

# NEWS & VIEWS

## Guarding your Reputation

VOLUME 24

It's hard to quantify the value of your reputation until you lose it. Then the costs of returns, spoilage, lost customers, lost profits and the potential for litigation could soon add up to an enormous sum. This is especially true when it comes to the consequences of metal exposure in beverage cans, because of the huge product volumes involved.

The only solution is constant vigilance. A test procedure you can be sure of twenty-four hours a day, seven days a week.

Often, companies rely on operators sampling production in addition to their other tasks, and manually testing for metal exposure. The problem with this type of 24/7 inspection procedure is the number of tests required to be statistically effective. When faced with such a repetitive task, operators are subject to fatigue and the normal distractions of trying to maintain line performance at the optimum. The risk of defective cans getting through is ever present.

There is a proven alternative solution, which is working effectively on many beverage lines throughout the world, and

**The risk of defective cans getting through is ever present.**

has been for many years. The Sencon QA2600 Automatic Enamel Rater.

This self-contained quality assurance machine stands guard at the end of your line all day, everyday without fatigue or distraction.

It can be easily incorporated into the line using the customer's preferred automatic sampling method. Then cans are tested

**A test procedure you can be sure of all day, everyday.**

continuously, with immediate feedback if a problem is discovered.

The completely automatic QA 2600 is constantly checking its own operation as well, to ensure that tests are accurate and reliable. Electrolyte concentration, fill level, and many other variables are continuously monitored, so you can rest assured that the same test quality is maintained day and night. With this test consistency, any trends or problems are spotted instantly and corrective action can be taken before excessive HFI's or scrap are generated.

The QA2600 has an industrial PC control, with a user-friendly graphical interface. Full networking capability allows detailed test reports to be generated for each production batch. The cabinet is made of corrosion resistant heavy

duty propylene, with the test area rated IP65. A full preventative maintenance contract is available from Sencon, so that you can be sure your reputation is secure 24/7, year after year after year.

**For more details of Automatic Enamel Rating tick QA2600 on the reply sheet.**

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In Brief

News & Views is published by:

# SENCON

CONTROL DOWN THE LINE

# Smoothly Does It !

There is no doubt that high speed lines prefer balanced running, with smooth modulation of speed rather than 'fast-slow-stop-start' running. But the control of a process line, made up of a number of pieces of independently controlled equipment, is complex. The sorts of problems encountered are:

- **SPEED MATCHING** - How to ensure the right machine speed to best utilise the incoming feed rate. Machines such as a Necker work best at a near constant speed, producing their best and most consistent quality output.

- **STABLE CONVEYOR CONDITIONS** - How to match the movement of lightweight, easily damaged cans between high speed machinery to give the optimum spacing and controlled pressure.

**Installation on infeed swan necks is not a problem**

- **CLOSE COUPLED SYNCHRONISATION** - How to maintain the best inter-machine back-ups and feed rates between close machines like Waxers, Neckers and Testers.

- **CONVEYOR PRESSURE CONTROL** - How best to vary conveyor speed relative to back-up to reduce transit and refill times without increasing can pressure or damage.

The more information that can be fed to the line control system, the better the control can be. The simplest control schemes use low and high level proximity sensors. Often a mid-level sensor is used, and when even better control is needed, additional sensors can be added between these. With 3, 4 or 5 proximity sensors, the line's fill level condition is better understood, but still lacks the infinite variability needed for smooth modulated control.

Sencon's versatile linear mass sensor provides the means to improve control

of cans on the conveyors as well as machine speeds. For example, it can revolutionise speed control of Decorators, Neckers and Testers. These machines often are able to run in a fully variable speed mode, but the control system is restricted to low, mid or high speed running. This is because the control system cannot predict how the infeed level is changing at any moment in time. The result is continual speed stepping and often it's caught out creating an unnecessary short stop.

Using an analogue sensor, which gives an infinitely variable and instant feedback of the cans in the machine's infeed trackwork, results in speed precisely balanced to the available supply of cans. In practice, short stops are reduced and the machine will tend to settle at a speed closely matching the up-stream process.

Installation on infeed swan necks is not a problem. If the guide rails are electrically isolated, they can be used in place of the sensor wire. This makes installation simplicity itself, even for complex gravity drops. With up

to 10 metres of sensing wire or guide rail acting as the sensor, very accurate speed control information can be supplied to the machine.

The analogue signal generated is proportional to the number of cans within the trackwork, allowing smooth response to control needs. In operation the sensor will increase its output until it directly matches the can supply rate, immediately

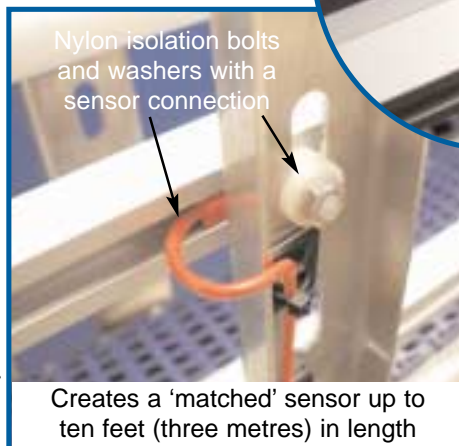
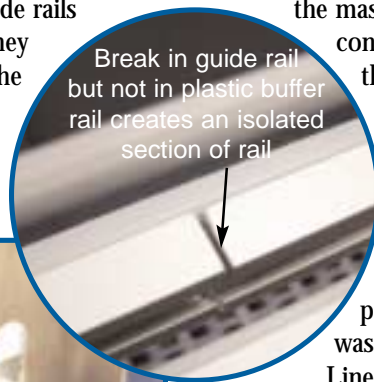
decelerating by an appropriate amount if the head of cans falls.

Another recent application was to improve the packing density on a 3pc can palletiser. The line engineer recognised that the speed of the supply belt to the palletiser infeed mass belt

**.... the packing density problem was solved.**

was key to consistent packing density. After trying several methods of getting the precise speed control necessary, a Sencon linear mass sensor was fitted to the mass belt, with its speed control signal being fed to the supply conveyor's motor. Once the simple set-up procedure was completed, the sensor found the appropriate infeed speed and the packing density problem was solved.

Linear Mass Sensing allows some really flexible control options to smooth out your plant operation, improve quality and reduce maintenance downtime. The only real limit is the control engineer's imagination in how to apply them.



**For more information tick Linear Mass Sensor on the enclosed reply sheet**

# Precise End Gap Control

Holding consistent gaps in end lines is becoming more critical as lines run faster and ends become smaller and lighter. Smooth, consistent flow is the ideal for any end production line.

**A more effective solution is analogue speed control.**

To achieve this goal the line control system needs to balance the following;

- reduce conveyor stop/starts
- avoid excessive gaps which cause ends to flip over, and
- prevent over pressure in the line, which can result in damage and excessive wear.

The common control method of using one or two proximity sensors to detect product flow, can only give relatively coarse feedback information to the control system. You then have to rely on manual speed adjustment, or the control system's program, to interpret the rather basic proximity sensor information. This gives what is, at best, only an approximate speed demand signal.

A more effective solution is an analogue speed control sensor package

such as the Sencon End Gap control system. This consists of a sensor and control module, and measures the actual gap between the ends. It produces an infinitely variable analogue control signal exactly matching the demand needed to maintain the ideal end gap.

The sensor's control module is designed to interface directly to a motor speed control using the standard outputs of 0-10Vdc and 4-20mA. No other control system components or programming are required. Setting up the system is simply a matter of pressing two buttons to confirm a



maximum and minimum allowable gap, then the sensor does the rest. In operation the sensor gives instant response without

overshoot, resulting in perfect control without complex fuss or fine-tuning.

Watching the sensor in action you find the end gap is maintained within remarkably narrow limits. Even as the take-away demand ramps up to full speed and back down to stop, the gap stays almost constant. One thing to be

aware of is variable speed drives often come with their own options for, ramp-up, ramp-down and delays. It's

**It's designed to interface directly to a motor control.**

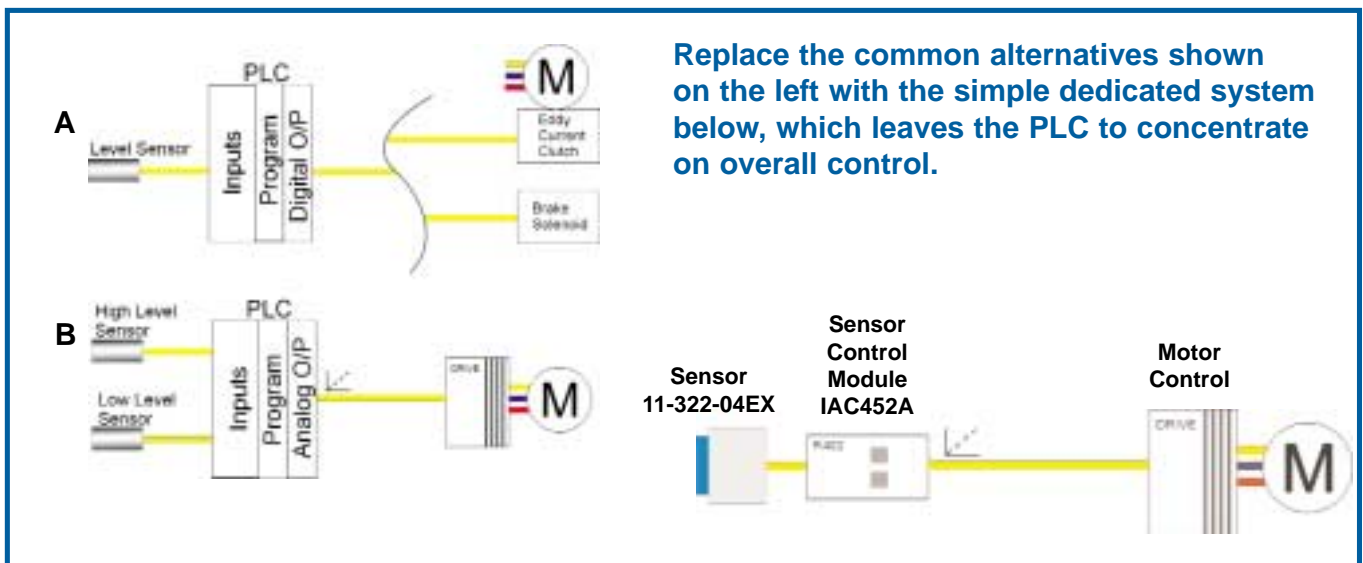
important to disable these functions as the Sencon system handles all of these needs. Having two parts of the system trying to apply delay and ramp demands simply causes confusion.

Warning alarm outputs are included for excessive low or high levels. These mimic the original high and low level proximity sensors and can be fed to the control system as before, although the control PLC now does not need to develop the motor speed signal.

Additional presets are included. One for response delay prevents hunting. Another enables the maximum output signal to be adjusted preventing demand for excessive speed from the motor, and ensuring the sensor exactly matches the application requirements.

End gap control could not be simpler as the Sencon system creates a precise closed loop control system needing no programming and little set up time.

**For more information tick End Gap control on the reply sheet**



# Side Seam Profiling

Side seam ovens are unlike other curing ovens. With a curing time of only 10-20 seconds, setting of the oven is critical for effective and economic performance.

As with other curing ovens, the profile of temperature versus time achieved on the can's surface is key to effective curing of the coating. The best way of recording this data is to attach thermocouples at various points along the can's seam and log the readings as the can passes through the oven.

Any logger used must be capable of collecting sufficient data in the short process time available. It must also be small enough to run through the oven during a normal production run with

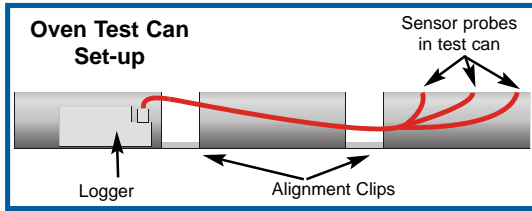
.....little or no physical or thermal effect on the process

little or no physical or thermal effect on the process.

The Sencon kit for side seam applications consists of an SL2400

Logger, probe set, alignment system and data analysis PC software.

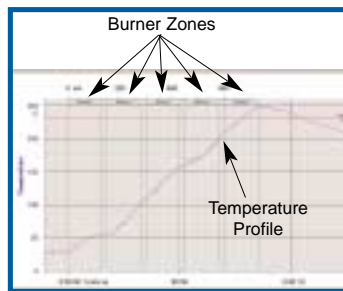
The system's compact logger is capable of taking up to 256,000 readings at a rate of 1,800 readings per second. It is designed to fit inside a normal



production can - or even small aerosol cans.

The temperature sensing probes, normally fitted on the seam of an adjacent production can, are connected by cables to the logger, and take the temperature directly as the seam is processed.

Experience has shown that having the logger too close to the thermocouples distorts the readings, due to disruption of the air flow through the can. So the solution is to create a train of cans, where the lead can has the sensors, followed by a standard can and finally a can with the



logger. Vertical alignment of the first can is critical as the energy from the oven is narrowly focused on the seam width. The alignment system is a set of

It can even be used in ovens with curved process paths.

articulated clips, which ensure that the trio of cans required for the logger's test run (see diagram) may be used in all ovens, including those with curved paths.

Finally, the Hexagon Windows based software is a powerful data analysis pack, which displays all data in a graphical form to give a fast visual understanding of the process characteristics.

The data can be shown as a

standard temperature against time graph, or temperature gradients against each burner for individual adjustments and fine tuning.

Side stripe curing is a critical process. This system enables you to optimise settings - then maintain them.

For more information tick 'Side Seam' on the reply sheet

## Sencon in Far East

We will be exhibiting at two shows in Hong Kong and Shanghai in November 2002. **ASIA CAN** in Hong Kong and **AEROTECH & METALTECH** in Shanghai.

Our 2003 Mouse Mat is available in English/Spanish/German or French. If you would like one tick the appropriate box on the reply sheet.

## In Brief

### 387 Short Can Sensor Advantages

Customer experience has shown that the 387 Short Can Sensor offers a number of valuable advantages:

- You only need one type of short can sensor for aluminum can stock. The normal variation in nickel punches doesn't affect the performance of the sensor.
- The 387 has its own hard-wired 'Stop' outputs, resulting in a very fast shut down

of the bodymaker after a short-can detection.

○ Fast shutdowns help prevent damage to both the punch and the tool pack, resulting in greater tooling life. This alone can be a major cost saving.

○ Unlike other sensors, if the 387 is not correctly adjusted, it will prevent the bodymaker from running. This reduces the possibility of operating without the correct short-can protection.

○ The 387's have a better life expectancy than other sensors, resulting in savings in maintenance time and money.

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