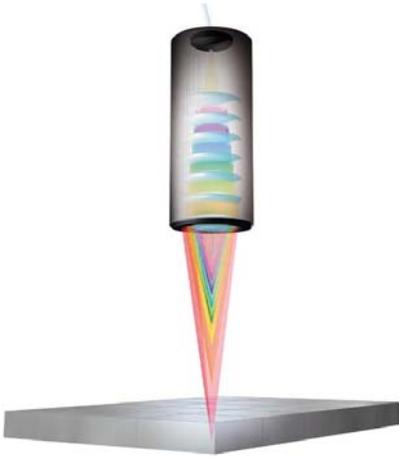


## THICKNESS MEASUREMENT WITH CONFOCAL-CHROMATIC SENSORS - ONE- OR TWO SIDED MEASURING GAUGES -



Confocal Sensors are the latest high end systems of the confocal chromatic measurement technology offered by Micro-Epsilon. The system achieves measurement rates of 10kHz using a white-light LED and 70kHz using a xenon-light source due to a very good signal-to-noise ration.

The confocal gauges are applied in challenging measurement tasks regarding the distance and thickness measurement.

### Principle of Measurement

Polychromatic white light is focused onto the target surface by a multilens optical system. The lenses are arranged so that the white light is dispersed into a monochromatic light by controlled chromatic aberration.

A specific distance to the target is assigned to each wavelength by a factory calibration. Only the wavelength which is exactly focused on the target is used for the measurement. This light reflected from the target surface is passed through a confocal aperture onto a spectrometer which detects and processes the spectral changes.

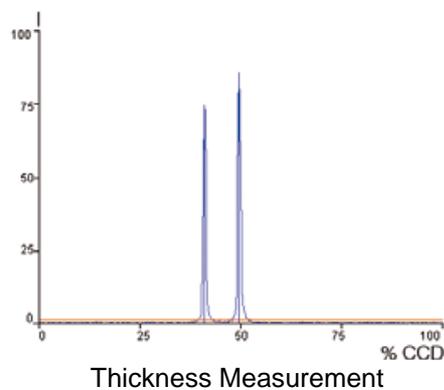
The sensors are designed for passive measurements and do not need any electrical components. This allows for measurements in difficult environments, such as potentially explosive areas. These sensors do not give off heat, which makes them suitable for use in sensitive environments.

## Application areas

### Thickness measurement of transparent material

Due to one-sided thickness measurement, a single sensor is able to measure the thickness of glass, plastic tubes or any transparent coatings.

For multi layer thickness measurements up to five peaks can be used.

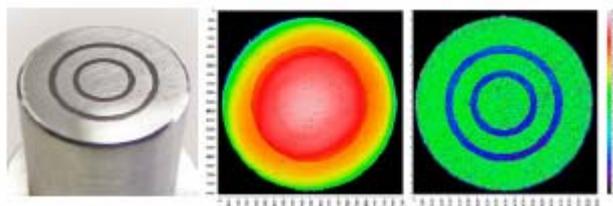


### Displacement and intensity measurement

Another option, in addition to displacement measurement, is to perform measurements using signal intensity. Intensity evaluations are particularly well suited for capturing even the finest structures.

The adjacent example shows a measurement for a planed surface.

Intensity evaluations help to display areas that cannot be detected using distance measurements.



Planar surface / Displacement / Intensity

### Cavity inspection



The Confocal Sensor design include also a “90°-version” , which is ideal for inspecting and measuring or detecting grooves or inner wall features of small gaps and cavities.