Multi-Carrier-System drives the packaging process

Carefully packaged

The servo-controlled horizontal cartoner HK-S from ECONO-PAK gently and efficiently places scratch-sensitive tubes of shoe polish into cardboard boxes. The freely configurable and flexible Multi-Carrier-System (MCS) from Festo perfectly synchronises the conveyors for the product and the cardboard box and ensures reliable packaging with a high throughput.
Operators of packaging machines have specific system requirements: they must be robust, reliable and compact, allow a high throughput and be easy to operate. Packaging machine manufacturer ECONO-PAK has developed a machine that offers outstanding precision and functionality. The HK-S is very compact and guarantees a reliable packaging process. It takes the machine just one minute to carefully pack 120 tubes with an extremely scratch-sensitive surface into cardboard boxes. “The Multi-Carrier-System – or MCS for short – from Festo is a key component of the system,” explains Markus Zerbe, Sales Manager at ECONO-PAK.

**Pit stop for reloading**
In the packaging process, the cartoner and MCS must work together in perfect harmony just like the musicians in an orchestra, as the efficiency of the machine depends on it. At station 1, the feed, a conveyor transports the tubes precisely and in parallel on two lines with a speed of 0.41 metres per second in the direction of the workpiece carriers. During the loading process, the carriers stop so that the transfer can take place without causing any damage. The carriers then accelerate to make up for lost time and synchronise with the speed of the cartoner running in parallel as well as the pusher assembly (0.31 m/s). The tubes are transferred to the cardboard box line via a guide slot and packed in a continuous process.

**Synchronisation is crucial**
At station 2, the loading area, the product pushers push the tubes through the product cartridges into the cardboard boxes. It is important that the carriers are completely synchronised with the pusher assembly along this section in order to avoid collisions between the tube and the box. As soon as the product pusher exits the product cartridge at the top, the carrier can resume its individual speed.

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**Station 1: Cycle operation**

- **Buffer**
- **Product transfer**

Fresh supplies always at hand: servo-controlled infeed conveyors always transport two tubes parallel to the loading station of the carriers.

Gentle tube feed: to ensure that the tubes are not marked or dented, the carrier does not move during the loading procedure.
Station 2: Continuous operation

Cartoner: the product is packaged in cardboard boxes

"During production peaks additional carriers can be added to the Multi-Carrier-System at any time. That is an important criterion for our customer."

Markus Zerbe, Head of Sales, ECONO-PAK

Space-saving and efficient: cost-effective return of the carriers using a servo-controlled toothed belt drive.

Synchronous movement increases productivity: the tubes are inserted into the cardboard boxes thanks to the completely synchronous movement of the carrier and the pusher assembly.

Critical passage: the MCS and cartoner are synchronised in this section; insertion in the cardboard box takes place at the rear.
The benefits of the Multi-Carrier-System and its closed recirculating system:

- Highly flexible MCS conveyor with low-cost toothed belt drive return
- With the MCS, cycle operation and continuous motion can be combined on one line
- Maximum dynamic response with outstanding precision thanks to the combination of V-guides for carriers and MCS
- Compact design with freely definable, individual mounting position
- Jerk-free movement of the carrier along the entire conveyor

At the end of the line, the empty carriers are routed back to the starting point vertically, where they can be reloaded.

A multitude of benefits

The vertical return of the carriers saves space and facilitates a slim, compact system design. Furthermore, the carriers return via a servo-controlled toothed belt, which means that the carrier drive is independent of the linear motor technology in this section. This reduces operating costs and makes for easier and more efficient adjustment and control of the system.

“The main advantage of the MCS, however, is that it allows complete synchronisation between the product and the cardboard box and accurately maintains the individual positions,” explains Markus Zerbe. Precisely maintaining the filling position is important for ensuring that the tubes slide gently into the carriers and are not damaged during transfer. “The integrity of the tubes is the biggest priority,” adds Zerbe. This is made possible by the linear motor technology of the MCS. The individual carriers can be accelerated, decelerated and freely positioned independently of one another. The MCS thus combines cycle mode and continuous motion on one line. Another benefit of the MCS for the system operator is its closed recirculating system, which can be quickly adapted to different conditions. For example, additional carriers can be integrated into the system at any time to cope with production peaks. According to Zerbe, a capacity increase to around 200 tubes per minute, for example, is easily achievable.

www.festo.com/mcs

Compact and powerful: horizontal cartoner type HK-S-Plug-in from ECONO-PAK with the Multi-Carrier-System from Festo.

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Area of business:
Manufacturer and developer of packaging solutions, offering consulting, project planning, design and manufacture, assembly and commissioning, production supervision with training and after-sales service as well as format-specific tool manufacture.