DWFRITZ
PRECISION AUTOMATION

Solution Sheet

Automated Valve Evaluation System

Challenge

A medical device manufacturer needed an automated system to replace an existing manual pulsatile flow tester for heart valves. The automated system needed to mimic the cardiac complete cycle and inspect the heart valve leaflets for proper mechanical functionality and surface defects.

Solution

The production-quality laboratory valve evaluation system measures fluid motion through a captivated heart valve sample. Pulsatile fluid flow through the valve mimics a complete cardiac cycle of 70 BPM, 5 LPM and 100 mmHG mean pressure, while a vision system monitors four coaptation test views (three side leaflet views and one outflow view).

An operator scans work orders and part bar codes from supplied paperwork, loads valves into the system, and monitors the automatic test cycle. The system applies predefined test programming plans that define systolic and diastolic test pressure curves, along with a prescribed number of test cycles.

Upon completion of a test cycle, the operator manually unloads the system and repackages the tested valves. Test data is recorded and logged for all tested components.

Result

The automated valve evaluation system successfully mimics the cardiac cycle, achieving a **throughput of 30 parts per hour**. The machine vision system replaces the manual inspection process, reducing overall labor costs and improving quality by inspecting valve leaflets for mechanical functionality and cosmetic defects along sealed edges and seams.

About DWFritz Automation

Established in 1973, DWFritz Automation provides world-class build-to-print manufacturing capabilities to clients, in addition to designing, building, and supporting engineered-to-order automation systems and high-speed, non-contact metrology products.

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