Optical 3D surface measurement technology for research and industry

Company profile and product overview
NanoFocus AG is a developer, manufacturer, and distributor of measurement technology and software packages for the characterization of technical surfaces. Worldwide, the confocal optical 3D surface analysis tools offer perfect quality assurance, reliable process control and manufacturing efficiency for all industries and applications. From standard system to customized business solution, we offer the best and effective measurement solution for each measurement task.

Top quality made in Germany - The systems and the software are produced and developed entirely by NanoFocus. They are based on the patented technology developed by NanoFocus.

The company at a glance

Foundation: 1994
IPO: 2005
Industrial property rights: >70

Head quarters with development and production: Oberhausen
Customer center: Karlsruhe
International offices in Singapore and in the USA

Our experience

1998
μsurf A
1. generation

1999
Launch of μscan-product line

2003
μsurf cylinder and μsurf mobile

2007
μsurf
3. generation

2009
Take over of μprint-product line from Siemens AG

2013
Full automation with μprint

2014
Launch of μsurf expert
20 years NanoFocus
NanoFocus AG’s products, services and innovations are highly oriented on customer processes. From consultation to commissioning through to ongoing support; we offer support from one source. Our customers can always rely on our well-founded engineering experience and our high standard of quality.

The NanoFocus factor – competence from a single source

The right measuring solution from research laboratory to production control

- Requirement analysis
- Test measurements
- Specifications sheet
- Parameters / Norms
- Training / Workshops

- Customer-specific adjustments
- Integration
- Programming
- Sensors
- Measuring tool capability tests

- Measurement services
- Installation
- Maintenance
- Calibration

Traceability of the results and auditability
- Approval of all measurement systems in accordance with international standards and based on PTB-certified standards

Norm-compliance
- Active involvement in international committees for standardization and norms for optical measuring processes
- Further development of our technology based on the most current standards
- Highest level of standard compliance

Environmental consciousness
- Environmentally compatible materials as well as auxiliary and operating materials
- Energy-efficient measurement equipment
- Operational environmental management
**μsurf – Confocal 3D surface measurement systems**

The robust μsurf sensor technology is based on the confocal technology from NanoFocus. Due optical filtering with the rotating multi-pinhole-disc, the surface is scanned seamlessly.

Typical measurement tasks: line roughness, surface roughness according to ISO, form and contour, volume, flatness, co-planarity, tribology

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### Laboratory / Development

<table>
<thead>
<tr>
<th>μsurf expert</th>
<th>μsurf explorer</th>
</tr>
</thead>
<tbody>
<tr>
<td>Powerful laboratory measurement system</td>
<td>Flexible all-rounder</td>
</tr>
<tr>
<td>High-end laboratory system</td>
<td>Efficient complete system</td>
</tr>
<tr>
<td>High measurement speed</td>
<td>Compact design</td>
</tr>
<tr>
<td>Automatable</td>
<td>User-friendly concept</td>
</tr>
<tr>
<td>Maximum optical resolution</td>
<td>Robust and reliable</td>
</tr>
<tr>
<td>Collision stop</td>
<td></td>
</tr>
</tbody>
</table>

- **μsurf expert**
  - LED/OLED/OLED
  - Sanding belt
  - Bank note

- **μsurf explorer**
  - Glass
  - Paper
  - Polystyrene

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### Quality assurance / Production

**μsurf custom**
Tailor-made measurement system

- Customized configuration
- Multi-sensors - wide range of additional sensors
- Large travel units
- Production-relevant interfaces
- Designed for continuous operation

- **μsurf custom**
  - Tool blade
  - Micro lens/Micro optics
  - Laser structuring

### Mobile measuring

**μsurf mobile**
Universally applicable

- Lightweight at 5 kg
- Quickly ready to use
- Measurement of large and heavy samples
- High level of flexibility
- Motorized xyz axis

- **μsurf mobile**
  - Print cylinder
  - Coating / Appearance
  - Sheet metal

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### Business solutions

**μsurf cylinder**
Inspection of cylinder liner surfaces

- Established business solution
- Non-destructive measurement
- Automatable

- **μsurf cylinder**
  - Plasma coating
  - Honing

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**μsurf solar**
Business solution for the solar industry

- Adapted light source
- Specialized evaluation algorithms

- **μsurf solar**
  - Solar cell
  - Solar cell

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**μsurf implant**
Roughness metrology for implants

- Multicompatible sample holding
- Compliant with FDA regulations
- Automated series measurements

- **μsurf implant**
  - Dental implant
  - Knee implant

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**µscan** – 2D and 3D scanning profilometers

The flexible µscan technology is based on the principle of optical 3D scanning profilometry using different point sensors.

Typical measurement tasks: geometry, flatness, co-planarity, form and contour

<table>
<thead>
<tr>
<th>Laboratory / Quality assurance</th>
<th>Production / Inline inspection</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>µscan custom</strong></td>
<td><strong>µscan sensor</strong></td>
</tr>
<tr>
<td>Modular 3D scanning profilometer</td>
<td>Easy integration into production machines</td>
</tr>
<tr>
<td>High measurement speed</td>
<td>Fully automatable</td>
</tr>
<tr>
<td>Combination of different point sensors</td>
<td>Production-relevant interfaces</td>
</tr>
<tr>
<td>Large measurement range ((x,z))</td>
<td>Customized configuration</td>
</tr>
<tr>
<td>Designed for continuous operation</td>
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</table>

**µprint** – High-speed confocal 3D inline inspection systems

The high-speed µprint technology is based on a combination of a laser with up to 128 channels and a vertically oscillating tuning fork. This makes it possible to scan surfaces at inline speed.

Typical measurement tasks: geometry, flatness, co-planarity, form and contour

<table>
<thead>
<tr>
<th>µprint topographer</th>
<th>µprint custom</th>
</tr>
</thead>
<tbody>
<tr>
<td>Highspeed 3D surface inspection</td>
<td>Fully automatable inline system</td>
</tr>
<tr>
<td>High-speed area scanning</td>
<td>Fastest confocal sensor</td>
</tr>
<tr>
<td>Compact design</td>
<td>Fully automatable and ready for inline use</td>
</tr>
<tr>
<td>High sensor dynamics</td>
<td>SEMI conform / SECS-GEM standard interface</td>
</tr>
<tr>
<td>Independent of surface properties</td>
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</table>

**µprint topographer**

- Fuel cell
- Printed circuits
- Sensor membrane

**µprint custom**

- Optical wave guide
- Microfluidics
- Screw

**µprint topographer**

- Leather
- Ceramic substrate
- Gasket plate

**µprint custom**

- Micro Bumps BGA
- Pin Grid Arrays PGA