Automation Case Study

8-Colour Flexo Printing Machine

Packaging Industry

Customer Overview

A leading manufacturer of woven bag making machines and flexo roll and bag printing machines developed an 8-Colour Flexographic Printing Machine for high-volume, roll-to-roll printing on PP woven fabric. The machine prints eight colours continuously, without changing print cylinders or rollers when the print size changes. It uses a water-based ink system with integrated hot-air drying. It serves packaging sectors such as fertilizers, food products, sugar, cement, milk powder and powdered chemicals.



Customer Challenges

The customer needed an automation platform that could deliver:

- Real-time synchronization of the main drive, eight colour stations, infeed/outfeed and unwinder/rewinder.
- Constant fabric tension through closed-loop control.
- Accurate colour registration across all eight colours.
- Front-and-back printing with I-Mark registration, including multi-pass jobs.
- Automated control of pneumatic lifting drums with ink roller interlocks.
- A clear HMI with live diagnostics and alarm logging.
- MES/SCADA connectivity for OEE tracking.

Inovance Solution

Inovance delivered a compact, motion-centric control solution:

- AM522-0808TN-INT Motion Controller: synchronizes the main drum, all eight print stations and the infeed/outfeed over EtherCAT using E-Cam and electronic gearing. Unwind and rewind stations communicate over Modbus RTU (RS485).



AM522 Motion Controller

- IT7100E-INT 10" HMI: recipe management, diagnostics and secure access control.
- GL20 EtherCAT Modular Remote I/O: flexible configuration, simpler wiring and faster commissioning.


IT7100E-INT HMI


GL20 I/O

The system supports Manual, Homing and Dry Run modes, front-and-back printing with I-Mark registration, selective drum control and advanced alarm management.

Key Benefits

- Synchronized multi-axis control across eight print stations and the web handling sections.
- Print sizes change without cylinder swaps, which cuts setup time.
- Precise registration across all colours, with I-Mark support for front-and-back and multi-pass jobs.
- Easier setup, troubleshooting and maintenance through Manual, Homing and Dry Run modes and detailed alarm handling.
- Recipe-based operation with secure user access.
- Simpler wiring and faster commissioning with EtherCAT modular I/O.
- Scalable architecture suited to 24×7 production.

Results

With Inovance's integrated motion control platform, the machine builder now has a reliable, scalable control system for its 8-colour flexo printing machine. It runs at line speeds of up to 100 m/min, subject to application design and system validation, and gives consistent colour registration, flexible operation and dependable continuous production.

Automation That Drives Flexo Printing Performance

- 8-colour synchronized printing
- Up to 100 m/min line speed*
- I-Mark front-and-back registration
- 24×7 reliability

Inovance's integrated motion-control platform gives the machine builder **consistent colour registration, flexible operation and dependable continuous production**—from infeed and eight print stations to unwinding and rewinding.

*Subject to application design and system validation


Flexo Printed Rolls – Finished Products