



LASER 2000

Application

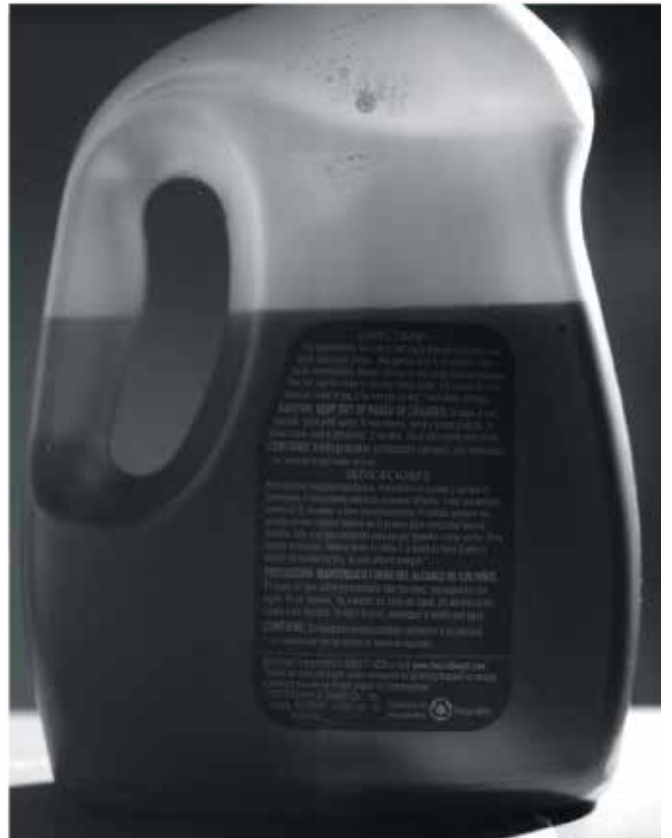
Infrared Imaging



Infrared Imaging - A World beyond the Visible

Infrared imaging is an established and proven technique for obtaining spatially resolved information about the nature of objects which cannot be obtained via the visible spectrum or other spectral ranges.

Latest developments of camera sensors open up new areas of applications for infrared imaging. Especially in industrial sorting and inspection infrared imaging enables new and more efficient solutions. In research and development more sensitive and higher-resolution cameras are available for more accurate measurements.



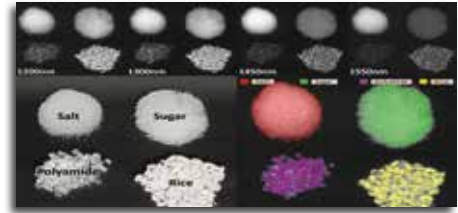
Infrared imaging measures the liquid level in the bottle

Sorting

Materials

Most bulk materials such as minerals, pellets and powder show characteristic features in the infrared spectral range that can be used for sorting applications.

- Enables quick material classification
- Sorting result is color independent
- Sorting process is cost efficient



Food

Infrared light can reveal hidden damage such as pressure points or rotten spots, as well as contamination in raw materials or packaged products.

- Non-invasive analysis is possible
- Foreign bodies are easily detected
- Final product quality is enhanced



Recycling

Infrared imaging is able to distinguish materials based on their chemical composition using high resolution and high measurement rates.

- Enables quick material identification
- Gives high purity sorting results
- Recycling efficiency is improved

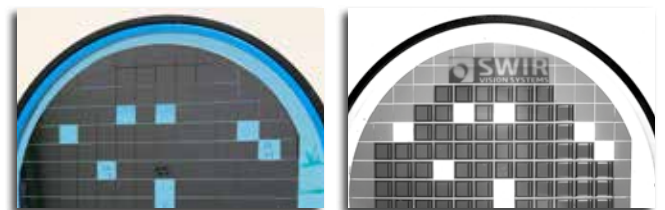


Inspection

Solar and semiconductor

Short-wave infrared enables the detection of contamination and defects in solar module and semiconductor production from the raw material to the finished product.

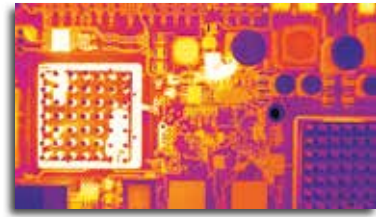
- Improves production yield
- Product quality and reliability are increased
- Reduces production costs



Electronics

Thermography can identify defective electronic parts and critical circuit board conditions by detecting hot spots and thermal bridges with high accuracy.

- Enables early to failure detection
- Allows precise allocation of weak spots
- Points out heat losses



Scientific & Research

Art and cultural heritage

Infrared imaging can provide valuable information about image elements and structures hidden under surface layers of the artwork to verify creation process or authenticity.

- Enables non-destructive detection
- Provides high spatial resolution
- Allows professional restoration



Life Science

With the help of infrared imaging, tissue samples can be examined without the use of dyes. In combination with OCT, structures below the surface can be examined.

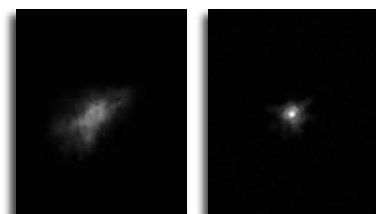
- Allows in-vivo imaging of tissue samples
- Less optical distortion by surface layers
- Non-invasive and non-ionizing imaging



Astronomy

Astronomy in the infrared spectral range enables the study of cold objects such as comets, asteroids, planets and early formation processes that do not emit visible light.

- Less distortions caused by atmosphere
- Easier correction by adaptive optics
- Lower interstellar extinction



Special Products for Demanding Applications

Sorting



Manx high-speed InGaAs linescan camera

- High speed linescanning up to 256 kHz
- 512, 1024 and 2048 pixel models
- Versatility with 4 gain modes
- Fast CoaXPress interface
- 12.5 μm pixel pitch

Inspection



Acuros SWIR and eSWIR cameras

- World's first 2 MP Full-HD SWIR cameras
- CQD-Technology for 350 - 2000 nm
- GenICam-compliant, USB3 / GigE Vision
- Option: Nearly fringeless laserdiagnostics
- VGA and 1 Megapixel models also available

Scientific & Research



Cheetah high-speed InGaAs area camera

- Up to 1700 frames per second
- Watercooled model available (110 Hz)
- >80 % QE VGA SWIR sensor
- Camera Link interface
- VIS-SWIR models available



Ceres T thermography camera

- Up to 1280 x 1024 pixel resolution
- Great on-board thermography calibrations
- High accuracy and stability
- 60 Hz full frame and <60 mK NETD
- CameraLink or GigE interface available

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



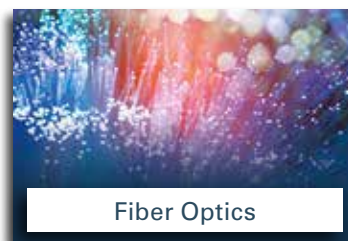
Test & Measurement



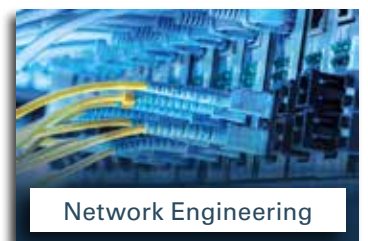
Optics & Optomechanics



Machine Vision



Fiber Optics



Network Engineering

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