Technology

Fraunhofer ILT has developed a novel sensor for thickness and distance measurements in plastic industry. The interferometric sensor »bd-1« uses infrared light to detect changes of the refractive index within its measuring range. In a single 1D-measurement the distances to one or several boundary surfaces can be detected simultaneously with micrometer precision.

The contactless measuring process is suited for inline measuring tasks of moving objects. The measuring beam runs forth and back along the same line. Due to this bidirectionality the measuring head is compact and the size of the optical window is reduced to a minimum. With an optical fiber of up to 15 m length the measuring head is linked with the separate control unit.

The sensor »bd-1« is made for industrial applications under rough ambient conditions.

Thickness Measurement of Translucent Objects

- Single layers thicknesses of multilayer plastic films, multilayer performs and multilayer bottles
- Single layers thicknesses of laminated safety glass

1 Multilayer plastic film.
2 Interferometric sensor with PC.
3 Interferometric sensor on VenPad carrier system (Octagon) at a blown film plant (A+C-Plastic).

Specifications

**Sensor**
- Measuring frequency: 14 kHz
- Total film thickness Δz: max. 4 mm
- Single layers’ thicknesses: min. 6 μm
- Precision: < 1 μm
- Working distance d: 80 mm
- Dynamic range: 60 dB
- Laser sources: 1
- Wavelength: 850 nm
- Beam guiding: bidirectional
- Length of fiber optics ℓ: 15 m
- Size of control unit: 600 x 520 x 420 mm³

**Measuring Head**
- Size, L x Ø: 55 mm x 18 mm
- Weight: 0.04 kg

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