



LASER 2000

Application

Machine Vision



Machine Vision - The Industrial Future

Industrial image processing is becoming increasingly important in many areas. Powerful camera systems in connection with homogeneous light sources and automated evaluation processes increase the measurement speed and lead to a significant increase in production efficiency. At the same time, the measurement accuracy of the imaging systems increases, so that the growing quality demands of customers can be met.

Latest developments in industrial image processing lead to more compact components, higher accuracy and faster data acquisition and thus enable automation in a growing number of applications.

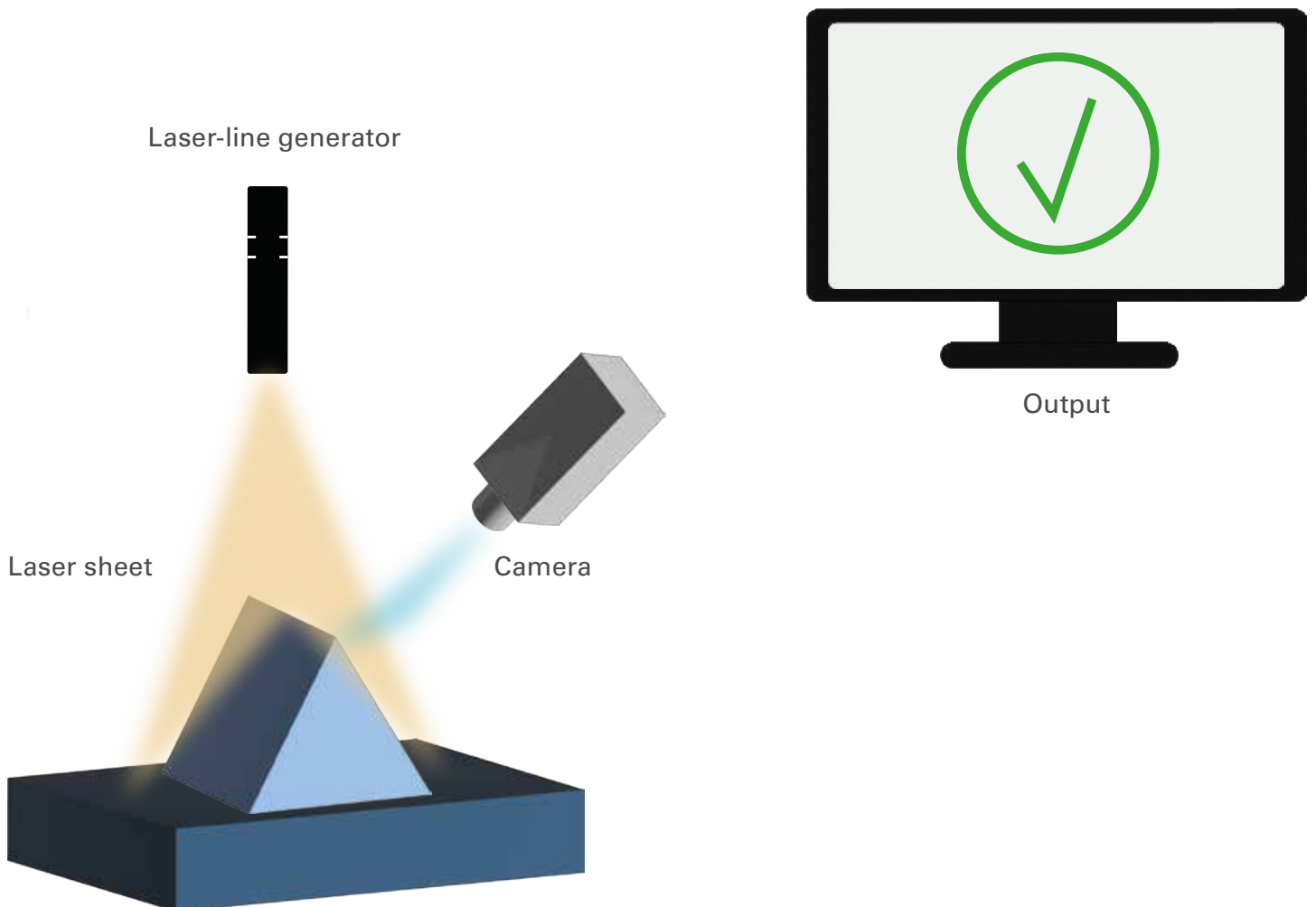


Illustration of components required for industrial image processing

2D and 3D Laser Image Processing

Wood processing industry

Lasers in combination with image processing are used in wood processing to determine the shape and surface quality of the wood for its further use.

- Enables 3D shape mapping and measurement
- Allows detection of grain pattern and blemishes
- Optimizes cutting and yield



Electronics manufacturing

Line lasers with very thin and precise lines are particularly well suited for quality control in electronics manufacturing.

- Smallest structures can be resolved
- Highest accuracy with telecentric lenses
- Small form factor allows easy integration



Railway and overhead line inspection

Powerful line lasers can be used for regular inspections of railway tracks, wheelsets or overhead lines in order to detect defects or material fatigue with high precision.

- Allows high speed measurements
- Stable performance under harsh conditions
- Enables early failure analysis



High Resolution Imaging

Metallurgical sample analysis

In quality control of metallic components, compact microscopy modules enable a quick and precise analysis of damages and material weaknesses.

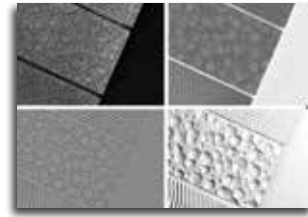
- Allows easy machine integration
- Enables early failure prediction in production
- Ensures consistently high production quality



Ceramic components analysis

Surface structures and smallest cracks in ceramic components or substrates can be reliably detected using angle-dependent scattered light analysis.

- Offers easy-to-use plug-and-play installation
- Outperforms conventional imaging techniques
- Provides cost efficient microscopy analysis



Industrial Image Processing

Quality control

Homogeneous high power LED sources are required for inspection of position, shape, color, surface quality or defects of objects in harsh production environments.

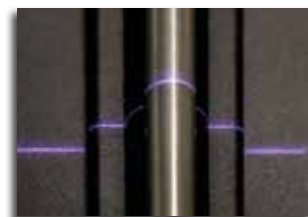
- Pulsed mode for fast moving parts analysis
- Offers long life time and high reliability
- Ensures low operation costs



Shape Measurements

Optimally matched and calibrated components ensure precise and reliable measurements in industry, even under extreme and changing environmental conditions.

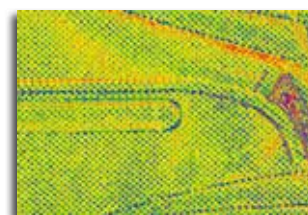
- Allows non-contact measurement
- Fully suitable for industrial environments
- Fast data processing for automation



Color Analysis

By using hyperspectral imaging cameras, colored surfaces can be analyzed in terms of color distribution with high spatial resolution and high spectral accuracy.

- Allows fast and non-destructive measurement
- Smallest color differences can be measured
- Proves authenticity by "fingerprint" analysis



Special Products for Demanding Applications

2D and 3D Laser Image Processing



Lasers with high-end optics

- Wide range of wavelengths and powers
- Excellent beam quality
- Various beam shaping optics
- Stable output power for all laser classes
- Rugged and reliable industrial housing

High Resolution Imaging



Compact microscope modules

- Up to sub-micron resolution
- Pre-calibrated parameters
- Integrated LED coax and ring light
- 5 MP color or B&W camera, USB 3.1
- Integrated measurement software

Industrial Image Processing



LED lighting

- Lighting solutions from UV to IR
- Durable and industrial-grade designs
- Large selection of standard lightings
- Customized solutions
- Optional controllers



Cameras

- High-quality standard, customized cameras
- High-resolution broadband SWIR cameras
- High-precision hyperspectral cameras
- High-speed streaming cameras
- Laser beam profile measurement systems

Our All-Round Service (Solutions)

The comprehensive consulting for your project

Photonics is considered one of the most important technologies of the future. Products from that field of are finding their way into a steadily growing number of applications and are opening up new, innovative and efficient approaches to solutions. At the same time, however, photonics also confronts manufacturers, plant engineers and system integrators with new, major challenges.

As a photonics expert, Laser 2000 supports you in your project. Our specialists with many years of experience advise you, show approaches to solutions, provide special concepts and accompany you with know-how from prototype development to series production.

Our broad product and solution portfolio as well as our extensive expert knowledge enables our customers to face and successfully master new challenges in photonics.



All Photonics Products from a Single Source

Experts in Photonics

Since 1986, we have supported well over 100 international photonics manufacturers as a leading partner in covering the European market. In doing so, we are an important link between users, integrators and suppliers. Our success is based on our solution-oriented consulting, the close exchange with our partners as well as our profound product and application understanding.



Laser & Light Sources



Laser Safety



Solutions



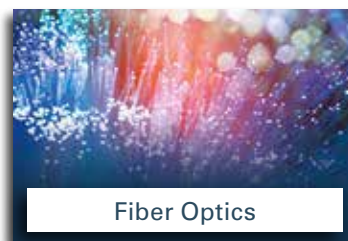
Test & Measurement



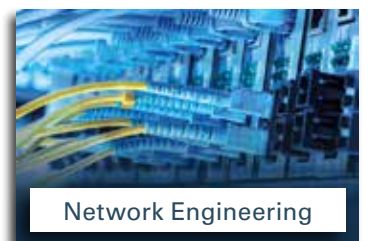
Optics & Optomechanics



Machine Vision



Fiber Optics



Network Engineering

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