

AFINOMAQ ATTRIBUTE 50% INCREASE IN THROUGHPUT TO UNIDRIVE SP



The upgrade of a ketchup bottle labelling machine, at one of Europe's leading manufacturers of machinery for filling, capping and labelling of bottles, has increased its throughput by 50%, significantly increased its accuracy and eliminated product wastage thanks to servodrives supplied by Control Techniques.

The Portuguese company Afinomaq makes a wide variety of machines for the food and beverage industry, including semi and fully automatic labelling machines. The company was experiencing some problems with a machine specifically designed for the labelling of ketchup bottles, with photocell failures because of intensive wash-down procedures and misalignment of labels because of line speed variations. The machine was producing some 100 labels per minute.

The machine applied three labels onto bottles of ketchup - front and rear plus another on the bottle-neck. There is an input conveyor and a movement 'star' on which the labels are applied in turn by three servo-controlled labelling heads.

"We needed to improve the performance of this machine to

match other machines in the line," says Afinomaq Technical Manager, José Marques, "and approached Harker Sumner (Control Techniques' local agent) to provide us with an improved control solution."

The scheme proposed comprises three sets of Control Techniques Unidrive SP 0.75kW AC drives in servo mode, twinned with Unimotors to control the three heads of the rotating head labelling machine. Each drive is fitted with an additional SM Universal Encoder Plus module to monitor the absolute encoder feedback of line speed, as well as an SM Applications module to provide powerful on-board programming.

The drives communicate using Control Techniques' high speed drive-to-drive network and are precisely synchronized together as well as being locked to line speed. The weakness of the photocells is eliminated, since the output speed of the labels is monitored in relation to line speed and a 20-position label buffer has been incorporated for label call-off.

The position of the star is monitored by a high accuracy 4096ppr encoder and this is fed back to the drives via the SM-Universal Encoder Plus. A sensor detects the input of a bottle into the 'star' - feeding the signal back to the high-speed inputs of the SM-Applications modules to trigger the labelling

KEY BENEFITS

- 50% THROUGHPUT INCREASE
- SIGNIFICANTLY IMPROVED ACCURACY & RELIABILITY
- ELIMINATED PRODUCT WASTE
- INCREASED RELIABILITY
- EASY PROGRAMMING THROUGH HMI

sequence at the right moment.

Now, with Harker Sumner's Control Techniques servo solution, the machine is totally flexible and can cope with all types of labels needed through a simple configuration of the touchscreen HMI. It is no longer necessary to make any mechanical adjustments on the machine since all of the trim controls, to a fraction of a millimetre, are made on the operator screen.

"The result has been a big increase in machine reliability plus a massive 50% increase in throughput speed," concludes José Marques, "and, as a bonus, bottles are less stressed in the star unit, eliminating breakages!"

The Unidrive SP AC variable speed drive range spans 0.75kW 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 range of three-phase, 6 or 8 pole permanently excited synchronous motors, with sinusoidal back EMF characteristics, is available in 75, 95, 115, 142 and 190 frame sizes, with rated speeds up to 4,000 rpm and rated torques up to 54.7 Nm.



The standard 'UM' 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.

Afinomaq - Sociada Técnica de Manutenção de Máquinas e Equipamentos, Lda, based in São Julião de Tojal in Portugal, has developed filling, capping and labelling machines for a wide range of bottle sizes from 10ml to 5 litres. The machines can be supplied separately or as an integrated line and can achieve a high throughput of up to 3600 bottles per hour. The machinery can be customized to liquids as varied as soup, wine, olive oil, liquor and shampoo as well as many others with the machine versatility meeting the needs of a variety of industries including food and beverage, pharmaceutical and chemical.



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