

Tube Set Automation



End-to-end automation for precision, speed, and compliance

Manual tube set assembly is often slow, repetitive and difficult to scale — especially in regulated environments where consistency and traceability are critical. Labour-intensive steps can increase variability, strain skilled teams and limit throughput as demand grows.

Eclipse Automation delivers high-performance automation solutions designed to streamline tube set manufacturing.

From cutting and coiling to final inspection, our systems are engineered to automate every step while meeting the industry's most rigorous standards.

What's inside an automated tube set line?

Explore the key modules and capabilities that make up a complete Eclipse automation solution — from early-stage prep to final packaging.

TUBE PREPARATION



Tube cutting

- Automated cutting ensures tubes are trimmed to exact lengths
- Deburring systems clean edges to reduce manual inspection and handling

Tube bending and forming

- Programmable forming systems shape tubes to customer bends and angles
- Heat-assisted or cold-forming methods ensure consistency without compromising integrity

Tube coiling

- Precision coiling modules wrap tubing to custom diameter and pitches
- End detection and tension control ensure uniform coil quality
- Force-feedback systems maintain consistent tip quality

ASSEMBLY & BONDING



Component attachment

- Sensor systems verify part presence and orientation
- Pick-and-place robotics accurately insert tubes, components, and wires
- Force-feedback systems ensure full and secure insertion

Bonding and assembly

- Thermal, ultrasonic, or laser bonding secures connections without adhesives
- Consistent joining with customizable solvent bonding processes

TESTING & PACKAGING



Leak and functionality testing

- Inline leak testers verify integrity with operators
- Connector testing validates valve actuation, seal integrity, and pressure performance
- Customizable leak testers built to fit each solution

Vision inspection

- Machine vision detects surface flaws, misalignment, or contamination
- Laser gauging tools check OD, ID, and taper dimensions
- Insertion depth inspection at 360 degrees

Packaging and labelling

- Robotic handling loads catheters into sterile pouches
- Labelling systems apply traceable info aligned with regulatory standards
- Seal integrity testers automatically validate seal quality

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Case Study: Vascular Access Device Assembly

A leading medical device manufacturer needed to scale production of its vascular access catheter introducer sheath. The existing semi-automated process was limiting throughput, increasing costs, and making quality control difficult.

Eclipse replaced the semi-automated system with a 19-station fully automated assembly line featuring precision link conveyors, pick-and-place transfer, and integrated inspection for part verification and functional testing.



The outcomes? Increased production capacity and improved quality consistency, integrated inspection for part verification and functional testing, and a modular design that supports future catheter variants and enables greater flexibility across product lines.



12+
GLOBAL FACILITIES

1M+
SQ. FT. OF PRODUCTION CAPACITY

2001
YEAR FOUNDED

25+
YEARS OF EXPERIENCE

750+
HIGHLY TRAINED EXPERTS

The Eclipse Advantage

Founded in Cambridge in 2001, Eclipse Automation delivers manufacturing automation solutions for clients across the nuclear energy, life sciences, transportation, consumer, industrial, food & beverage, semiconductors, and aerospace & defense sectors.

Our cross-industry experience allows us to adapt proven technologies and best practices from one sector to another, enhancing precision, performance, and reliability for every customer.

With operations across Canada, the U.S., and Europe, we continue to grow our reach and capabilities to meet the evolving needs of all global manufacturers.

Ready to build what's next?

Contact us today to see what's possible:

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