

solinoTM



INSPECTION AND MEASUREMENT SYSTEMS

The 2011 Catalogue for high precision optical Quality Control

www.solino.com

Solutions in Optics

Welcome to the solino Yellow Line Catalogue,

containing Optical Inspection and Measurement Systems for high precision Quality Control. Opto Sonderbedarf, the company behind Solino, was established in 1980 and has become a leading supplier of specialist optical inspection systems.

Complete customer satisfaction is our goal, and to us, every customer is unique.

We take pride in having built our reputation on designing the highest quality optical inspection equipment exactly to fit the application, in as short a lead time as possible, and of course, within budget!

Contact:

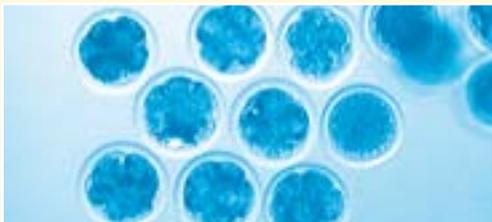
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For even more products and the latest information visit our websites: www.solino.com – www.opto.de

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Quotation, Ordering & Terms

We are pleased to provide you with a solution tailored to your specific requirement. Simply contact your local representative for technical details or quotation.

Terms of business can be found on our webpage. Specifications in this catalogue are current at the time of publication but we reserve the right to change these specifications without prior notice. Pictures may show different or alternative specifications. Technical information and guidance provided in this catalogue is intended to be useful in the application of Opto products but we do not accept responsibility for its use.

Terms and conditions of sale are specific to each country in which Opto operates and are supplied with all quotations and invoices. Please contact us for additional copies. Nothing in the foregoing statements modifies the Terms and Conditions in effect for each country of operation.

About Opto Sonderbedarf GmbH

Opto Sonderbedarf GmbH is your experienced partner for:

- A complete selection of components for machinevision and microscopy
- Complete microscopes with emphasis on display (TV)-microscopy and stereomicroscopy
- Development of optical and mechanical systems and solutions
- Counsel and advices in all optical matters

A close collaboration with leading manufacturers enables us to continuously offer our customers the highest levels of product quality, service and innovation.



Solutions

We offer simple to use solutions for Inspection and Measurement purposes in all kind of markets.

Modularity

The systems shown here are combined out of a list of single components. Our certified partners offer additional options to adjust the optics to your needs.



Production

Opto is a European producer and innovative solution provider with own facilities and a global supply chain.

Partner Strategy

Opto works together with selected partners worldwide to offer you local service and guarantee the high quality and perfect usability we are known for.



Training

Opto provides documentation and regular training on the systems for its dealers as well as in house with customers.



Contact your nearest Partner

Germany
Opto Sonderbedarf GmbH
Lochhamer Schlag 14
82166 Graefelfing (near Munich)

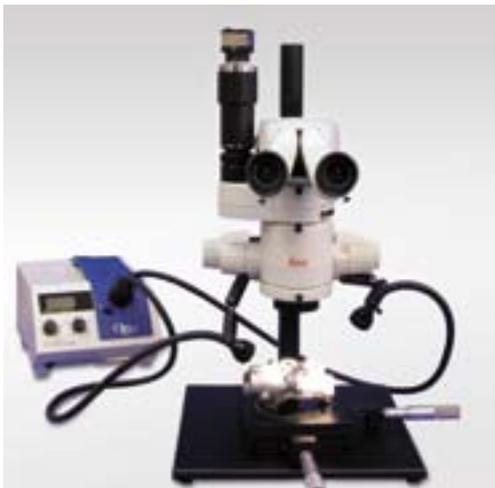
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Granite Stand Systems

This stable setup is a modular platform for truly ergonomic work for almost every inspection application.

The easy way to a complete Quality Control, Repair, Inspection and Image Capture station.

Key Features

- Multi angle stand setup
- Tilting tables for side inspection
- Stereomicroscopes and Video optics are well integrated

Your Benefit

- Rock solid but flexible stand for high end optics
- Adaptable to a wide field of inspection tasks
- Ergonomically and easy to use equipment

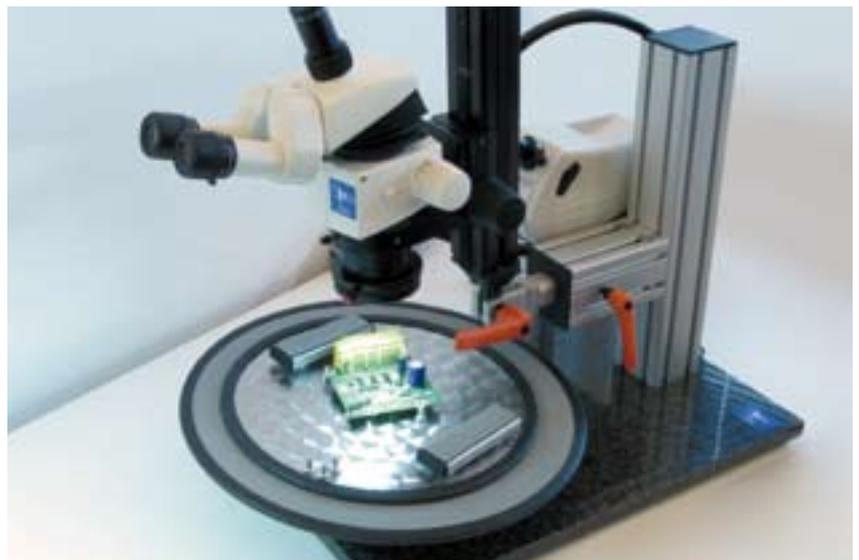


3D Stereo Inspection System 4x-25x

Field of view diameter: 9.0–58 mm
Magnification: 4x–25x
Working distance: 148 mm

- High end Stereo microscope with a 4x–25x Zoom
- Trinocular TV-tube with 10x wide field eye pieces
- C-Mount camera port
- Annular ring light illumination with LED light source
- Granite stand 400 x 550 mm with a tilting focusing device
- Dust cover

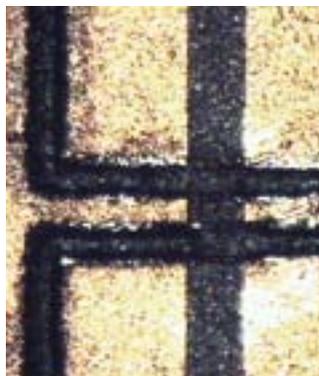
Order Number: 043-112065



Ask your local Opto Partner for a tailor made system in order to perfectly fit your needs.

Based on a very stable granite plate with a robust cube column that can hold a variety of tilt able focusing devices. The tilting device is equipped with two quick-lock fixation screws to adept the proper viewing position. The angle can be freely adjusted to anything between 0–90°.

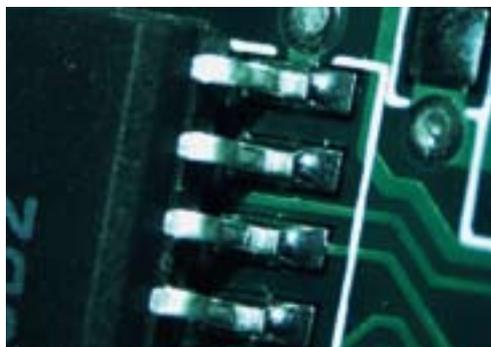
It is useable with all kind of Stereo- and TV–Microscopes and suitable illuminations. The adjustable height allows different tables, clamps and manufacturing equipment to be used with the microscope. For example it is commonly used with Opto's Tilting Tables for easy and comfortable inspection and repair of electronic equipment.



Quality Control of Laser engravings on metal or online control during electrical Laser trimming work



Microscopic control and repair work of printed circuit boards



Board inspection with overview and detailed control of wires and lead frames

Oblique Viewing Systems

Our unique Oblique Viewing adapters enable effortless 360° viewing of fixed objects with an adjustable oblique viewing angle of up to 60°. This enables complete optical inspection without moving the object or the microscope! This is particularly popular for the inspection of soldered SMD parts and soldered jumpers.

Key Features

- Large working distances of 85 mm
- Even LED Illumination
- Perfect fit for Gliding Stages

Your Benefit

- Flexible optics for perfect images
- Visualisation and correction of samples
- Flexible stand solutions to fit your needs



Oblique Viewing System Stereo Compact LED

- Magnification: 2.5x-16x
- Working Distance: 85 mm
- Stereo Microscope with binocular tube 45°
- Wide field eyepiece for spectacle wearers 10x/21B
- Stand ESD 300x350 mm, 500mm Focusing drive
- Oblique observation adapter
- Integrated LED Illumination, adjustable

Order-Nr.: 043-112008



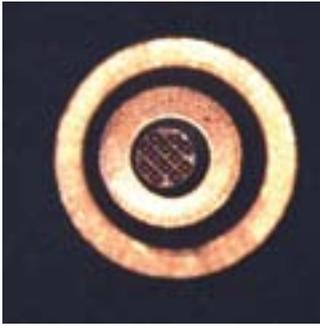
Oblique Viewing System Stereo Universal

- Magnification: 3x-24x
- Working Distance: 85 mm
- High-End stereo microscope
- Trinocular tube 45°, Ergo wedge 5° - 25°
- Wide field eyepieces for spectacle wearers 10x/23B
- X/Y stage 250 x 400 mm, focussing drive 300mm
- Vertical and oblique observation manual changeable
- Integrated LED Ring Light, adjustable

Order-Nr.: 043-112009

Ask your local Opto Partner for a tailor made system in order to perfectly fit your needs.





If required the adapter is simple to remove - allowing the traditional view from above by using it as a normal stereo microscope



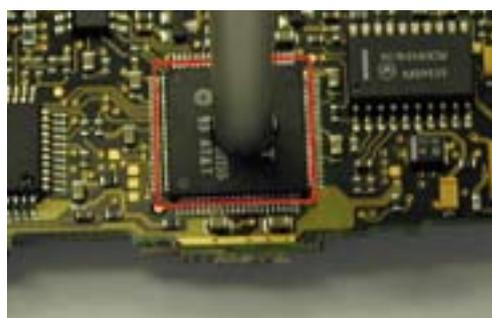
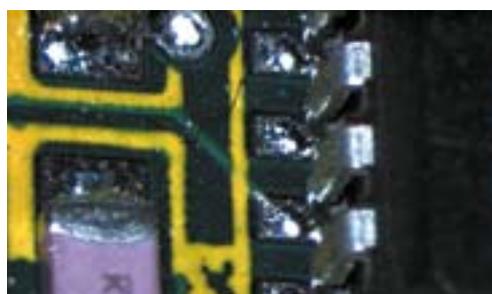
Simple 360° rotation—oblique viewing inspection reveals hidden parts



The adjustment of the working angle is easily accessible using the small lever on the side

The angle to survey the smallest objects is 60°

The working distance of 85 mm allows plenty of room for handling under the microscope



SMD-Control and Inspection of soldered semiconductors without moving the object

Mobile Floor Stands

Opto's Mobile Floor Stands allow to inspect flexibly at varying locations. The rock-solid stand with lockable wheels has a height adjustable column.

An adjustable spring inside the arm keeps it in position. There is a counter weight to the arm extension, granting overall stability. Commonly used with a Stereo Microscope it can easily mount other inspection systems as well as tools.

A locking mechanism allows use of microscopes even overhead, preventing them from falling out.

Key Features

- Articulated arm for max 10 kg Equipment
- Overhang of max. 800mm
- 360° 3 axis turnable and lockable

Your Benefit

- Unique Flexibility and Mobility
- All in one inspection terminal with integrated optics, illumination and accessories
- Same Equipment for different locations



Mobile Floor Stand

Magnification: 4x – 25x
 Field of View: 9.2 mm – 58.4 mm
 Working distance: 148.2 mm

- High end Stereo Microscope with 6:1 zoom
- Binocular tube with 10x eyepieces
- LED Light source with flexible light guides
- Inclined focusing unit from vertical to horizontal use
- Column height adjustable from 1200 mm to 1680 mm
- Scissor arm adjustable +/- 45°
- All axis clamp able
- Locking brakes at the base

Order-Nr.: 043-110200



Ask your local Opto Partner for a tailor made system in order to perfectly fit your needs.



We used this stand also for high speed Camera Setups for process analysis of production runs and selective quality control of fast assembly processes



Material science for making online research measurements, the mobile floor stand is equipped with a big telecentric lens and a customised illumination for making distortion less images with a Megapixel Camera



Paintings, sculptures, prints and jewellerys can be analysed and restored locally with Stereomicroscopes or TV solutions



Tool inspection and shop floor analysis for quality control.

Zoom Inspection Systems

The Solino Zoom Systems are unique with their various combinations based on 1:7 and 1:12.5 Zoom modules.

The magnification of the zooms can be selected by using different objectives from 0.1x to 100x.

Key Features

- Continuous optical zoom
- LED illumination possible
- C-Mount TV-optics

Your Benefit

- Machine integration as well as stand alone solutions
- All in one quality control units
- Eye piece free inspection



TV-Inspection System 0.3x–2.2x Horizontal

Magnification: 0.3x–2.2x
Field of View (1/2"): 21.3 x 16 mm–2.9 x 2.2 mm
Working distance: 240 mm

- Zoom objective 7:1
- Adapter for C-Mount-camera
- LED-Ring light D=66 mm
- Dual boom stand 254 x 194 mm
- Dust cover

Order-Nr.: 043-103112



TV-Inspection System 0.45x–3.2x Alu LED

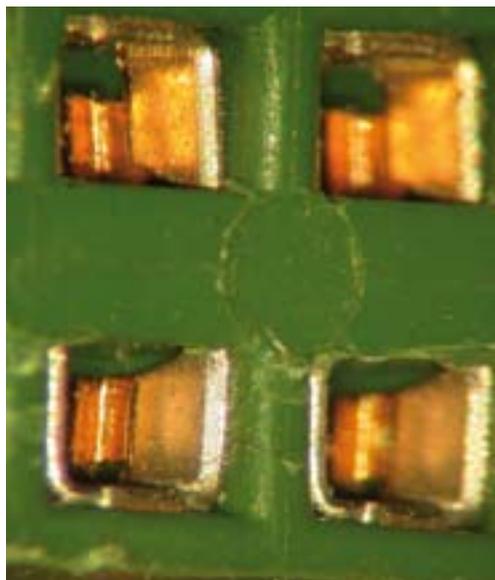
Magnification: 0.45x–3.2x
Field of View (1/2"): 14.0 x 10.4 mm–2.0 x 1.5 mm
Working distance: 155 mm

- Zoom objective 7:1
- Adapter for C-Mount-camera
- LED-Ring light
- Aluminium stand 300 x 300 mm
- Dust cover

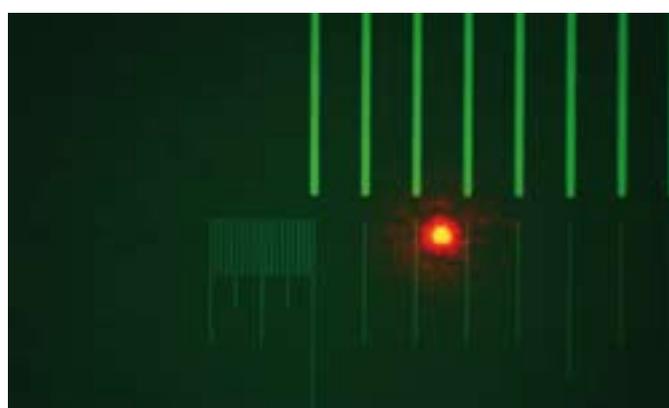
Order-Nr.: 043-103110



Ask your local Opto Partner for a tailor made system in order to perfectly fit your needs.



Documentation, repeatable measurements of material defects as well as micro handling are possible applications

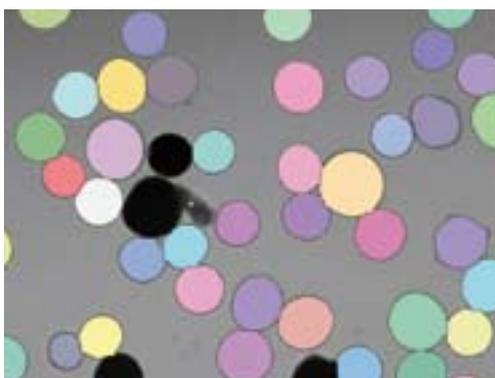


Epi Laser Injection for micro handling systems and nano manufacturing machines



OEM Machine integration with Epi LED Koehler illumination and inverted micro objective

Microbiological samples can be scanned with this inverted phase contrast setup



Process control and documentation of behaviour and distribution of fluids, granulates and powders

Zoom Measurement Systems

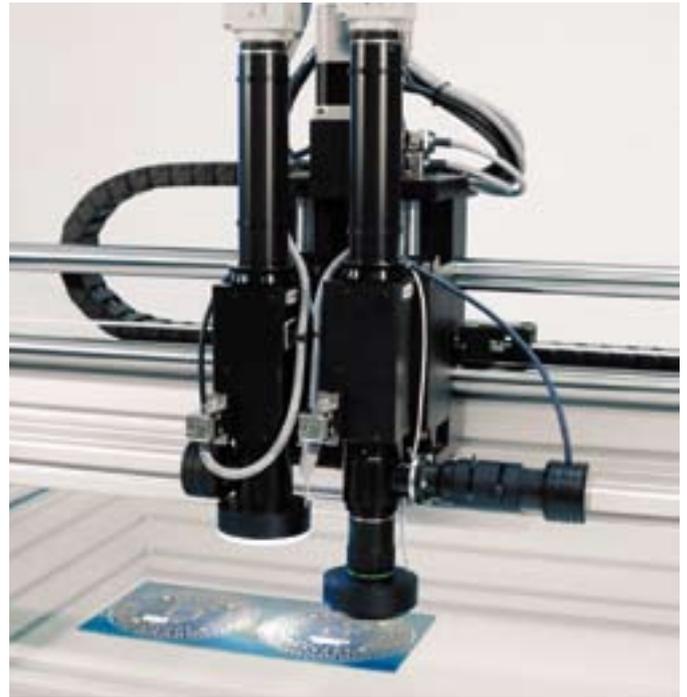
For measuring purposes we offer a wide range of different stands, measuring tables and TV-optics, creating systems fitting almost any possible need.

Key Features

- Compact with high magnification range
- Modular optics Setup
- Integrated Illumination

Your Benefit

- Repeatable magnifications for measurement
- Proven Concept with many installed systems
- Various additional accessories



TV-Inspection System 3.75x–27.5x Alu Coax Measurement

Magnification: 3.75x–27.5x
 Field of View (1/2"): 1.7 x 1.3 mm–0.23 x 0.17mm
 Working distance: 17.6 mm

- Zoom objective 7:1 with click stops
- Adapter for C-Mount-camera
- LED-Coax Illumination incl. power supply
- Measuring stage 25x25mm
- Dust cover

Order-Nr.: 043-103111



Universal Macroscope to measure large samples

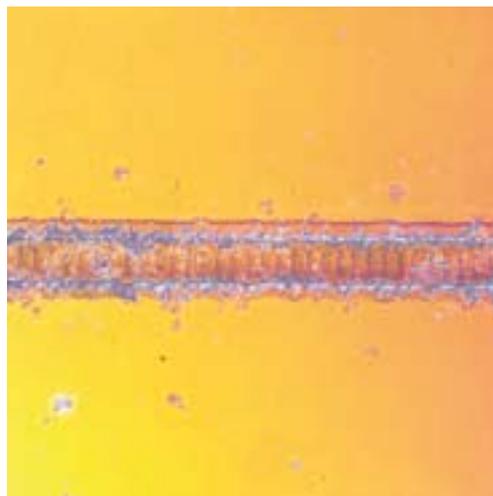
Magnification: 14.3x–230x
 Working distance: 39 mm

- Base plate 500 x 530 mm,
- Column height of 500 mm
- Focusing with fine-/rough adjustment drive
- 1:16 APO Zoom, trinocular tube, 10x eyepieces
- X/Y table, micrometer spindles, 50 mm drive

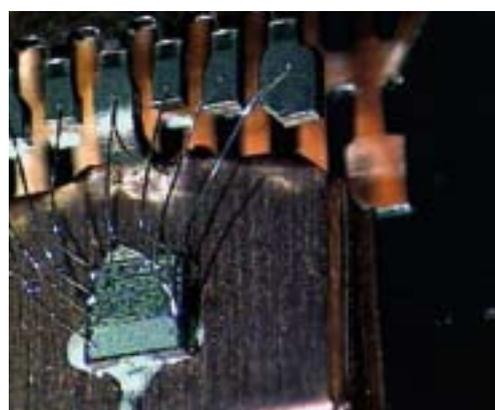
Order-Nr.: 043-103103



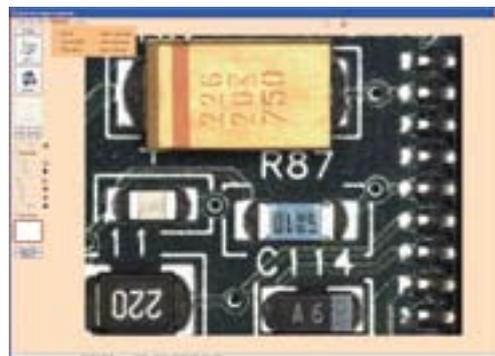
Ask your local Opto Partner for a tailor made system in order to perfectly fit your needs.



Unique measurement setup combining a stereo microscope and integrated Laser



Multi angle vision setup for oblique measurements



Spilt field measurement systems for simultaneous top and bottom or left and right view for e.g. semiconductor alignment



90° Sandwich Control of different material layers and coatings or analysis of drops

Portable Systems

This portable measurement microscope with its ergonomic carrying handle can be used for a wide field of surface inspections. They can also be upgraded with a measuring gauge for non-contact measurement of thicknesses up to 2 mm. An easy to carry system with the finest optical quality.

Key Features

- Objective nosepiece allows 4 magnifications
- Integrated coaxial LED illumination
- Graticule for measurements

Your Benefit

- Rock solid stand for high magnifications
- Inspection to go
- Handy measurement solution



Portable Roller Microscope

- Trinocular head with 0.5x C-Mount video out adapter
- Head rotatable by 90° to right and left hand side
- Magnifications of 40x/100x/200x/400x
- Usable for roll inspection (min. diameter 60 mm)
- Sensitive x/y positioning adjustment of the microscope by using micrometer spindles with a travel of 25 mm
- Integrated graticule with graduation of 10 mm in 100 divisions
- Coaxial white LED illumination, adjustable brightness
- Z-axis movement with coarse and fine focusing device
- Weight approx. 4 kg
- Dimensions approx. 320 x 160 x 230 mm
- Roller microscope with LED illumination and X/Y cradle

Order Number: 043-112401



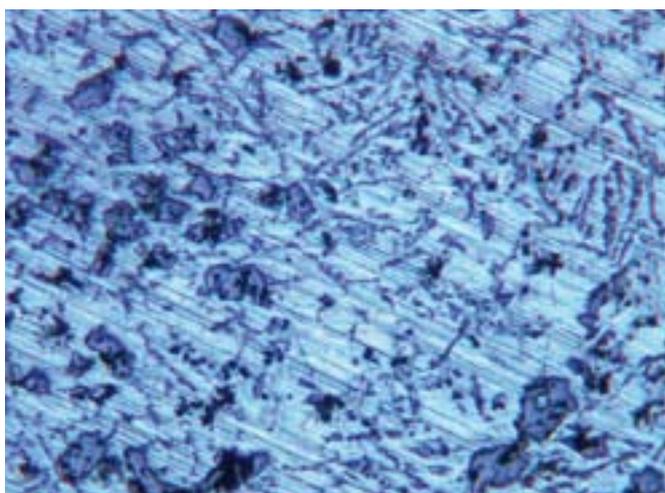
Digital measuring gauge
with holder
Order Number: 043-112402-70

Microscope carrying case
Order Number: 044-910055

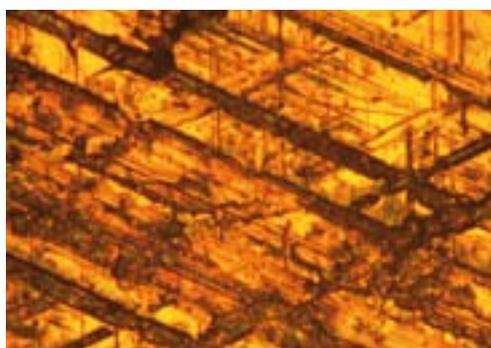




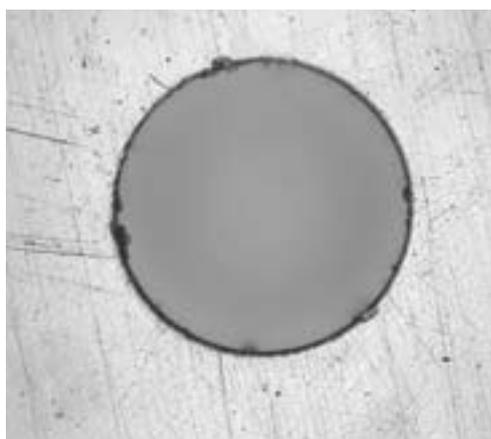
Inspection of metal and glass surfaces of big sheet plates like in foil production or solar manufacturing besides production



Analysis of crystallisation on high end finished AlSi-surfaces



Inspection of finished surfaces on big metal sheets after production



Measurement of laser drill holes on big metal plates

Momic Systems

This compact and robust video zoom microscope is a cost-effective mobile system for onsite measuring and documentation of surfaces. Easy to change adapters allow the use of almost any SLR camera as well as any C-Mount camera.

This fully portable microscope comes with a robust stand made of alloy and stainless steel granting through its three adjustable feet a solid stand even on rough surfaces. Illumination is realised by a battery operated LED-Light.

The 7x zoom has 7 click-stops to allow repeatable measurements in calibrated magnifications and features a integrated manual focussing device.

Key Features

- 1:7 Zoom optic with click stops
- Integrated battery operated LED-Light
- Complete autonomous inspection

Your Benefit

- Compact and easy to use
- Repeatable outdoor Measurements
- Proven Technology in unique setup



Momic Multi - Cam

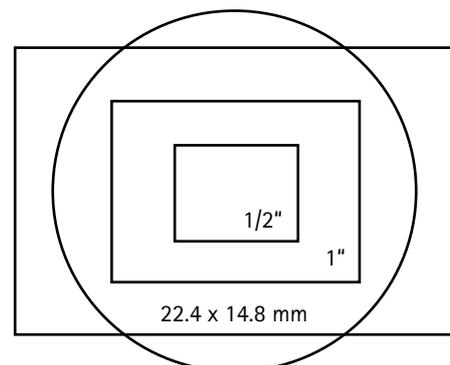
Field of View (1/2"): 6.3 x 8.5 mm to 0.91 x 1.2 mm

Zoom: 7:1 Zoom, 7 click stops

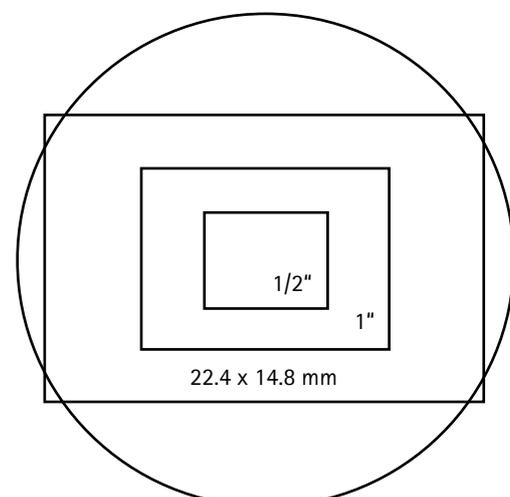
- High class optics with integrated focusing module
- Robust portable stand
- Integrated battery operated LED-illumination
- Field of view diameter on chip 18.5–25.4 mm
- Weight without camera aprox 3.1 kg
- Adapters for almost all standard DSLR Cameras available on request

Order Nummer: 043 - 140101

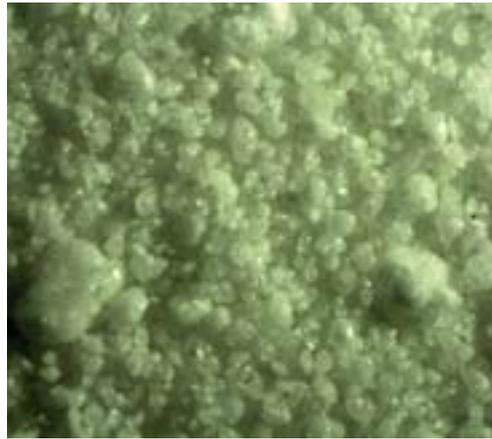
Note: SLR cameras often feature large chip sizes so vignetting may occur, which leads to black areas on the image border. Also not all features of your camera may be supported by using this microscope. For the example on the righth we choose 22.4 x 14.8 mm as chip size.



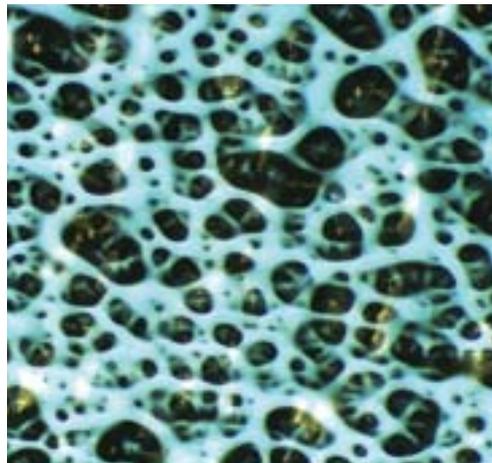
Circle illustrates aproximate field of view at lowest magnification level in comparison with different camera chip sizes.



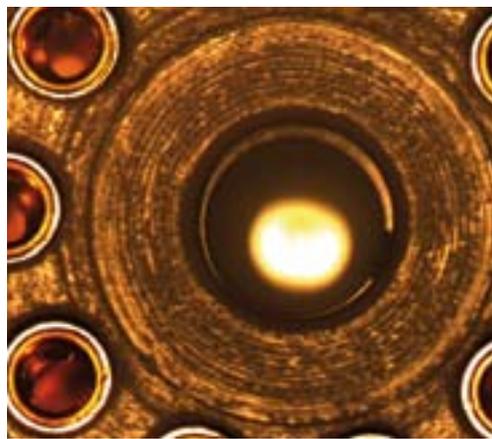
Circle illustrates aproximate field of view at highest magnification level in comparison with different camera chip sizes.



Analysis of paint on streets or rust analysis on outdoor monuments



Outdoor certification and documentation of defects or manufacturing mistakes on buildings.



Detailed microscopic documentation of integrated structures of big samples.



Measurement of holes, scratches and defects on large sheets in production environments.

Macro Zoom Systems

One single objective—many magnifications. Our Macro Systems matches a variety of possible combinations from single visualisation tasks up to high precision measurement needs. Also available with click stops the unique detented version guarantees reliable measurements.

Macro Systems are used in a broad range of applications. A complete quality control setup with additional image database supplements perfectly every production. High magnification and long working distance are ideal for visualising defects in SMD repair. Also a integration of this 18-108 Macro-Zoom lens into machines is possible.

Key Features

- High zoom range with removable close up lens
- Optional 10 click stops for repeatable magnifications
- C-Mount camera assembly

Your Benefit

- Measurement and inspection possible
- Easy to use documentation platform
- Overview and details in one unit

Macro Zoom System "Basic"

Field of View (1/2"): 5 mm— 300 mm horizontal
Working distance: min. 140 mm

- Macro video zoom lens 6:1 including removable „Close-Up“ lens
- Stand with quick camera adjustment
 - Column height: 1000 mm
 - ESD-Base: 300 x 350 mm
- Dust cover

Order Nummer: 043-102301

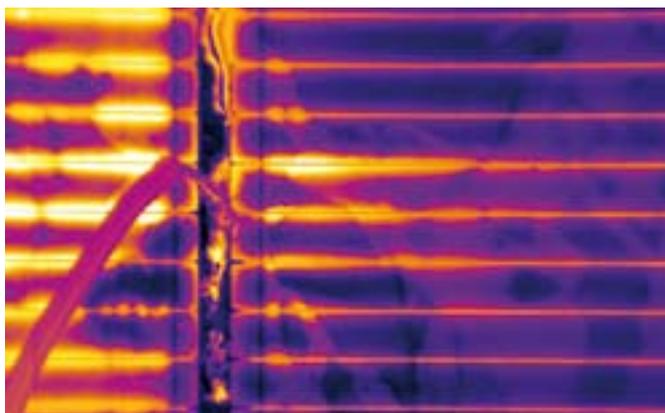
Macro Zoom System „Professional“

Field of View (1/2"): 5 mm— 300 mm horizontal
Working distance: min. 140 mm

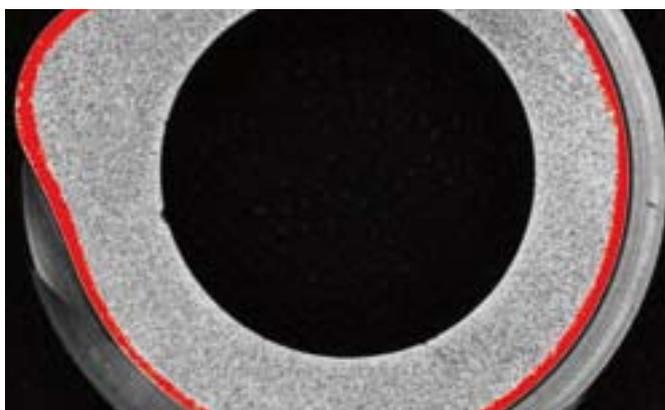
- Macrovideo Zoomlens 6:1 with detents and additional close-up lens
- Stand for exact camera adjustment:
 - Column height: 1200 mm
 - Base: 500 x 600 mm
 - Rack and pinion
 - Counter weight for height adjustment
- 2x Fluorescent illumination 4x36 W, 7600 lumen, 220 V, high frequency, flicker free

Order Nummer: 043-103117

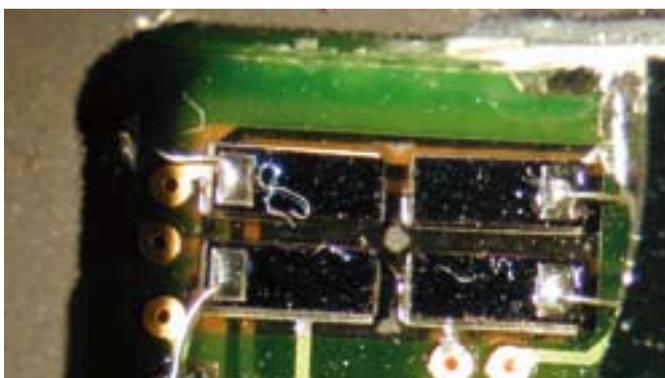
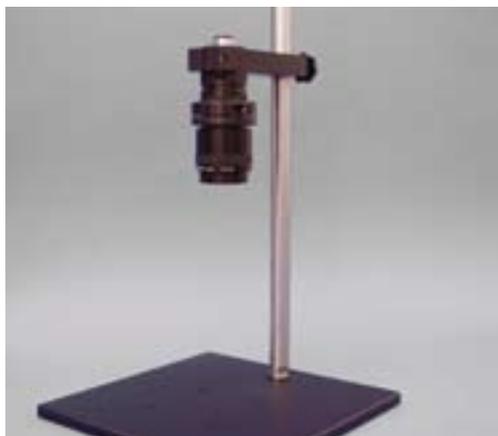




Electro luminescence measurement in combination with high sensitive NIR cameras



Automated image analysis and online quality control in different environments



Quality control on machined parts and DIN / ISO documentation besides production lines



Together with our homogenous LED spot it is possible to make precise measurements also on difficult object structures

Folding Arm Systems

Our space saving dual-folding arm keeps your desk free for important equipment and allows microscopic inspection without bulky stands – the microscope can quickly be moved in and out the working area. You can mount a focus drive with microscope or use it for other equipment such as measuring devices.

Key Features

- Modular microscopes available
- 800mm extension between column and object
- Direct table mount

Your Benefit

- Free desk microscopy
- Robust setup for high magnification inspection
- Easy to use, intuitive design



Folding Arm System "Basic"

Flexible extension range from 200 to 800 mm

- 700 mm octagonal vertical column with counter plate 130x130 mm
- Pin mounting for folding arms
- Lockable height
- Two folding arms with 5/8" adapter
- Opto OEM focus drive with 50 mm travel
- 76mm clamp Diameter for Stereo microscopes (without microscope)

Order Number: 045-600156



Ask your local Opto Partner for a tailor made system in order to perfectly fit your needs.



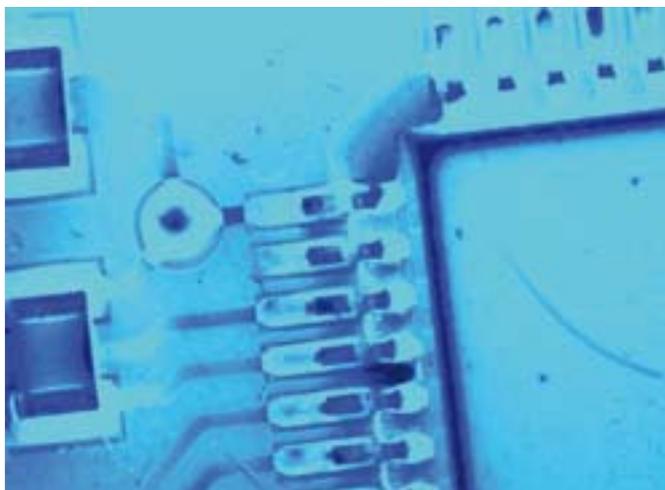
With our unique bendable jointed couplers it is possible to position nearly every illumination to requirement



Money verification for crime and forensic purposes with telecentric lenses and optimised illumination



3D-Stereoscopic inspection for research on sensitive samples that can only be inspected in protected environment



Conformal coating survey with external UV illumination besides production chains

Heavy Duty Systems

This stand system is used for moving optics in μm precision in Z-axis. Either with a hand wheel or motorized—this stand offers rock-solid stability for high end optics.

The column slider can carry all kinds of equipment, even a microscope with high magnification and a long extension produces a brilliant, vibration free image.

Key Features

- Rough continuous Z-Movement up to 1500 mm
- Fine μm Z-Movement of 50 mm
- Stable up to 20 kg measurement equipment

Your Benefit

- Up to 500x magnification
- High samples inspection
- Big sample inspection



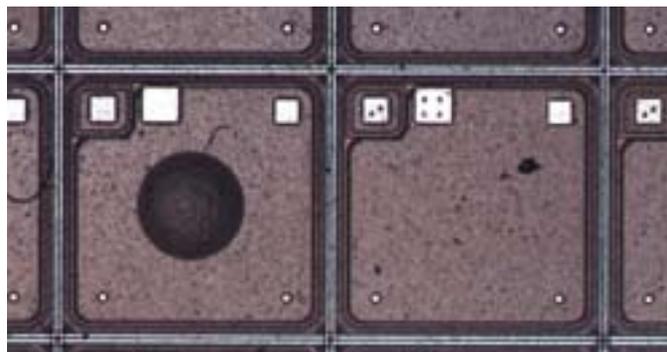
Heavy Duty System "Basic"

- Baseplate 600x600 mm with M6 threads
- Focusable 800 mm column with handwheel
- Separate coarse and fine focus drive 50mm
- Adapter plate for heavy microscope heads
- Maximal extension of 350 mm for focus stability
- Reliable up to magnifications of 500x
- Stand solution without microscope

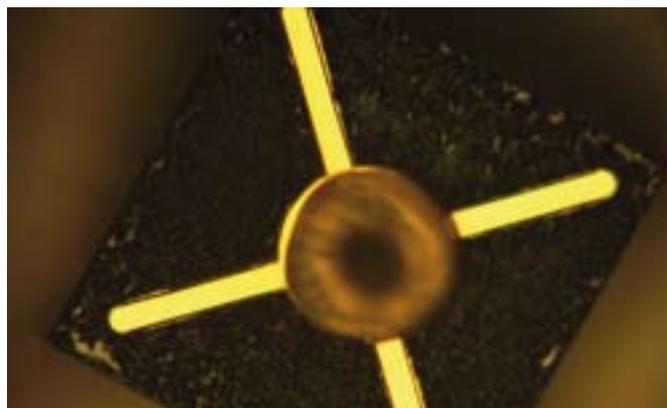
Order Nummer: 043-611001

Ask your local Opto Partner for a tailor made system in order to perfectly fit your needs.

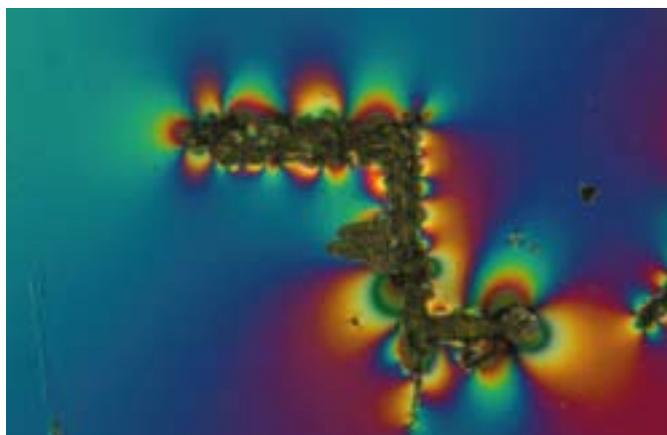




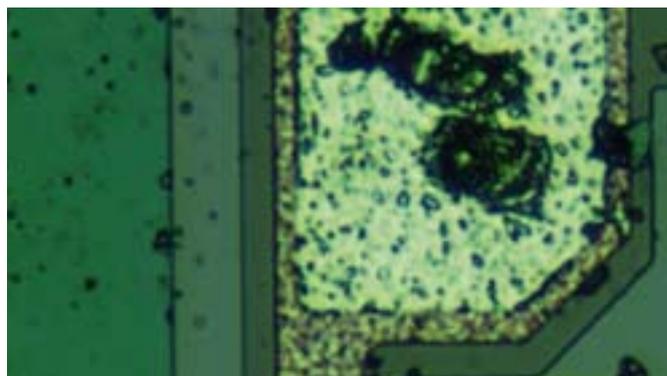
Ink dots on Wafer dies can be selected and identified with EPI coaxial Illumination and Laser injection



16:1 High End Zoom measurement setup for laboratory environment



Stress measurement with polarisation and DIC techniques on glass and plastics



500x semiconductor image for adjustment purposes done with Epi fibre Illumination and Laser injection

Measurement Systems

A simple to use measurement setup consisting of a manual XY-stage, optional with motorized XY-stage and controller or even with a motorized Z-axis to allow full 3D measurement possibilities.

Measurement software for different applications guarantees reliable and easy to use inspection.

Key Features

- 7:1 Zoom range with detents
- X-Y-measurement stage
- Unique course and fine focus Z-axis

Your Benefit

- All-in-one package
- Integrated software solutions
- Stable platform for reliable measurements



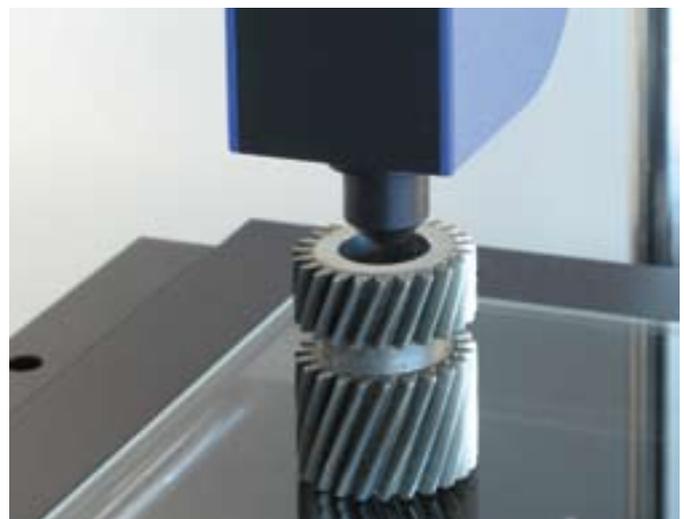
Optical Measurement System "Universal" 100 x 100 mm

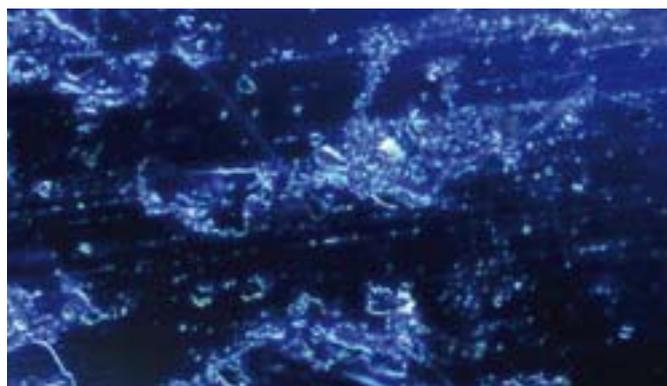
Magnification: 1.88x - 13.75x

Working distance: 40 mm

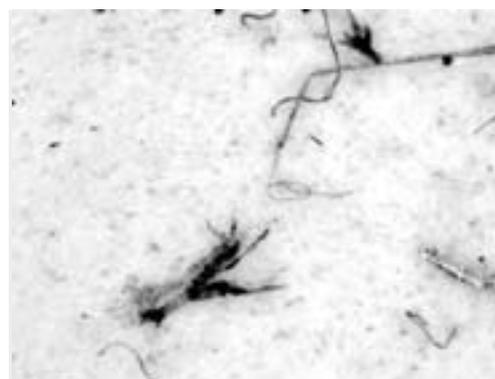
- Zoom with detents
- Minimal FoV 0.47x0.35 mm
- Maximum FoV 3.41x2.56 mm
- Darkfield LED Illumination
- Measurement table with 100x100mm travel range
- Computer with advanced measurement software
- Monitor, keyboard and mouse

Order Nummer: 043-102450

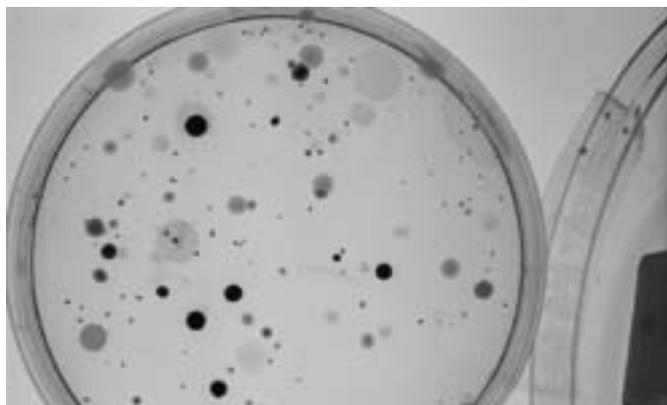
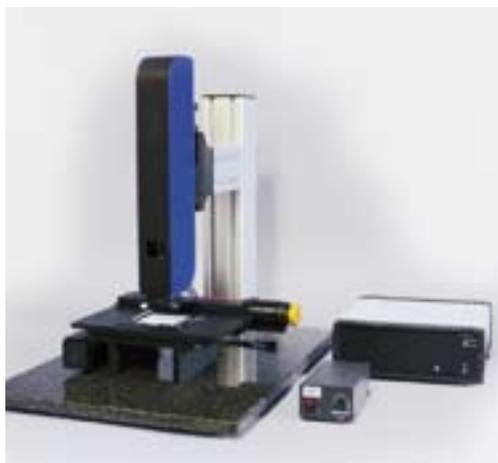




Fluorescence distribution of organic material can be automatically detected with pre defined filter combinations



Imagery of particles separated by quantity, form and consistency



Big samples can be recorded in high resolution and analysed as a complete stitched together image



Automated microscopic cell research and screening with Hoffmann or Phase Contrast

Our Custom Solutions and Standard Products are integrated innovatively in medical, industrial and scientific vision applications

Opto develops and manufacture client driven optomechatronic Modules, Components and Systems in quantities ranging from one-off prototypes to full scale production. Our vision is to be a leading supplier of the most innovative vision solutions to the most demanding inspection applications.

Components

for Machine Vision and Microscopy



Inspection Systems

for Quality Control and Measurement

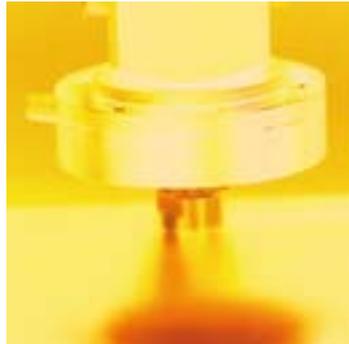
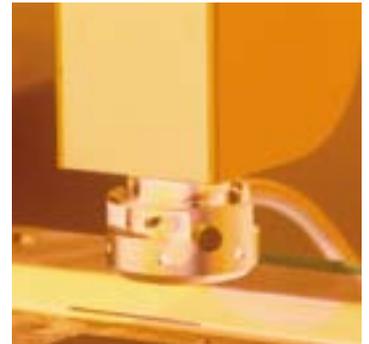


Image Analysis Systems

for Industrial Material Science



Custom Solutions



Opto develops and manufactures in quantities ranging from one-off prototypes to full scale production



OEM Modules

Plug and Play Imaging Modules for Machine Builders consisting of Optics, Mechanics, Illumination and Sensors



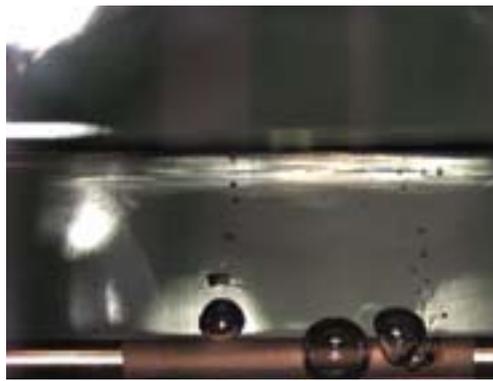
Customised Machines

Development and Production of complete Inspection / Vision Systems in partnership with Customer



Custom Production

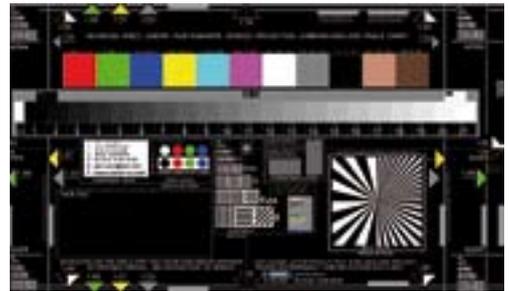
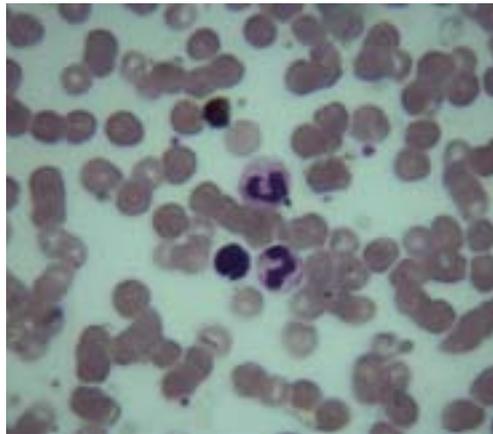
Design and Build to print of Mechanics and Optics



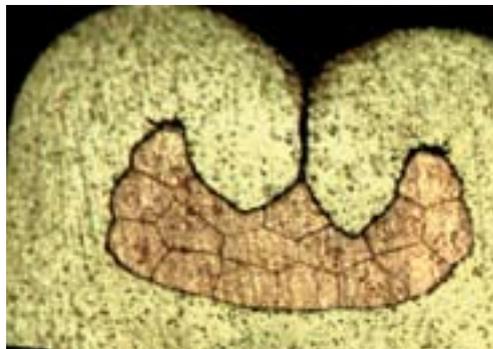
Analysis of liquids inside chambers



Split field Microscope for top and simultaneous bottom view together with a laser inspection



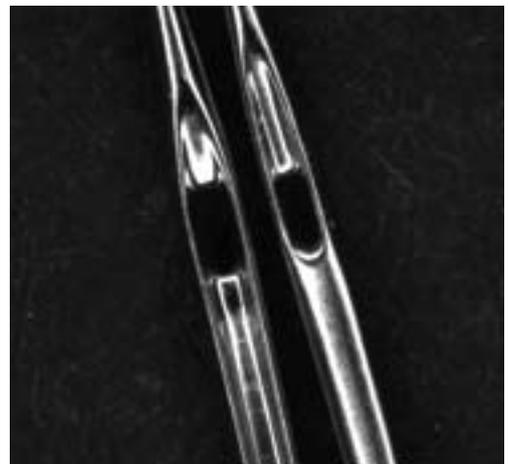
Images of blood cells on representative samples in an integrated OEM setup



Stereoscopic measurement solution for quality control on electrical parts like crimped wires as well as the possibility to use attached prober needles.



Telecentric system with Mega Pixel camera for one shot results of big samples



Measurement of shiny parts like tools or needles

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Solutions in Optics

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