NEWS & VIEWS

Six Sigma - The Latest or Greatest?

The Six Sigma quality initiative now seems to be really taking hold. Pioneered by Motorola, Six Sigma has been made famous by the enigmatic CEO of General Electric, Jack Welch, who claims that the system will save his organisation a whopping $10 Billion over five years. It is now being adopted on a global scale - yes, even in the can making industry.

Like quality systems that went before it, Six Sigma uses statistical based tools to drive process improvements. It differs in its breadth of application, as it is a disciplined approach encompassing ALL levels and aspects of the business. It also sets the very exacting target, statistically implied in its name, of 3.4 defects per million.

Six Sigma may be a quality initiative but it's justification is cost reduction. With it's reliance on statistical facts it should help resolve the difficulty in determining payback from investments in quality.

Traditionally, quality investment decisions are primarily driven by customer complaint or pressure. This is understandable - money should be spent where it has the highest impact. But the true magnitude of potential cost savings takes a lot of effort - and reliable data - to define. Costs associated with spoilage, low line efficiency, HFI's, complaints, returns, unnecessary process adjustment, unnecessary tool change, excessive materials use, excessive energy use, slow changeovers, etc, etc can all be reduced by investment in quality.

For example, the biggest benefit in automating or improving off-line quality tests, such as coating thickness and distribution, is removing operator variability from the results - not removing the operator from the building. The Six Sigma approach should help predict and prove this.

So who will do better, the frugal traditionalist or the quality obsessed Six Sigma convert? Only time will tell, but meanwhile we are happy to talk to anybody about our products and systems that help to improve process control or prevent defective product from reaching their customers. Some examples of these are given in the tables below.

2 Piece Production
Eliminating Defective Product

- Miss-sprayed can detector
- Mixed (wrong label) Can detector
- Can Light Tester Upgrade System
- End Light Tester System
- Can Litho Inspector

Process Improvement

- Semi-auto enamel rater
- Coatings tester
- Fully Automatic Enamel Rater
- Fully Automatic Coatings Tester
- Fully Automatic Dome Tester (growth & buckle)
- Fully Automatic Axial Load Tester

3 Piece Production
Eliminating Defective Product

- Double sheet or end detector
- Sheet skew detector
- Plain Margin Inspector

Process Improvement

- Semi-auto enamel rater
- Coatings tester with Hoverprobe
- Coating viscosity & solids controller

Virtually all of these products can output their quality findings to SPC applications such as QC Sentinel.

Information on background reading please tick “6 Sigma” on the reply sheet.

VOLUME 20

In this issue

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SENCON

CONTROL DOWN THE LIN

Film Weight Pitfalls

Film weight measurement is a subject we have discussed before in News & Views. Having found two other potential pitfalls with film weight measurement, we feel it is important to highlight them.

Recently a customer contacted us complaining that their film weight gauge had poor linearity and at times 10% errors were noted.

SI9500 Digital Film Weight Gauge

This triggered an immediate re-check of the gauge's accuracy. Our detailed tests only appeared to prove that the gauge was highly accurate, so we started looking elsewhere for the problem. When the customer's calibration panels were checked, the problem became clear.

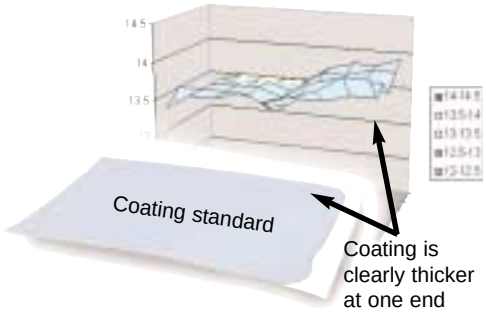
When the coating supplier makes calibration panels they are often made by hand, using a variety of methods. Although the average film weight of the panel is usually accurate, the film distribution may not be so good; we regularly see a 10% variation in film weight across the calibration panel. So depending on the precise point on the panel used for the calibration, the subsequent readings will be distorted by the same error.

The Film weight gauge is a comparator gauge, just like basic kitchen balance, if the comparison weights are inaccurate, all your weight measurements will be equally wrong. The same applies to the Film weight gauge, if the calibration piece has an error, all measurements will be affected.

You can try this yourself by measuring a calibration panel at different points across its surface. You might be amazed at the variations.

So what is the best way around this problem to ensure your readings are truly accurate.

To avoid the possibility for error, panels with excessive variation should be rejected. This would mean auditing all current panels in use and checking new panels as they arrive from the supplier.

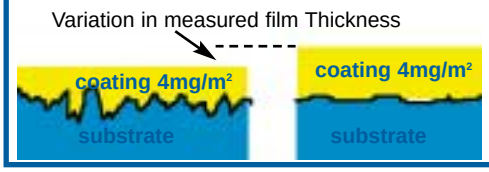


Calibration standard with its measured thickness graphed out in the background

Surface Roughness

The second problem is one of surface roughness. All materials, even apparently smooth surfaces have a roughness to them, if you look closely enough. Can stock will generally have surface roughness of a few microns. As the final can coating will only be, say 4-8 microns thick, the coating will fill in the low points, resulting in a lower than expected final thickness. Now if the calibration panel has a different surface roughness the coating will behave differently and appear to be a different weight. The answer to this potential problem is to make sure that the calibration panel has the same surface roughness as the can stock currently in production.

Diferent surface finishes will produce varying coating thickness



For more information please tick "Coating Calibration" on the reply sheet

Can Stand Maintenance

A key element of the enamel-rating test is good reliable electrical contact throughout the test circuit. This is particularly important between the can body and the can stand, after all, the can will act as one of the electrodes during the test. Sencon's beverage can stand uses 3 sharp point-contacts to create a reliable low resistance connection.

Over time their effectiveness is affected by wear and corrosion from electrolyte, as you can see in the picture. Although as a safeguard, the Sencon Enamel rater will prevent users from taking a reading when the can body is not fully in contact with the can stand, it does become harder to work quickly if you do not get good contact between the can and stand.

Fortunately these contacts are easily replaceable by the user. Simply unscrew the old contacts and replace with new ones. These are available from Sencon as a service kit, part number: SI9008.

The Right Sensor For The Job

Spoilage analysis is becoming an important measure of line performance. Counting the product in and the out of each manufacturing process gives very precise information about the process's spoilage.

Often though, inaccurate results appear on counting systems. Our experience shows that the type of sensor used for counting will make all the difference to the accuracy of the results.

11-392-66 Beverage End Count Sensor

The majority of standard proximity sensors are designed for general-purpose use, not specifically for can line use. Counting individual cans accurately is an altogether different job. The count sensor must produce a unique electrical signal for each and every can, but all sorts of factors can prevent this from happening reliably.

- On high speed processes count signals can be very short in duration, these signals are sometimes missed by the control system, resulting in under counting.

Sencon count sensors are specified to better than 20 counts per million accuracy - but many trials have proven them far more accurate than that.

- Additional errors occur when cans back up in front of the sensor. Because the conveyor continues to run the cans will shake or jitter causing the sensor to switch, creating additional counts.
- Cans bunch together and appear as a single can, especially if large diameter proximity sensors are used. Often this is assumed to be impossible on a machine outfeed as the cans are naturally spaced. But during a build back a badly positioned sensor will miss the occasional can, each time a build back occurs.

As well as these potential errors, it is also easy to introduce further errors in the way that the count signals are processed, especially if count sensors are connected to a PLC. Remember, the count signal duration will not be a function of line speed, it will be a function of can velocity as it passes the sensor. Signal duration will be variable and could be just a few milliseconds, far too short to overcome the input turn-on time and scan frequency of the PLC.

Little wonder then that many count or spoilage systems fail to deliver credible data.

Sencon develops it's products specially for the real world conditions of the high speed can line. Our count sensors and systems have been refined over the last twenty years to deliver rock solid reliable results.

Did you know - Many close couple can making - can filling operations use our can sensors as their primary data source for invoicing the supply of empty cans.

Features include;

Divide by 10 outputs

Divide by 10 outputs reduce the number and extend the duration of count signals, allowing even slower PLC's to keep up with fast processes.

Uni-directional counting

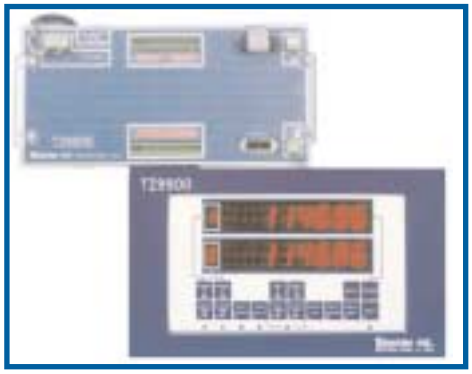
Uni-directional counting means the sensor will only count product in the forward direction eliminating back up errors caused by cans jittering or moving the wrong way.

Dual head format

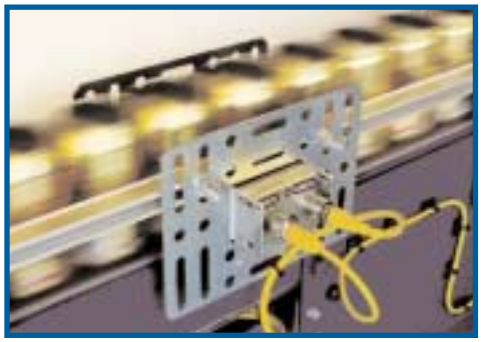
The dual head format provides a fit and forget approach, eliminating problems with achieving correct sensing distance when cans are loosely contained in the trackwork.

For smaller count or spoilage systems the Sencon Totalizer units provide accurate high speed battery backed data from up to 9 count sensors. With a simple user interface and network features allowing data to be collated away from the line. The totalizer represents a highly cost effective solution.

A correctly engineered spoilage monitoring system will help to pinpoint locations, causes, quantities and patterns of line spoilage - essential information for the fight to reduce spoilage. Remember, before you can control, first you must measure. Sencon count sensors and systems give you the tools to measure accurately.



Networkable Totalizer



11-371-06 Can Count Sensor

For more information please tick 'Can Counting' on the reply sheet

Sencon Sales & Support Team

Sencon's sales and customer support team, based in Worcester UK are dedicated to supporting Sencon customers from the UK to New Zealand and everywhere in between.

The UK team from the left (back row)
Paul Orban, *Sales Manager;* **Dave Holmes,** *Customer Support Engineer*; **Bob Stapleton,** *Internal Sales Manager*; **Ian Blackledge,** *Technical Manager;* **Philip Rogers,** *Customer Support Engineer;* **Andy Freeth,** *Products Manager*; **Harald Moyrer,** *Area Sales Manager;* **Kathryn Phillips,** *Business Administrator .*
(Front row)
James Breeze, *Technical Apprentice;* **Tom Hall,** *Customer Support Engineer;* **Tim Yeates,** *Sales Engineer;* **Angie Roddis,** *Customer Support Coordinator;* **Mark Tredinnick,** *Customer Support Manager;* **Rob Mitchell,** *Customer Support Engineer;* **Julie Fitzpatrick,** *Internal sales Coordinator.*

Meet the team in Chicago next issue

In Brief

Metpack 2002

METPACK exhibition needs little introduction as Europe's premier metal packaging exhibition, held once every three years in Essen Germany. METPACK 2002 will be held between April 23rd & 27th 2002. Sencon will be there demonstrating a wide range of its products including, automatic quality gauges, vision inspection systems, manual gauges and sensors.

Re-calibrations

When digital Film Weight gauges are returned for recalibration, often the Hoverprobe or formed can probe is returned as well. So long as the probe is working correctly, returning the probe is unnecessary. This will save you excessive carriage costs for the heavy item such as a probe. Don't forget to change the probe tips regularly and recalibrate on your coating standards afterwards, as the new probe tip will behave differently to a worn one.

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