

## Leak test of carburetor assemblies

Choosing the right leak test system enables manufacturer to increase production at a reduced cost.

*When a manufacturer's carburetor line had to gear up to take on the production of another plant, the Sentinel 3520 enabled them to meet the challenge. By dramatically improving the cycle time of their leak test system not only did they reduce the number of leak test stations by half, allowing them to incorporate the test into the line, they improved their quality.*

The challenge of adding 2.4 million parts to a production line with a leak test process already strained by capacity, burdened by high cost and troubled with repeatability issues drove the manufacturer to find a new way to leak test their carburetor bowls.

The manufacturer had eight off-line leak test stations to test the 3.2 million carburetor assemblies produced by their small engine plant. Having the leak tests performed off of the main production line was not the ideal solution, but the well-known leak test system used in the stations was too slow and could not meet the low cycle time and basic quality thresholds required to allow it to be integrated into the assembly line. Taking up a significant amount of floor space, the leak test stations required six or more

staff per shift: four operators and two runners to get the parts to and from the assembly line.

There was a 5% failure rate that plant staff suspected was heavily comprised of false failures but had no ability to correlate the information

with other data. The gage repeatability and reproducibility was "above 30%" and this, combined with the failure rate, reduced the manufacturer's absolute confidence in the leak test. Failures were simply scrapped, with tens of thousands of units awaiting that fate on the floor.

### The Need for Speed: **4x Faster**

The requirement to consolidate the production of the carburetor line from another site into their plant pushed the manufacturer to look for a solution that could handle the additional 2.4 million parts capacity without increasing the number of leak testers and associated costs with the change. They believed it was critical to find a way to bring the test onto the manufacturing line but it was impossible to incorporate eight stations.



**Higher production volume, half the leak testers, improved quality, a fraction of the cost**

- Time to payback: Estimated at only 4 months for an approximate investment of \$100,000
- Avoided additional investment in leak test stations
- Reduced staffing requirements
- Able to handle additional 2.4M parts/year

# Sentinel 3520 Application Note

The first step was addressing the cycle time. The current leak test system required 16.3 seconds for the leak test, part to part, including load/unload of the parts. To make it possible to bring the test in-line, the total process had to take less than 8 seconds. No one had managed this yet but the Sentinel 3520 leak test instrument, which is optimized for speed, was able to bring the total leak test cycle time down to 4.5 seconds. The test could go in-line, *using only four test stations.*

The automation of the leak test reduced the number of leak test stations by half and reduced the staff positions required to support the test.

## Quality as well as Quantity: **7.5x Better**

The Sentinel 3520 was able to meet the cycle time targets because of its extreme accuracy. What had been a gage R&R rate so high they'd stopped measuring it at 30%, became a highly repeatable and reliable process with gage R&R of 4%. The manufacturer appreciated that using the signature analysis technology provided the visibility that would enable them to optimize their tests, learn from what was happening and correlate the data from the tests using Sciometric's QualityWorX analysis tools.

## Performance Advantage – **30x Better**

- 4x faster
- 7x better gage R&R

