



TapTone

APPLICATION NOTES

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

SEAL INTEGRITY, PRESSURE/VACUUM LOSS AND FILL LEVEL INSPECTION IN EZ OPEN SOUPCANS (COOKER PROTECTION)

Tested: 2-piece EZ open soup cans

Inspection Desired: The purpose of this test was to prove the effectiveness of TapTone systems in determining seal integrity, proper vacuum and fill level in EZ open soup cans prior to retort.



▲ EZ open soup cans are tested with the T500-P.

Packagers in the food and beverage industry have long sought a remedy for the costly equipment failure and downtime that results when defective containers jam the continuous cooker on a canning line. By combining a proximity sensor to measure lid curvature and an X-Ray fill level sensor, the TapTone T500-PX detects and automatically rejects cans with defective lids, flat lids, missing lids, cocked lids, seam defects, knockdown flanges, dents, underfill and overfill, and low vacuum. With a TapTone system installed before the cooker, these defects are virtually eliminated, protecting the cooker from jam-ups.

Tested with: TapTone 500-PX Proximity/X-Ray Inspection System

TECHNOLOGY CORNER *HOW IT WORKS*

The TapTone 500-PX uses a proximity sensor to measure pressure or vacuum in food cans, beverage cans, glass jars, or bottles with pop-up lids by measuring lid deflection. The proximity sensor produces a continuous magnetic field that monitors the distance of the metal lid and produces a proportional analog voltage. The continuous proximity signal is digitally sampled to produce a merit value of the lid profile. The profile value is then compared to user set limits where containers with lid deflection outside these limits are rejected.



▲ TapTone 500-P

The X-Ray sensor utilizes X-Ray technology to measure the fill level of products packaged in steel, aluminum, glass, plastic or paper containers. An X-Ray tube energized at high voltage is used to produce a low energy X-Ray beam. This X-Ray beam is focused to look through the container in the expected fill level region. As the X-Ray beam penetrates the container, it is attenuated by the amount of product blocking the beam. The beam is monitored by an X-Ray detector which measures the X-Ray intensity after it goes through the container. The change of intensity is directly proportional to the fill level of the container. Rejection levels, set by the user, define the high and low level limits.

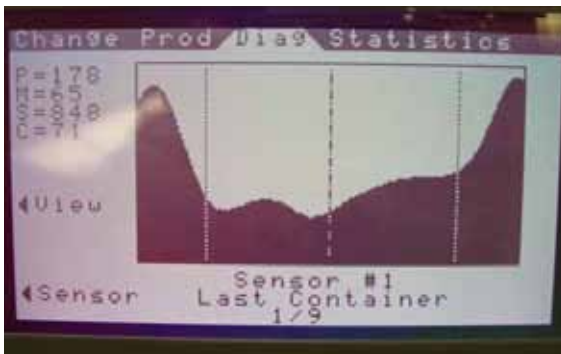
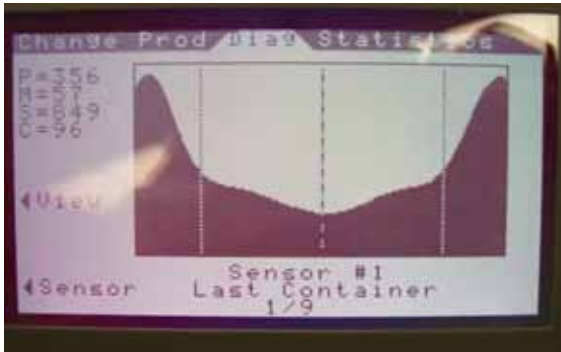


▲ TapTone 500 X-Ray sensor

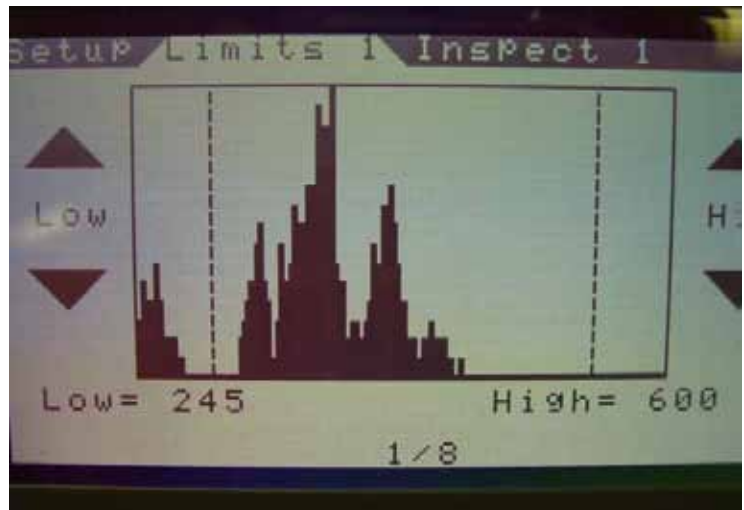


TEST 1 – TAPTONE 500 PROXIMITY SENSOR

The cans were tested both right side up and upside down. The tests proved that a clear low/high value separation of properly sealed containers versus defects was achievable.

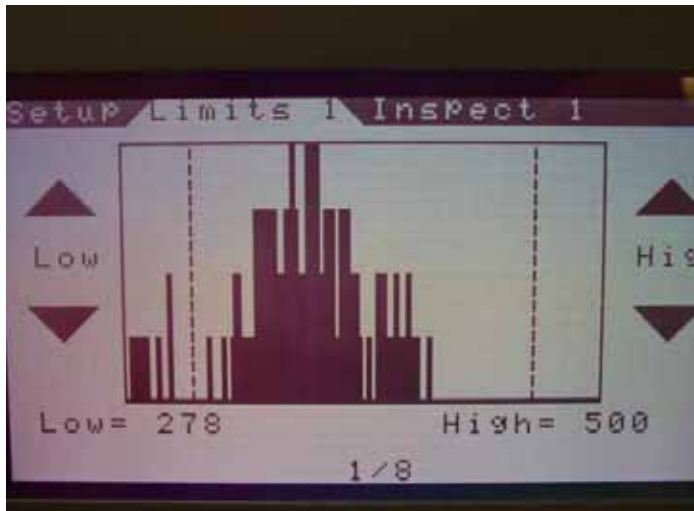


▲ Top: good can profile.
Bottom: bad can profile.



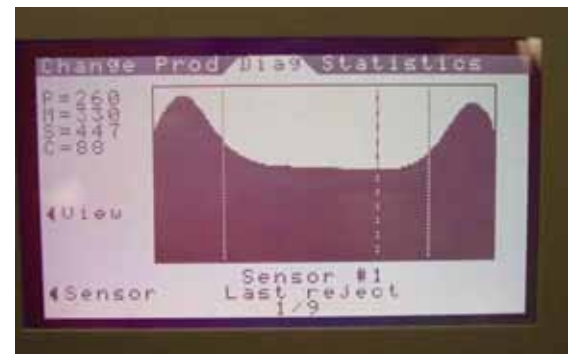
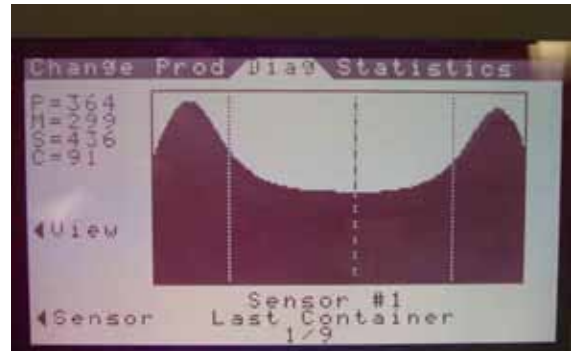
▲ Screen capture shows the profile histogram of the top ends of the cans tested single file with the T500-P. The data plot displays the separation of sealed cans versus those with low vacuum.

Can Tops



▲ Screen capture shows the profile histogram of the bottom ends of the cans tested single file with the T500-P. The data plot displays the separation of a sealed can versus those with low vacuum.

Can Bottoms



▲ Top: good can profile.
Bottom: bad can profile.

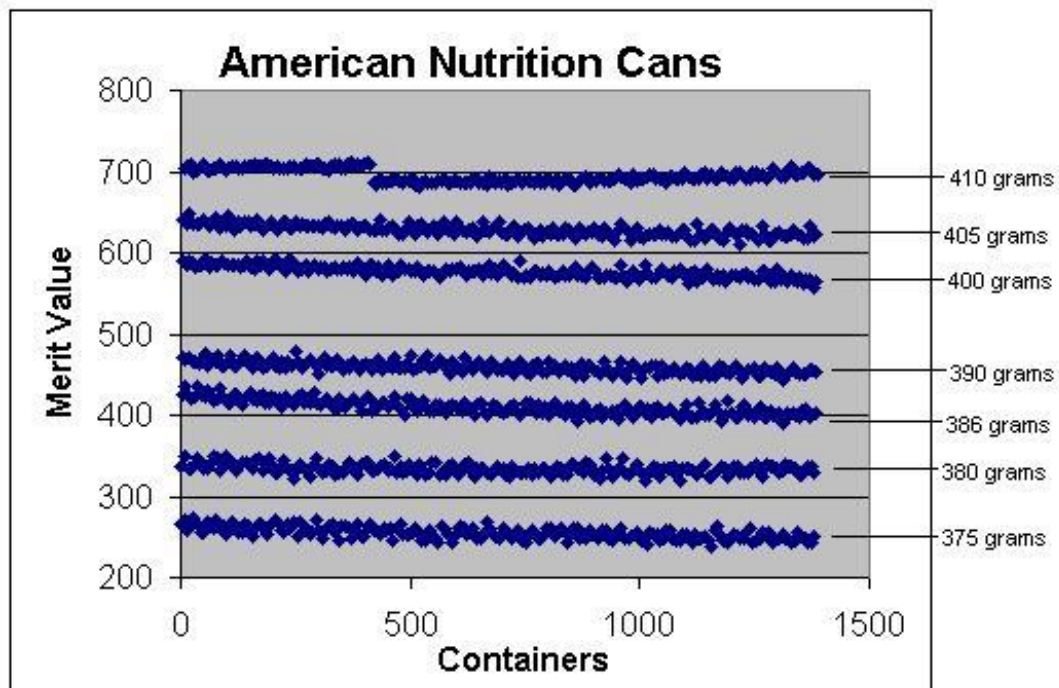


TAPTONE 500 X-RAY SENSOR

Cans were then passed through the TapTone 500 X-Ray sensor. As seen in the histogram, the merit values clearly distinguish weight variations in the cans.

Conclusion

Both tests successfully show that EZ open soup cans will be tested effectively for seal integrity, vacuum level and fill height prior to entering the cooker and thereby preventing jams.



▲ Cans are tested with the T500 X-Ray sensor.



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1/24/12. Specifications subject to change without notice.

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