

■ Automation Case Study

Multi-Station Thermoforming Machine

Customer Profile

A leading machine builder developed a next-generation Multi-Station Thermoforming Machine to produce food containers, trays, lids, clamshells, and other thermoformed packaging products. The machine integrates multiple manufacturing processes—including sheet feeding, heating, forming, cutting, punching, and stacking—into a continuous automated production cycle to achieve higher productivity, precision, and operational efficiency.



Customer Challenges

The customer required an advanced automation platform capable of delivering:

- High-speed synchronized multi-axis motion control for seamless machine operation.
- Precise forming and cutting to ensure consistent product quality.
- Production speeds of up to 45 strokes per minute, subject to application and mechanical constraints.
- Flexible recipe management for quick product changeovers.
- User-friendly HMI with advanced diagnostics and alarm management.
- Smooth motion profiles to reduce mechanical wear and improve machine life.

Inovance Solution

After evaluating the application requirements, Inovance delivered a complete motion-centric automation solution built around its integrated control platform.

The solution included:

- AM500 Series Motion Controller for synchronized multi-axis control
- SV Series Servo Drives with MS1 Servo Motors



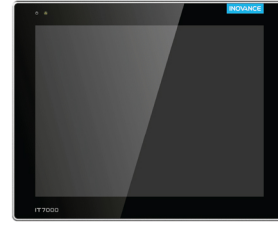
Servo Motor



AM500 Series

- IT7 series HMI for recipe management, diagnostics, and secure user access
- GL20 EtherCAT Modular Remote I/O modules
- MD520 AC Drives for auxiliary applications

The system provides synchronized control of sheet indexing, forming, plug assist, cutting, punching, and stacking operations while ensuring smooth, high-speed machine performance.



IT7 series HMI



VFD

Key Benefits

- Achieved stable production speeds of up to 23 strokes/min production speed and 45 strokes/min dry run cycle speed
- High positioning accuracy and synchronized multi-axis motion.
- Improved product consistency and dimensional repeatability.
- Faster mold changeovers through recipe-based operation.
- Reduced machine downtime with intelligent diagnostics and alarm management.
- Flexible machine configuration using EtherCAT modular I/O.
- Reliable 24x7 operation with scalable architecture for future expansion.

Results

By implementing Inovance's integrated automation platform, the machine builder successfully modernized its thermoforming machine with a high-speed, reliable, and scalable control system. The solution delivers consistent product quality, enhanced operational efficiency, reduced maintenance requirements, and supports continuous 24x7 production, making it an ideal solution for high-volume thermoforming applications.

Automation That Drives Thermoforming Performance

- 45 strokes/min
- Multi-axis synchronization
- Fast changeovers
- 24x7 reliability

Inovance's integrated motion-control platform enables the machine builder to achieve **high-speed, precision thermoforming with greater flexibility, consistency and operational efficiency**—from sheet feeding and forming to cutting, punching and stacking.



Thermoforming Applications
– Finished Products