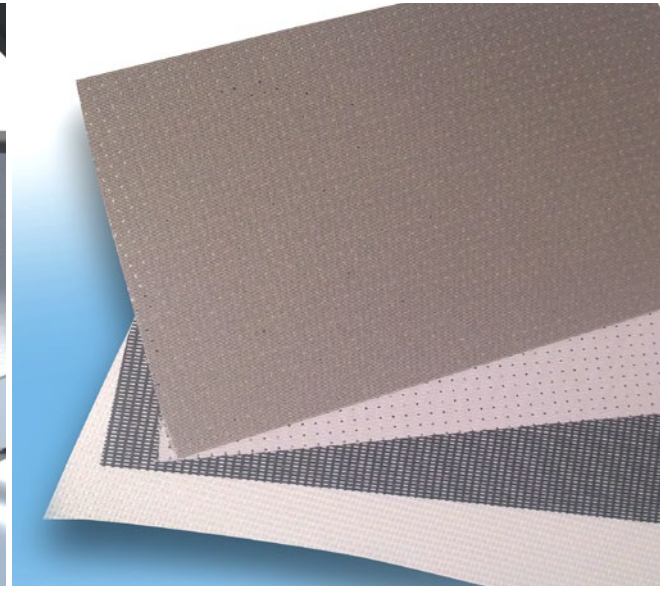
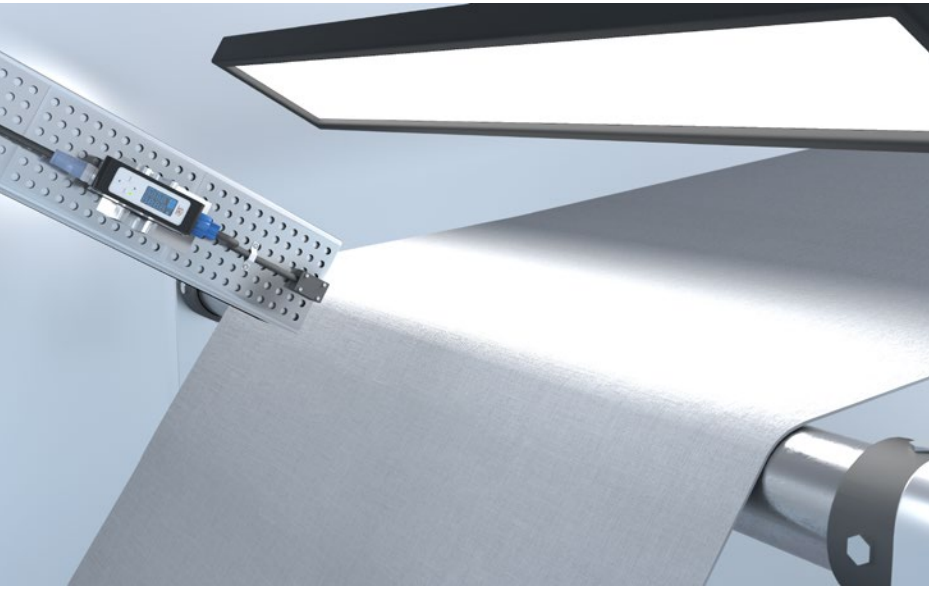




Edge detection of fabric strips in cutting machines

When processing fabrics, for example for shading systems or insect protection, the strip material must first be cut to a defined size. The fabrics to be processed are around 0.5 mm thick, consist of various types of material and are partly perforated. In order to achieve an optimal result when cutting, the exact material position must be determined before further processing. Otherwise, rejects due to faulty cuts as well as machine malfunctions due to missing signals at the control system are possible consequences.

Therefore, the optoCONTROL CLS fiber optic sensors from Micro-Epsilon are used for position detection. The sensor reliably detects the beginning of the roll. The sensor is mounted on one of the cutting blades and recognizes from a distance of around 140 mm when the fabric is in the right cutting position. The switching output (PNP) transmits a signal level directly to the controller and the cutting process begins. In this way, the knives can be positioned exactly to 0.5 to 2 mm depending on the material. After each cut, the fabric position is recalculated. The measurement is performed at feed speeds of 333 m/min.

The optoCONTROL CLS1000-QN-PNP measuring system from Micro-Epsilon provides highly reliable and reproducible measurement results. This optimized cutting process leads to a significant reduction in faults and rejects. The CLS-QN-PNP is even insensitive to scratches and contamination on the shiny metallic surface of the roller.

Due to a wide portfolio of different sensors, freely-selectable lengths and numerous sensor heads, individual solutions can be implemented. The spatial separation of sensor and controller also enables space-saving and optimum machine integration.

Requirements for the measurement system

- Detection range approx. 140 mm
- Material thickness approx. 0.5 mm
- Feed speed 333 mm/s
- Switching frequency 2.5 kHz
- Data output via level (PNP)

Ambient conditions

- Production plant
- Almost constant room temperature

System design

- 1x controller: CLS-QN-PNP
- 1x sensor: CFS4-Q2

Advantages

- Non-contact measurement with large measuring range
- Reliable edge detection even with different surfaces
- Freely-selectable position of fiber optics for optimal integration

