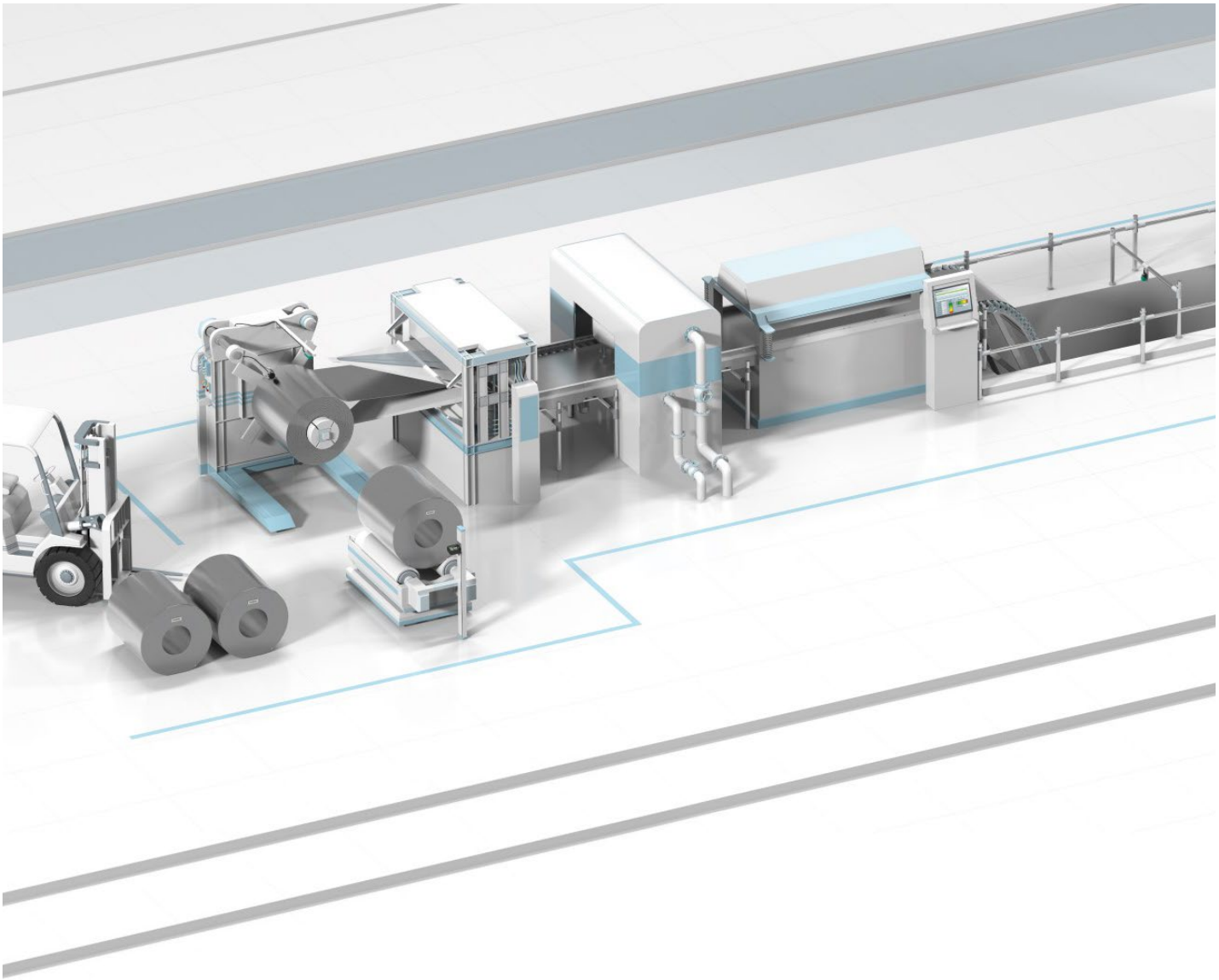
Maximizing Machine Uptime

Ultrasonic Sensors
Regulate Material Feed

The Application

On many production lines, the material to be processed is fed from large rolls. Examples include metal sheets for stamping in the automotive industry or plastic film for blister package manufacturing in the pharmaceutical industry. The applications are wide ranging, but the requirements are always the same. In all cases, the amount of material remaining on a roll must be monitored. To avoid machine downtime, a signal has to be transmitted at the appropriate time to switch the line over to a new roll.



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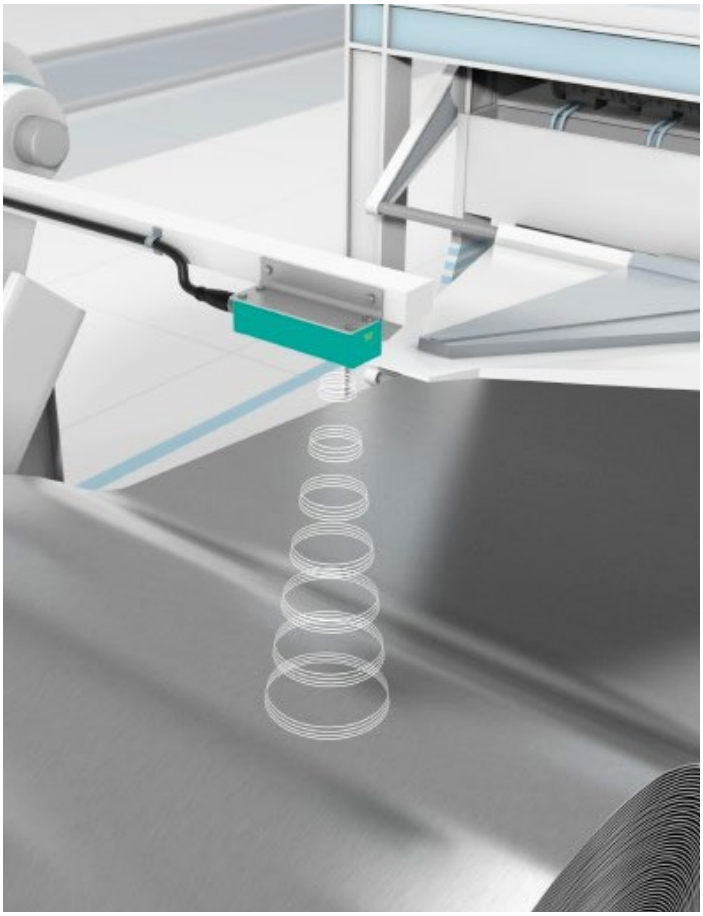

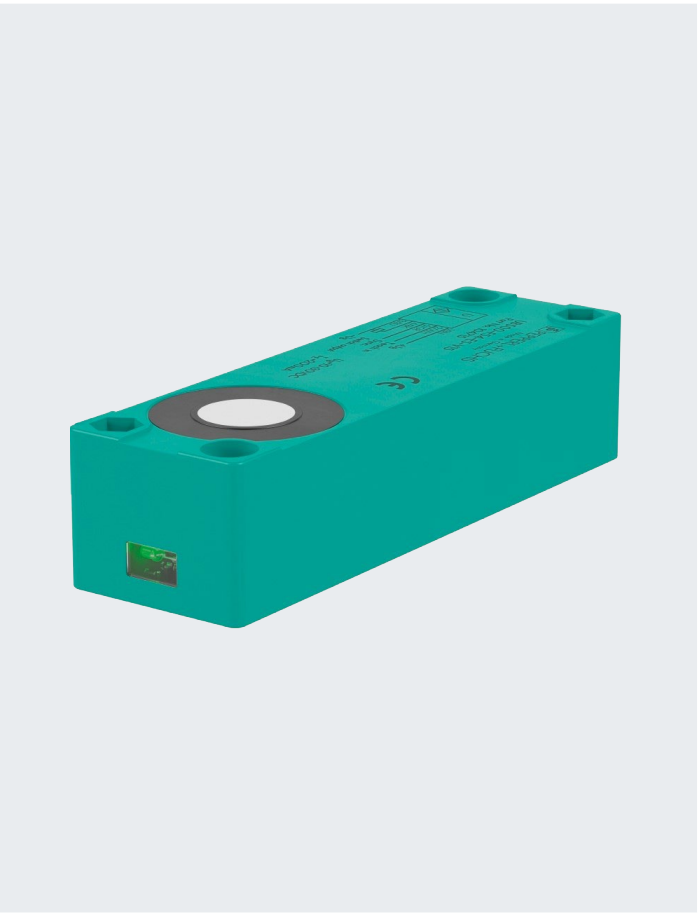

The Goal

Rolls of varying widths are used to feed a diverse range of materials: transparent, printed in bright colors, metallized, multilayered, or textured. To prevent machine downtime, precise detection of the roll diameter—i.e., the remaining amount of material—is essential. To keep waste to a minimum, the smallest possible amount of material should be left on a roll before it is replaced. Additionally, it is important to ensure that only the material is detected and not, for instance, the washer disc.

The Solution

Roll diameter is measured using an ultrasonic sensor, such as the 30GM70 or F54 series. The sensor is mounted above the roll such that the ultrasonic pulse hits the material surface perpendicularly. Since the distance between the sensor and the roll's core is known, the diameter is calculated by measuring the distance to the sensor. If there are washer discs on either side of the material, the beam width of the sensor can easily be adjusted to ensure reliable measurement. Ultrasonic sensors can be used with digital or analog outputs, depending on whether only a "roll empty" notification or continuous roll thickness feedback is required.

More information can be found at
www.pepperl-fuchs.com/ultrasonic

The Benefits

Ultrasound technology allows to measure roll diameter with millimeter precision, regardless of the material being processed. And installing the sensor is remarkably easy: The desired switch points or measuring ranges are set by teach-in or parameterization software. The wide variety of designs and detection ranges allows for optimal adjustment to the relevant application. Even in variable conditions such as rising or falling ambient temperatures, the sensor provides reliable measurements. In addition, noncontact measurement and high dirt and dust immunity mean low-maintenance operation.

At a Glance

- Millimeter precision, reliable measurement of roll diameter regardless of color, surface texture, and material type
- Wide variety of designs, detection ranges, and adjustment options
- Simple adjustment of the desired switch points or analog limits by teach-in or parameterization software
- Low-maintenance, noncontact measurement

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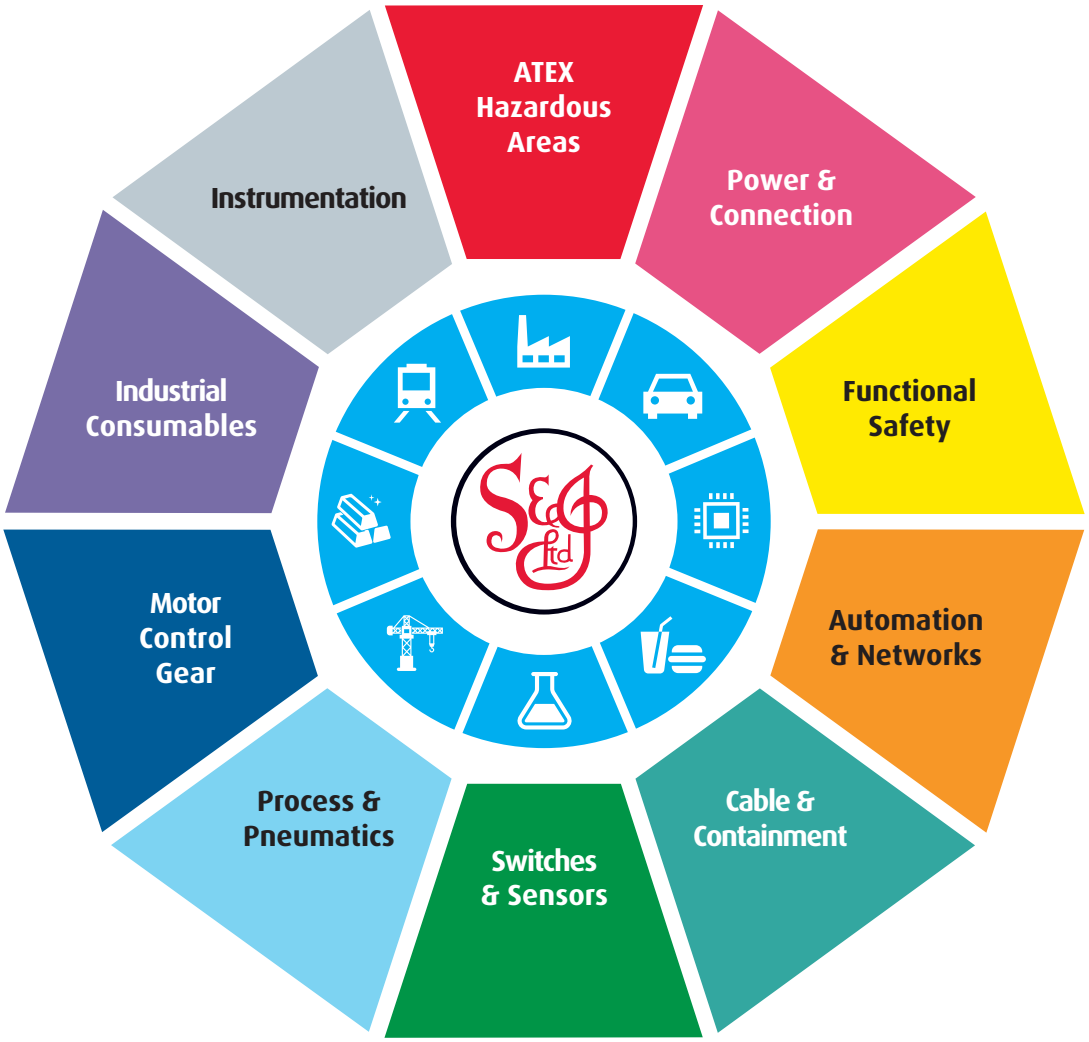

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