

- 1 Schematic diagram of the measurement principle.
- 2 Image of circuit board / measurement values (heights color-coded).
- 3 Sensor in an automated inspection system.

## IN-LINE 3D MEASUREMENT

### Fraunhofer Institute for Applied Optics and Precision Engineering IOF

Albert-Einstein-Straße 7  
07745 Jena

Director  
Prof. Dr. Andreas Tünnermann

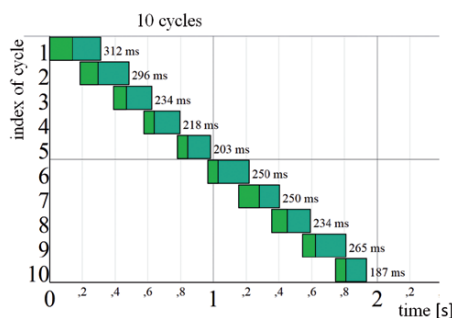
Department Optical Systems  
Head of Department  
Dr. Gunther Notni

Contact  
Dr. Peter Kühmstedt  
Phone +49 3641 807-230  
peter.kuehmstedt@iof.fraunhofer.de

[www.iof.fraunhofer.de](http://www.iof.fraunhofer.de)

### Measurement Principle

- Non-contact optical 3D metrology
- Simultaneous fringe projection and image acquisition
- Time-optimized computation of phase values and 3D coordinates using known system geometry parameters
- Parallelized 3D algorithms to utilize multi processor systems



Permanent measurement cycle  
Duty cycle: 0.18 s  
Measurement speed: 80 cm<sup>2</sup>/s  
22.2 Mio. pixel/s

### Our Offer

- In-line inspection of industrial products with high precision
- Measurement systems for application at assembly-line
- Continuous measurement of large objects with short duty cycle
- Preparation of measurement with respect to the specifications for effective evaluation and processing
- Implementation of sensors in automated inspection systems
- Possibility of remote diagnostic and automated recalibration

### System Parameters

Measurement point pitch: 20 / 15 / 10 µm  
Camera: 4 Mio. pixel  
Single measurement field: 40 mm x 40 mm / 30 mm x 30 mm / 20 mm x 20 mm  
Measurement uncertainty: 5 µm ... 10 µm