gbs

smartWLI
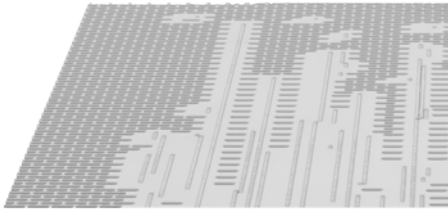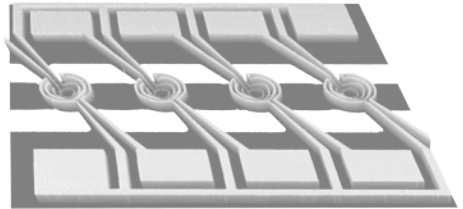## technology

- **sub nanometre height resolution on large areas**
- **high speed with parallel image processing**
- **scanning of shine and transparent surfaces possible**
- **optimized algorithms for steep flanks**

**Seat – 10 mm²**

Chip – 0.01 mm²

Sensors – 1 mm²

**Horizontal Milling – 100 mm²**

Surface Structures • Micro Geometries • Flatness Measurement • Precisions and Micro Parts
Tools and Abrasives • Hardness Indentations • Wear and Corrosion • Forensics • Display Inspection
Optical Components • Coatings • Semiconductors / Wafers • Cylinder Inspection • Printing Cylinders

smart White Light Interferometry

- The objective is moved in z - axis using a piezo positioning system
- Interferences can be found on any surface including shine and transparent ones
- The interference effect provids sub nanometre resolution
- The location of the correlogram including several interferences determines the absolute distance from the objective
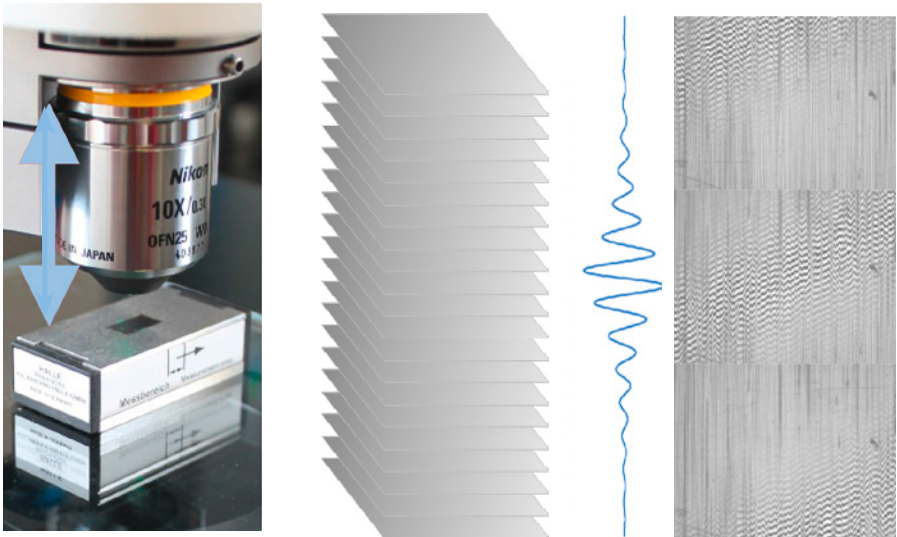
- The GBS's Speedytec technology uses the power of massive parallel image processing in FPGA's and GPU's providing real time 3D calculation with extreme speed.
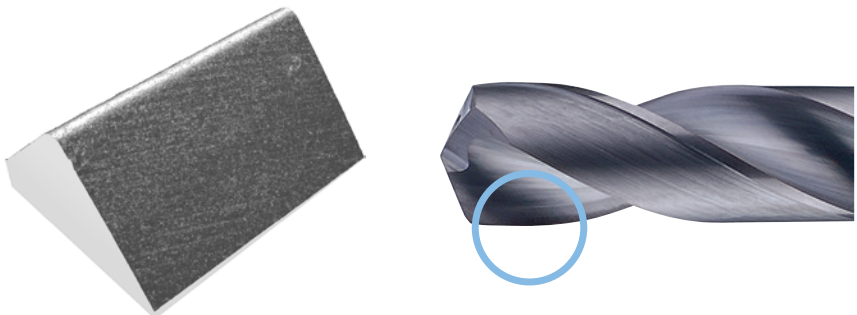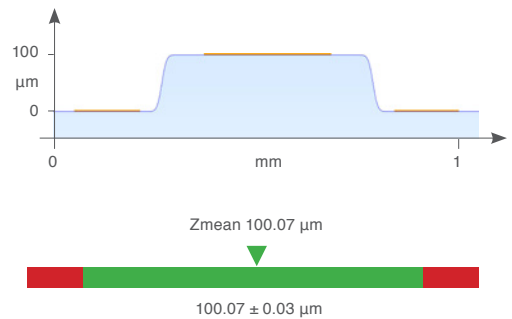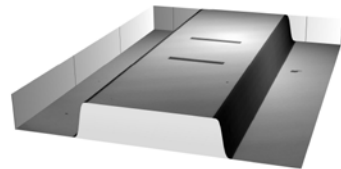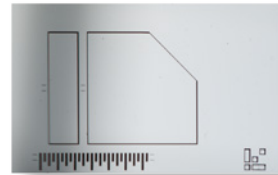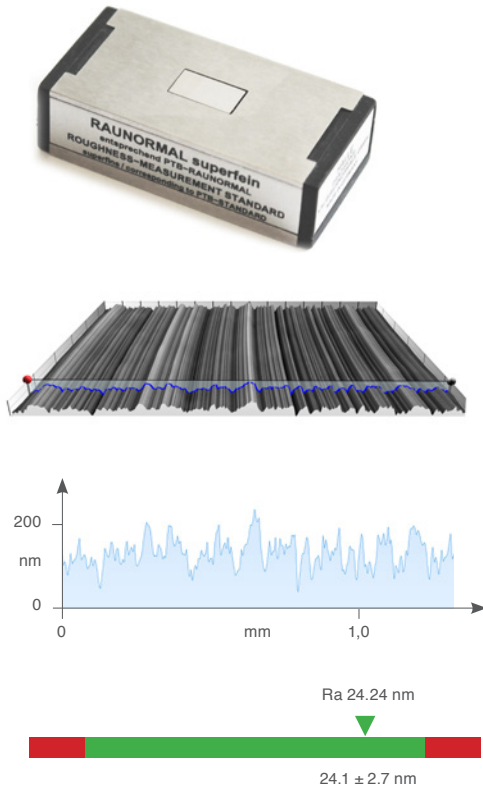

Optimized to generate best results on steep geometries.

Extreme esolution and proven accuracy

superfine roughness standard

calibrated step standard

Ra 24.24 nm

24.1 ± 2.7 nm

Zmean 100.07 µm
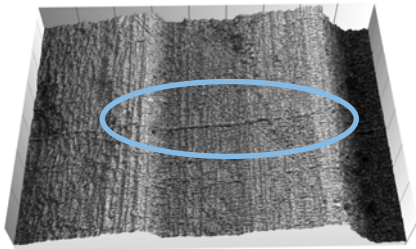
100.07 ± 0.03 µm

Fe

0,14 nm
diameter
Fe - Atom

0,1 nm
standard deviation Ra
25 repetitions

Stronghold of smartWLI's:

- The superior height resolution is independent from the field of view
- Many objects can measured without stitching
- This can save time and the money for automated xy tables
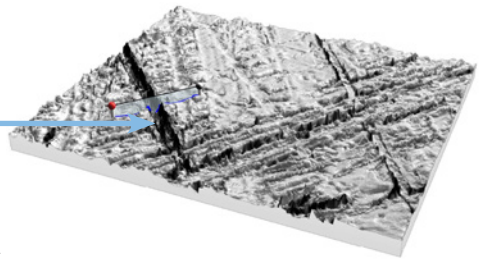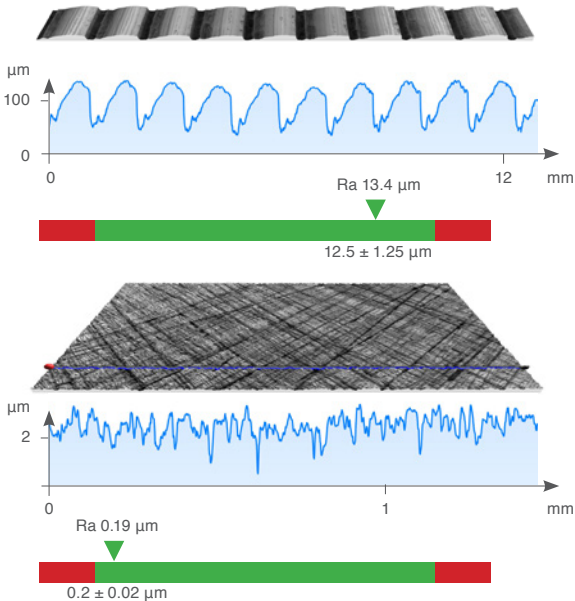
Measurement of surface roughness

Stylus tip scratches

Stylus tip limitation

10 µm

stylus tip

stylus tip

stylus tip

Object

5 µm

µm

1

0

−1

smartWLI

mm

stylus tip compensated

0   30   µm
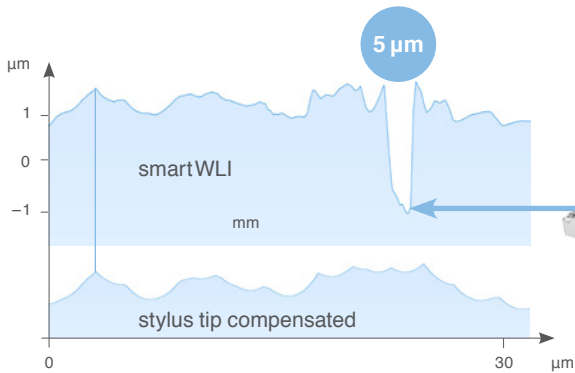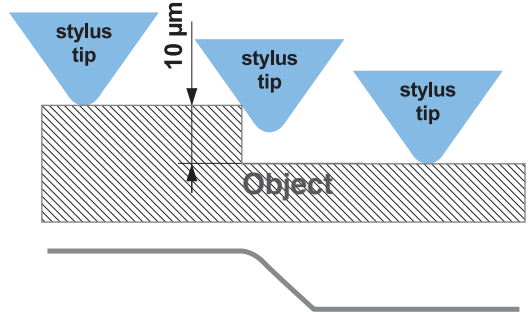
tactile measured profile

Reproduction of certified stylus measuring results

µm
100

0

0   12   mm

Ra 13.4 µm

12.5 ± 1.25 µm

µm
2

0   1   mm

Ra 0.19 µm

0.2 ± 0.02 µm

| µ "AA | 63 | 32 | 16 | 8 | 4 | 2 |
| µm Ra | 1.6 | 0.8 | 0.4 | 0.2 | 0.1 | 0.05 |

FLAT LAPPING REAMING

GRINDING

	N7	N6	N5	N4	N3	N2
FLEXBAR NO. 16008	△△△			▽▽▽		
	N10	N9	N8	N7	N6	N5

HORIZONTAL MILLING

VERTICAL MILLING

TURNING

| µm Ra | 12.5 | 6.3 | 3.2 | 1.6 | 0.8 | 0.4 |
| µ "AA | 500 | 250 | 125 | 63 | 32 | 16 |

Smart VIS3D - the scanning software

- Speedytec - parallel image processing in real time
- Piezo - control of the scanning and synchronized image acquisition
- XY tables - positioning and automated stitching
- Algorithms - vertical scanning, phase shift, fast scan
- User interface - push button scan, macro selector, visualization and data export, live image, light control, scanning preview

MountainsMap® – package for universal 3D data analysis

- 3D tools - step height, flatness, parallelism, structure analysis, surface roughness parameters, Fourier analysis…
- Profile tools - step height, distances, angle, radii, surface roughness parameter…
- Contour analysis - geometrical fits, comparison against ideal geometry, angle, radii, distances, centricity…
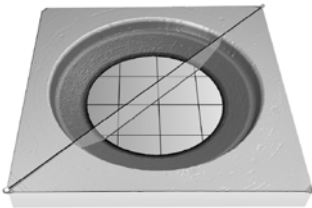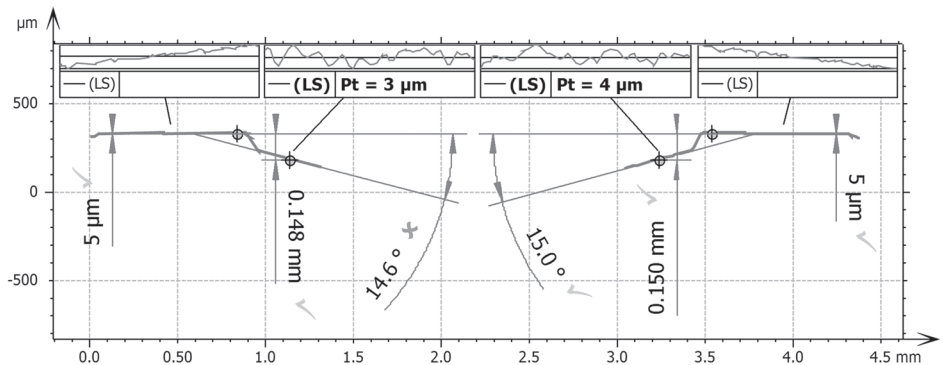
Customization

- Plug ins for MountainsMap®
- System and software development for complete automated measuring stations

gbs

Interferometer

smartWLI prime
smartWLI extended
smartWLI embedded
smartWLI Cylinderinspector 3D

Accessories

interferometric objectives
stand alone stands
mobile stands
automated stitching tables
calibration standards
evaluation software

Integrators

FPGA powered smartWLI sensors
upgrade kits for microscopes

Services

high res scans as service
consulting for smartWLI
technology
customized automated
measuring systems

Rev. 03/2017

EFRE
EUROPA FÜR THÜRINGEN
EUROPÄISCHER FONDS FÜR REGIONALE ENTWICKLUNG

EUROPÄISCHE UNION