TECHCON™

Application Report

2K Adhesive & Prosthetic Devices

The Customer

A medical device company that is the inventors and manufacturers of a prosthetic device worn by people who are experiencing balance and mobility issues.

The device is attached to the patient's feet and lower calves and compensates for nerve damage by delivering specific stimuli to functioning nerves around the lower leg.

The Objective

The construction of the prosthetic requires the application of an adhesive sealant into a winding series of grooves. This sealant helps maintain the device's integrity and protects the wearer from the components within.

Before Techcon

Although production was going smoothly, the manufacturer's process was not producing enough units for all the patients they knew they could help.

Using a manual dispensing process, throughput was limited to only 10 pairs of prosthetics per day.

The Challenge

Reduce the time required to dispense the sealant from 20 minutes per unit to 5 – 6 minutes. The manufacturer's hope was to increase production by a *factor of five*.

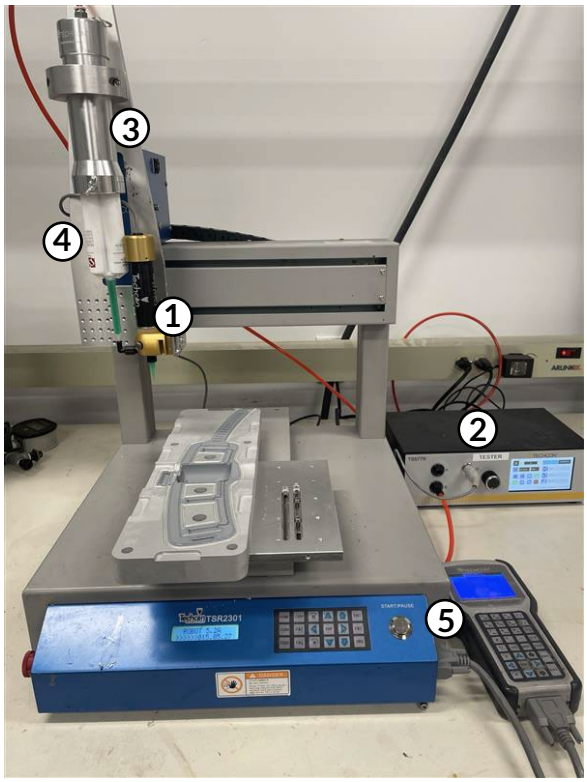
Challenge accepted.

Oh, and did we mention the sealant is a two-part material?

Equipment Used

Techcon configured a system that combined:

- Full automation
- Mixing & dispensing 2K adhesive
- Low cost-of-ownership
- Fast and easy maintenance



	Techcon Part No.	Description	
1	TS5000DMP-DCX-S	Rotary Valve w/ Disposable Material Path	TDS
2	TS577R	Smart Controller for Rotary Valves	TDS
3	TS-DSAD-50-11	Dual-Syringe Adhesive Dispenser for 50ml 1:1 Side by Side	TDS
4	SBS50-A1	50 ml Side by Side Dispensing Cartridge, 1 :1 ratio	TDS
5	TSR2302	3-Axis Dispensing Robot, 300 mm x 300 mm w/Teach Pendant	TDS

Techcon's Solution

The manufacturer supplied the material to be used in our tests in 50 ml dual-cartridges. Techcon determined they could easily dispense the 2K adhesive using their Dual Syringe Adhesive Dispenser (DSAD). The DSAD was connected to a highly precise rotary valve. The dispensing parameters, like pressure and material flow rate, are dialed in to the Smart Controller. The dispenser and precision rotary valve were mounted to a benchtop dispensing robot, for accurate control of the dispenser speed and pattern.

The TSR2302 Dispensing Robot, with 400 x 400 work surface, was large enough to accommodate two parts at once. Once the dispensing path for one part was established, it was easily mirrored to fill a second part without repositioning or halting the dispensing process.

Techcon determined accurate dispensing would be achieved by programming the robot to move the valve 14 mm to 20 mm per second, with a relatively low air pressure of 40 psi.

Areas of the parts that require more material, like where the wires connect to the motor, were accounted for. Techcon programmed into the dispense pattern of the robot the appropriate delay to dispense additional adhesive in those key areas.

Results

After optimizing all parameters, Techcon was able to achieve an average time for each sample part of *100 seconds*. The goal was to dispense onto each part in 5 – 6 minutes (300 – 360 seconds) each. So Techcon was able to complete each part *three times faster than the goal rate.*

Switching from their current process to the Techcon Recommended Solution would increase throughput of their prosthetic devices by a factor of 12

Contact Techcon to discover how we can improve your throughput, safety, and product quality with our custom-made dispensing solutions.
www.techcon.com/contact-us

Techcon Solutions Used

TS5000DMP-DCX Disposable Material Path Rotary Valve

Techcon's patented Disposable Material Path (DMP) valve contains a disposable feed screw for easy maintenance and reliable dispensing. With a feed screw made of Delrin®, the valve is designed for use with two-component and UV fluids. The DMP valve has a hinged doorway that opens easily so the disposable feed path can be removed, disposed of, and replaced within seconds while the line is still in operation. No cleaning or refurbishment of the valve is required.

TS577R Smart Controller for Rotary Valves

TS577R Smart Rotary Valve Controller controls all Techcon TS5000 Series and TS7000 Series auger/rotary valves. With a universal power supply, it is a fully 'plug and play' system and can be used immediately, anywhere in the world.

TS-DSAD-50-11 Dual Syringe Adhesive Dispenser

Techcon's Dual Syringe Dispenser is designed to accommodate conveniently packaged 50ml side-by-side syringes, in ratios 1:1, 2:1, 4:1 and 10:1.

SBS50-A1 Side-by-Side Cartridge

Techcon 50 ml Side-by-Side Cartridges are precise metering containers for 2-component adhesives and sealants. Offered in four standard mixing ratios to accommodate the most common product formulations for industrial applications. Available in 1:1, 2:1 and 10:1 ratio, the 50 ml side-by-side cartridge is made of polypropylene (PP) to meet a wide range of chemical compatibility.

TSR2302 Benchtop Dispensing Robot

Techcon benchtop dispensing robots are easy to program, simple to operate, and compatible with all valve types and controllers.

Designed and configured specifically for fluid dispensing applications, Techcon robots provide total control over fluid placement, from beads, arcs, and circles to repeated timed dots. Programming is simple via teach pendant.

Techcon respects the confidentiality of our customers and prospective customers. That is why we do not name specific companies or show the products we are validating in our Application Papers. For a list of references, contact Techcon.

Find the Best Dispensing Solution for Your Application

Determining the best configuration of valves, fluid line assemblies, controllers, adapters, syringes, and/or dispensing cartridges for your own needs is not easy.

Techcon is here to help

Take advantage of the Techcon Material Test Program, a service where our Application Engineers test your material in our systems and dispense on your part to build the best bespoke solution to meet your requirements.

Interested? Fill out the Application Form or contact your Techcon Regional Sales Manager:

www.techcon.com/application-form
www.techcon.com/contact-us

	Page Number	Viscosity Range			Small Shot Accuracy by Viscosity Range			Disposable Material Path (DMP)	Field-Replaceable Wetted Parts	High Flow Rate	High Feed Pressure	Aggressive Material	Abrasive Material	Atomizing Spray
		Low	Med	High	Low	Med	High							
TS1201 Dispensing Pen	25	●						●	●			●		
TS1212 Pinch Tube Valve	25	●						●	●			●		
TS941 Spool Valve	24		●	●					●	●	●	●		
TS5322 Mini Spool Valve	24		●	●		●	●		●		●			
TS5420 Needle Valve	23	●	●		●				●			●		
TS5440 MS Needle Valve	23	●	●		●	●			●			●		
TS5540/5520 Spray Valves	26	●			●				●			●		●
TS5622 Diaphragm Valve	21	●			●				●			●		
TS5624DMP DMP Diaphragm	22	●			●			●	●			●		
TS5000DMP DMP Rotary Valve	19		●	●		●	●	●	●				●	
TS7000 Rotary Valve	20		●	●		●	●		●			●	●	
TS8100-M PC Pump	18	●	●	●	●	●	●		●			●	●	
TS9800 Jet Valve	16	●	●	●	●	●	●		●			●	●	
TS8200-MM Micro-Meter Mix	17	●	●	●	●	●	●		●			●	●	

Viscosity Rating; Low = Up to 30K Cps; Med = 30K-100K Cps; High = 100K Cps - up

Recommended = ●

For additional reference, see the The Valve Application Guide on page 43. Disclaimer: The chart above and the Valve Application Guide is for reference only. Please contact a Techcon applications engineer for accurate valve recommendations.