News Release

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**At INTERPHEX NYC, Automation NTH to Showcase Precision Automation Solution for Complex Medical Device Component Assembly**

***Live demonstrations will highlight company’s Vision Guided Robotic Wire Insertion Machine for assembling close-tolerance components.***

*Nashville, TN* – **Automation NTH**, a leading automation system integrator specializing in solving complex life sciences, medical device and med tech manufacturing challenges, will showcase a precision automation solution for complex medical device assembly at **INTERPHEX NYC, April 1-3.** At **Booth #3061**, the company will provide live demonstrations of its custom-designed **Vision Guided Robotic Wire Insertion Machine**, a precision solution that can meticulously control movement with less than 0.001” (25 µm) tolerance in all axes. The machine was engineered to address the tight-tolerance assembly of two common medical device sub-components: stylets and cannulas.

Stylets are flexible metal wires often as miniscule as 0.010” (0.254mm) in diameter. Cannulas are hollow, exceedingly narrow tubes with inner diameters of approximately 0.013” (0.3302mm). Cannulas are frequently used to house needles or stylets for IVs and syringes.

Assembling such constructions brings several challenges, precision first and foremost. The wire insertion process requires accuracy of ± 21 µm, angular tolerance of 1.5°, and robot movements with ± 5 µm accuracy. From a quality control standpoint, stylets must not touch the inner wall of the cannula, which could damage the stylet. Variability is also a concern, as stylets differ in key attributes such as wire bends, angles, and lengths. Considering this, any machine solution must be exceptionally flexible.

Automation NTH solved these challenges by utilizing a Selective Compliance Assembly Robot Arm 4 (SCARA 4) axis robot, along with two tabletop-mounted servo motorspermitting independent motion. The configuration allows the machine to tilt the syringe, holding the cannula in the Theta X and Theta Y directions to handle angle variability in the stylets. To accommodate for stylet variability, the machine utilizes vision to guide the robot into position, then aligns the cannula with the stylet for insertion.

Automation NTH’s Vision Guided Robotic Wire Insertion machine incorporates a robotic gripper, which picks a cannula from a nest and threads it into the syringe body, fixing it into place. A corresponding robotic arm then picks a stylet from the nest and moves it to an approach position, presenting it to inspection cameras that record and measure offsets.

The system thus employs a delicate feedback loop between the robot, camera, and servo motors. The cameras record and measure, while the robots adjust the stylets and cannulas as needed based on this information. The process is then repeated until the stylet is lined up within ± 21 µm, achieving this incredibly tight tolerance via a “progress until perfection” setup.

“This Vision Guided Robotic Wire Insertion machine demonstrates Automation NTH’s ability to create innovative solutions for complex, high precision assembly applications,” said Peter Sarvey, Head of Sales at Automation NTH. “We look forward to showcasing the machine’s extraordinarily precise handling and assembly capabilities to attendees at INTERPHEX NYC.”

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**About Automation NTH**

Founded in 1999 and headquartered outside of Nashville, TN with a facility in San Diego, CA, Automation NTH is a trusted partner in automation for manufacturers. Our expertise transforms your manufacturing operations from manual processes to semi-automated and fully automated production. Whether scaling up from individual work cells or introducing fully integrated production lines, we deliver solutions that drive cost savings, enhance efficiency, and minimize risks. With a strong focus on robotics and controls, we ensure timely delivery of projects with strict adherence to budget. Our innovative approaches improve production capacity, product quality, and enable operator autonomy. Our services include: Custom Automation, Equipment Optimization, and Automation Consulting. Let us turn Automation into your Competitive Advantage!

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