



An eagle eye for scrutinising inefficiencies at the production site helps save costs resulting from downtime. By **John J Foley**, Executive Vice President, Fastec Imaging Corporation.

**CONSIDER** a general manager of a can manufacturing plant. His new decorator, the printing press that 'paints' logos and designs on cans, is not functioning properly.

It is supposed to handle 1,200 cans per minute, but it would not process more than 800 units without jamming. It also destroys new cans that are caught in the feeding mechanism at a cost of four cents per can.

Over time, this waste threatens to cost tens of thousands of dollars. The top management wanted solutions to the problem.

This scenario actually occurred a few years ago at a major can manufacturing company.

Using high-speed video analysis, company engineers were able to diagnose and correct the mechanical defects that were affecting the decorator's performance.



## Fast & Furious Scrutiny

After a day of studying the decorator's operation with the high-speed video camera, the engineers had the decorator operating smoothly at a throughput rate of 1,000 cans per minute.

Shortly thereafter, the decorator was brought up to its full rated throughput rate of 1,200 cans per minute.

### MICROSCOPIC SCRUTINISATION

With high-speed video analysis, it is possible to scrutinise to a "microscopic" degree, as well as the various electrical and mechanical functions, timings and interrelationships governing the operation of a modern high-speed packaging line.

Equipment designers, manufacturers and system end-users

can all benefit from high-speed video analysis. The 'fine tuning' of a system, after undergoing analysis, usually leads to higher productivity and less waste.

High-speed video, such as TroubleShooter by San Diego-based Fastec Imaging Corporation, is a portable high-speed digital video camera for checking production onsite.

It is a battery powered, hand-held, high-speed digital video camera with a built-in display screen and a USB 2.0 connection to the PC, the equivalent of a high-speed camcorder. Depending on the model, recording speeds up to 16,000 partial frames per second are available.

The small, portable device is ideal for factory manufacturing, maintenance and service operations. It helps to improve operational efficiency by reducing downtime and waste, increasing production capacity and improving product quality.

#### HIGH-SPEED EVALUATION

Consider the case of a film manufacturer that was considering adding a second line to its film cassette packaging operation. Before implementing the second line, the company conducted a high-speed video analysis of the existing line.

The company had been operating that line for a long time, at what it considered to be top capacity and efficiency. To the surprise of the management, however, the study revealed an incredible amount of inefficient action and 'slop' on the line.

'Dwell' time – the time each film cassette spent stopped at various points along the line – was much longer than necessary. Although this extra time might be only 50 milliseconds per stop, it added up significantly over millions of units.

After studying the high-speed analysis findings, the engineers were able to make adjustments that increased the single line's productivity by 14 percent. This allowed the company to delay implementing the second line for almost two years and saving



At such speeds, it is impossible to detect minute flaws with the unaided eye.

Mechanical engineers have traditionally dealt with this type of problem by analysing it in terms of past experience, and then recommending corrective action on a trial-and-error basis.

This process, however, is imprecise, time-consuming and costly.

#### JAR EFFICIENCY

An example of high-speed video technology in action is at a leading producer of foods for infants. Jars are filled with baby food at rates of approximately 1,200 per minute.

At this speed, they are filling over one million jars every 14 hours. The jars move along the conveyors to different stations; washing, filling, capping and labeling at very high speeds.

Any equipment malfunctions can create a nightmare of line jams, breakage and other problems that result in significant downtime and wasted product. To help prevent these problems, the company uses high-speed video to troubleshoot their high-speed lines, letting engineers 'see it so they can solve it'.

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on the interest of the cost of a new line, which exceeded US\$1 million.

#### TRIAL-AND-ERROR NO MORE

To maximise any packaging system, it is vital to eliminate even the slightest operational inconsistencies or flaws.

This is especially important with today's packaging systems, which are capable of processing thousands of items per minute.



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