TAPTONE
APPLICATION NOTE
Volume 2, No. 4

LEAK DETECTION ON PLASTIC CONTAINERS FILLED WITH EYE WASH SOLUTION

Tested: 2 Piece HDPE containers, multiple sizes 60ml, 120ml, 360ml and 480ml

Tested with: TapTone 4000 Dual Sensor Compression System

The purpose of the evaluation was to prove the effectiveness of the TapTone 4000-Dual Sensor Compression system for detecting small leaks in pharmaceutical containers. The Pharmaceutical industry has high quality control standards. These standards often require that 100% of the product be tested, or the product be stored and incubated for the purpose of determining container integrity. The T4000 Dual Sensor Compression system is capable of detecting leaks as small as .006" (.152mm) at production speeds up to 250 feet/min, (1.27 meters/sec).

HDPE Eye Wash Bottles

TECHNOLOGY CORNER
How it Works

TapTone 4000- Dual Sensor Compression

The T4000-Dual Sensor Compression system finds and rejects leaking and damaged flexible bottles at production line speeds up to 250 feet per minute. The system is designed with dual parallel belts suspended over the customers existing conveying system.

As the container passes through the system, the dual parallel belts apply force to the sidewall of the container. This action compresses the headspace of the container which allows a comparative measurement to be taken at both the infeed and the discharge of the system. Comparing the container to itself between the infeed and discharge of the system, eliminates typical variations seen in the production environment (Fill Level, Product Temperature, and Container Density).

Utilizing advanced DSP technology the T4000 controller analyzes the comparative measurement and assigns a merit value to each container. If the merit value is outside of the acceptable range, a reject signal activates a remote reject system.

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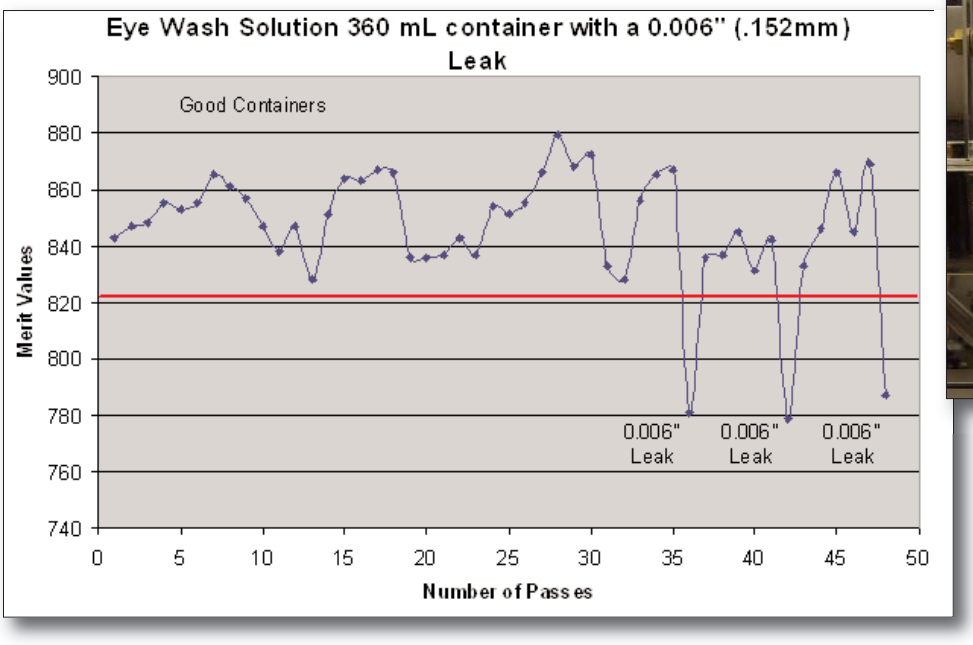
TEST

Testing was conducted on multiple size HDPE containers ranging in size from 60ml to 480ml. The containers were filled with an eye wash solution. Good, non-leaking containers were passed through the system multiple times to establish Entry, Exit, and Leak merit values for non-leaking containers. The average leak merit value for a good container was found to be 851.

To create a leaking container, the cap was removed from a good container and replaced with a .006" (.152mm) calibrated leak orifice. The leaking container was evaluated three times. The average merit value for the 0.006" (.152mm) leak was 782. This was 70 merit value points below the good, non-leaking container making the .006" easily detectable at full production speeds of 100 ft/min (.51m/sec).

The graph below shows the T4000-DSC is able to clearly distinguish between good containers and containers with a .006" (.152mm) leak.



*Merit value is a calculated number determined using an algorithm to compute a resultant from a set of data values.

SUMMARY

The results indicate that the TapTone 4000 DSC system can successfully be used to detect leaks as small as 0.152mm (.006 in), in HDPE plastic bottles, at full production speeds.

TELEDYNE TAPTONE
Package Inspection Systems
A Teledyne Technologies Company

www.TapTone.com

49 Edgerton Drive • North Falmouth, MA 02556 USA

P: 508.563.1000
F: 508.564.9945
E-Mail: taptone@teledyne.com

ISO 9001 Certified CE Compliant