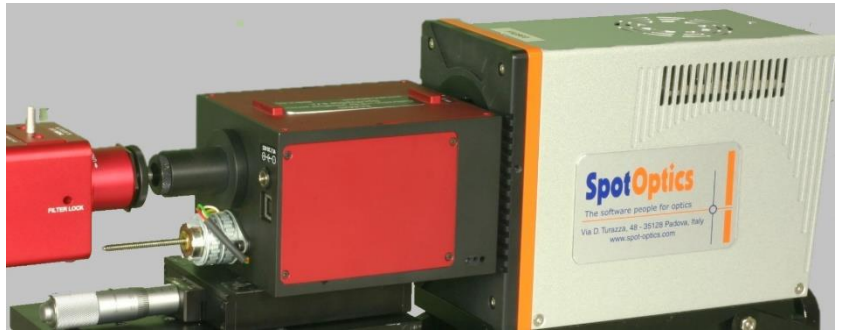
SpotOptics

OMI-MWIR



FAST & ACCURATE WAVEFRONT SENSOR

- Acquisition speed up to 357 Hz, analysis speed up to 50Hz
- Optimized for MWIR wavelength range with InSb or MCT camera
- Accurate metrology in single pass
- Optical elements, lasers and laser diodes
- Test any focal length and diameter (with accessories)
- Large dynamic range
- 35x35 sampling
- Adaptable for production

More than 25 years' experience in accurate metrology

TECHNICAL SPECIFICATIONS

Hardware	
Test	Optical elements, lasers and laser diodes
Power of laser diode that can be tested	Few mW. Higher powers require reduction system (available)
No of spots	35x35
Diameter and focal length of standard lenslets	(ϕ=0.2mm, f=11mm), (ϕ=0.2mm, f=7mm), depending from the test wavelength
Software	
Software (control and analysis)	Sensoft for 64bit Win 8.1, Win 10
RMS repeatability of Zernike coefficients	<3nm rms (λ/1000 @ 3000nm)
RMS repeatability of modal wavefront measurements	> λ/100
Accuracy and dynamic range	λ/20- λ/100 (calibration dependent), -±50 λ
Camera (see next page for details)	
Detector, wavelength range and cooling	InSb. 3.6 µm - 4.9 µm (1.5 µm - 5.4 µm broadband version). Stirling cooling MCT. 3.7 µm - 4.8 µm (1.5 µm – 6 µm broadband version). Stirling cooling
Connection, bits	Gigabit Ethernet, 14-bits
Acquisition speed	From 117Hz up to 357Hz at full resolution.
Triggering	Yes
Exposure time range	1 ums-to few msec
Accessories	
Light sources, beam expanders and compressors	High quality LD at test wavelength, beam expanders/compressors

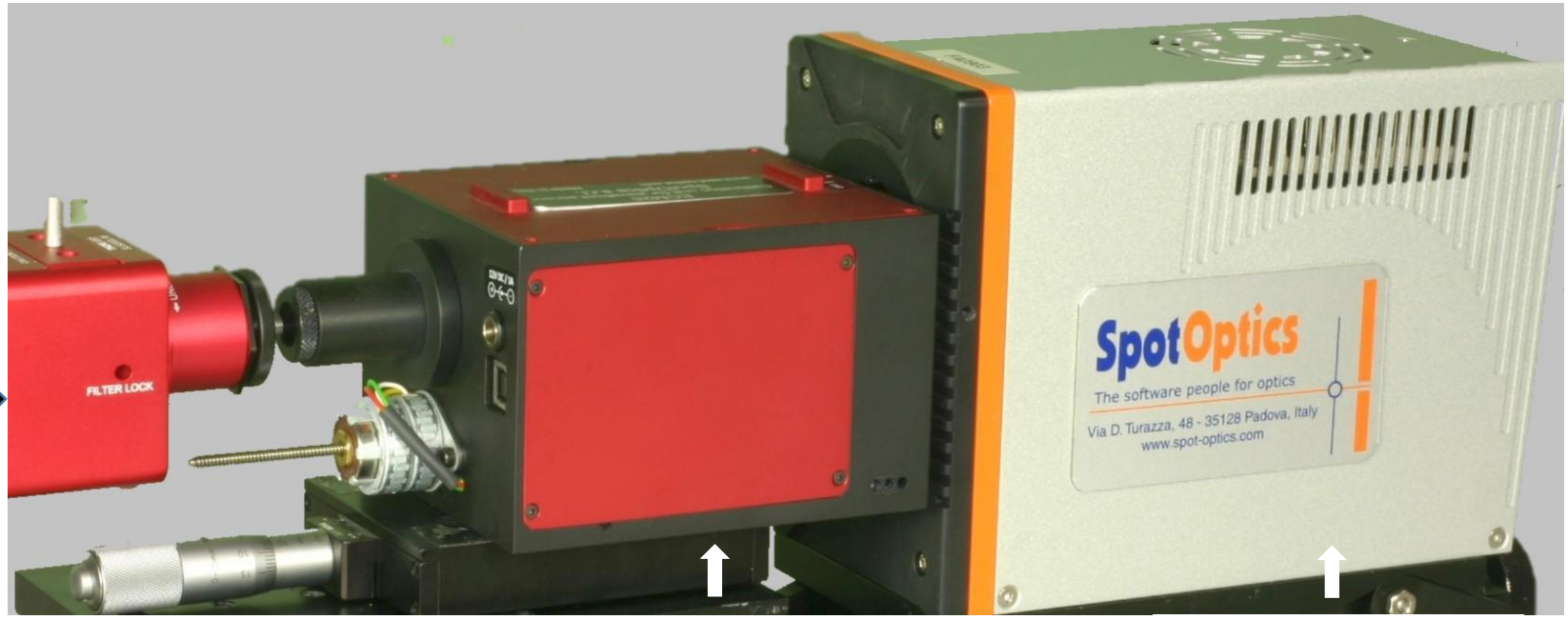
OMI details

Model of wavefront sensor	OMI-MWIR-InSb	OMI-MWIR-InSb-Bb	OMI-MWIR-MCT	OMI-MWIR-MCT-BB
Highlights	High-speed, 357fps	High-speed, 357fps	117fps	117fps
Form	Rectangular	Rectangular	Rectangular	Rectangular
Camera dimensions	640x512 pixels. Pixel size: 15 µm 9.6x7.68 mm^2	640x512 pixels. Pixel size: 15 µm 9.6x7.68 mm^2	640x512 pixels. Pixel size: 15 µm 9.6x7.68 mm^2	640x512 pixels. Pixel size: 15 µm 9.6x7.68 mm^2
Resolution	35x35	35x35	35x35	35x35
Wavelength range:	3.6 µm to 4.9 µm	1.5 µm to 5.4 µm	3.7 µm to 4.8 µm	1.5 µm to 6 µm
Stirling cooling	Yes	Yes	Yes	Yes
Output(bits)	14	14	14	14
Camera control	Gigabit Ethernet	Gigabit Ethernet	Gigabit Ethernet	Gigabit Ethernet
Ambient operating temp (°C)	-40 to +60	-40 to +60	-40 to +60	-40 to +60
Power requirement (V DC)	24	24	24	24
Power consumption (W)	25	25	25	25
Weight (Camera+OMI) (kg)	3.5+0.2=3.7	3.5+0.2=3.7	3.5+0.2=3.7	3.5+0.2=3.7
Dimension (L,W,H in mm)	220 x 100 x 149 mm	220 x 100 x 149 mm	220 x 100 x 149 mm	220 x 100 x 149 mm
Acquisition speed (fps)	357	357	117	117
Analysis speed for Zernike coefficients in loop mode (Hz)	~50	~50	~50	~50

OMI-MWIR: THE HARDWARE

Filter

Light source

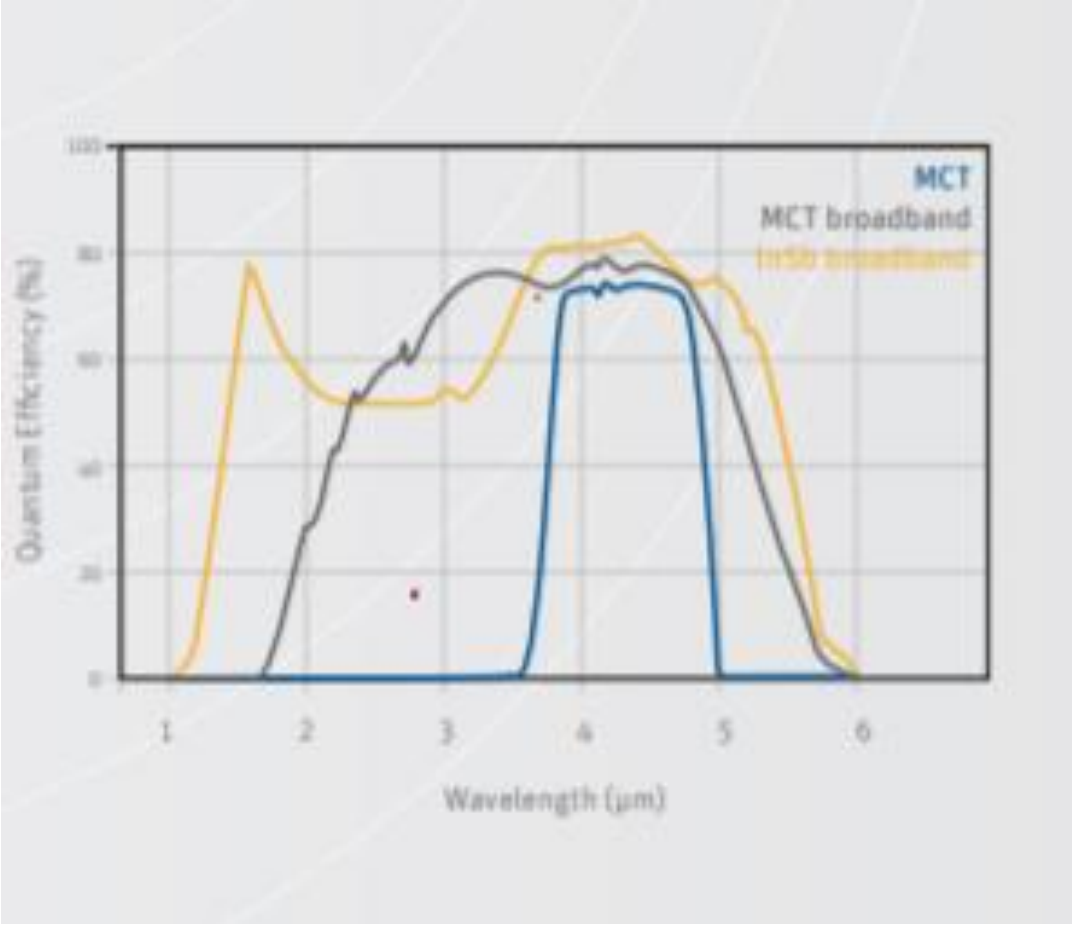


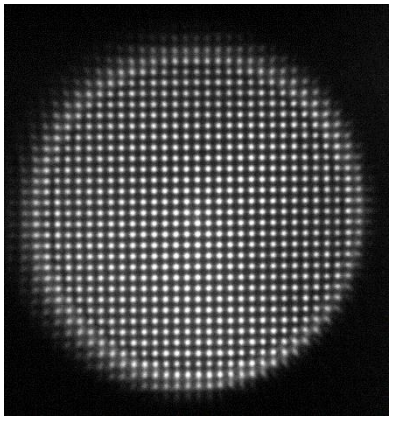
OMI mounted on motorized calibration unit

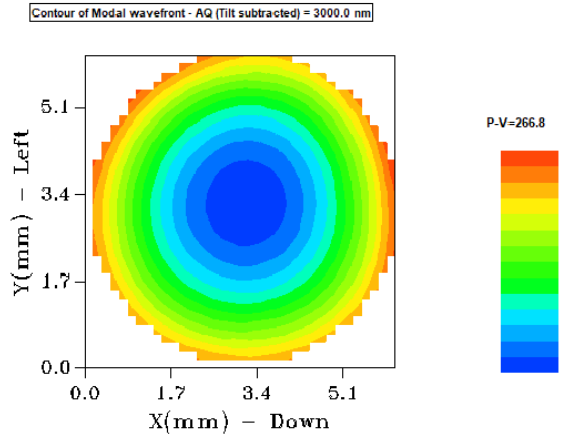
MWIR Camera InSb/MCT

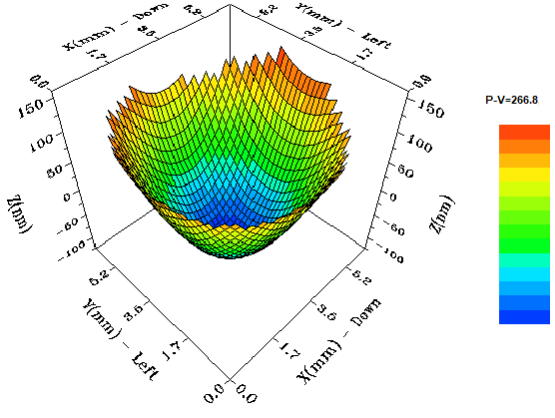
Quantum efficiency curve of MWIR InSb and MCT sensors

sensor









SENSOFT: THE SOFTWARE

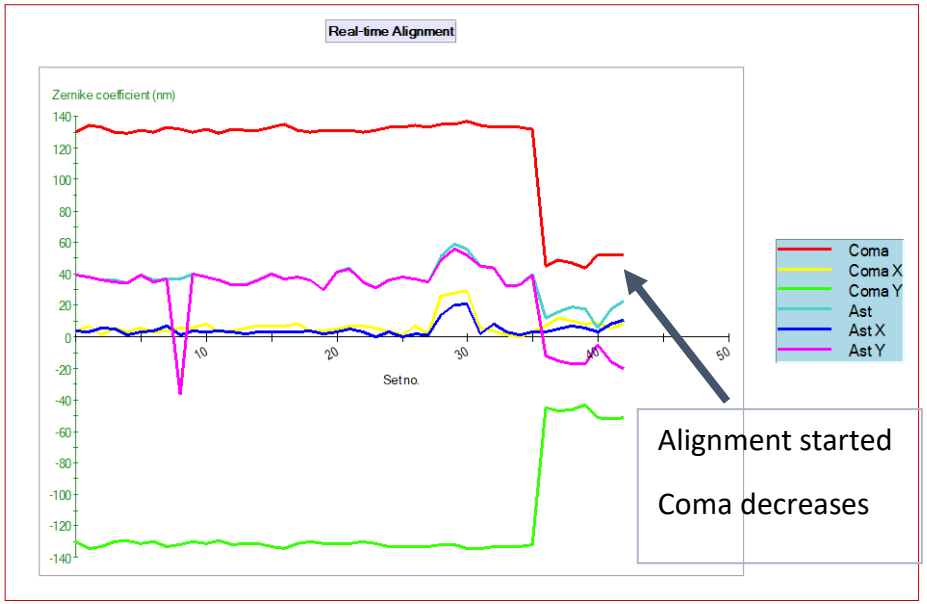
Sensoft: The modular software package

- Fully controls the hardware of OMI
- Performs the Shack-Hartmann (SH) analysis
- Computes Zernike coefficients, diagnostics (alignment and correct focal plane), wavefront, MTF, spot diagram
- Has a Loop mode for on-line adjustment of optical systems

OMI in your production line:

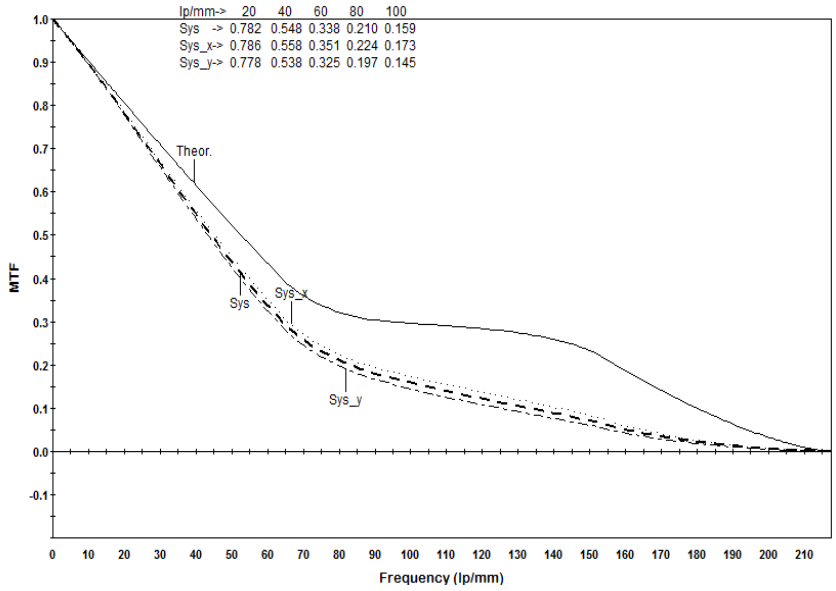
- OMI – with its own PC - can easily be adapted to the production line
- It can work in a closed-loop with the PC of the manufacturing machine
- A software module defines the IP communication protocol and transfers the results between the PCs in the Local Area Network

ON-LINE ALIGNMENT IN A FAST LOOP



- The alignment of complex optical systems becomes easy by monitoring coma and astigmatism in a continuous loop
- The individual (x, y) components of coma and astigmatism, as well as the total coefficients are displayed
- The optimization can be done for one component at a time, as the software can display one component of interest

MTF MEASUREMENTS



MTF after subtracting the contributions of tilt and defocus present in the data.