

Industry: Rubber /// Plastics /// Manufacturing
 Products Used: Modular PLCs /// HMIs /// Servos

Mitsubishi PLC and Servo expertise speeds racing tyre production

Ritech Ltd has chosen Mitsubishi Electric equipment to provide a solution for a complex cutting operation at Cooper Avon Tyres in Melksham.



Based at Devizes in Wiltshire, Ritech are specialists in the design of control and automation systems. The project at Cooper Avon tyres involved designing a system to cut precisely angled diagonal strips from a thin sheet of rubber compound as it travelled along a belt conveyor. The new cutting machine is part of a £1.4 million investment by the specialist racing tyres division, whose tyres are specified as the standard for a wide range of motor racing classes.

On the new machine the angle required is selected on a Mitsubishi E900 HMI. When this is selected a set of parameters for the cut are automatically uploaded from a data set permanently held in the A series PLC that had been originally created from an Excel spreadsheet. An A1SD75 special function positioning module carries out the X-Y axes interpolation and generates pulse train commands for two Mitsubishi MRJ2-100 Servo amplifiers.

Application story first released September 1998 by Mitsubishi Electric UK

Two 1.1kW servo motors move the cutting head on a belt driven Hepco DLS4 linear slide system to achieve the angle of cut required. The rotary head and cutting disk are orientated to the appropriate angle needed for each cut by a geared stepper motor controlled as the Z axis by the A1SD75.

To simplify specification, installation and commissioning, Mitsubishi supplies the motors, servo amplifiers and positioning controllers as one integrated package. The positioning controller plugs directly into the Mitsubishi A Series PLC control system and ensures fast response and high accuracy by using high speed digital communications to the servo amplifiers. The highly advanced control algorithm also suppresses servo lock micro-vibration, making a truly stable system possible.

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Richard Armstrong
Ritech

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Richard Armstrong says, "Getting the servos and motors to work together was very simple and the servo auto-tune function made set up very quick and easy." Speed of cutting has also been improved by the ability to cut in both directions and output is currently limited by the need for an operator to unload and reposition the strips at the end of the cutting line, rather than the cutting speed of the machine.