured as a standalone automated workstation or linked together to quickly create a complete production line and can adapt quickly to the rapidly changing production needs.

“For this assembly, we needed to pick up components from a feeding system, which was incoming from a reel, feeder bay or feeder tray with an escapement that would present the required part. That part would need to be picked out and inserted inside the build of the component,” explained Buck.

This customer had already standardized on Epson robot technology as its de facto standard, so Automation^{nth} leveraged Epson’s common programming platform and user experience to help implement this new flexible approach to manufacturing.



“We typically go with the G-Series when we need higher precision. However, we also integrated the T-Series All-in-One as it offers industrial performance, yet a more cost-effective solution where ultra-high precision wasn’t needed for this particular application,” shared Buck.

Epson [T-Series All-in-One SCARA robots](#) are space-saving robots that install in minutes due to their controller being built into the base of the robot arm. They use the same intuitive software and powerful features found in Epson’s high-end robots. Available at an exceptional value, the T-Series robots are fast, easy to integrate and takes less time to install than most automation solutions. With reach distances of 400 and 600 mm, the T-Series can handle payloads of 3 kg and 6 kg, respectively.

The Right Robot for Each Job

Using a variety of automation solutions has given Automation^{nth} the freedom to provide options to this customer to deliver the best combination of functionality and price.

“For the scope of this program, we were able to easily install a range of Epson robots – 18 from the G-Series and 21 from the T-Series for each line, with a total of six lines – a total of 234 robots,” shared Young.

“When we had those high-precision needs, the G-Series solved that challenge. The T-Series provided an economical robot solution, which was an advantage,” expressed Buck.

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Also, the easy-to-use programming environment was nice as it allowed us to interface with the Epson robots using a template code that we developed.”

Automation^{nth} has found the programming environment to be a huge component when needing to quickly use Epson Robots to simulate an assembly line solution. The included Epson RC+[®] development software allows all components to communicate on a single platform. The single development environment makes it easy to develop programs for daily operational use and routine maintenance.

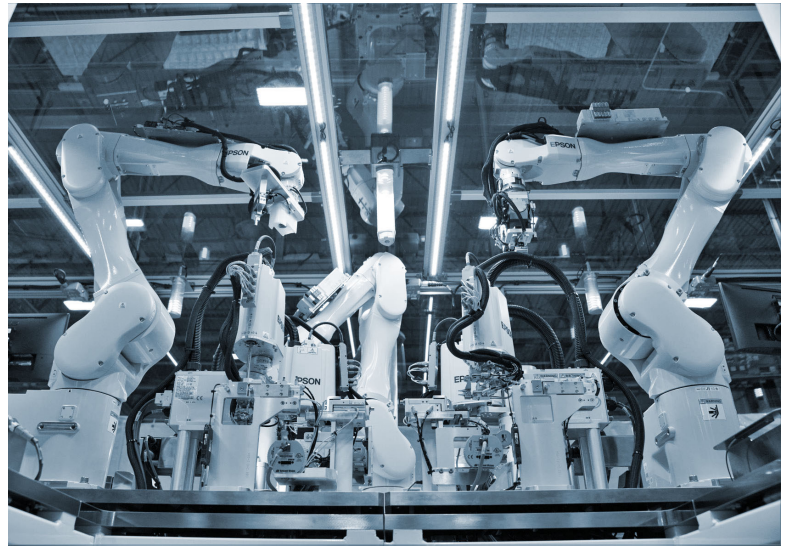
A Job Well Done = Customer Success

Compared to its manual assembly, Automation^{nth}'s customer was pleased with the improved quality and faster cycle time with the complete automated production line.

“Our customer is very happy because they were able to successfully execute one of the fastest production ramps the industry has seen,” said Young. “They are now producing millions of units per year, while also improving their yield and product quality. This also resulted in less product warranty exposure.”

Relationship Goals

Because Automation^{nth} is a long-standing Epson robot customer, the company has been able to create automation concepts that exceed customer expectations.



The company has also been able to broaden employee skillsets when using Epson robots through onsite training offered to platinum-level system integrators within Epson's [AutomateEliteSM](#) Authorized System Integrator Program.

Together, Automation^{nth} and Epson Robots are helping manufacturers overcome automated assembly challenges by providing more efficient and productive solutions, ultimately saving time, frustration and costs.

Epson Robots, along with the other automated machinery included in the assembly line helps Automation^{nth} in building trust with its medical device assembly customers, and collectively solves automated manufacturing problems.



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