

AUTOMATED TAPE APPLICATOR AND MATERIAL MANAGEMENT SYSTEM

The RoboTape system is a complete solution for production tape applications that require precision, repeatability and high output.

Each feature of the system was carefully designed to alleviate common production challenges with adhesive tape application.

Foam, felt and attachment tapes are the key product varieties that the universal system can run, often with little to no changeover. This means the capital equipment can be utilized for multiple programs throughout the equipment's lifespan.

Innovative's standard RoboTape system can be integrated into a custom-designed work cell to accomplish other manufacturing processes simultaneously.

The cell can be designed to work with existing equipment, floor space and cycle time requirements to deliver the efficiencies needed for a successful program.

The applicator head is lightweight, which permits the use of small, fast and cost efficient robots. Alternatively, a fixed position applicator head can easily be implemented when the part is actuated by a different means, i.e. "Part-to-Process". Take advantage of a mold tending robot's downtime with a fixed RoboTape applicator configured to apply tape to the part while it is already nested in the robotic tool.

The patent-pending feed system delivers material to the applicator uninterrupted, regardless of angle and orientation of the tool. This advancement allows for complex paths and profiles of tape to be laid with ease.

Circles, square corners and even 3D profiles can be performed with any standard RoboTape system. An integrated cutting system allows for multiple, segmented applications and reduces inventory requirements as compared to diecut solutions.



ROBOTAPE: FEATURES AND BENEFITS

A proprietary material management system feeds material from a remote location, which allows the cell layout to be optimized for process flow and maintenance. Typically located outside the safe zone, the material management system contains the bulk spool of material, and processes it to support continuous operation of the cell.

In the event of a spool changeover, a zero-downtime spool change system provides the user a window of time to install a new full spool while the upstream equipment is running, sometimes referred to as "hot swapping."

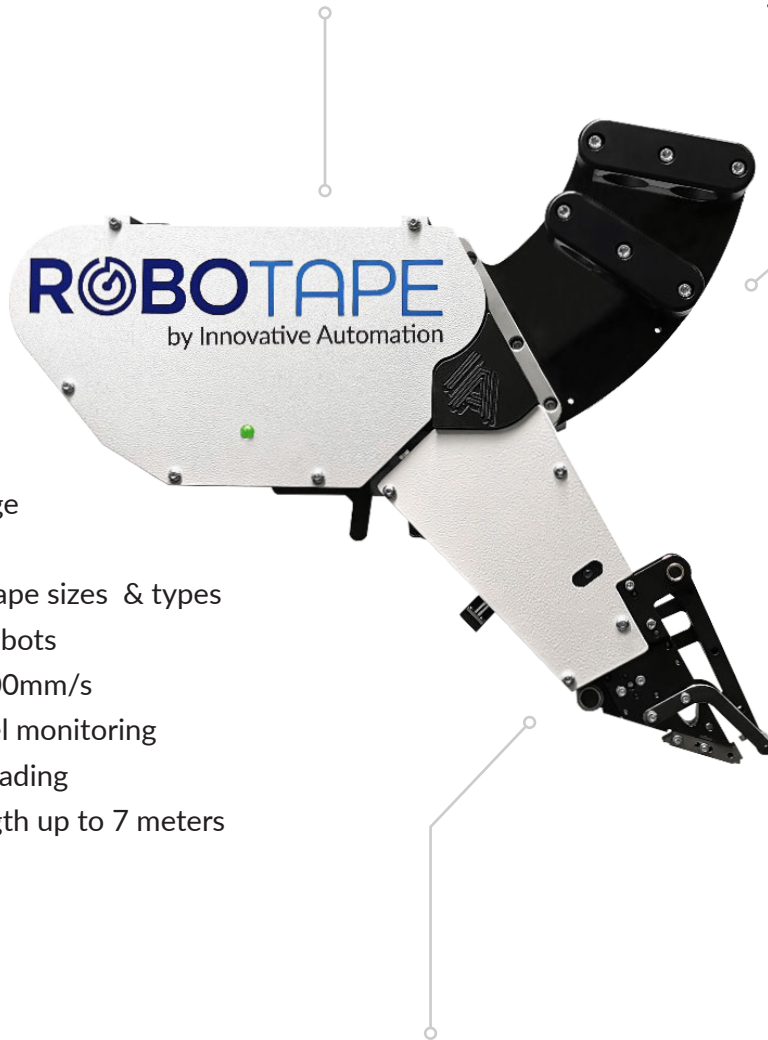
Bulk spool lengths can be tailored by the converter to match ergonomic specifications and run-time requirements, such that changeover can often be limited to once per shift, or even once per day. Scrap liner is automatically removed from the work cell and disposed of in a collection bin, typically emptied once per shift.

Other maintenance tasks can be completed utilizing the refined "Service Mode", which allow users to easily rethread the equipment and service the cutting system.

Splice detection and auto reject

Liner reclaim

Flexible feed system



Integrated cut-to-length

Sleek applicator tip

Customizable wet-out

FEATURES

- Zero-downtime spool change
- Remote machine tending
- Standard design adapts to tape sizes & types
- Integrates to most 10kg+ robots
- Application speeds up to 300mm/s
- Data collection & spool level monitoring
- Automatic feed system threading
- Adjustable feed system length up to 7 meters

BENEFITS

- Increase through-put
- Reduce manual labor
- Improve quality and repeatability
- Flexible cell layout

Is RoboTape right for my application?

RoboTape has been tested and proven with a variety of foam tapes with adhesive on one or two sides, felt and double-sided acrylic foam attachment tapes. Other materials in level-wound format can work with the system with minor modifications. An application specialist will be assigned to specify a system and can demonstrate the systems performance with our robotic test cell.



Considerations

Can the material be spooled?

Spooled material can be provided by third party convertors, or supplied direct from tape manufacturers. Innovative can assist with the supplier selection process to ensure their capabilities match the process requirements.

Retrofit an existing cell or build new?

RoboTape can be easily retrofitted to existing work cells to create new efficiencies and solve production challenges. There are also benefits to design new such as improving workflow, automating additional processes, combining part variants and building in future flexibility.

What is the return on investment?

ROI calculations vary, but often times is less than one year. The system offers many cost saving advantages such as reductions in labor, inventory, floor space, and quality issues. The system can increase through-put and accomplish applications that are not feasible for human operators.

RoboTape Payout Specifications

Item	Description
Size	890w X 575d X 1285h mm (35w x 22.5d x 50.4h")
Weight	140kg (308.6lbs)
Tape Dimension Constraints	3mm - 16mm wide, up to 16mm thick (0.118" - 0.63" wide, up to 0.63" thick)*
Spool Size	Up to 425mm diameter x 425mm wide (16.75" x 16.75")
Feed System	Adjustable length up to 7 meters
Minimum Air Supply	5.5 bar, 315LPM (80PSI, 11CFM)**
Electrical Supply	100-127V AC 1 Phase, 50/60 Hz, NEMA 5-15P, 5 F.L. AMPRES, TN Distribution
Short-Circuit Current Rating	5kA
Maximum Feed Rate	300mm/s (1 fps)
Integrated Control System	Beckhoff TwinCAT3, Windows 10 IoT, 64 bit
Program	Built-in recipe selection, fault messaging, data collection, material level indicator, maintenance alerts
Slave Communication Protocol	EtherCAT, Ethernet-IP, PROFINET
Safety	Beckhoff TwinSAFE
Material	Body: Powder coated steel, Mechanical components: 6061 T6 AL, HRS, hardened steel, brass, Pulleys: Nylon
Ambient Payout Temperature for Usage	Minimum: 5°C (41°F) Maximum: 40°C (104°F)
Sensors	24VDC, PNP (Optical, inductive, laser, IO-Link)
Noise Emission	<70dB Emission

* Application dependant, please consult the RoboTape team to confirm feasibility

** Air consumption varies based on machine set points and cycle time

RoboTape Applicator Specifications

Item	Description
Size	425w X 225d X 350h mm (16.7w x 8.9d x 13.8h")*
Weight	7.5kg (16.5lbs)
Tape Dimension Constraints	Up to 16mm square (0.63" square)**
Air Supply	1x 8mm PU tube (from Payout)
Electrical Supply	24VDC, 1.5A, DB25 (from Payout)
Maximum Feed Rate	300mm/s (1 fps)**
Standard Tool Clearance	11mm from center of tape (zero clearance applicator tip available)
Application Precision	+/-1mm (0.04") all around**
Blade Adjustment Precision	0.02mm (0.0008") per increment
Sensors	24VDC, PNP (Optical, inductive, laser, IO-Link)
Ambient Applicator Temperature for Usage	Minimum: 5°C (41°F) Maximum: 40°C (104°F)
Robot Requirements	10kg minimum payload, must have TCP speed output**

* Dimensions are approximate 'tip to tip'

** *Tape placement tolerance may be affected by several factors not limited to; Tape Specifications, Robot Selection, Application Speed, PLC Specifications.*

RoboTape™

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ROBOTAPE
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