

THE DRIVE FOR SWEET SUCCESS AT FOX'S

Britain's demand for one of its favourite biscuits seemingly knows no bounds to the extent that the production line for Rocky bars has recently been upgraded at Fox's Biscuits' Kirkham plant in Lancashire. And, at the heart of the project, once again, are Fox's own favourites, precision variable speed drives from Control Techniques.

One limiting factor to the line's throughput speed was the caramel depositing station and this is where Fox's development team focused their attention, bringing in depositing systems specialists Wymbs Engineering of Macclesfield.

The solution, comprising a pressurised Wymbs multi-head manifold, with 2-axis movement and fed by metered pump, has increased the throughput on the line substantially. Three variations of Rocky chocolate bars - Rocky Chocolate, Rocky Caramel and Rocky Orange - as well as several 'own-brand' biscuits for leading retail chains can all be produced on this one line.

As each row of Rocky Caramel biscuits passes along the



conveyor underneath the caramel depositing manifold, a measured amount of caramel is laid along each biscuit. The manifold can be set to any required trajectory in horizontal and vertical axes to suit the product, the temperature and viscosity of the caramel (or other filling), the ambient temperature and the dispensing pressure.

The precision control of the depositing manifold and the metering pumps is the duty of four Control Techniques Unidrive SP 2.2kW AC drives operating in servo-mode and working in conjunction with Control Techniques FM servo-motors with resolver feedback.

Two control the manifold positioning, one the dispensing pump into the manifold and the fourth a separate pump that dispenses caramel into 'tote' bins for transfer to other production plants.

KEY BENEFITS

- SUBSTANTIALLY INCREASED THROUGHPUT
- REDUCED DOWNTIME
- LINE SPEED SYNCHRONISATION
- PRECISION CONTROL
- QUICK & EASY PROGRAMMING



Unidrive SP drives, each fitted with plug-in programmable Application Modules, proved to be the ideal selection for this task, making system programming quicker and easier according to Wymb's Engineering's systems engineering manager, Mark Walker.

The first of the drives is designated as 'master' and is fitted with a second encoder module for the feedback from the conveyor shaft encoder. The whole of the depositor system is geared to actual line speed, speeding up or slowing down in synchronism. The master drive is fitted with an Ethernet module which it uses to communicate with the HMI, the master drive talks to the other drives via a high speed drive to drive network. The trajectory, created on two axes on a ball screw gantry layout, the second drive acting as slave, is set on the HMI according to recipes for each product and programmed into the Application Modules on the drives.

The metering pumps for the depositing manifold and tote bins operate on pressure - with a working pressure of 100psi - with transducers in the pipework feeding back to the drives, using the standard on-board PiD functions.

"The programming was very straightforward and intuitive," says Mark Walker. "We built and programmed the panel here at Bollington and on site, did little more than connect it up, switch it on and walk away. Everything worked first time and we've had no issues since in was installed in July 2008."

"We are happy to have Control Techniques drives again," says Engineering Manager, Peter Murphy. "They are included in our site specification, we are familiar with them and our engineers find them easy to work with."

"The new system is much more operator friendly," adds line manager, Stephen Acker. "Much of the jargon has been taken out and pictorial representation of the line making it easier and quicker to access information,



diagnostics and new set-ups for a different product. Our downtime has reduced - it takes just a matter of minutes to change the manifold and select a new 'recipe' on the HMI - and waste is kept under control.

The Unidrive SP AC variable speed drive range spans 0.37kW right up to 1.9MW. Unidrive SP is the world's most advanced 'solutions platform' AC drive, configurable into five operating modes - open and closed loop,

vector, servo and regenerating modes - connectivity to most industry standard networks and accepting 14 position feedback protocols. With a range of plug-in module options, its on-board PLC can be supplemented as in this case, with programmable modules.

The Unimotor FM range of three-phase, 6 or 8 pole permanently excited synchronous motors, with sinusoidal back EMF characteristics, is available in 75, 95, 115, 142, 190 and 250 frame sizes, with rated speeds up to 6,000 rpm and rated torques up to 54.7 Nm.

The standard 'FM' range is designed for use with the Control Techniques Unidrive range and is ideally suited to demanding servo environments. A range of feedback options is available: incremental encoder, Sin/Cos single and multi-turn encoders or resolver to suit application requirements.

Wymb's Engineering manufactures pressurised depositing manifold systems, machines and processing plant for the bakery, dairy and confectionery industries, developing solutions to meet the changing needs of these industries.

Fox's Biscuits, part of Northern Foods plc is a name synonymous with quality, using only the best raw material available for manufacture of a wide range of biscuits, including the Rocky, Classic, Echo and Creations ranges. It has three factories, in Batley in West Yorkshire, Kirkham near Blackpool and Uttoxeter in Staffordshire.



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