Zwick / Roell

Intelligent testing

How do I find the right extensometer for my application?

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Agenda

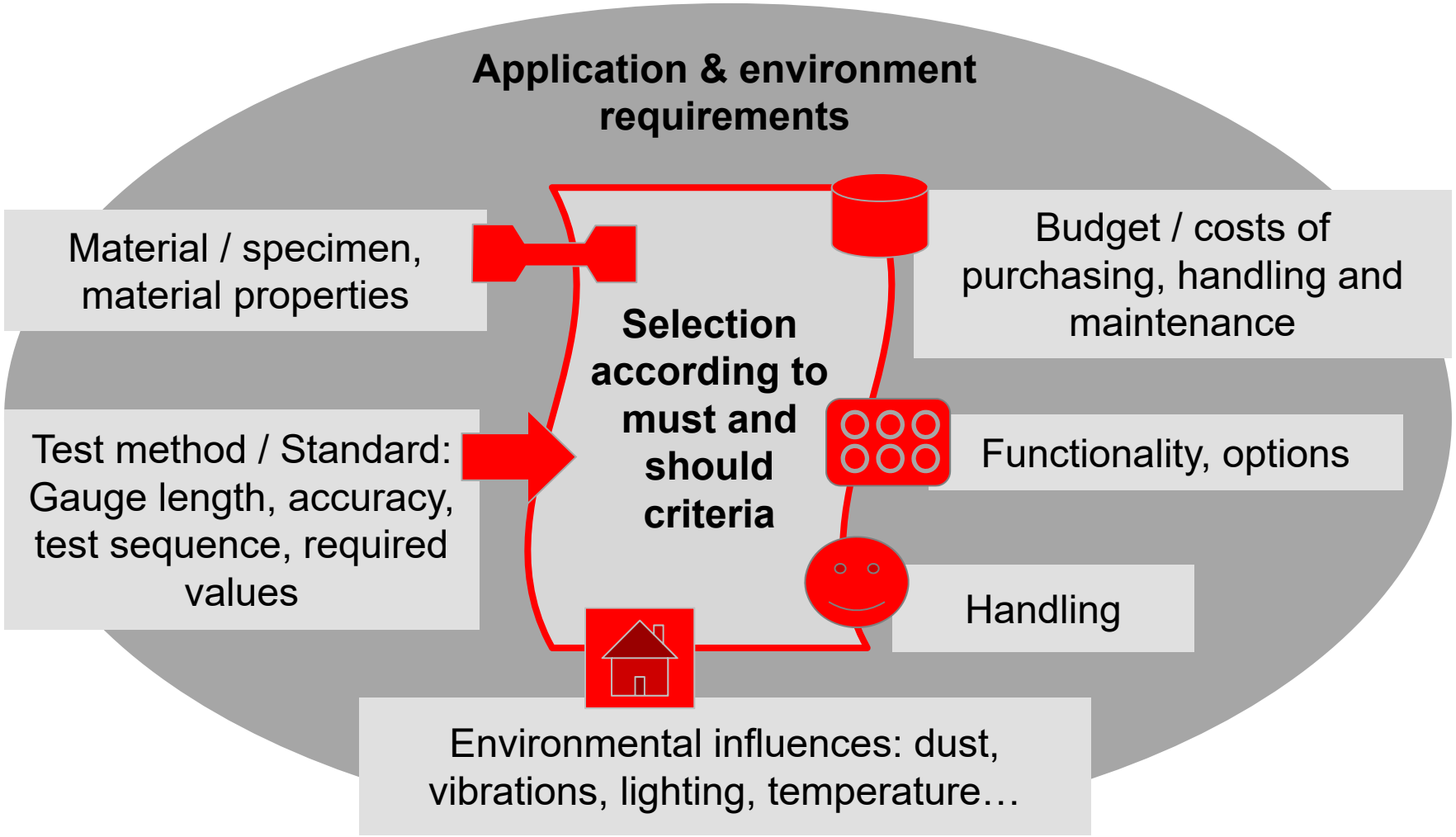
How do I find the right extensometer for my application?

Choosing the suitable extensometer: selection criteria

6 examples for a good choice

Extensometer selection

Choosing the suitable extensometer: selection criteria



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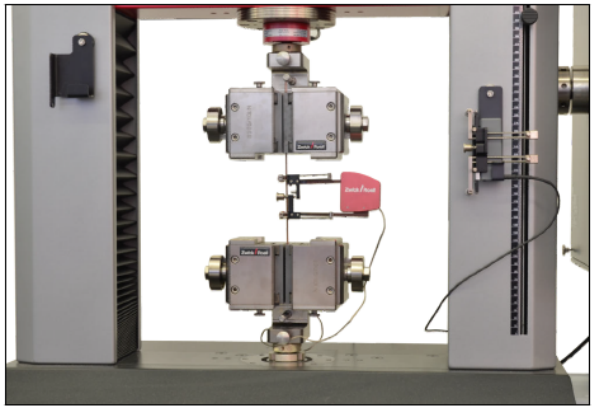
6 examples for a good choice

Example 1

Clip-on extensometer: simple & effective solution for standard metal / plastic tests.

Convenient one-handed operation allows fast, easy attachment and removal

Clip-on extensometer 5025-1, 8040-1 and 7537-1



Reproducible test results by **accurate, lockable setting of initial gauge length** (low user influence)

Automatic alignment at round specimens: prismatic counter-rollers

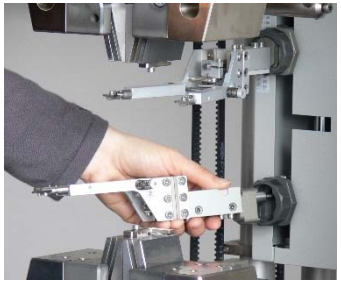
Precise measurement system, high measurement travel

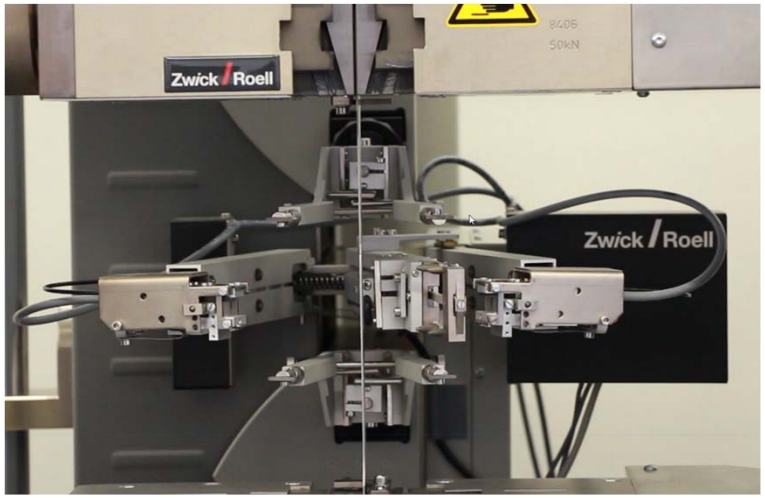
High precision in temperature chamber by compensation of accuracy deviations

Example 2

makroXtens II – a universal extensometer

- Standard extensometer in metals, plastics and automotive industries – more than 6,500 systems installed
- Highly flexible:
  - Tensile, compression and flexure tests
  - Tests in temperature chamber
  - Mechanical and optical transverse strain extensometers / fine-strain extensometers (options)





- User independent: automatic gage-length adjustment and automatic attachment/ removal (optional)
- Robust extensometer, can be used up to specimen failure (Integrated safety mechanism and tilting knife-edges)

Example 3

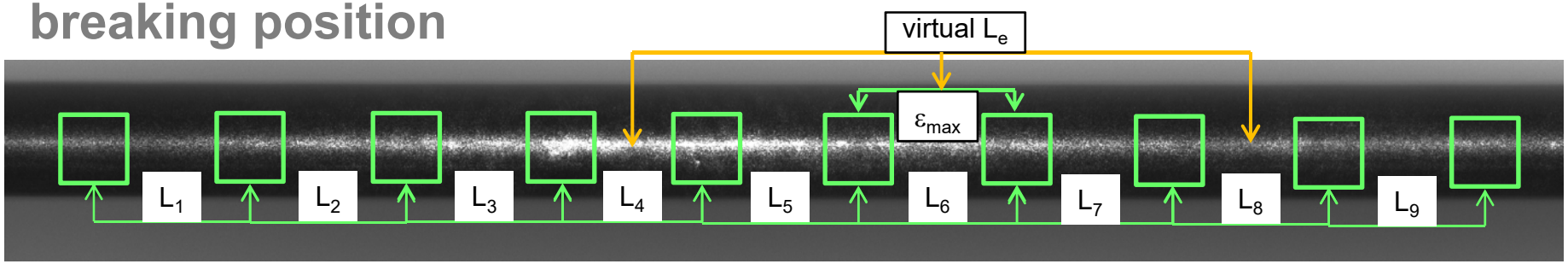
Automatic determination of breaking position with optical extensometers

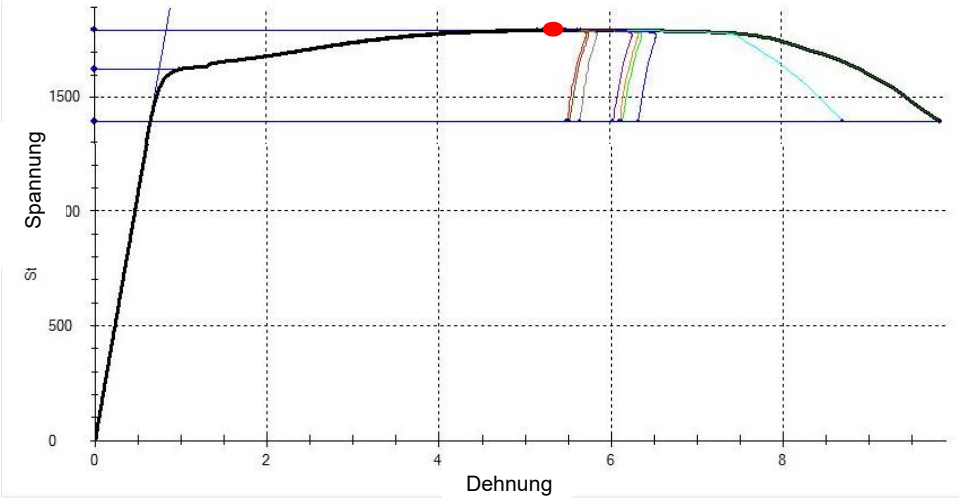
- Testing metals acc. ISO6892: specimen often breaks outside gage length Le → High costs because of wasted time and specimen material

➢ Optical extensometer with option strain distribution = automatic determination of breaking position

Example 3

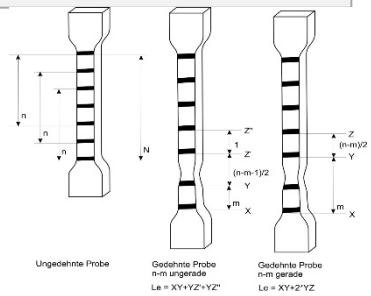
Testing metals with automatic determination of specimens breaking position





- reliable determination of strain at break
- „no“ specimen to reject

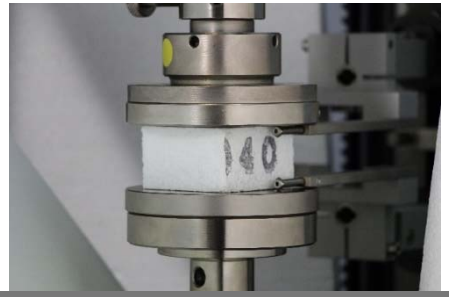
- up to 16 virtual measurement marks, (in-between automatically identical distances)
- during the test: simultaneous recording of up to 15 local strains
- Le is centered automatically around the sector of highest strain → automatic determination of specimens breaking position
- automatic balancing of the virtual Le around the constriction acc. to ISO 6892-1 annex I



Example 4

Changing applications with high accuracy at a testing house: Allrounder multiXtens II HP

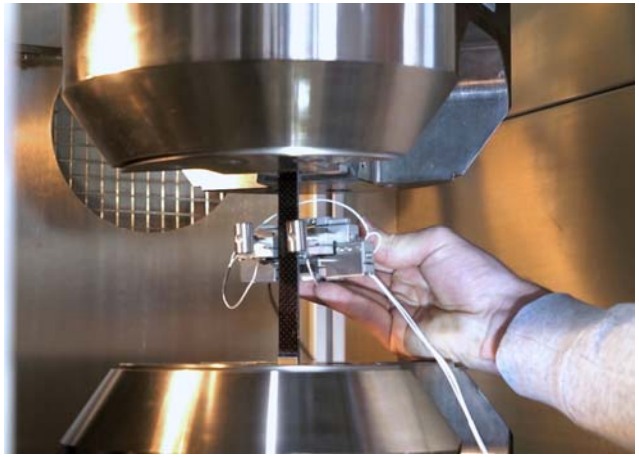
- Only one extensometer that can do small and high strains combined with high measurement accuracy. Class 0.5 combined with large measurement range (700 mm – L0)
- Higly modular and flexible: Tensile, compression, flexure tests, tests in temperature chamber, transverse strain,…
- Fully automatic system, no influence of user

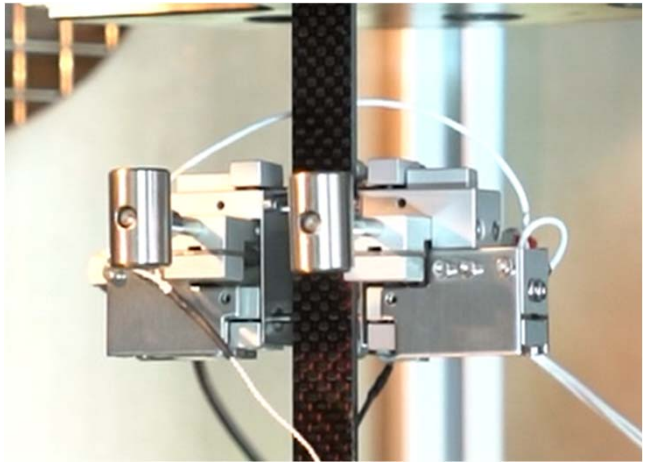


- Automatic test area measurement

Example 5

Efficient but highly precise testing of composites: Clip-on biax 2501-2





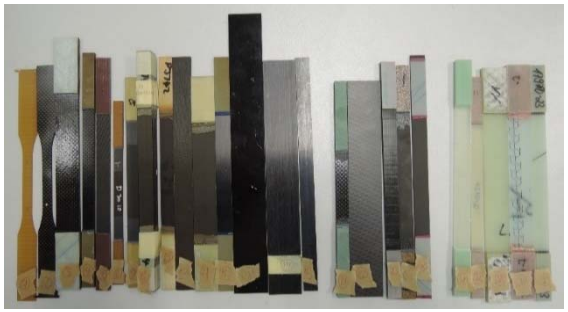
- Biaxial testing: determination of axial and transverse strain of composites
- Determination of the shear modulus (IPS) and Poissons ratio
- Extreme high accuracy in temperature chamber
- One-hand operation, lockable setting of L0
- Device for withdrawing the clip-on in temperature chamber from outside and safety restraint

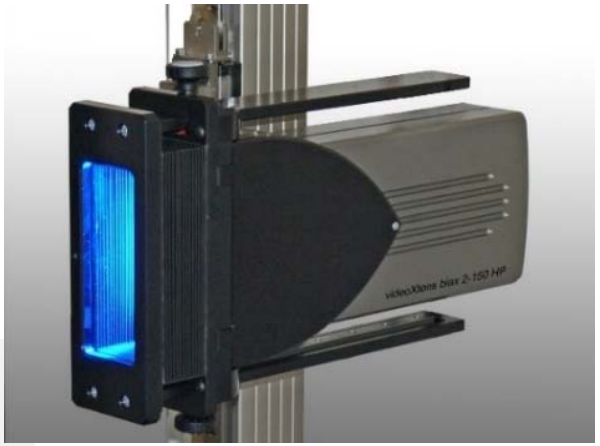
Example 6

One system for typical composite applications & for comparable test results also under temperature: videoXtens biax 2-150 HP & ZwickRoell temperature chamber

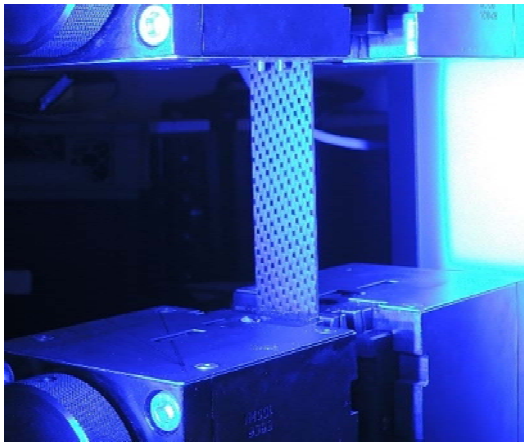
Applications

- Tensile test on composites acc. to ISO 527-4 /-5, ASTM D 3039, ASTM D 4018
- Determination of tensile modulus acc. to ISO 527-1
- Determination of Poissons ratio acc. to ISO 527-1
- Determination of shear strain and/or shear modulus (IPS-test) to ASTM D 5318 & ISO 14129
- 3-/4-point flexure test to DIN EN ISO 14125
- All tests under temperature





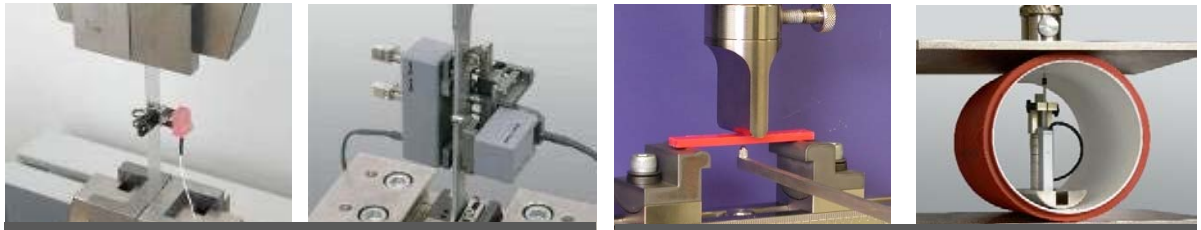
- Fulfills exacting requirements for determination of tensile modulus and Poisson ratio acc. to ISO 527-1 (annex B and C)
- Accuracy of 1 µm for tests under temperature in Zwick Roell temperature chamber
- Marking-free measurement
- Testing up to break



ZwickRoell has the right extensometer system for every application

Feeler arm extensometers

Optical extensometers



Clip-on extensometers

Special transducers

Thank you for your attention!