

A Stitch in Time Thanks to Control Techniques Servo Drives



Saurer, based in Arbon, Switzerland, is the world's leading manufacturer of bespoke embroidery systems and achieves its remarkable operating speeds and precision thanks to servo drives and motors from Control Techniques.

The Swiss company, now part of OC Oerlikon, leads the way in CAD/CAM operated single and double frame machines that feature completely revised drive concepts to give flexibility in operation and high operating performance that is some 10% better than others on the market.

The key to this dominant position has been the integration of the Control Techniques' triple-axis MultiAx servodrive system, in conjunction with the advanced Control Techniques Dynamics Unimotor servo motors that use SLM technology that replaces the many connections between the motion controller, the drive and the motor with a communication cable. At Saurer, wiring terminations are half that of other systems, improving reliability and, because MultiAx is so compact, cubicle sizes are much smaller too, a major benefit for customers where floor space is at a premium.

The Epoca 05 shuttle embroidery machine makes full use of the electronic drives, being available in single or double frame format. A conventional double frame machine has both frames mechanically linked and working in parallel. Should a thread break on one, or if maintenance is required on one frame, production is completely stopped.

On the Epoca 05 system, however, the two frames are linked together electronically, using communication between the Control Techniques intelligent servo-drives, so that a stoppage on one doesn't affect the output of the other.

Equally, the two frames can operate independently if required.

Where frames are mechanically linked, both frames run and finish together, with fabric change being a complex, labour intensive task. With the Epoca 5, the second frame continues working, improving efficiency, reducing downtime and requiring less staff. The high productivity is enhanced by short thread cutting times of under 10 seconds as well as the extremely short acceleration time of two seconds to maximum speed achieved with the MultiAx / SLM Unimotor motor combination.

KEY BENEFITS

- FLEXIBILITY IN OPERATION
- HIGH OPERATING PERFORMANCE
- IMPROVED RELIABILITY
- REDUCED CUBICLE SIZE
- IMPROVED EFFICIENCY
- REDUCED DOWNTIME



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Machines can feature up to 32 axes, each controlled by the MultiAx / SLM Unimotor combination –the main axis being the feed; the needle, borer and shuttle axes being electrically slaved to this to maintain synchronisation. Frames can weigh up to 500 kg and movement of up to 5-mm is required in just 30 milliseconds!

The complete electrical control is supplied by solutions control company Pantec Engineering who build the EmControl specialist embroidery control panels and supply the complete installation for each Saurer embroidery machine. Designs on the master PC are fed to Delta Tau motion controllers, each with an SLM daughter board.

SLM technology is designed to overcome the limitations of analogue interfaces with their limited feedback resolution. Using a high-speed communication network, the system provides high response, high resolution control for speed loop control and synchronisation of axes. This provides a resolution of greater than eight million points per revolution, giving a greatly enhanced performance (an update loop response of just 125 microseconds), with a digital link unaffected by noise. This high resolution allows the tracking of the smallest deviation.

MultiAx provides a three servo channel output with high digital clarity (a 2.5 Mbaud, 4 wire system) from a compact 'bookcase' design, saving cubicle space in the Pantec cubicles. Featuring a back-up power supply, internal dynamic braking, 4.75kW per axis and a 200% peak for

2 seconds, MultiAx has easy start, with automatic motor mapping and pluggable main terminals for easy connection/disconnection.

"We are a long standing user of Control Techniques servodrives," says Saurer's Market & Product Manager Andreas Hellwig,"because of their precision, the modularity of design and how compact they are – this keeps the overall size of the cubicle down.



For further information please visit
www.controltechniques.com



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