

Pharmaceutical Industry

Technical Bulletin

Pharmaceutical companies are pushing high-speed manufacturing and packaging processes in an effort to maximize manufacturing output. Equipment is often pushed to or past designed operational speeds in an effort to meet production goals.

A typical manufacturer in the pharmaceutical industry must address the following questions:

- Does the manufacturing of gel capsules, tablets and pills run without defects or excessive material waste? Are manufacturing machines achieving production goals (desired run rate, minimum down time)? Are line changes fast and efficient?
- Do all the secondary production processes (packing, bottling, labeling, printing date & lot code) run without manufacturing problems? Are manufacturing goals being met?

Problem

Manufacturing engineers and line operators are often faced with lines that are down or producing faulty products. In order to see what the problem is, the operator typically slows the line down to observe manufacturing processes that are too fast for the eye to see. This changes the mechanical phenomenon (bounce, vibration, alignment, dwell time, material variability induced



by velocity changes, etc) and the problem goes away. When the line is returned to the normal run rate, the problems return. Engineers and operators can spend a lot of time and money trying to solve the unseen problems.

Solution

High-speed digital camera systems provide an easy, inexpensive way to observe high-speed mechanical processes under real production situations. The Slow-motion video (record rates up to 1,000 frames per second) can be instantly played back to see what is causing the problems. The camera can be positioned to record the manufacturing process of interest. An operator can periodically play back sequences of the process and take action before a problem occurs.

Capture Random Events

The high-speed camera may be triggered manually, via external signal generated by the machine, or automatically by image content. Images of the event are ready for immediate playback and analysis. When you can see what caused the problem, you know what has to be done to fix it the problem.

This is only one example of how high-speed imaging can lower manufacturing costs and increase profitability by helping to reduce line downtime and changeover time, reduce waste, improve yield and improve product quality.