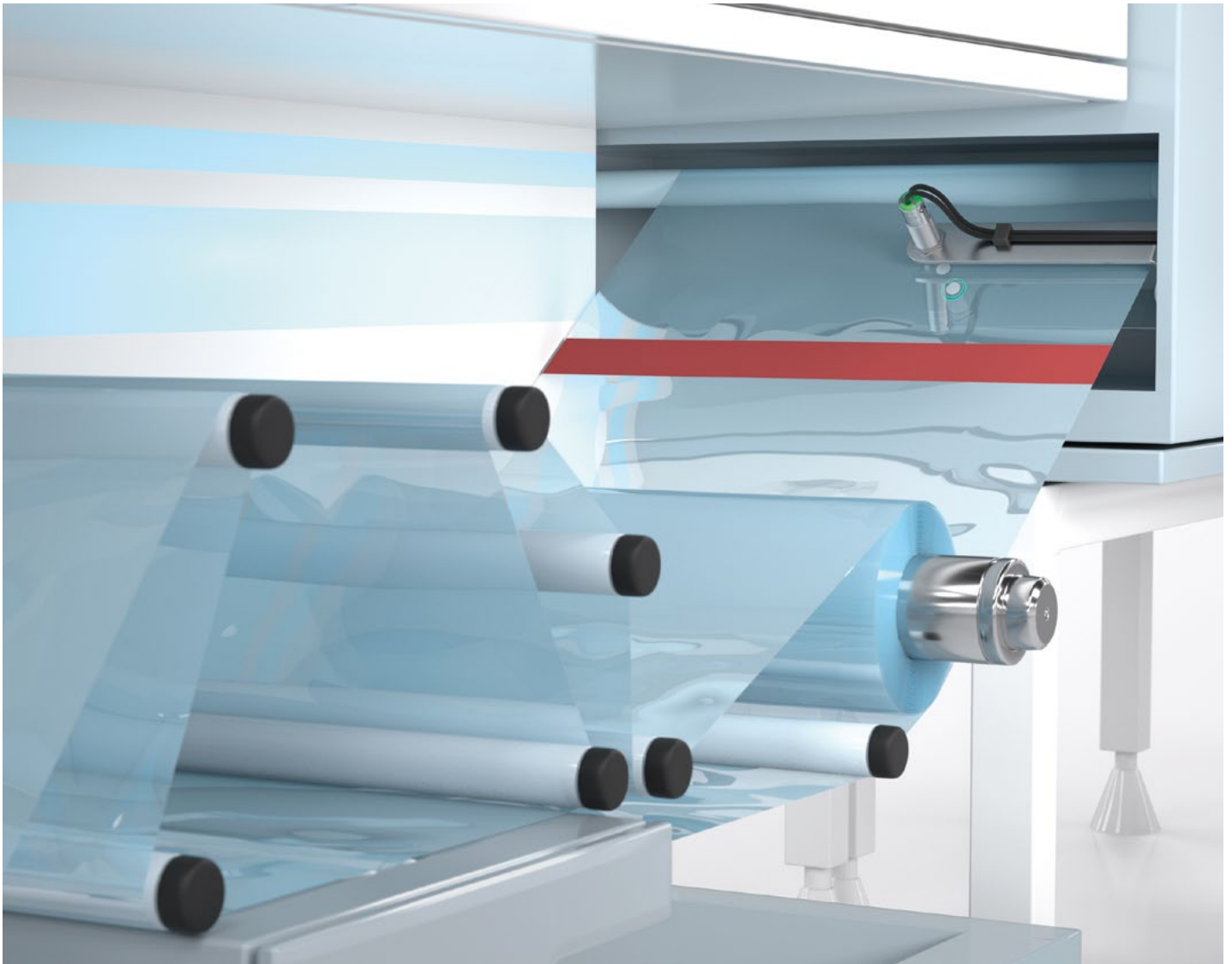


Ultrasonic Sensors Detect Splices and Stack Height

Reliable Detection for an Uninterrupted
Packaging Process

At a Glance

- Reliable, precise detection of splices
- Monitors stack height regardless of color, shape, or surface
- Simple teach-in of sensors (teach-in input or via a PLC)
- Maintenance-free sensor operation





The Application

The packaging for things like chocolates and cosmetics often contains protective or stabilizing parts designed to match the contour of the product. These molded plastic parts are usually produced by a shaping method known as deep drawing. This process begins when rolls feed a film-like starter material into a thermoforming machine. The beginning of a new roll is spliced to the end of a used roll with adhesive strips to avoid the time-consuming rethreading process. However, the material of the splicing strips is not suitable for molded parts and could impede production by causing buildup in the thermoform unit. Splices must not go through the thermoform.

The Goal

Connections between film rolls and splices within a roll must be reliably detected. Spliced rolls can be made from several batches of film, and the splice points must be removed before the film enters the thermoform for deep drawing. Monitoring the stock of finished molded parts on the assembly line is another common function in the packaging process. In both cases, it is important to avoid interrupting the process.

The Solution

Ultrasonic sensors are designed for both splice detection and stock monitoring. They can detect the roll material and finished molded parts without visual influence, and they aren't affected by the electrostatic charge of the plastic film.

The UGB-18GM50-255 ultrasonic splice detection sensor reliably detects splices with a reaction time of only 600 μ s because splices absorb sound differently than the roll material. The UB400-F77-E2-V31 ultrasonic sensor can measure the stack height of finished molded parts down to the millimeter. Other versions are also available for this application. The user can choose between continuous monitoring and a set limit value that triggers refilling.

The Advantages

The films can be any color or printed in multiple colors. They are often transparent or have reflective surfaces. The molded parts have irregular contours, often with recesses or abrupt depressions. Ultrasonic sensors provide accurate detection, regardless of color, surface, or shape. The same sensor can be used for a wide range of materials. The 600 μ s reaction time of the ultrasonic splice detection sensors enables rapid removal of splice points with minimal material waste. A dynamic teach-in can take place while the machine is running, and the sensor can be taught-in directly from the PLC via a digital output.

Features of the UGB-18GM50 splice detection sensor

- Extremely short response delay
- Compact design
- Sensing range 20 ... 60 mm

Features of the UB100-F77 diffuse mode sensor

- Sensing range 25 ... 400 mm
- Compact space-saving design
- Program input