Flow wrapper
Machine Case Study

VERTICAL FORM, FILL & SEAL, INTERMITTENT OPERATION
• Dedicated interrupt feeding control
• Standard PLC-Based solution
• Easy axis positioning control
Vertical flow wrapper

Machine description
Bags are supplied from a roll in the form of a continuous web, are formed into a tube by a mandrel, sealed longitudinally and transversely, then cut in precise registration with a printed graphic. The feeding operation is intermittent and the feed length corresponds to the bag length.

Machine Function
1 Feeder
A bag foil is fed via a loop control to the filling station. The foil tension control is achieved with a dancing arm system and an inverter.

2 Register
Because the foil feed is subject to slippage, the exact position of the foil is constantly updated using a register mark encoder.

3 Driver
Two vacuum side-belts which are controlled by 2 servo-motors pull the film through the forming area.

4 Former & Side-Sealer
A forming collar is used to shape the film into a bag, and the length is sealed by the longitudinal sealing unit.

5 Bottom-Sealer & Filler
While the bag is sealed at the bottom, feeding station start to drop fill material into the bag.

6 Top-Sealer
Once the bag has moved downward by one length, traverse sealing unit close the bag and a cutter separates the packaged product from the bag foil.
Your automation partner in packaging
We Automate Machines! We supply all the automation products for Vertical flow wrappers, including the logic and motion or hybrid controller. In addition we provide all motors, drives, position sensors, safety devices, temperature sensors and other panel components. All devices are easy to integrate and carry the Omron mark of quality and reliability.

Simple PLC-Based motion control
This solution is the perfect fit for vertical flow wrappers with intermittent servo-driven sealing jaw. Since axis synchronisation is not required, the machine sequences [Unwind, Mark Register, Form, Fill & Seal] can be programmed into the CJ2-Series PLC thanks to the advanced function blocks of the CX-One library (PLC/HMI/Drive programming environment).

Cost-effective daisy chain wiring method with PTO signal inversion
The use of junction blocks allows to reverse the PTO signal from one servo-drive compare to the other. This wiring method makes turn one servo-motor clock-wise while the other turn counter clock wise in a perfect synchronisation. This configuration enables the two servo-drives to run in synchronisation without the need for advanced motion controller.

Easy positioning control with Pulse Train Output (PTO)
This configuration uses only one CJ2-Series Pulse Output unit (CJ2M-MD212) with two pulse train outputs to command three servo-drives. The first output is used to command the unique servo-drive of the sealing system. The second output is used to command, through junction blocks, two G5-Series servo-drives which control the foil vacuum pull-belt.

Dedicated interrupt feeding control
The foil/bag positioning before sealing is achieved with a simple interrupt feeding function block which processes the registration mark detection (E3ZM-V or E3U-GL) via an interrupt input which is used as a trigger during speed control to switch to position control and then move a specified amount, equivalent to one bag length, before decelerating to a stop. This architecture keeps the solution cost-effective, pneumatic-system free and really reliable in regard of the required performance.
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