



BENEFITS

- » Increases throughput and offers the potential for 24/7 operation
- » Requires minimal tending, allowing personnel to be utilized elsewhere for more efficient use of labor
- » Reduces bottlenecks with a sustained, repeatable and consistent cycle time
- » System accommodates up to four rolls of wrapping material in varying widths, making it easy to wrap different load sizes on the fly
- » Reduces workplace injuries by automating a dangerous, manual task
- » Ensures precise, even wrap placement on every load for professional, uniform packaging and brand identification
- » Programmable staple quantity and placement ensure wrap material is secure
- » Minimizes downtime by monitoring supply levels and automatically reloading the staple gun magazine
- » Remote Access Monitoring (optional) reduces the need for onsite technical resources to perform diagnostics and troubleshooting, if required

APPLICATIONS

- » Bundles of I-joint beams
- » Stacks of LVL, OSB or plywood
- » Stack heights of 9" to 26"
- » Stack lengths of 10' to 100'
- » Stack widths up to 50"

FLEXIBLE AUTOMATED SOLUTIONS

PRE-TEC's Robotic Wrap Applicator automatically applies end seal and protective wrapping to bundles of I-joint beams and stacked laminated veneer lumber (LVL). The system is designed to increase product output and free up manpower for more value-added activities.

PRECISE, REPEATABLE LOAD WRAPPING

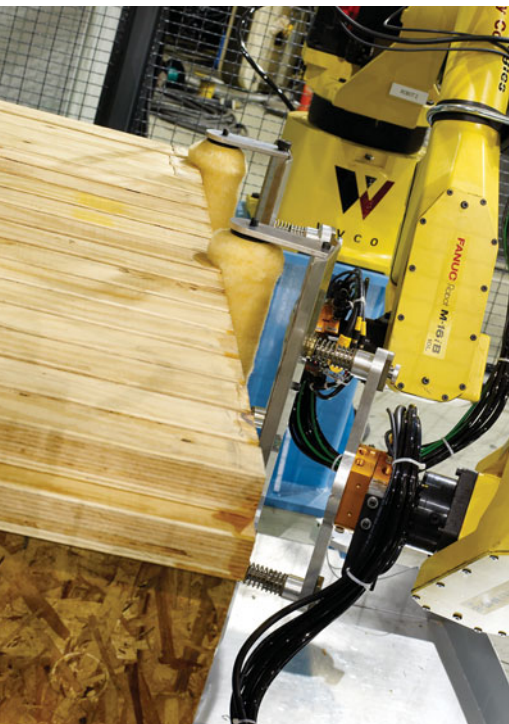
Three, six-axis, industrial robotic arms utilize end-of-arm tools to apply sealer to the leading and trailing ends of a stack of I-beams or LVL. The system also folds and secures protective wrap material to the load. The flexibility and accuracy of the robotic arms allow programming of precise staple patterns and consistent wrap application for repeatable results on every load.

The paper carousel accommodates up to four rolls in varying widths that can be changed on the fly depending on the size of the load. The height and width of the load are determined upstream using a Programmable Logic Controller (PLC), photo eyes and other devices. This allows the paper carousel to index the correct roll into position prior to the unit entering the applicator area.

INTELLIGENT SUPPLY MONITORING

The control system actively monitors paper usage and staple supply levels. When a low staple magazine condition occurs, the robotic arm moves the staple gun to the automatic staple-loading conveyor. The staple gun can be reloaded automatically between units without operator intervention, enabling consistent cycle times and minimizing disruptions.

If the staple levels in the automatic staple-loading conveyor run low, the operator is notified in advance so it can be resupplied for continuous system operation.



COMPONENT OUTLINE

- » Three (3) Fanuc M710iC Six-axis Robotic Arms and Controllers
 - › One (1) paper handling robot
 - › Two (2) stapling robots
- » Programmable Logic Controller (PLC)
- » Structural Steel Framework
- » One (1) End-of-Arm Paper Gripping Tool
- » Two (2) Pneumatic End-of-Arm Staple Gun Assemblies
- » Two (2) Paint Roller End-of-Arm Tools
- » Two (2) Tool Cribs
- » Cut-off/Compression Roll Assembly
- » Paper Management System
 - › Loading bar with straps
 - › Paper justification system: automatically justifies paper +/- 3"
 - › Carousel system for up to four paper rolls
 - › Accommodates paper rolls up to 16" diameter and widths of 66" to 102"
- » Paint Supply System
- » Automatic Staple-Loading Conveyors
- » Safety System
 - › Robotics Industries Association (RIA) 15.06 Standard Compliant
 - › Disconnects for lockout and tag-out protocols
 - › Personnel interlock switches on access doors that activate a safety stop command if opened during operation
 - › Service platform with staircase and handrail
- » Fully Integrated Conveyor
- » Full Complement of Sensors
- » Lockable Air Supply Valves
- » Two (2) Operation Manuals

STANDARD COMPONENTS

- » **Mechanical Drives:** Sew EuroDrive
- » **Motors:** Baldor, Toshiba or Weg
- » **Bearings:** Dodge, SKF or Link-belt
- » **Pressure Switches:** IFM
- » **Pneumatics:** Numatics
- » **Communications Protocol:** Ethernet I/P Standard
- » **HMI (2):** PanelView +7 1000
- » **PLC:** Allen Bradley Compact Logix
- » **Enclosures:** Hoffman or Rittal

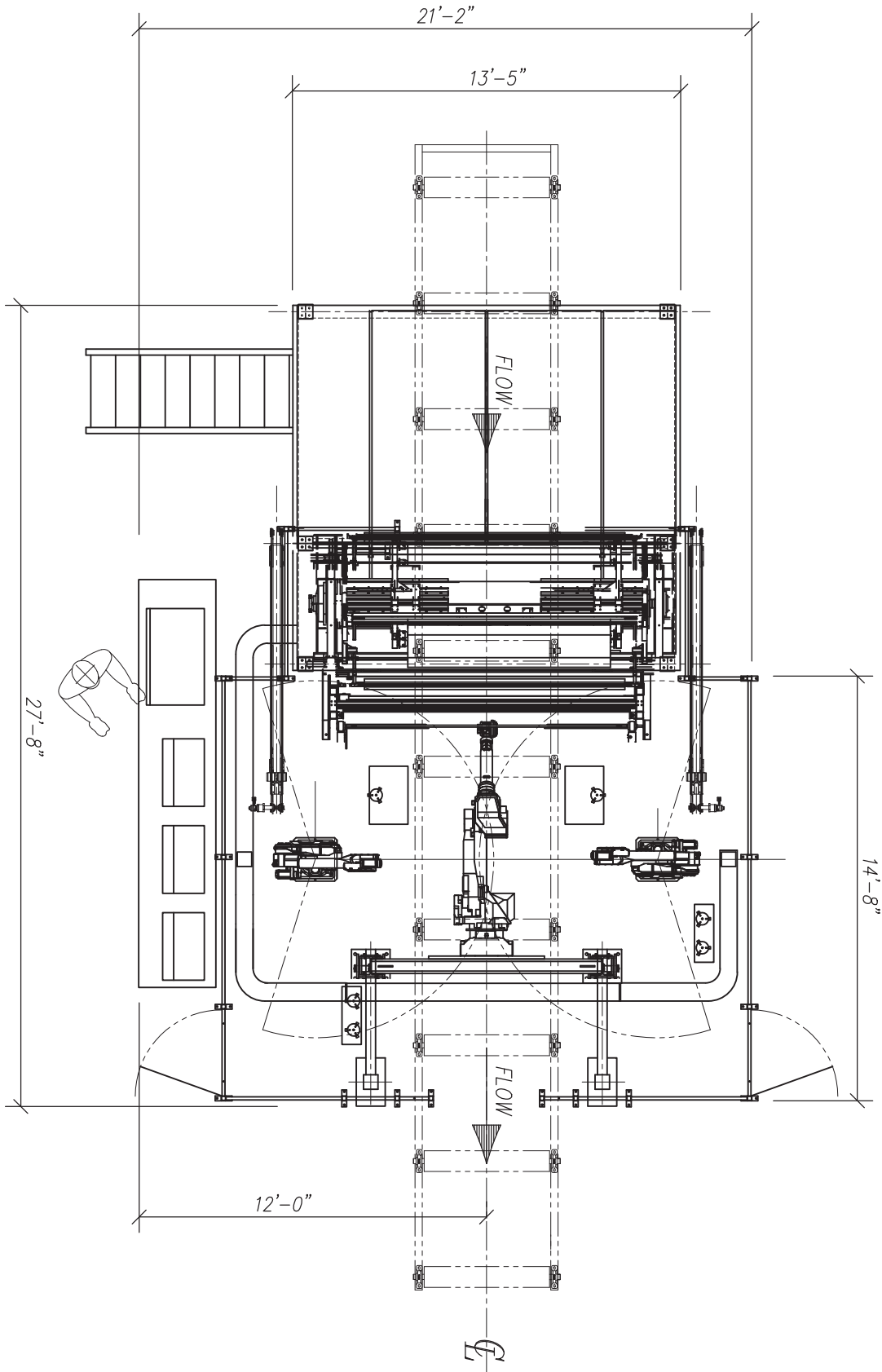
OPTIONS

- » Remote Access Monitoring (recommended)
- » Allen Bradley Control Logix PLC
- » Labeling Operation
- » Dunnage Placement

REMOTE ACCESS MONITORING

Get help when you need it! PRE-TEC can provide remote assistance as an optional addition to the Robotic Wrap Applicator system. The Remote Access Monitoring hardware enables PRE-TEC employees to help mill personnel with troubleshooting and diagnostics without requiring a costly, onsite visit. Remote Access Monitoring connects to the system's main PLC via Ethernet. Mill personnel activate the Remote Access Monitoring system through a mobile connection (a mobile access signal at the mill is required).

ROBOTIC WRAP APPLICATOR LAYOUT



SPECIFICATIONS

System Height (varies by pass line height):

Approximately 14'

System Length: 21' – 30' (depending

on options)

Conveyor Length: depends on options

System Width: 26' (excluding controls cabinet)

System Weight (including conveyor): 9,500 lbs.

Power Requirements (two drops minimum):

USA: 480VAC, 3PH, 60 amp,

120v single phase

Canada: 575VAC, 3PH, 50 amp,

120v single phase

Grounding Requirements: Ground Rod(s)

100 Ohms or less

Foundation Requirements: Steel-reinforced

concrete sound slab floor, 6" to 8" thick

Process Air (dry, clean):

11 scfm @ 70 psi Duty Cycle 30%

Anchoring Requirements: Epoxy Anchors:

(32) 3/4" x 7 1/2" long, (6) 5/8" x 6" long,

(4) 1/2" x 6" long

PRE-TEC is the largest custom robotic solution provider on the West Coast. Whether you are considering automation to increase efficiency, ensure manufacturing safety or improve quality, PRE-TEC has the expertise to make your next project a success.



SEQUENCE OF OPERATION

1. The height and width of the load are measured upstream from the Wrap Applicator system to determine which paper roll size is needed. Depending on the load dimensions, the system indexes the appropriate paper roll into position.
2. The load moves to a predetermined location inside the system and stops.
3. A center-mounted robotic arm grasps the paper in two locations on the leading edge to ensure the paper remains taut for placement on the load.
4. Sealer is applied to the leading edge of the unit by paint rollers (nap) attached to two robotic arms mounted on opposite sides of the load.
5. After end sealing is complete, the paint rollers are exchanged for staple gun assembly units.
6. The paper-handling robot positions the paper while the stapling robots fold and stable the front end of the load.
7. The system signals the conveyor to advance after the paper-handling robot releases the end of the paper.
8. The paper-handling robotic arm extends the wrap to cover the top and sides of the unit in preparation for folding and stapling along the load.
9. Once the unit starts to advance, the stapling robotic arms secure the wrap to the load.
10. While the load advances, the stapling robots staple the paper along both edges of the load.
11. The conveyor advances the load and the stapling operation continues until the trailing end is detected by the system.
12. The load stops and the trailing edge of the unit is automatically end-sealed and wrapped.
13. Once the wrapping operation is complete, the unit is released to move downstream.

CYCLE TIMES

The Wrap Applicator processes a load at approximately 50 seconds per end and one second per foot along the length of the load. For example, a 4' x 16' unit can be wrapped in roughly 120 seconds. The cycle begins when the unit arrives at the end seal location. It stops when the wrapping operation is complete and the load is released to move downstream.

Factors that can affect cycle time include:

- » Infeed/outfeed conveyor speed
- » Multi-tasking of robot and conveyor control systems via PLC
- » Integration optimization
- » End sealing needing to be done in advance of wrapping

Call 800.205.9826 for an engineering review of your project.
Or visit pre-tec.com to see demonstration videos, project history and more.