



FULLY AUTOMATED LEAK TESTING SYSTEM FOR TORQUE CONVERTERS



Automotive Torque Converters are tested for leakage to a high sensitivity level at a production rate of 2/minute in this fully automated test system. Using PC control and custom software, the system automatically loads the parts into the vacuum test chamber from the production-line conveyor, sequences the 10-step test cycle, makes the test validity and pass/fail decisions, and unloads to separate pass or fail conveyors. In this helium mass spectrometer tester, the torque converters are internally pressurized to 45 psig with 30% helium in compressed air to meet the leak test specification for the part of $1 \times 10E-4$ atm-cc/sec of pure helium at 1 atm.

The test cycle includes two early checks for gross leaks to avoid any production slowdown due to excess helium background during the sensitive leak-test step. It also incorporates a final step to determine the validity of each test by using a helium calibrated leak to assure proper operation of all aspects of the test, from the composition of the input gas to the helium sensitivity of the mass spectrometer sensor. The cycle time per part of approximately 30 seconds includes about 10 seconds for the loading, positioning and unloading operations, and approximately 20 seconds for the test chamber evacuation, part pressurization and the sequence of leak tests.