

Shrink sleeve

Machine Case Study



HIGH-SPEED LINEAR SHRINK SLEEVE LABEL APPLICATOR

- Pre-programmed cam profiles for fast changeover
- Vibration free motion operation
- Label positioning at any operation speed

High speed linear shrink sleeve applicator

Machine description

Shrink sleeve labels are supplied from a roll in the form of a continuous web, unlabeled bottles are transported via an infeed conveyor and then metered via a rotating feedscrew. While the bottles enter the labeler moving past a trigger cell, the labels in web form are opened and formed into a tube by a mandrel, fed and cut in precise registration with a printed graphic, applied to a bottle which is then conveyed up to a steam tunnel.

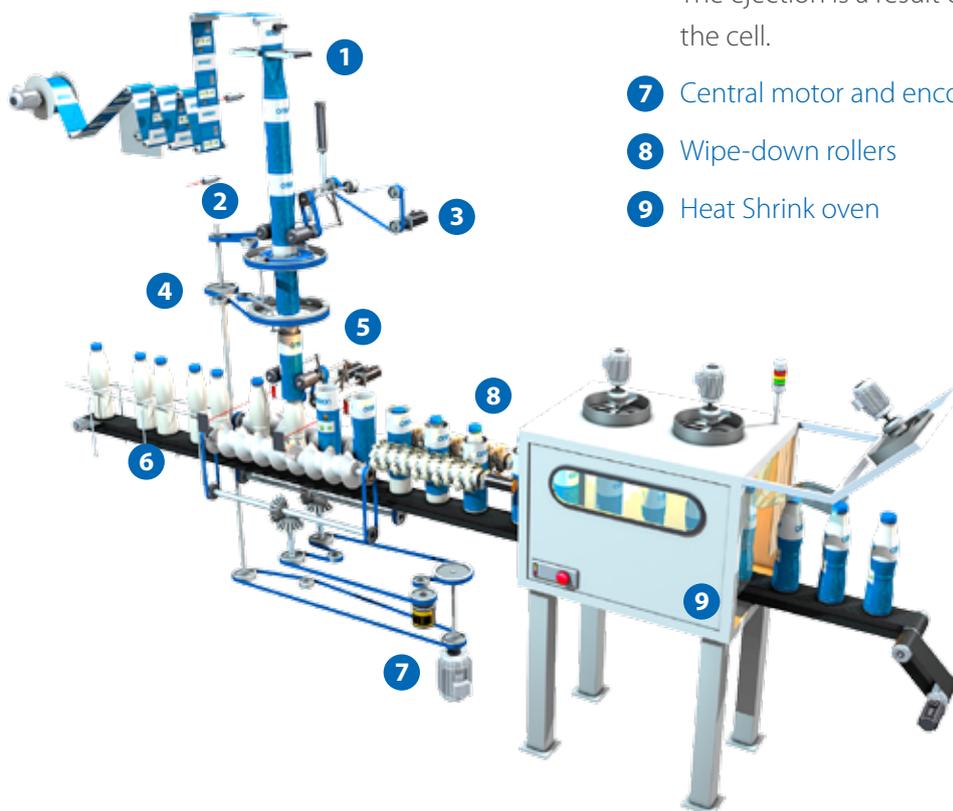
Label inserter and Shrink oven

The high-speed label inserter controls intermittently the film advance in precise registration with a printed graphic between two consecutive cutting operations. The steam tunnel develops the heat required to shrink the sleeves and guarantee a perfect adhesion on the bottle.

Machine Function

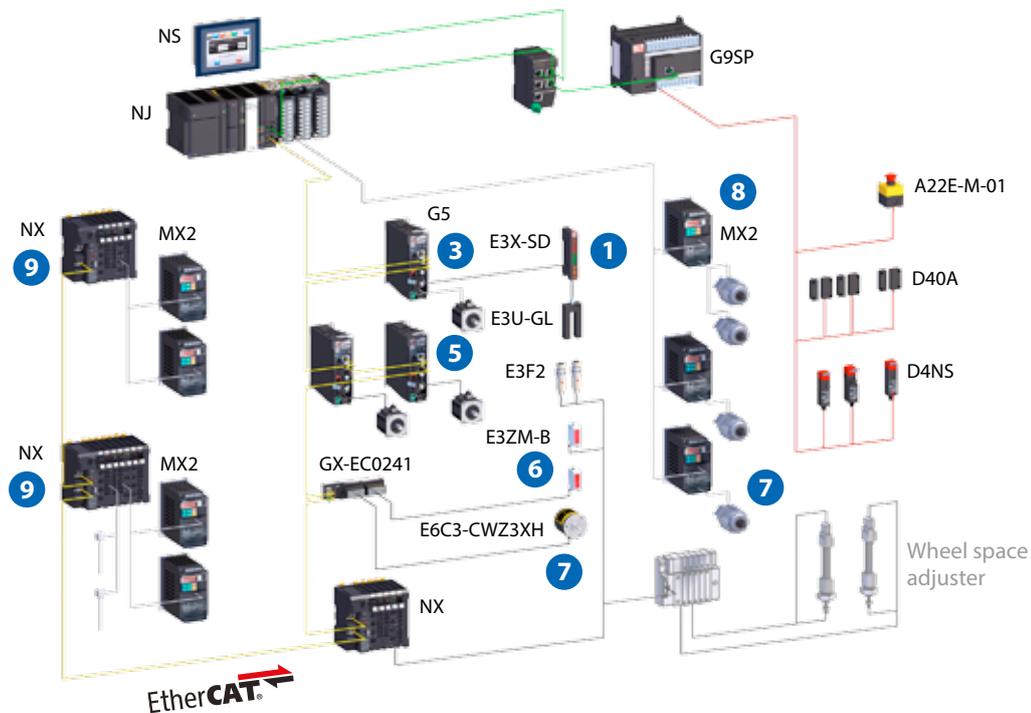
- 1 Registration mark detection
- 2 Floating mandrel
- 3 Film advance wheels
Two gripping rollers rolls on the mandrel. The film is driven by being interposed between the rollers and the mandrel.
- 4 Cutter assembly
The cutter consists in two superposed rings that are driven in rotation. With the difference in their speeds, blades pivot in alternation between a retracted position and a cutting position.
- 5 Ejector wheels
The dispensing mechanism places the cut segment of web over the container.
- 6 Ejection trigger cell
The ejection is a result of the article moving past the cell.

- 7 Central motor and encoder axis
- 8 Wipe-down rollers
- 9 Heat Shrink oven



Your automation partner in packaging

We Automate Machines! We supply all the automation products for Shrink sleeves, 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.



Fast registration control to position and place the label at any operating speed

The registration mark printed on the label is used to check the feed and to compensate for any slippage or positioning errors. The registration control works by measuring any error on the current move and applying a correction to the next. The NJ-controller captures the label registration event and synchronizes the label feed with the master encoder axis to place the label on the article at the right moment.

Advanced cam profile for vibration-free operation and higher rates of throughput

The NJ-controller with EtherCAT synchronises all machine movements according the master encoder position. The NJ-controller generates a pair of continuous bell-shaped speed profiles which precisely control acceleration and deceleration of the film advance wheels and ejector wheels as a function

of the angle of rotation of the master encoder. The synchronisation of the film advance and the sleeve ejection with cam profiles guarantees absence of vibration at any operating speed. During operation, the speed can be change via the NS screen without stopping the machine and missing any placement of a label to the bottle.

Pre-programmed cam profiles for fast changeover

Manually creating cam profiles can involve intense calculations and a deep understanding of motion control. The Sysmac Studio's cam profile editor offers an easy to use tool in designing electronic cam profile. Those profiles can be pre-programmed and stored in the memory of the controller. When a different cam profile is needed during machine operation, a switch instruction can be executed in the user-program via the HMI. This reduces product changeovers to mere software commands.

Would you like to know more?

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