

Automation Control for Vertical Form, Fill and Seal (VFFS) Machines

Advantages

- **Substitution of mechanical machine elements** — Flexible, electronic synchronized drives replace rigid mechanical systems with mainshaft, gears and cams. Extended machine lifecycle and noise and vibration reduction by decoupling mechanical components
- **Maximum flexibility** — Easy synchronization to upstream or downstream machines or processes
- **Increased productivity** — Increased cycle rates by replacing mechanical transmission components with servo technologies
- **Automated format change by means of recipe storage** — Increased product quality Phase correction by use of registration mark control improves seal and cut accuracy
- **Reduced downtime** — No homing after downtime (in case of product jams or power failure) by using servo motors with absolute encoders
- **Jump Start Programming** — Take advantage of the VFFS code template for the Logix platform to reduce development time



Photo courtesy of Rovema Packaging Machines

Overview

Vertical Form, Fill, and Seal (VFFS) machines are used in the consumer products industry for a wide variety of packaging applications. Various products like salt, tea, sugar, spices, snack foods, wafers, detergent and candies are placed into formed pouches and then sealed. The pouch material is flexible and typically heat-sealable plastic. Paper is also used and sealed by glue.

VFFS machines can be intermittent or continuous motion. Intermittent motion machines operate on the principle that vertical bag seals are made when the film is moving and horizontal seals occur when the film stops. Intermittent motion machines offer a suitable solution for applications where speed is not absolutely paramount.

Continuous motion machines operate on the principle that both vertical and horizontal bag seals are made when the film is in motion. These machines operate at the highest attainable speeds.

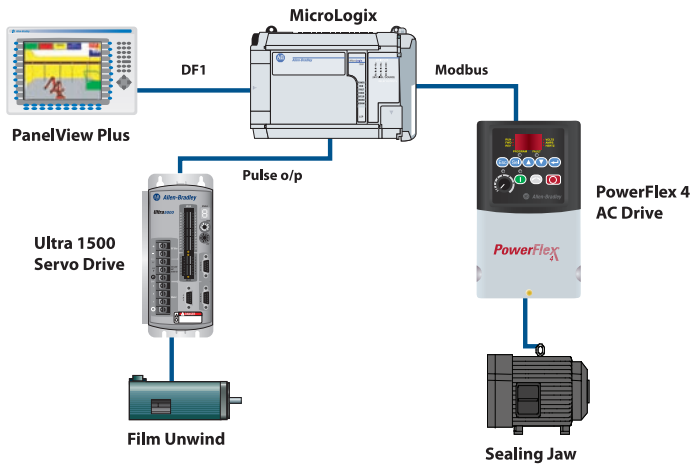
Solution

There are several good solutions from Rockwell Automation that can be used for VFFS machine applications. For intermittent motion machines, you can implement a control architecture based on either an Allen-Bradley MicroLogix™ controller or an Allen-Bradley CompactLogix® programmable automation controller (PAC), depending on your machine speed requirements. For continuous motion machines, the Rockwell Automation Integrated Architecture™ with integrated motion is an ideal choice. The Logix Control Platform is a powerful system of control, networking, visualization, and information technologies that delivers a lower total cost to design, develop, and deliver machinery. Unlike conventional control architectures, it provides fully integrated, scalable solutions using a single control platform and a single development environment. This enables machine builders to efficiently re-use engineering designs to reduce development time and cost and greatly enhance business performance. In addition, Rockwell Automation has developed a modular VFFS machine code template based on industry standards that helps reduce development time and leverage best practices.

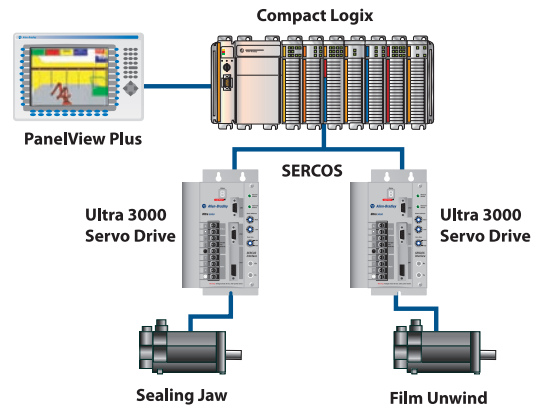
LISTEN.
THINK.
SOLVE.™

Typical Architectures

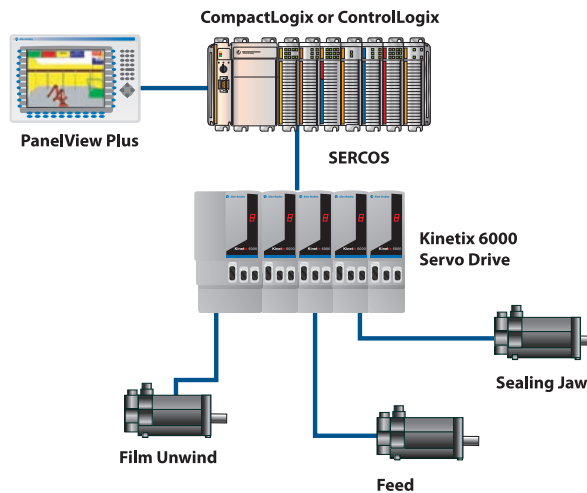
Slow Intermittent Motion Machine



Fast Intermittent Motion Machine



Continuous motion



Rockwell Automation solutions deliver improved production capabilities and reduced total cost of ownership by providing unparalleled functionality, flexibility and scalability. Machine builders can respond more quickly to customer or market demands, reduce maintenance costs and downtime and easily gain access to actionable plant and production information for improved management and decision-making.

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