

## OPTICS FOR CAPS INSPECTION & MEASUREMENT



**PERICENTRIC LENSES** are an exclusive product developed by Opto Engineering to enable the 360° view of objects without the aid of mirrors, with just one camera. Parts up to 60 mm in diameter can be inspected.



**CATADIOPTRIC PC LENSES** are compact pericentric lenses exclusively developed and produced by Opto Engineering to enable the 360° side view imaging of small objects. Parts as small as 7,5 mm can be inspected.



**HOLE INSPECTION OPTICS** have been developed by Opto Engineering to enable the 360° inside view of holed objects, cavities and containers from 10 to 70 mm with very good resolution and excellent depth of focus.



**TC SERIES** is a family of Bi-Telecentric Lenses compatible with matrix and large detectors. The TC Series are the key component of any accurate measurement system based on machine vision technologies.

**NEW**

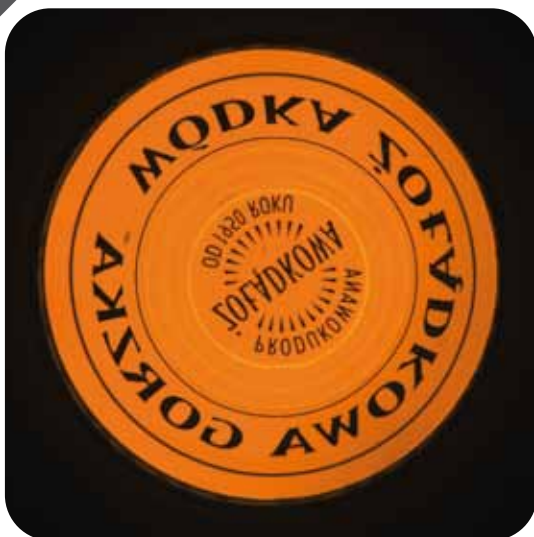
Opto Engineering offers uncommon optical solutions to common machine vision problems in the packaging industry using 360° and Bi-Telecentric technologies.

**This paper has the objective to highlight real applications for bottle cap inspection and measurement.**

Please feel free to contact us and send samples or book a testing session in one of our labs around the world.

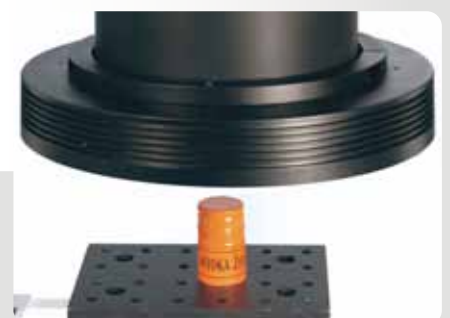
## Examples of Application

example



### BIG CAP INSPECTION Pericentric Lens

For caps with a diameter range from 20 to 60 mm. The Pericentric Lens enables the capture of both the side and top views of the cap with only one camera shot. The inspection of both top and side views avoids the use of multiple cameras placed around the cap.



example



### SMALL CAP INSPECTION Catadioptric PC Lens

For caps with a diameter range from 7 to 25 mm. With its wide lateral viewing angle, the Catadioptric PC Lens enables the capture of both the side and top views of the cap with only one camera shot. Its compact structure makes it easy to integrate in inspection lines. It is also suitable for the thread inspection on a bottleneck.



example



### CAP INTERNAL WALLS & BOTTOM INSPECTION Hole Inspection Optics

For cavities with diameters from 10 to 70 mm. The Hole Inspection Lens performs cavity inspection from the outside. With a very high field depth and perfect focusing, it makes an ideal lens for inspecting a bottle cap or threads of a transparent bottleneck.



example

### CAP MEASUREMENT & POSITIONING TC Series



Opto Engineering Bi-Telecentric Lenses are ideal for measuring applications. They can be used in many different dimensional applications on caps, including verification on the correct positioning or correct closure of caps.

