A335

Laser Sensors / Optical Micrometers

optoNCDT / optoCONTROL

Parameter monitoring of continuous loop strap for cable ties

Cable ties in the most variegated shapes and continuous loop straps for automated applications are manufactured in the fastening technology and cable management industry. In practice, the continuous loop strap and fastening heads are combined from their separate dispensing devices. The strap is guided around the item to be bound and cut to length, and the fastening head is added from the dispenser and connected to the strap. It is essential that the “width” and “height” of the cable tie strap, as well as the “tooth pitch” are monitored concurrently and constantly during the production of the continuous loop straps.

These values are crucial to ensure a consistently good and reliable binding result. Monitoring of specific product parameters during the entire process is pivotal in ensuring the quality and uniformity of production. HellermannTyton GmbH therefore relies on a solution from ISW GmbH that uses a Micro Epsilon sensor system to monitor the parameters.

The solution consists of a sensor combination that includes two optical precision micrometers and a triangulation sensor that is attached behind the extruder. Two ODC 2520-46 type sensors are positioned both horizontally and vertically and measure the height and width of the strap. The optoNCDT ILD2300-2DR series triangulation sensor measures the tooth pitch from above. ISW GmbH implemented the arrangement of the sensors in a compact structure with adjustable strap guiding. The data measured are analyzed using the interface programmed by Micro Epsilon system partner ISW GmbH via a port. Recording the extrusion speed is the challenge in this application. The speed must be congruent with the measuring sensors.

The combined measuring system, consisting of optoCONTROL and optoNCDT, provides extremely reliable and reproducible measurements. In the final analysis, this accelerates the optimization process, and reduces waste and errors during manufacturing.

Requirements for the measurement system

	ODC2520-46	ILD2300-2DR
Measuring range	46 mm	2 mm
Accuracy	± 20 - 50 µm	
Resolution	1 µm	30 nm
Linearity	≤ ± 12 µm	≤ ± 0.6 µm
Measuring rate	2.5 kHz	20 kHz

Ambient conditions

- Plastic PA 6.6 in plain and black
- Continuous operation 24/7 with maintenance breaks
- Configuration with extrusion speed (0.5 to 0.66 m/s)
- Temperature 35 - 40 °C

System design

- Two ODC2520-46 type sensors to measure the height and width of the strap
- optoNCDT ILD2300-2DR triangulation sensor to measure the tooth pitch
- IF2001 USB converter

Advantages

- 100% monitoring
- Extremely reliable and accurate
- Sensor package from a single source
- Live monitoring of production changes/development steps
- Improved development optimization
- Reliable measurement independent of the color of the measured object

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