



**Machine vision**

## **Fast, compact, and reliable adaptive optics**

Focus tunable lenses, fast-steering mirrors, and beam shifting windows are ideal for dynamic focus change in high-speed applications over a large working distance range, expansion of the field of view, or increasing image resolution. Small size, robust, and reliable tuning solutions for over a billion cycles. Highly accurate and repeatable.



## Liquid lenses

Compared to motorized lenses or piezos for Z-axis control, liquid lenses offer:

- 100x faster focus
- Compact size
- No mechanical vibrations
- 3x more affordable
- No table top controller
- One-time calibration

## Machine vision applications

- Package sorting
- Robot vision
- Bin picking / palletizing
- Bottle inspection
- Electronics & IC inspection
- Contact lens inspection

## Lenses setups

### MODULE



- WD 100 mm -  $\infty$
- Large image circle
- Low f-numbers
- Highest resolution
- Simple integration



### FRONT

- WD 100 mm -  $\infty$
- Simple mounting
- FoV up to 30°



### BACK

- WD <160 mm
- Large image circle
- For f > 50 mm

## Fast-steering mirrors

Most compact, shock & vibrations resistant scanning solution with wide field of view and accurate closed loop control. Integrating our mirror enables easy:

- Up to 100° FoV expansion
- PCB inspection
- Area of interest selection
- Mirror diameter 15 mm
- Mechanical tilt (both axes) 25°
- Full scale bandwidth 20 Hz



MR-15-30

## Beam shifting windows

Integrating a compact beam shifter increases the resolution up to 4x while introducing less color artefacts for example with laser projectors or thermal cameras in a cost-efficient way in:

- Thermal imaging
- Electronics & IC inspection
- Display inspection
- Aperture size 9 - 40 mm
- Tilt angle up to 0.9°
- Transition time 1 ms



BSW-20



Let's talk about your application