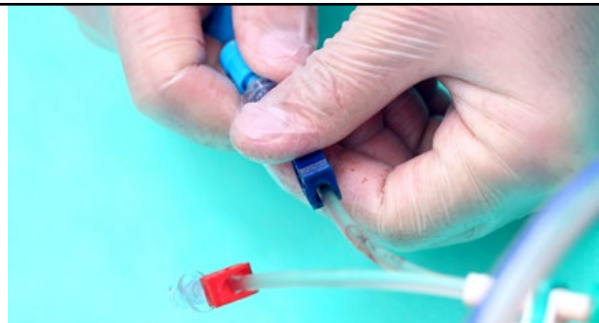


Spring manufacturer successfully achieves precise pressure control during artery catheter-forming process

RESULTS

- Accelerated set up and manufacturing time for various artery catheters
- Precise control of output pressure, leading to proper wire tension during the manufacturing process
- An increase in correctly specified catheters, significantly reducing waste



APPLICATION

The manufacturing of artery catheters of various sizes and lengths

CUSTOMER

A spring wireform manufacturer that produces compression, torsion and extension springs, as well as custom wireform products and medical components.

CHALLENGE

A spring wireform manufacturer needed a pressure regulator for a manufacturing process involving the creation of a custom medical spring. After the springs are wound and sterilized, they are coated with Teflon and tipped with a silicon plug.

The manufacturer needed a pressure regulator that could function as a mandrel—maintaining proper wire tension as the 0.02-inch wire is wound around the circumference.

HOW THE PROCESS WORKS

During the spring-making process, a small wire is wound around a mandrel — in this case, a larger wire — to form artery catheters of various lengths. The mandrel is pulled, creating tension so that it does not flex. Depending on the size of the mandrel and the wire being wound around it, the amount of tension will be different. A simple way to change and maintain the tension is to increase or decrease the air pressure. The amount of air pressure, and the effective area of the cylinder, creates the required tension for a specific catheter.

A spring wireform manufacturer switched to an electronic pressure regulator, which improved its ability to make medical artery catheters of various sizes and lengths.

THE BENEFITS OF ELECTRONIC VERSUS INDUSTRIAL REGULATORS

To meet this application's air pressure requirements, Emerson experts provided the SentronicD Series 608 Digital Electronic Pressure Regulator.

Prior to using this unit, the wireform manufacturer set the air pressure with a manual regulator and pressure gauge. However, industrial pressure regulators don't have the same repeatability and sensitivity as electronic proportional pressure regulators. For one, industrial regulators use a mechanical spring, diaphragm and seals, all of which can affect the output pressure.

The SentronicD regulator, on the other hand, uses a direct-acting proportional coil to change the output pressure by moving up or down over a fixed orifice. It also uses a pressure transducer to monitor and maintain the exact output pressure, as well as make corrections in the event of external influences. Operators can change the output pressure, simply by using the up and down buttons on the LED display. This design eliminates the need for an analog output card from a PLC or industrial computer. In addition, operators need only 24 VDC to power the unit.

In terms of benefits, the company was able to set up and produce different catheters more quickly, thanks to the use of the up and down buttons. By controlling the output pressure electronically, operators could also maintain consistent tension on the mandrel, keeping products within the correct specification and reducing waste.

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