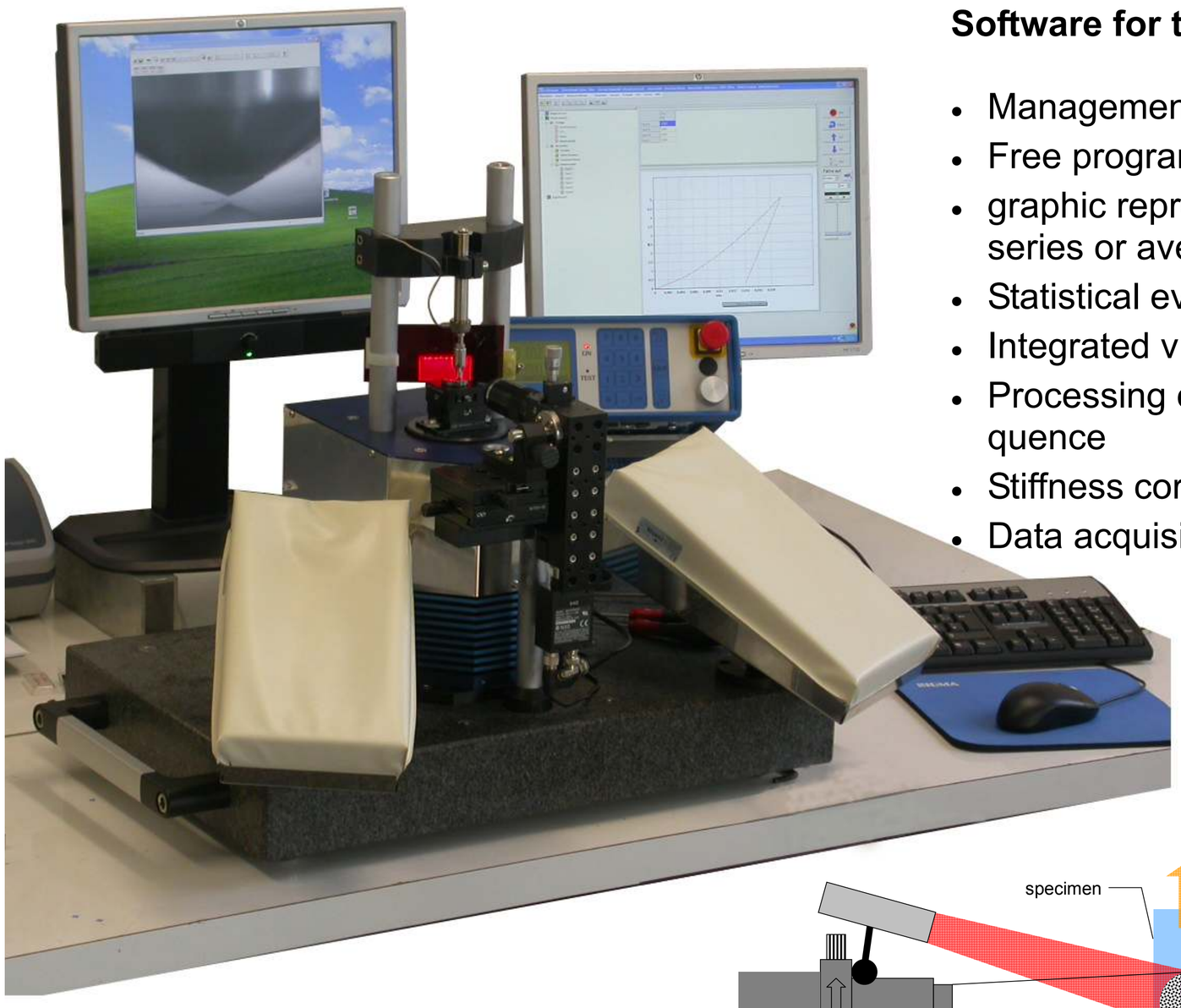
Hegewald & Peschke
Meß- und Prüftechnik GmbH

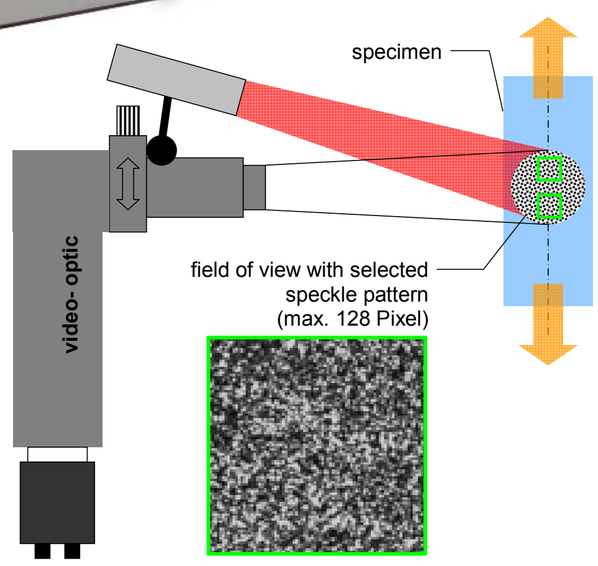
Testing machines for micro system engineering for mechanical load in the range of mN and µm

static testing machine	**Static-dynamical testing machine in low frequency range**	static dynamical precision testing machine
spindle-mechanical drive and indirect position measurement	**Direct drive with voice coil motor and direct position measurement**	Piezodrive with direct position measurement and spindle pre-positioning
inspekt micro S500N	*inspekt* micro LC100N	*inspekt* micro P20N



Software for testing machines H&P LabMaster

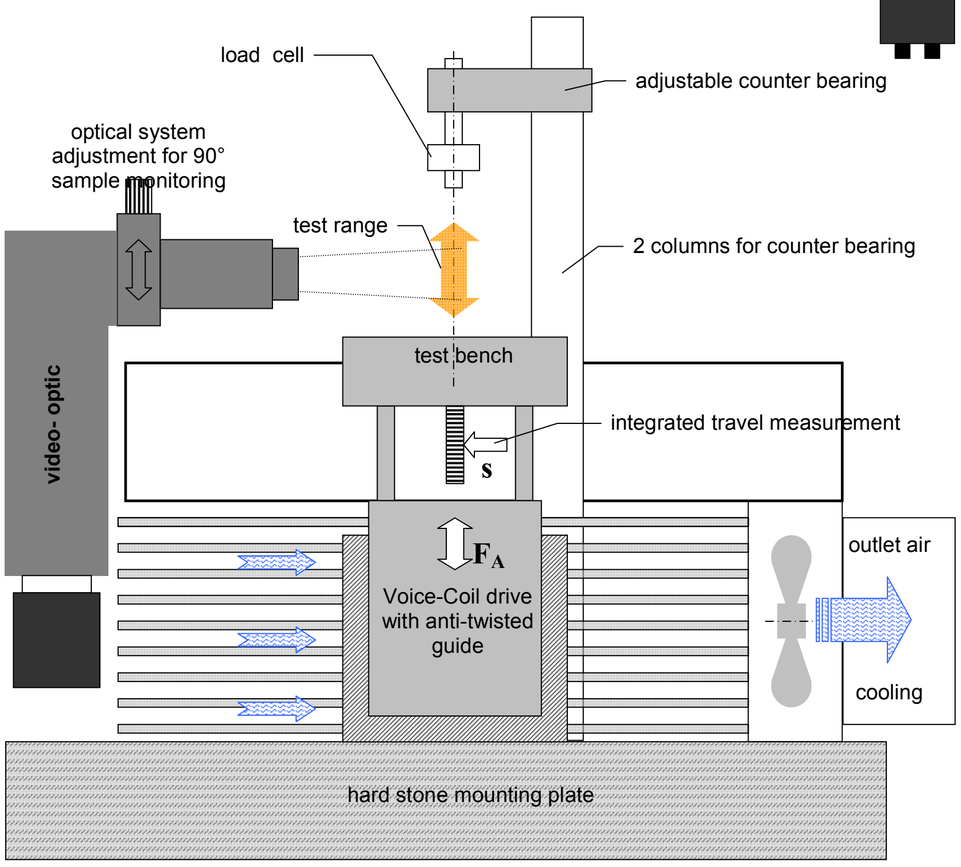
- Management of measuring data and test parameters
- Free programming of the test procedure using block programme
- graphic representation of measuring data as single, measuring series or average curve
- Statistical evaluation
- Integrated video picture and synchronous record to the test
- Processing of input and output signals in the programme sequence
- Stiffness correction
- Data acquisition rate 1 kHz possible



Laser Speckle Extensometer (Option)

- Contact-free deformation measurement without sample marking
- 2 - dimensional strain measurment (lateral and longitudinal strain) in surfaces possible
- Coherent light (Laser 660 nm) falls on an optical swirl
- Acquisition of speckle pattern in an evaluation window and tracing of it in the field of vision of the camera by using a cross-correlation algorithm, which compares two successive patterns

system structure load device



Technical parameters for inspekt micro LC100N

- Special design for working with small sample
- Voice-Coil drive
- Stress test load ±100 N, up to 50 Hz sinus
- Load resolution ±140.000 digits,
  interchangeable sensors (grading 10 N / 50 N / 100 N)
- Travel ±5 mm (10 mm), resolution 0,02 µm, accuracy 3 µm
- Maximal test speed v_{max} = 120 mm/s

- System stiffness with 100 N force sensor 4 N/µm
- Field of view - zoom from 1,2×0,9 mm to 6,5×5,0 mm
- Basic set-up on a hard stone mounting plate with additional fixing options
- Device suitable for clean rooms ISO 14644-1 class 8
  Outlet air backward

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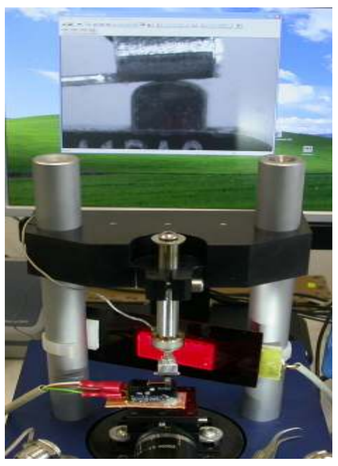
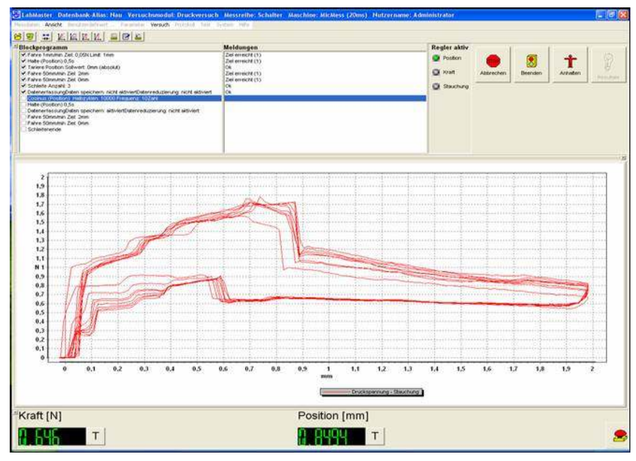
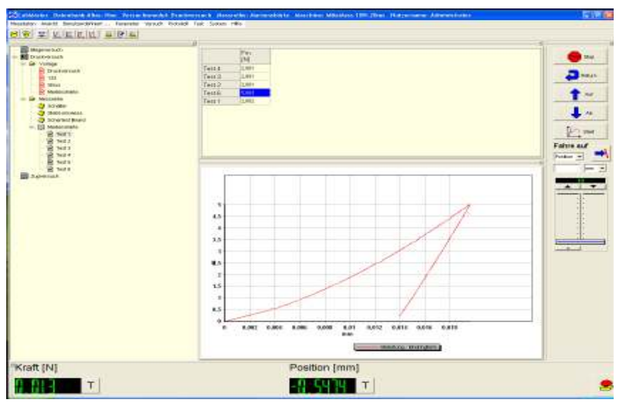
Testing machines for micro system engineering: possible applications



Component tests (micro switch)

- Use of block program for test accomplishment
- Test cycle is automatically saved every 10000 cycles
- The respective 10000 load cycles were done with 10 Hz sinus with 2 mm lift
- Load cycles are not recorded, only limit values are supervised
- The switch is connected to the I/O of the controller and switch points are saved synchronously with the positions



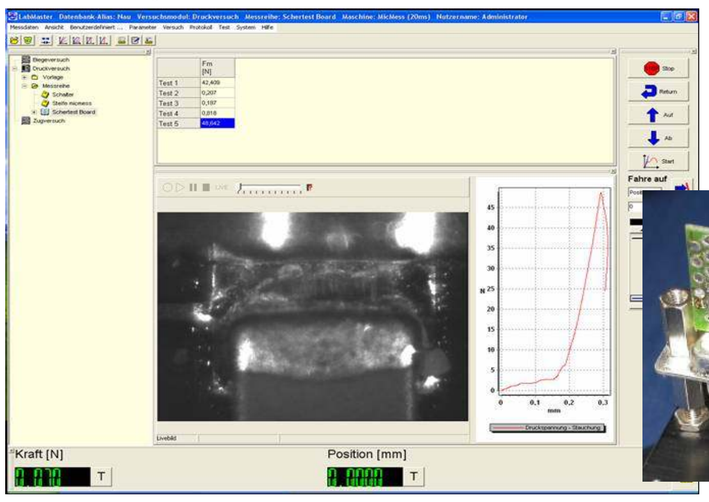


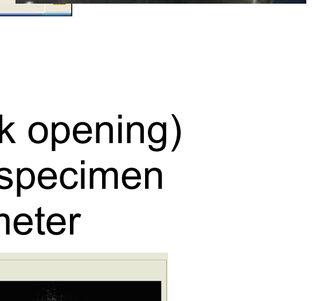
Recording hardness testing and compression tests

- Use of the testing machine for recording hardness testing
- Use of hardness measuring probe with integrated depth measuring system possible
- Use of different indenters (Vickers, ball)
- Adjustment of penetration with machine stiffness using force

Veer test on soldered joints on SMD Board

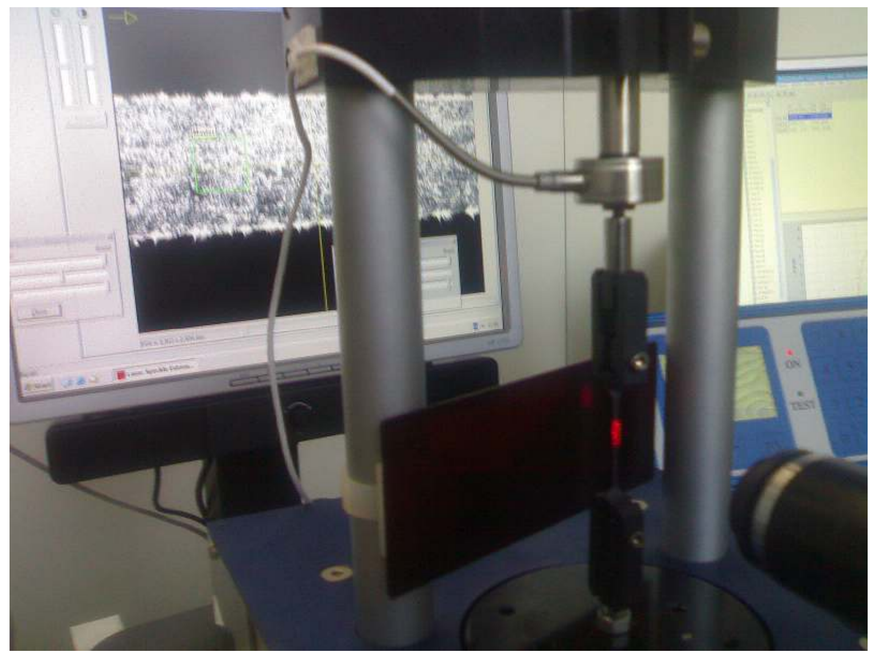
- Positioning of the sample with a X-Y compound table
- Use of different veer chisels possible
- Documentation of component failure with the integrated video module and synchronous record of strain





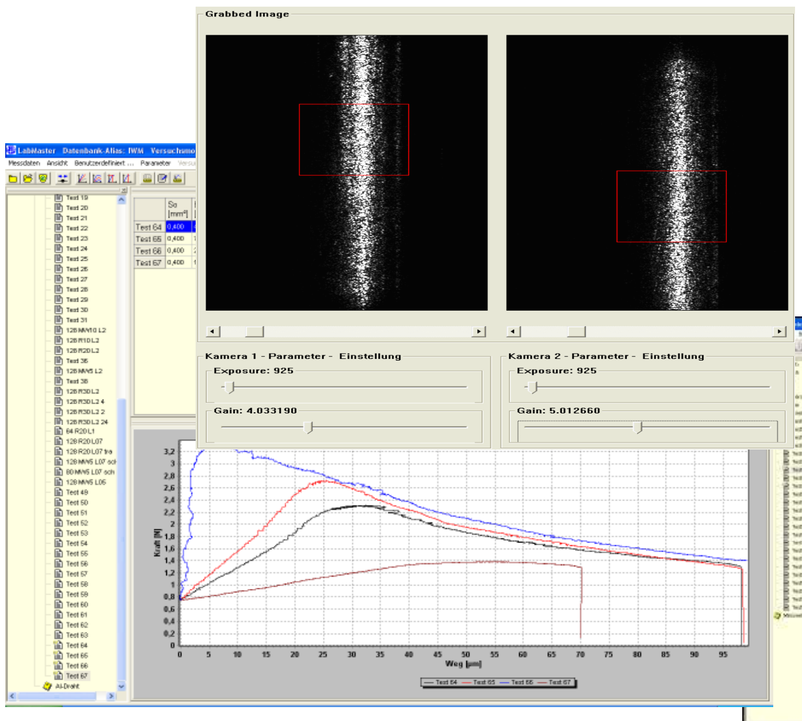
Tensile tests on plane specimen

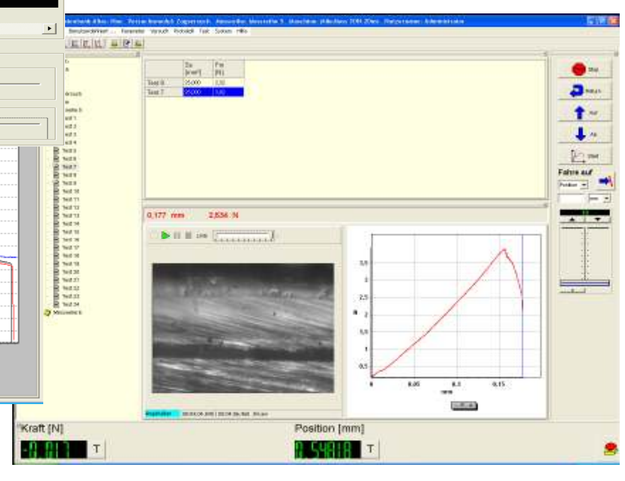
- Elongation measurement directly on the specimen with Laser Speckle Extensometer



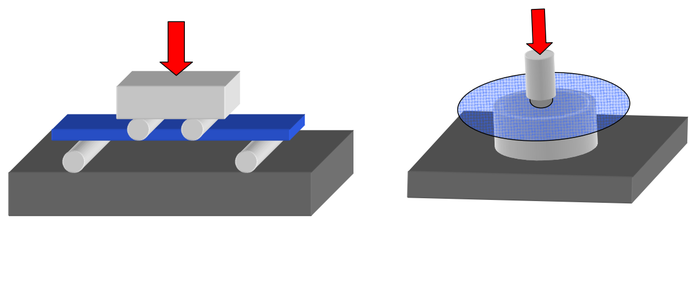
Chevron-Test

- Deformation measurement (crack opening) on the front side of the Chevron specimen with the Laser Speckle Extensometer
- Documentation of the crack opening of the Chevron sample with the integrated video module and recording synchronous to the load



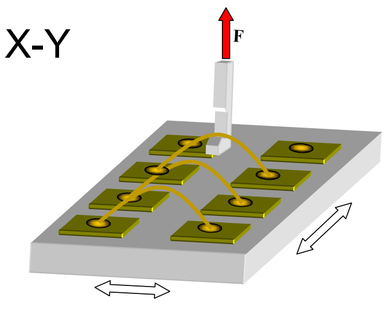


Bending tests on arbors and membranes



Tensile tests on bond landline circuits

- Specimen positioning with X-Y compound table
- Different pulling tools



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