

RIVO MULTITRADE OPTICAL SYSTEMS

Automatic riveting of cable trays



Overview

Automatic riveter integrates with drill-&-rivet machines for fully automated ladder and cable tray production lines.

Key Takeaways

Automatic riveting for cable trays uses robotic or gantry-based systems with integrated rivet feeding and precise alignment to achieve high-speed, consistent, and labor-saving assembly.

Automatic riveting systems for cable trays are designed to replace manual riveting, improving speed, accuracy, and safety. These systems typically integrate:

- Robotic or gantry-mounted rivet guns that can move along multiple axes to reach all rivet points on a tray or ladder frame .
- Automated rivet feeding mechanisms, such as vibratory bowl feeders or vacuum pickup arms, which sort, orient, and deliver rivets to the gun head, minimizing jams and double-feeds .
- Integrated counting and diagnostics, allowing precise control over the number of rivets applied and quick troubleshooting in case of errors .

Riveting Techniques

Two primary automated riveting methods are commonly used:



- **Blind (Pop) Riveting:** A rivet gun inserts a rivet into pre-drilled holes and snaps the mandrel, expanding the rivet to fasten the tray components. This method is easily automated with robotic arms and rivet feeders .
- **Orbital Riveting:** A riveting press head hammers the rivet shaft to secure parts together. This method is suitable for solid, tubular, or semi-tubular rivets and can be integrated into robotic cells for high precision .

Process Flow for Cable Tray Assembly

A typical automated cable tray riveting line includes:

- **Loading:** Side rails and tray bottoms are placed on conveyors using gantry robots or pneumatic pushers .
- **Hole Drilling:** CNC spindles drill precise holes in tray components, sometimes combined with tapping threads in a single pass .
- **Rivet Alignment and Placement:** Pneumatic pins or actuators ensure holes are perfectly aligned under the rivet guns. Two or more rivet guns can operate simultaneously to reduce cycle time .
- **Rivet Setting:** Each rivet pair is set in 3-4 seconds, with the option to add extra guns for higher throughput .
- **Post-Riveting Handling:** Finished trays are moved to exit conveyors, where robots can stack them or send them to finishing processes like powder coating or deburring . Some advanced systems combine drilling and riveting in a single gantry pass, further streamlining production and reducing part handling .

Advantages of Automation

- **High throughput:** Systems can set thousands of rivets per hour, far exceeding manual operations .
- **Consistency and precision:** Automated alignment ensures perfect rivet placement and structural integrity .
- **Labor savings:** Reduces manual handling and repetitive strain injuries .
- **Flexibility:** Quick-change rivet heads allow different rivet sizes and materials to be used without tools .
- **Real-time monitoring:** Sensors and diagnostics track rivet placement, detect errors, and alert operators to low material levels .

Applications

Automatic riveting systems are widely used in industrial cable tray production, including:

- Aluminum and steel ladder-type trays
- High-voltage cable tray packaging

- Aerospace, automotive, and heavy industrial equipment assembly These systems are particularly valuable in high-volume production environments where speed, accuracy, and repeatability are critical.

Article Content

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Automatic riveter integrates with drill-&-rivet machines for fully automated ladder and cable tray production lines.

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