

TRC 1500 – Timber Repair & Cosmetic Machine

Technical Description • System Overview • Process Workflow

System Overview

The Wintersteiger TRC 1500 is a fully automated industrial system designed to detect, repair defects in wooden boards. It combines advanced 3D scanning, high-pressure thermoplastic injection technology to deliver consistent, high-quality repairs at production speed. Defects are repaired with thermoplastic filling material using injection and application units. No filling material is wasted thanks to the precise calculation of the filling quantity and precision injection.

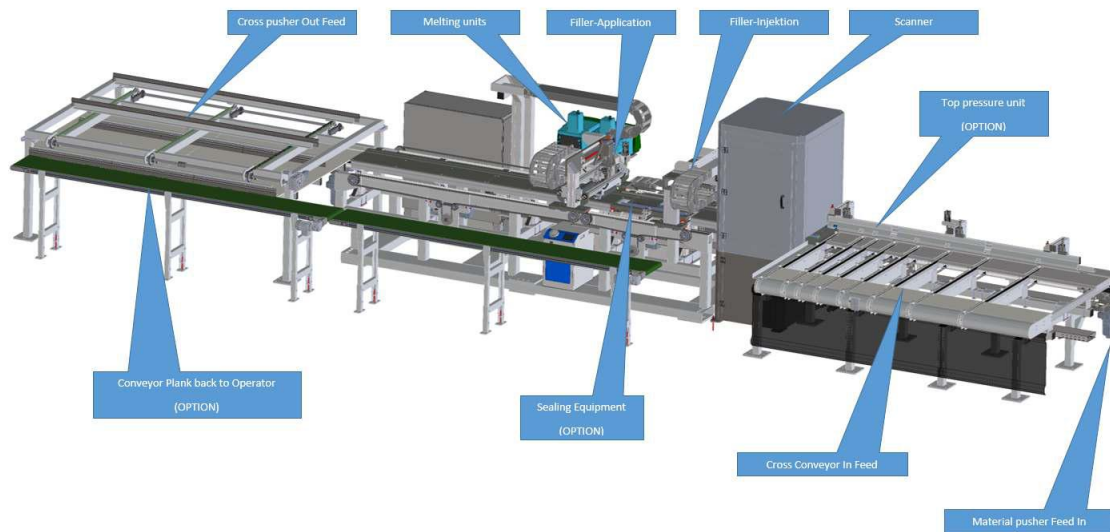
the edges can also be filled.



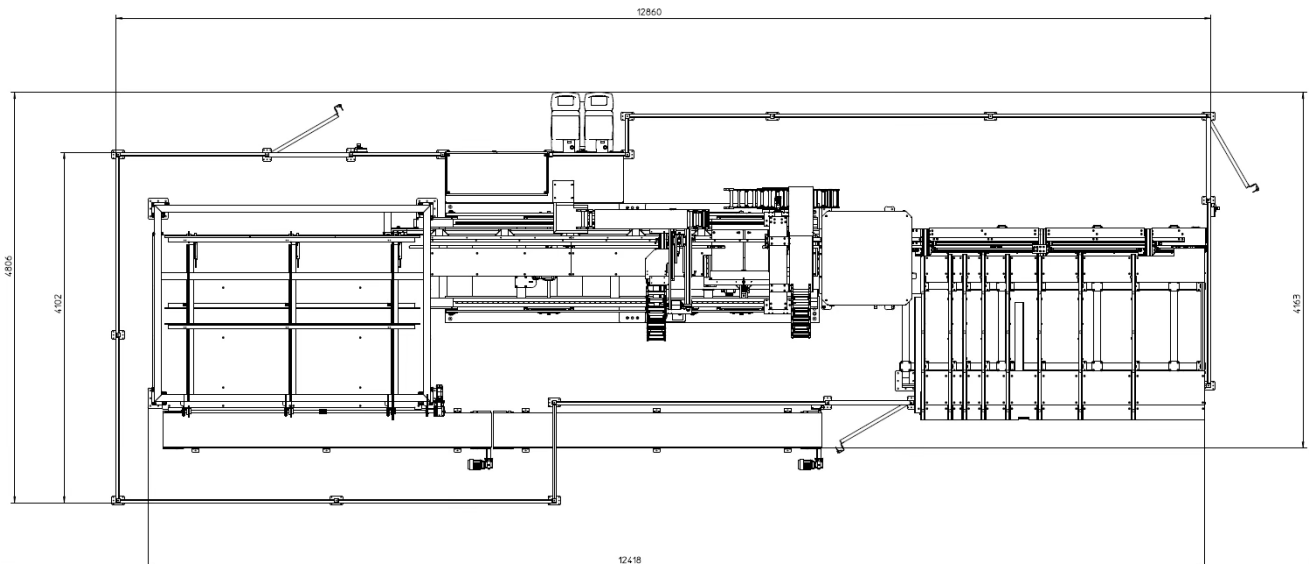
Key Features

- Automated 3D laser triangulation defect detection
- High-pressure thermoplastic injection for durable repairs
- Precision finishing unit for cosmetic perfection
- Independent melt temperature zones with 8 kg tank
- Closed glycol-water cooling system for controlled solidification
- Ethernet-based control system with remote maintenance
- Unlimited product profiles and intuitive scanner interface

1. Machine Photo



2. System Layout



4. Product Range (Workpiece Specifications)

Length	500–3000 mm
Width	100–350 mm
Thickness	3–30 mm
Production speed	upto 10 m/min – depending on number and sizes of defects

5. Filling System – Injection & Application Units

- Injection Unit:
 - 3-axis positioning (X/Y servo-driven, Z pneumatic)
 - Pressure-regulated melt feed
 - High-pressure injection
- Application Unit:
 - 3-axis control
 - Fine finishing of repaired areas

6. Faulty Spot Eye Scanner

- 3D laser triangulation and high-speed camera system.
 - Detects defects from approx. 1 mm depth
 - Automatic height adjustment
 - 2D + 3D measurement
 - Adjustable parameters for wood types

7. Melting Unit

- 8 kg tank
- Independent temperature zones
- Integrated piston pump for constant pressure

8. Cooling Unit

- Closed glycol-water circuit
- Stable temperature control

9. Control System

- Ethernet-based communication with remote maintenance
- Access to PLC, scanner, servo drives
- Energy-efficient regenerative drive technology

10. Scanner Software

- Processes 3D light-section profiles
- Calculates defect volume and coordinates
- Unlimited product programs
- Intuitive operator interface

11. High-Pressure Injection Process

1. Melting of thermoplastic material
 2. Pressure and temperature regulation
 3. Targeted injection into defect
 4. Immediate cooling
 5. Minimal surface residue
- Benefits:
 - Low material usage
 - Excellent adhesion
 - No alteration of surrounding wood structure

12. System Architecture

- Melting unit
- Heated hoses
- Injection head
- Cooling plate
- Cooling unit with supply/return flow