

Flexible control platform
optimizes production process

PC Control for high-quality packaging

TM100 overwrapping machine for high-quality packaging and CP6901 "Economy" built-in Control Panel with 12" display



→ Marden Edwards is a company with over 40 years of experience in the design and manufacturing of overwrapping and shrink wrapping systems. Their position as international market leader is the result of an exceptionally comprehensive product range, an ability to tailor machines to individual applications and a worldwide network of trade partners providing local expertise and after-sales support. By utilizing the CX1020 as an embedded platform for PLC and Motion Control, Marden was able to drastically reduce machine development time and increase productivity.



The move to the CX1020 Embedded PC for PLC and Motion Control was straightforward as the existing Bus Terminal I/O system and TwinCAT programming tools could be used.



Marden Edwards, based in Wimborne, Great Britain, has so far produced more than 8,500 overwrapping systems and exported to more than 150 countries. It is a measure of the reliability and lasting quality of the machinery that many of the early machines produced more than 40 years ago are still in operation.

Overwrapping machines produce a high-quality folded, sealed and fully enclosed wrap around a product or group of products. They are energy efficient, as little heat is required to seal the film, and are well placed to use the latest generation of starch-based biodegradable films.

"A requirement to have both a flexible control system that allows customers to quickly change pack sizes, plus having the ability to adjust the wrapping speed on-the-fly where key to the design," explains Marden Edwards Technical Director Jeremy Marden. "We have used the Beckhoff BC9000 Bus Controller for a number of years and found the flexibility and range of the I/O Bus Terminals very effective. It was therefore the natural step to move to the CX1020 Embedded PC for PLC and Motion Control as we could use the existing Bus Terminal I/O system and TwinCAT programming tools. This made the transition simple."

PLC, Servo Motion Control and improved visualization on a single platform

The new TM100 packaging machine required a user interface to present production information as well as enabling the customer to visually change the pack size up to a maximum of 200 x 100 x 300 mm. By utilizing the CX1020 Embedded PC plus the CP6901 Control Panel, Marden Edwards were able to implement the PLC, Servo Motion Control and enhanced user visualization on a single platform.

Marden Edwards developed the TM100 to be modular, allowing options such as a stacker unit to be attached easily. This is quickly implemented just by adding extra Beckhoff Bus Terminals. The CX1020 in combination with the TwinCAT automation software controls the AX2500 Servo Drive over Ethernet. Utilization of the flexible control system dramatically reduced the development phase from several months to a record time of just a few weeks.

More efficient machines for new packaging options

The new TM100 overwrapping machine is designed to provide an extremely high quality of wrap with all seal positioning parameters placed under the operator's control. Changeover from one size to another takes less than 10 minutes and is assisted by the Beckhoff Servo Drives and motors, which meter the film and control the infeed pusher. This enables the machine timing to be optimized for any given pack size resulting in highly efficient operation.

The built-in film splitter, which enables one size of film roll to be used for many different pack sizes, automatically winds waste material onto a separate reel allowing for easy changeover between sizes. In addition, an individual pack separ-

ation system is used to transport the box through the folding sequence. This assists in keeping boxes square and accurately positions the dot end seals.

CX1020 facilitates expansion

The next stage of development for Marden Edwards is to migrate to the new AX5000 EtherCAT Servo Drives. This will reduce both installation time and cost by using the dual servo axis option of the AX5000 family. "By having a control system based on PC rather than PLC architecture, we no longer need to have extra peripheral products such as a separate PC for SCADA," highlights Jerry Bugler, Marden Edwards Software Engineer. "Our customers are always asking for production data and efficiency figures to be made available to their own management information systems. As we can easily implement an OPC server on the CX platform, it allows the data to be served to any compliant third-party package. This would be very difficult, if not impossible, to do using traditional PLC solutions. We even download all documentation and electrical drawings onto the CX and display these on the CP6901 as PDF images," continues Jerry Bugler.

The addition of print registration, also implemented in the CX1020, not only reduced wastage of the wrapping film but allows the printed face to be placed on any side of the package.

→ Marden Edwards Limited www.mardenedwards.com

→ Hayes Control Systems Ltd www.hayescontrols.co.uk

