TELEDYNE TAPTONE
Everywhereyoulook™

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TapTone APPLICATION NOTES

News and information from Teledyne TapTone, a leader in the package inspection industry.

VACUUM DETECTION

Tested: Regular Sanitary Can Ends and EZ Open Can Ends

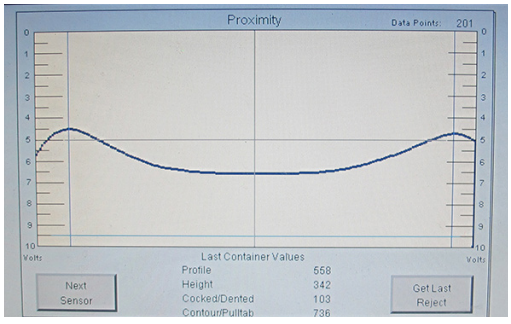
Inspection: The purpose of this test was to prove the effectiveness of the TapTone RTV-P Sensor in testing varied metal cans for vacuum integrity. If vacuum integrity cannot be verified in a container on the production line, there is likely a leak in the can. Leaks not only damage brand image, but also provide an entry point for contamination of the product, and potential health concerns for your consumers. The TapTone RTV-P sensor can test both sanitary ends and pull-tab cans and is ideal for finding potential leakers in a variety of cans before they leave your processing plant.

Tested with: TapTone Proximity Sensor

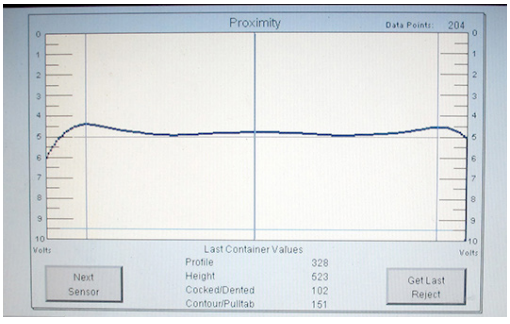
A can of evaporated milk passes under the RTV-P sensor

TECHNOLOGY CORNER *HOW IT WORKS*

Proximity technology measures pressure or vacuum in containers with metal closures by measuring the lid deflection. The sensor produces a continuous magnetic field that monitors the distance between the sensor and the metal lid. The continuous signal is digitally sampled to produce a merit* value of the lid profile. The profile value is then compared to user set limits. Containers with lid deflection outside these limits are rejected.



Deflection of "good" cans

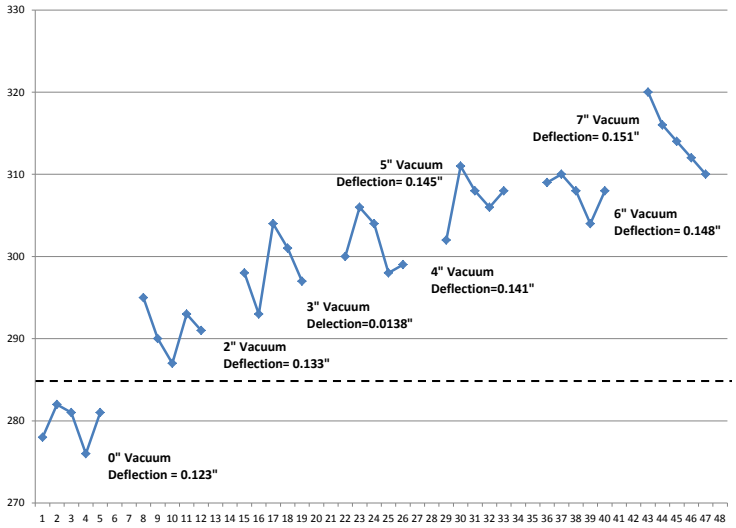


Deflection of "bad" cans

TapTone Twin Proximity system

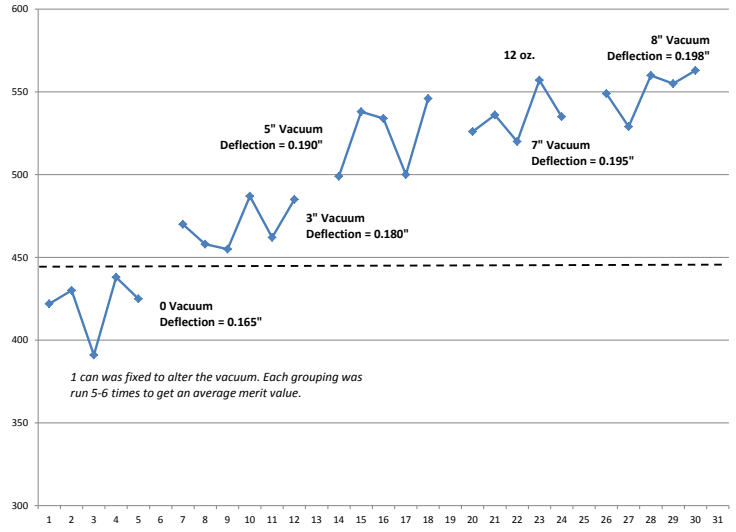
TESTING

For this application, TapTone used a canned milk product for vacuum evaluation. The first samples tested were the sanitary ends (no pull-tab). To vary vacuum deflection for testing, a small hole was drilled near the top of the can and a copper tube was affixed (soldered) into place. The vacuum was set to values ranging from 0 vacuum to 7 inches (177.8 mm) of vacuum. The can was then passed through the proximity sensor five times to get an average merit value.* As shown on the chart, the differing values provided a clear separation between 0 and 2 inches (50.8 mm) of vacuum.



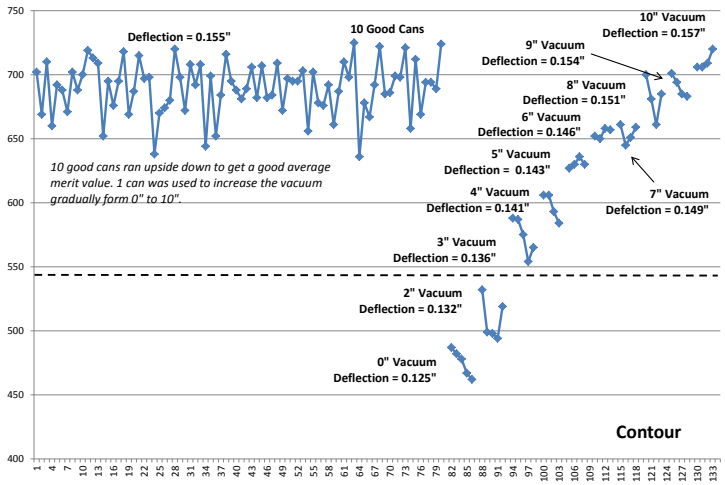
First set of samples – Smooth-Top Cans

In the second set of samples, cans with an EZ open ends were tested. The same method for varying the vacuum was used for a new range of 0 vacuum to 8 inches (203.2 mm) of vacuum. While this provided distinct merit values, it is important to note that the position of the pull-tab does not directly affect the readings while the proximity head is taking a measurement.



Second set of samples – Pull-Tab Cans

In a third set of samples, cans with open ends were re-tested, however this time flipped upside down. In this test, ten (10) "good" cans were passed by the sensor upside down to obtain a "good" average merit value. One (1) can was then used to gradually increase the vacuum from 0 vacuum to 10 inches (254 mm) of vacuum. With the can upside down, the proximity sensor is able to determine the difference between 2 inches (50.8 mm) of vacuum and above.



Third set of samples – Pull-Tab Upside Down Cans

SUMMARY

These tests demonstrate that the TapTone Proximity Sensor can consistently determine the integrity of a vacuum in smooth-top cans. In cans with pull-tabs, the Proximity sensor can consistently determine vacuum integrity when the can is sent through the machine upside down, as long as the bottom of the can is of the same rigidity as the top of the can.

** Merit value is a calculated number determined using an algorithm to compute a resultant from a set of data values. Test results achieved in the test laboratory may be different from results seen in the production environment.*

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