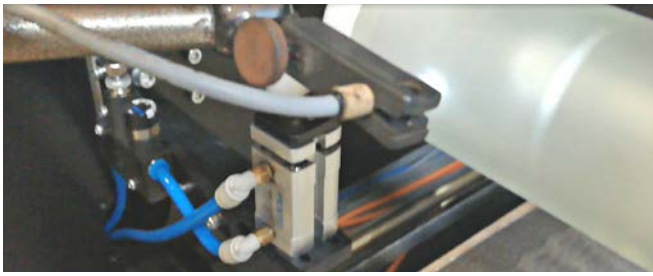
A321

Color sensors
colorSENSOR



Marking detection on cosmetics bottles

Color sensors from Micro-Epsilon are not just designed for high precision color measurement. These sensors can also be used to implement detection, testing or positioning tasks. The company David Blankenaufulland uses color sensors from Micro-Epsilon for precisely these purposes. The company develops and manufactures CNC screen-printing machines for printing on a variety of containers made from plastics, textiles, ceramics or glass. When automatically printing on semi-transparent glass ceramic bottles, it is necessary to determine the exact position for the printing.

Before the printing process, a reference mark is embossed into the bottles. Due to the depression of the embossment, the color of the reference mark deviates slightly from the rest of the bottle surface. The colorSENSOR CFO100 detects this minimal color difference, which enables the exact determination of the printing position below the embossment. For a flawless print, accurate and reproducible positioning is crucial. If the marking is missing, the bottle is considered as faulty and will be rejected immediately. Therefore at the same time, a good / bad evaluation can be carried out as part of a quality control. A machine turns the cosmetics bottle while the colorSENSOR CFO100 constantly measures the surface of the bottle at a distance of less than 10 mm. The embossment is detected quickly and reliably. Next, the exact position for the bottle printing is determined and further process steps can be carried out. The colorSENSOR shows clear advantages over other measuring methods. First, it masters the semi-transparent surface easily. Second, it is ideally suited to this kind of position measurement task due to its favorable price/performance ratio.

For this application, the colorSENSOR CFO100 is integrated into the machine and so is the optimum solution for an efficient printing process. Thanks to its high speed measurement frequency, it outputs a complete OK / NOK signal within the specified cycle time of less than two seconds.

Its small measurement spot size with a diameter of just 0.6 mm ensures reliable and precise embossment detection. Due to the spatial separation of measuring point and signal processing, the sensor easily withstands the typical ambient conditions such as dirt and temperature inside the machine. The compact and robust controller can be easily and quickly integrated into the back of the machine, while the space-saving fiber optics with ferrule can be easily positioned at the measuring point. This system design not only ensures the correct printing position but also reduces waste.

Requirements for the measurement system

- Miniature measurement spot size of Ø 0.6 mm
- Measurement distance < 10 mm
- Measurement and evaluation of OK/NOK signal in less than 2 s
- Non-contact measurement

Ambient conditions

- Sensor integrated in production machine

System design

- Sensor: colorSENSOR CFO100
- Fiber optics with ferrule: FAR-T-M1.1-0,6-1200-67°
- Cable: - M12 supply cable and switching outputs
  - M12 Ethernet cable for configuration via browser
- Mounting: DIN rail

Advantages

- Quick and easy integration
- Waste reduction
- Space-saving solution