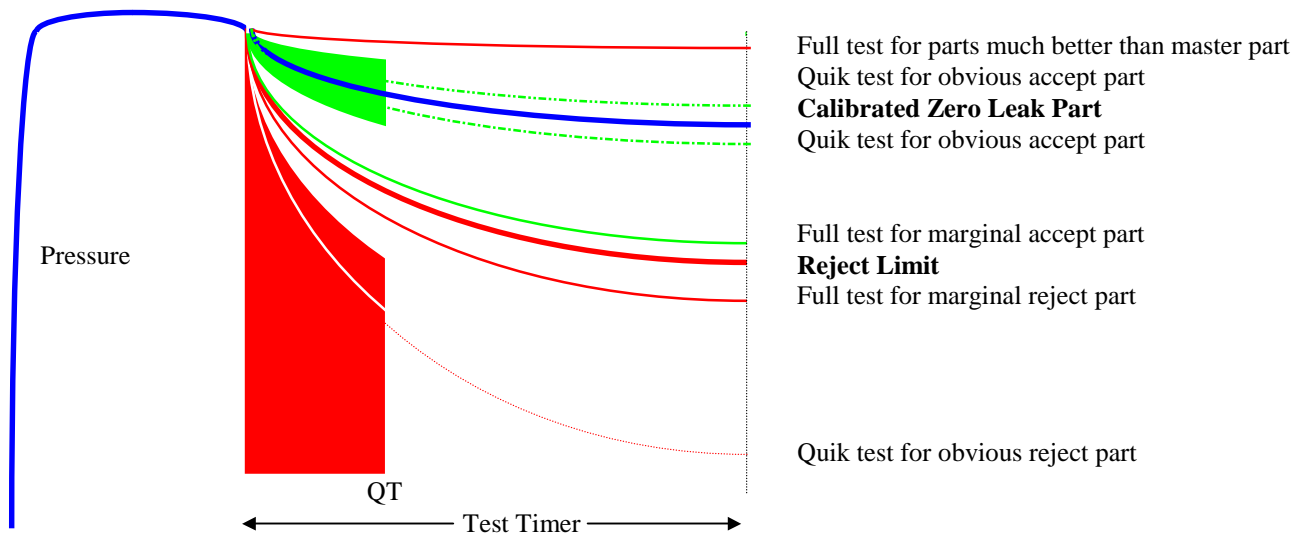# Sentinel C-20 Update

Quik Test

Function

Quik Test performs a conventional leak test on each part but stops the test early for parts that are obviously good or obviously bad without sacrificing accuracy for the marginal parts.

How does it work?

Most manufactured parts that are leak tested pass the test easily. Conversely, most defective (leaking) parts reject by a wide margin. Quik Test monitors the pressure drop within a part during the leak test cycle, ending the test early for the vast majority of your parts that are either going to easily pass or easily reject.

Full test for parts much better than master part
Quik test for obvious accept part
Calibrated Zero Leak Part
Quik test for obvious accept part

Full test for marginal accept part
Reject Limit
Full test for marginal reject part

Quik test for obvious reject part

Pressure

QT

Test Timer

Benefits

- Provide a highly reliable test on all parts while shortening the average test cycle time.
- Increase throughput on existing test systems without major expenditures for new fixtures, tooling, and operators.
- Reduce risk of accepting marginal reject parts on existing systems, which are running shortened cycle times for all parts,.

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Setup Parameters

- **Quik Test Percentage**: Activation of the Quik Test feature is optional. It can be set for OFF or a plus and minus percentage limit about the no leak loss curve and an equal distant limit below the reject loss curve. The optional limit settings are 25, 50, and 75%.
- **Quik Test Time (QT)**: The time into test when a decision is made to stop testing for obvious accept and reject parts. Minimum time setting is 20% of the test timer.

Test Data Calculations and Storage

When the "Quik Test Percentage" is set to OFF, the instrument will calculate and store both a "Quik Test" leak rate (based on the Quik Test Time, QT) and an "Actual Leak Rate" for all tests. An analysis of these results can be performed to decide if Quik Testing is a viable option for the application.

Sample of test data display (Quik Test: OFF)

Actual pressure loss   Process Drift   Quik Test Leak Rate   Test Result   Actual Leak Rate
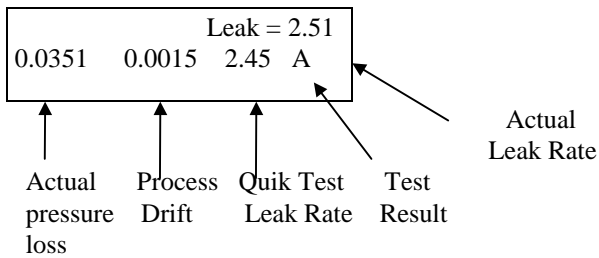
Sample of the print out /data output:
2.51 (0.0351 0.0015 2.45 A)

When the Quik Test feature is activated, the instrument will calculate a Quik Test Leak Rate for all tests and an Actual Leak Rate for only the tests that run the "full length" test. The display for the "full length tests will appear as in the above example. The display for the Quik Test will appear as follows:

Sample of test data display (Quik Test = xx%)

Quik Test Pressure Loss   Process Drift   Indicates Quik Test   Test Result   Quik Test Leak Rate
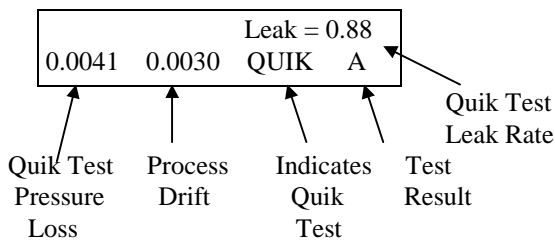
Sample of the printout/data port:
0.88 (0.0011 0.0030 QUIK A)

Cycle Time Savings

The time savings that can be achieved with Quik Test is the difference between completing the total test timer (full length) verses stopping at the Quik Test Time. An example of achievable time savings is shown below.

If the full cycle is set at 15.5 seconds (see example below) and Quik Test timer is set for 1.5 seconds (25% of Test timer), below is a comparison the two time cycles that would be run.

Normal Test		Quik Test	
Pre-fill	1.0 second	Pre-fill	1.0 second
Fill	3.0 seconds	Fill	3.0 seconds
Stab	4.5 seconds	Stab	4.5 seconds
Test	6.0 seconds	Quik	1.5 seconds
Exh	1.0 second	Exh	1.0 seconds
Total	15.5 seconds		11 seconds

The normal or "full length" cycle is used for calibration, test qualification, and test on parts with leak rates that are close the reject limit.

The Quik Test cycle would be used for the high majority of parts that test close to zero leak rate or are obvious leakers.

Quik Test Offset Correction

If there is a consistent offset between the Actual Leak Rate and Quik Test Leak Rate, the Sentinel C-20 will calculate the average offset and correct the Quik Test results. This compensates for differences in the shapes of the calibration curve verses the normal production pressure decay curves and assures more accurate results for the Quik Test.

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