



Sensor Intelligence.

How to Ensure Packaging Machine Flexibility on Cartoners *Advancements in Background Suppression Technology Boost Productivity*

An automated cartoning machine may be one of the last major components positioned in a packaging line, but it's hardly the least important contributor to the system's efficiency. The machine's ability to quickly and efficiently form, erect, fill, and seal various types of materials into secure, transport-ready containers saves time, improves productivity, and expedites the delivery of foods, pharmaceuticals, and other consumer goods to market, all while helping a packager preserve its profitability.

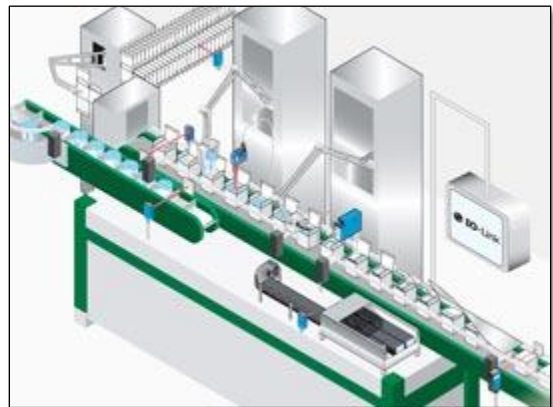
Though speed and reliability have long been critical characteristics for gauging a cartoner's performance, today's hotly competitive marketing environment has made flexibility an equally important—if not more critical—factor.

That's because an increasingly diverse range of package types, sizes, label designs, colors, and textures are being utilized to give products a coveted measure of visibility that will capture the consumer's eye and lead to a sale. And where once weeks, if not months, of planning preceded even minimal package modifications, the pressure of market forces now requires companies to implement major changes and redesigns virtually overnight.

Bright packages - Big problems

Advancements in mechanical design have enabled cartoners of all types to provide some measure of flexibility for handling some variations in certain package attributes (e.g., size, shape). But packagers often find that the machine's sensor stations—usually based on conventional photoelectric technology—don't respond adequately to changes in package material and appearance during line operation. This issue is becoming encountered more frequently given the growing popularity of bright, highly reflective colors and surfaces.

What's more, the limited detection range of some of these conventional sensors can severely constrain a cartoner's versatility. As long as the products fall within the sensor's bandwidth, there are usually few problems. But even an occasional "miss" due to the package itself or the nature of the surrounding ambient light is often enough to cause jams that can, in turn, spark a



“domino effect” of line interruptions, not to mention mishandled and damaged products, and any number of other costly headaches from downtime and waste to unhappy customers and lost credibility in the marketplace.

Some operators attempt to compromise for the sensor’s limitations by slowing down the line, thereby compromising its efficiency and productivity, or adjusting the device on their own to allow more products to pass. Such subjective, well-intentioned temporary fixes may provide a few hours of reliable performance, but the problems quickly return—and worsen—if the sensor isn’t readjusted properly for the next product changeover.

In other words, considering the precision required to accurately detect subtle differences in product types, “close enough” is rarely an acceptable option.

The typical solution

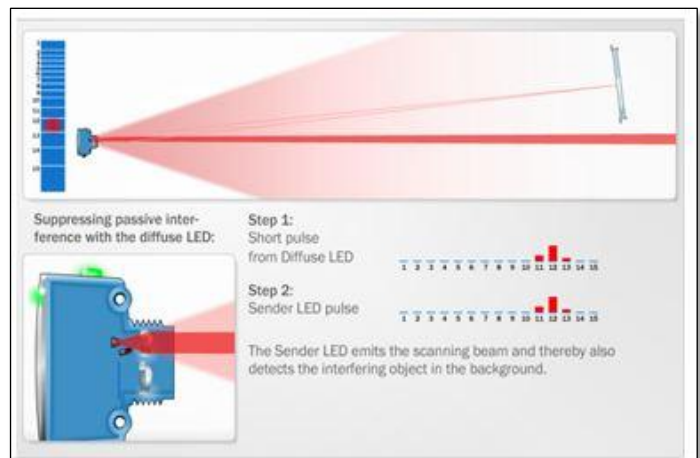
Clearly, even the most mechanically versatile cartoning machine can be hamstrung by a limited, unreliable sensor system. But there are alternative sensor technologies available that can provide the dependable detection capability packagers need to accommodate an ever-diversifying package portfolio without compromising their equipment budget.

The most effective solution is background suppression, a proven technology that enables the sensors to ignore stray background reflections and detect, to some degree, multi-colored/shiny objects.

Unlike conventional sensor technologies that focus solely on a target area at a fixed distance, background suppression sensors use light triangulation to detect and discern everything in a defined sensing area—both target and background. The use of triangulation enables the sensor’s receivers to “see” the background behind, but ignore it, even as products move rapidly through the target area.

Not all background suppression technology is created equal

Minneapolis-based SICK developed a proprietary ASIC that takes background suppression to a new level. Its OES3 chip has a logarithmic segmented receiver array that provides a reliable and stable adjustment tolerance over the entire sensing range. A unique “active area management” feature uses an additional pilot LED to simulate interference and stray reflections, making it easy to evaluate and eliminate false trips within the sensor. In addition, a self-adjusting light spot, in combination with the logarithmic segmented receiver array, automatically adjusts the intensity of the light beam to provide the most reliable sensing of virtually any color or shininess in the industry. Passive area management allows the sensor to adjust its



own modulation frequency if it detects another nearby sensor with a similar frequency, virtually eliminating cross-talk.



Simple solution

The advanced technology from SICK is built within its sensors and is automatically utilized, depending on the conditions in the application and/or environment, making the usability of the sensor simple.

Background suppression sensors are available in a variety of models. The simplest detect objects at a fixed distance, while adjustable units allow users to change the sensing range as needed to accommodate a wider variety of applications and products.

While background suppression sensors are increasingly found in new cartoners, the company's sensors can be easily retrofitted onto an existing machine with little, if any, changes to controls or output functions. Usually, the process is as simple as unplugging the conventional sensor and installing the new device.

Benefits for your machine or line

Though background suppression sensors are a relatively small component in modern cartoning machines, they offer a wealth of immediate and long-term benefits for packaging operations of all sizes and scopes. On top of increased overall system reliability, uptime, and productivity, the technology is compatible with a vast spectrum of packaging materials and styles, providing flexibility for whatever product designs may be introduced in the future.

Seamless integration with existing cartoner mechanics and control systems also allows packagers to easily implement this solution whenever and wherever needed, and with minimal costs for installation, training, and maintenance.

Overall, background suppression sensor technology offers many advantages to packagers as they adapt to an ever-changing product portfolio, and strive to optimize the efficiency of their end-of-line functions, as well as their overall operations.

For more information about how background suppression technology can keep your packaging lines moving, contact Mark Langridge, SICK director of sales & marketing, packaging, food, beverage and consumer goods at mark.langridge@sick.com or visit our resource page on our website at www.sickusa.com/simpleensors.