



## The Medical Automation Revolution - Suture Processing

**An automated surgical suture machine invented by PharmSouth Ltd and using maxon motors, gearheads and controllers, is greatly improving the suture processing industry.**

PharmSouth, a consultancy and design company, refurbishes and builds new machines for pharmaceutical companies worldwide. They specialise in designing machines that encompass the whole suture manufacturing process, from pack winding to the attaching of the needle and stiffening the ends. These suture packs can be found in operating theatres throughout the world. Suture material varies widely in size, length and make up as do the needles. Different variations are required for different operations. Surprisingly one type of suture is actually made from stainless steel and is used to stitch up bones. The machines are designed to be adjusted quickly and easily depending on the requirements.

maxon motor uk has been working with Stuart Best, a consultant from the company, on the design of the innovative apparatus. Each machine uses an EC 45 flat brushless motor and the GS 45 spur gearhead is driven by the EPOS2 P 24/5 motor controller using hall sensors for feedback. This controls the suture feed, on lead screw, along the frame ensuring each of the windings are exactly the same distance apart, even when the frame motor is accelerating. This action is much like the mechanical gearing of a lathe on the tool carrier when machining threads. The difference being this is geared electronically not mechanically. The electrical gearing is thanks to the master encoder mode within the EPOS motor controller, it's a mode of operation when a master encoder is spliced to a slave drive which scales the encoder pulses to incremental motions on its own axis. This way two different axes can be synchronised or scaled in the same or opposing direction as the master axis.

The RE 40 DC motor and encoder and GP 52C planetary gearhead is driven by the more powerful slave EPOS2 50/5 motor controller and rotates the fast spinning of the frame on which the suture winds. This axis has a maxon motor shunt fitted, the 25W 30A with selectable voltage threshold for

electronic dynamic and e-stop braking. This is essential in the event of the safety circuit being triggered (by entering the area of operation) so the motor can stop instantly.

Stuart Best said 'The support we get from maxon motor uk is phenomenal. Our customers don't tend to have technical staff so we are the first point of call for any product issues but the maxon products have never failed. Another reason we work with maxon motor is they have an office in practically every country in the world so I can always get products delivered locally.'

Stuart also attended maxon's free EPOS and ESCON training courses in their Berkshire offices last year.

Introducing automation to the suture market increases productivity and the repeatability ensures predictable quality levels. It is not surprising that demand has been incredibly high for PharmSouth's machines and the company is currently recruiting.

### **About maxon motor**

maxon motor is the world's leading supplier of DC motors, brushless motors, gearheads and controllers. We offer high quality, innovation, competitive pricing and highly specialised solutions.

Where are maxon motors used today?

Aerospace  
Robotics  
Medical science  
Industrial automation  
Instrumentation & inspection  
Communication  
Surveillance cameras  
Automotive  
Consumer applications

maxon's motors, gearheads, encoders, brakes and controllers are all perfectly compatible and offer an almost unending number of possible combinations. The maxon modular system gives the ideal combination for the required application.

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