Microscope and visualization equipment

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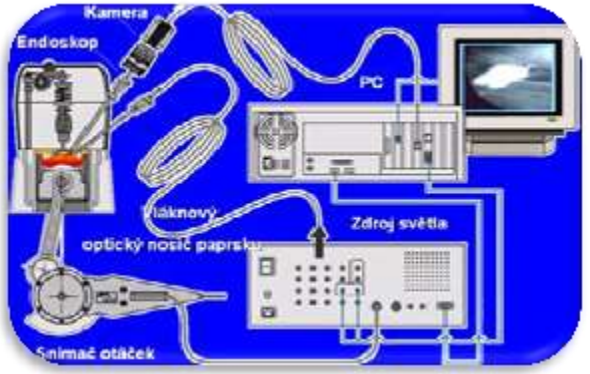
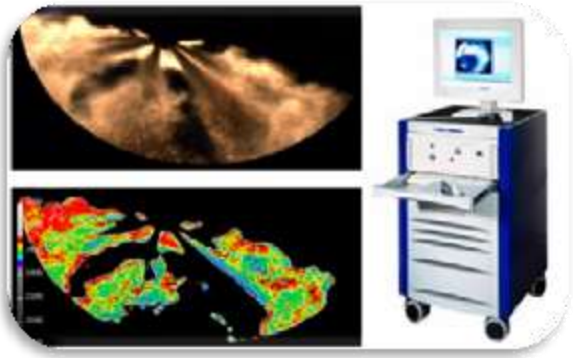
Visualisation techniques

System for direct monitoring of a process in internal combustion engine - AVL VISIOSCOPE, part of the device is an optical measuring device for measuring the temperature (Temperature VISIOFEM TIVFEMT.00) in the equipment are two camera systems PixelFly and DICA Pro.

The modular concept of the system can be used for:

- Analysis of homogeneous combustion flame
- Monitoring of processes in the intake pipe
- Synchronization with Indication technology,
- Possibility of processing data and compared the results for different engines.





Carl Zeiss Ultra plus

Ultra-High resolution imaging for analysis of nonconductive samples

- UHR SEM
  - 0,8 nm @ 30 kV (STEM mode)
  - 0,8 nm @ 15 kV
  - 1,6 nm @ 1 kV
  - AV 0,020-30 kV
  - PC 4pA-20nA
- InLens SE det. (for max. resolution)
- InLens EsB det. (BSE)
- Chamber SE det. (topographic contrast)
- Cap-mounted AsB det. (BSE orientation)
- STEM det. (BF, DF, ODF)
- Charge-compensator (for analysis of el. resistant samples without the necessity of surface modification

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UHR FE-SEM Carl Zeiss Ultra Plus

Ultra-High resolution imaging for analysis of nonconductive samples

- In-Lens SE detector pro max. resolution
- In-Lens EsB detector for BSE capture according to the energy
- Integrated AsB detector for capturing of BSE according to the angle
- Complete micro analytic base EDS + WDS + EBSD (OXFORD)
- Possibility od 3D image through 4-quadrant AsB detector

Resolution :	1nm @ 15 kV
	1,6 nm @ 1 kV
Magnification	12 – 1 000 000 x in SE mode
Acceleration voltage:	0,02 – 30 kV

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JPK Nanowizard III

AFM system

AFM system designed for optimal use in air or liquid environment

Biological x Material SPM

- AFM
- MFM
- STM
- CAFM

- Nanolithography
- Nanomanipulation
- Force-spectroscopy
- Heating-Cooling Module
- Direct Overlay (correlation with optical picture)

Monochromatic (2D) camera BASLER PILOT VGA piA640-210gm
Colour (2D) camera BASLER PILOT 5MP piA2400-17gc

Cameras for 2D scans

Main area of use:

- Design of industrial applications for 2D scans, optimal lighting parameters, cameras, software tools ect.
- Development of software for picture analysis of technological scenery, surface analysis and quality of products.

Accesories:

- Industrial NI VISION SYSTEM (control unit)
- Lens with focus range 2 to 100 mm
- Set of lights

Olympus BX51M

Material optical microscope with camera

Parameters:

- Pictures only in reflected light
- Possibilities: *light and dark field*
- Scope of magnification: 5, 10, 20, 50, 100
- System enables real-time projection of viewed sample on the monitor
- Resolution of the video camera: 3635 x 2723 px

Other accessories:

- Software for image analysis (Quick Photo, Lucia)
- Module for connection of pictures into one final focused photo (Deep Focus)

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Axio Vision Imager M2 Zeiss

Fluorescent microscope for biological, medical and material research

Technical parameters:

- View in reflected and transparent light, possibility of using fluorescence
- Light, dark field, phase contrast
- Objective magnification:

  2,5 - 5 – 10 – 20 – 40 – 63 – 100
- Resolution of the camera: 1388 x 1038 px (black and white, color camera)
- Real-time projection of viewed sample on the monitor

Additional accessories:

- Software image analysis (AxioVision)
- Module for connection of pictures into one final focused photo (Deep Focus)

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Optical microscopes

Carl Zeiss Axio Imager M2M and Carl Zeiss Axio Observer A1

Carl Zeiss Axio Imager M2M

- Reflected light - BF, DF, C-DIC
- Z-Stack, Mosaix, Panorama
- 3D, visual analysis
- Correlative microscopy (LOM/SEM)

Carl Zeiss Axio Observer A1

- Walk-through light – BF, PC
- Reflected light – FL
- Direct Overlay – picture correlation with SPM

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