Manual Testing
The Need for Testing:

- Good Practice
- HACCP Stipulation
- Performance Assurance
Test Frequency

- Minimum: beginning & end of shift
- Beginning & end of product run
- More Frequent Tests = Better Protection
• Multiple sample passes with all metal types

• Sometimes the need to test in variable pack positions & sequences

• The need for a test pack recovery plan in the event of a failure
Testing Complications & Costs

• The need to document results

• The need to address safety concerns

• High speed lines/complicated test scenarios may require multiple operations or even lime shift down
A plant has 10 lines with 3 shifts

Test requirement:
- Every 4 hours
- 5 passes per sample
- 3 sample types

Approximate test time: 20 mins (including documentation)

Test time = \textbf{20 hours / day}

Plus the lost production!
Automatic Testing
Challenges:

• Must reproduce signals that:
  o Are same as calibrated spheres would passing through the center of the aperture
  o Represent different metal types (ferrous, non-ferrous, and stainless steel)
  o Have the same speed envelope as the product
• Must reproduce signals that:
  - Can be timed to package location (front, middle, and back)
  - Cause a reject response
  - Are recordable events
  - Are generated outside of the detectors direct control
Automated Detector Testing Intent

- To be used to augment manual testing **NOT** replace it
- Can be used to reduce time between manual tests
- Testing with ↑ labor & downtime cost
HALO® AUTOMATIC METAL DETECTOR TESTING SYSTEM
The *Halo* is an automatic system that fully tests the functionality of a Fortress Metal Detector System. It creates the same disturbance in the receiver produced when testing with physical test samples.

What is the “Halo” system?

- Automatic, accurate & consistent testing
- Eliminates downtime resulting from manual testing
- Eliminates workplace safety risk occurring from manual testing
The “Halo” Theory

An antenna is used to reflect the detectors electromagnetic field and create a disturbance in the received signal. This disturbance can be very accurately controlled and precisely simulates actual metals of different types passing through the detector at the correct speed.

Halo electronics create reflected signals of specific types and sizes of test sample.

Halo Electronics are external from the detector’s control electronics used for metal detection.
The following are actual waveforms of what the metal detector is seeing from both manual and Halo tests.

**Halo Test v.s. Manual Test signals**

**Manual Test of 1.5mm Ferrous**

**Halo Test of 1.5mm Ferrous**
The following are actual waveforms of what the metal detector is seeing from both manual and Halo tests.

Manual Test of 2.0mm non-Ferrous

Halo Test of 2.0mm non-Ferrous
Halo Test v.s. Manual Test signals

The following are actual waveforms of what the metal detector is seeing from both manual and Halo tests

Manual Test of 2.0mm Stainless Steel

Halo Test of 2.0mm Stainless Steel
Test results when using Halo are more precise than that of manually running test samples

Example of consistent results generated using Halo test signal

Example of varying contaminant position and signal from physically using test samples.

The Halo is setup to generate signals slightly lower than the testing sample in the weakest point through the metal detector aperture (center). The result is that the Halo will fail before the test samples if sensitivity is adjusted lower.
The Halo uses the photo eye signal to automatically test different positions on any size pack.

- Ferrous Halo test on leading edge of package
- Ferrous Halo test on middle of package
- Ferrous Halo test on trailing edge of package
Halo test signal can be set to trigger automatically on a timer or can be manually initiated by an operator.

Can be set for different tests routines that are required for different customer specified certification schemes.

Test results are logged as such and can be viewed via Fortress Contact reporter software.
Contact us to find out how Halo can save you time and money!

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