

■ Case Study

High-Speed Flute Laminator Machine

Customer Profile

The customer is an emerging OEM in the packaging machinery industry, specializing in the development of high-speed flute laminator machines used for corrugated board applications. The company focuses on delivering cost-effective, high-performance solutions for printed packaging, catering to industries such as FMCG, retail display, and logistics.

With increasing demand for high-quality laminated boards, the customer aimed to enhance machine precision, speed, and automation capability to compete with established global players.

The Challenge

The customer faced multiple challenges while developing their first high-speed flute laminator machine:

- Lack of prior experience in designing automated laminator systems
- Dependency on manual and mechanically synchronized roller systems
- Difficulty in achieving precise sheet alignment at high speeds
- Requirement for accurate synchronization between printed paper and corrugated sheets
- Need to replace conventional motion control systems with an integrated, scalable solution
- Achieving high-speed correction with consistent bonding quality

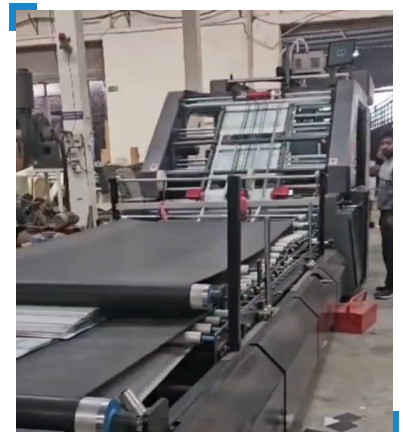
Additionally, maintaining stability at speeds up to 12,000 sheets/hour , Length (550 mm) while ensuring minimal rejection was a key technical challenge

The Solution

Inovance Technology provided a complete automation solution tailored to the application, enabling high-speed, synchronized motion control across multiple axes.

Key System Architecture

- PLC & Control
AM521-0808TN (Main PLC), EASY320-0808TN (Expansion PLC)
- HMI
IT7100E for real-time monitoring, parameter setting, and diagnostics
- I/O Expansion
GL20 Series modules for flexible system scalability
- Servo System
SV660 & SV630 series servo drives, MS1H servo motors (400 W to 4.4 kW)
- Drives
MD310 series AC drives for:
Main motor (5.5 kW), Table motor (1.5 kW), Vacuum motor (0.75 kW)



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Machine Functionality

The system integrates multiple synchronized sections:

- Feeding Section - Printed sheets and corrugated boards are fed precisely
- Correction Section - Servo-controlled alignment ensures accurate positioning
- Gluing Section - Uniform adhesive application for strong bonding
- Pressing Section - High-pressure rollers ensure proper lamination
- Delivery Section - Smooth output handling at high speed

Advanced motion algorithms ensure precise coordination between all axes, replacing traditional mechanical linkages.

The Benefits

The implementation of Inovance's automation solution delivered significant improvements:

Performance Improvements

- Achieved high-speed operation of up to 12,000 sheets/hour , Length (550 mm)
- Improved sheet alignment accuracy through servo-based correction
- Reduced vibration and mechanical wear by eliminating cam-based systems

Quality Enhancements

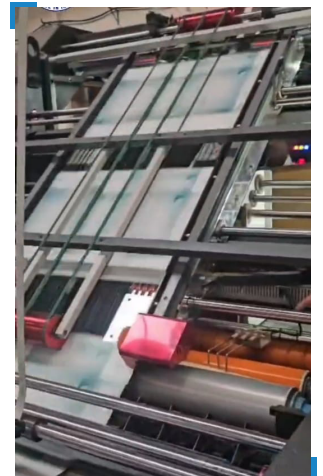
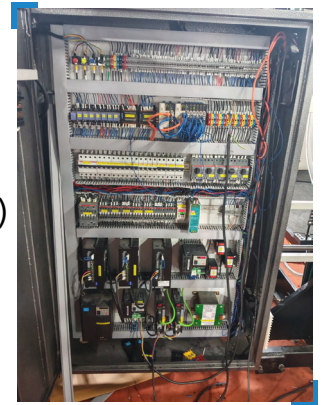
- Consistent bonding quality across all speeds
- Reduced rejection rates due to precise synchronization
- Enhanced control over glue application and pressing

Operational Advantages

- User-friendly HMI for easy parameter adjustments
- Faster commissioning and reduced setup time
- Scalable architecture for future upgrades

Cost & Efficiency

- Reduced maintenance due to fewer mechanical components
- Improved machine reliability and uptime
- Competitive solution compared to imported systems



Conclusion

By leveraging Inovance Technology's advanced PLC, servo, and drive solutions, the customer successfully developed a high-performance flute laminator machine capable of meeting modern packaging industry demands.

The solution enabled precise synchronization, high-speed operation, and superior product quality—positioning the customer as a competitive player in the corrugated packaging machinery market.