

# Precision Motion System Produces Better Artificial Blood Vessel

Vascutek is one of the world's leading designers, manufacturers and marketers of vascular products for the treatment of cardiovascular disease. Based at a custom built facility in Scotland, Vascutek uses innovative technologies to develop products that address the needs of cardiovascular and vascular surgeons throughout the world.

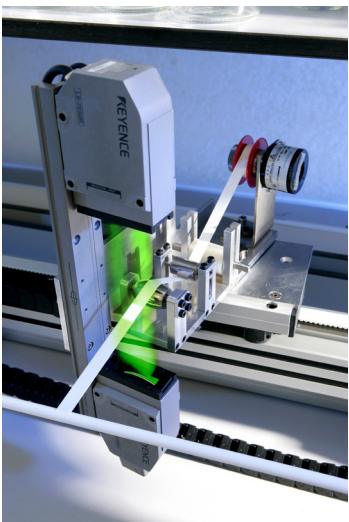
The company markets a wide range of polyester and ePTFE vascular prosthetic grafts for the treatment of diseased and damaged arteries. A new range of ePTFE **MAXIFLO™ Ultrathin** replacement arteries was introduced last year, designed to offer a much thinner more flexible product but with enhanced physical properties.

The product is essentially a soft flexible tube, typically 8mm diameter, with a helical outer winding of a thin, narrow PTFE tape.

With the original production winding machines there were a number of issues relating to the inconsistency of set speeds of mandrel and dispensing carriage which required compensation, and also the tape itself varied slightly in width such that it was very difficult to produce a consistent finished product. Production was therefore very labour-intensive, requiring skilled operators to constantly monitor and adjust the speed of the linear carriage with respect to that of the mandrel.

Vascutek approached SmartDrive, Cambridgeshire-based manufacturers of precision stepper motor drives and controllers, to try to improve the production process. Together with their long-established partners, Hepco Motion, SmartDrive conceived, designed and built a custom mechanism and motion control system which incorporates digitally-interlocked speed setting on both axes, and also a non-contacting optical GaN LED micrometer which measures the tape width just before it is wound onto the mandrel. The data from this is polled over a serial port and the carriage speed is continuously adjusted to compensate for the all of the process variables.

Extensive pre-production trials were wholly successful, and two systems are now installed in Vascutek's clean room, producing consistently high-quality artificial blood vessels at significantly higher yield than before.



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