Zwick / Roell

Prüfen mit Verstand

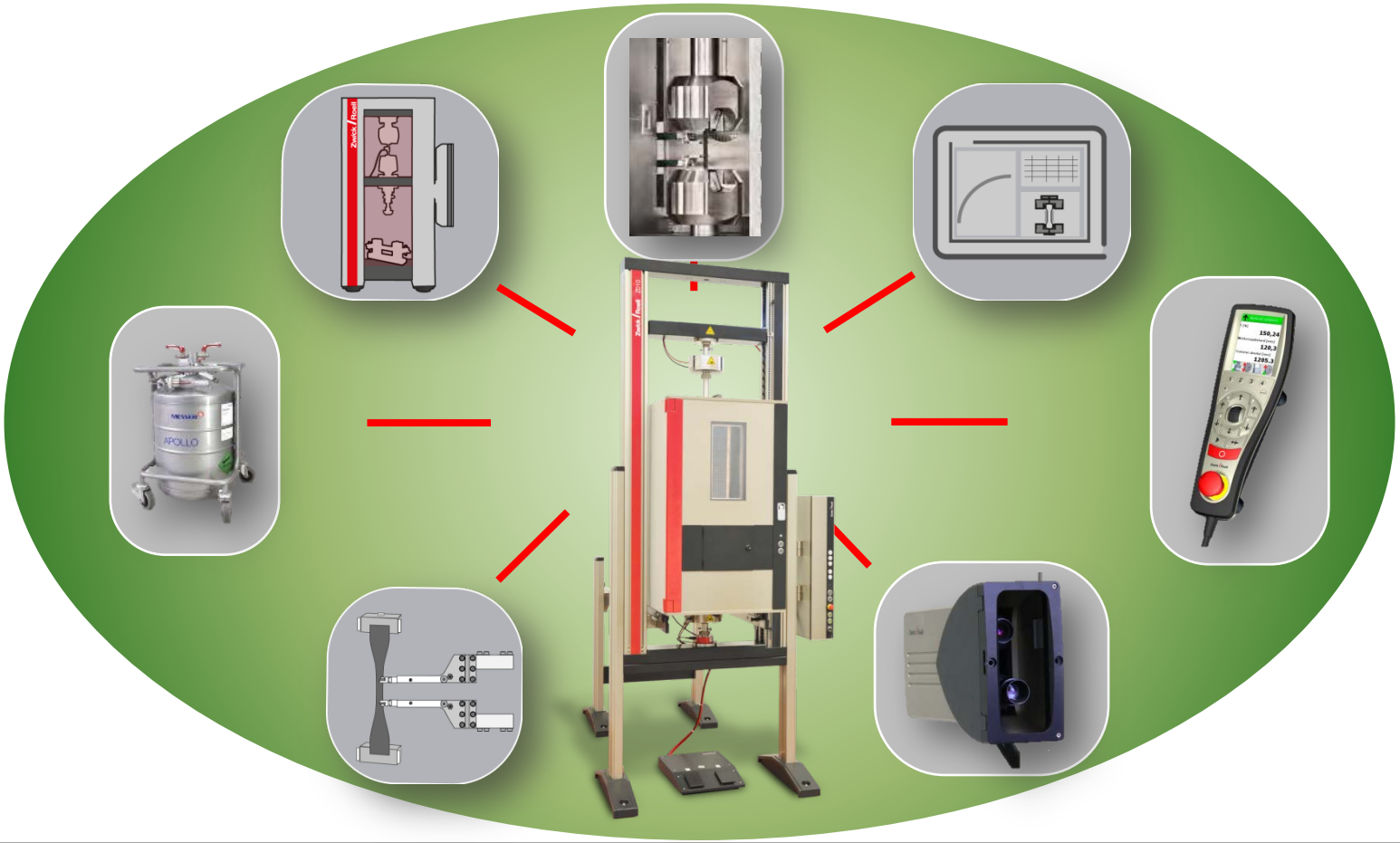
The new temperature chambers - made by Zwick

testXpo 2016

Boris Plach

The new temperature chambers

The new temperature chambers are impressing by the strong functional interaction between all parts of the testing system.



Agenda

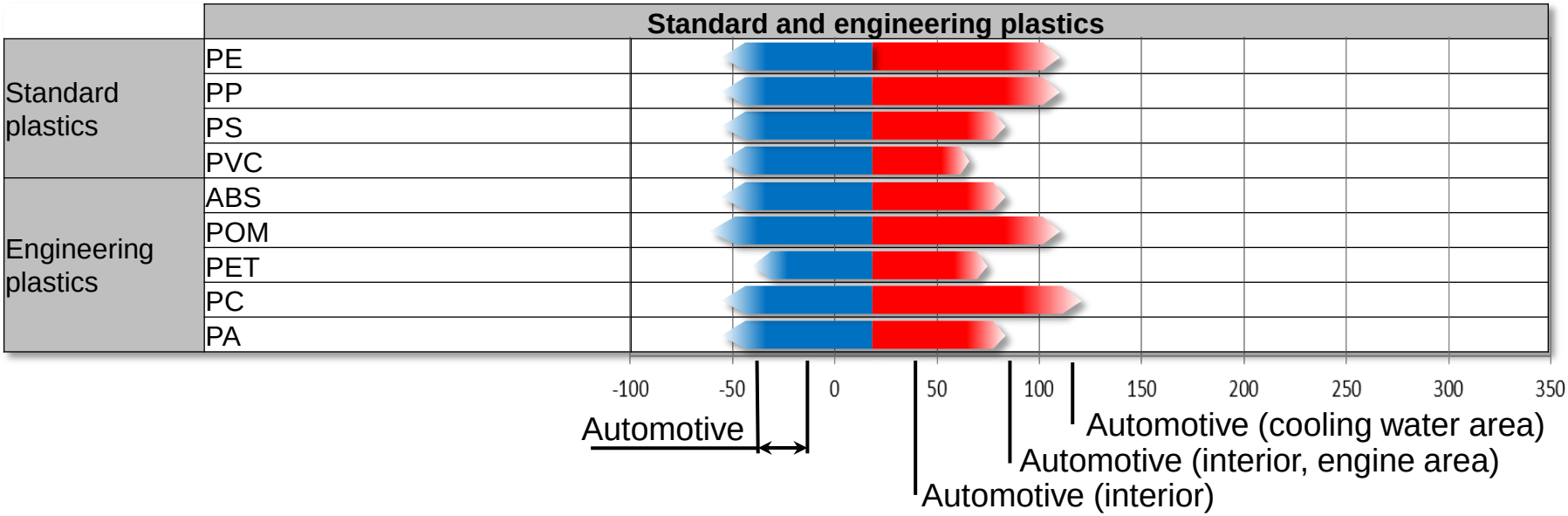
Zwick / Roell

- **Testing of plastics**
- **Testing of elastomers and rubber**
- **Testing of Composites**
- **Customer Values**

  - **Your requirements**
  - **Our solution**
  - **Your advantages**

Requirements - Plastics

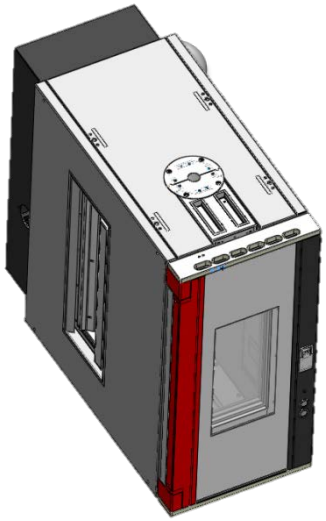
Requirements in the field of standard plastics and engineering plastics.



- Reliable test results
- Flexible and future-proof
- Time and money savings
- High level of operating convenience

Plastics - Optical extensometers

Typical chamber equipment (essential) for tensile tests using optical extensometers.



Temperature chamber

400 x 840mm

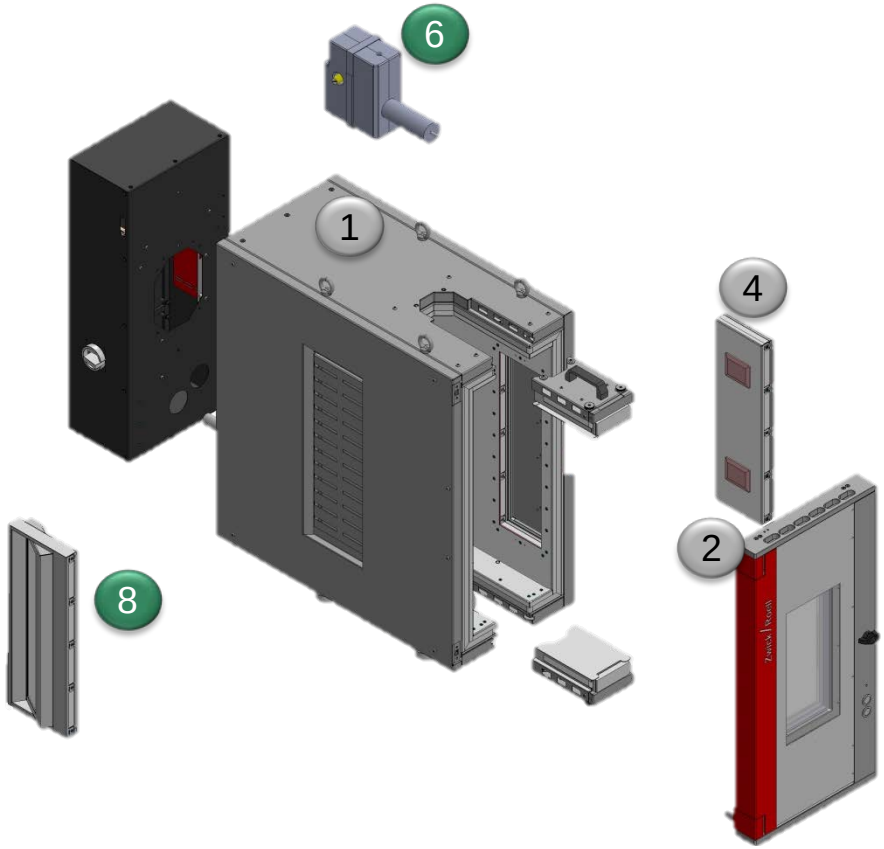
+

videoXtens

lightXtens

Plastics - Optical extensometers

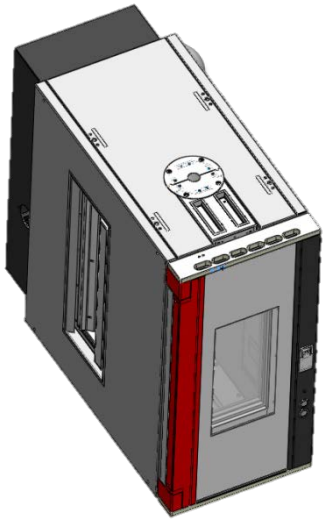
Typical chamber equipment (essential) for tensile tests using optical extensometers.



1. Basic 400 x 840mm chamber with electronics and slides
2. Door
4. Standard lighting module
6. Cooling system
8. Glass module
13. Guide rails without removable rail section

Plastics - Contact-type extensometers

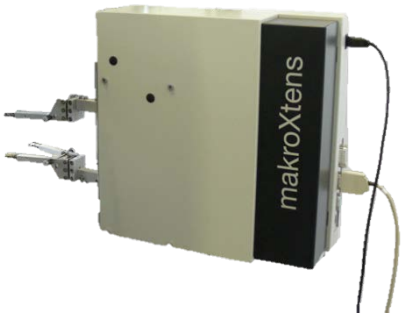
Typical chamber equipment for tensile tests using contact-type extensometers.



Temperature chamber

400 x 840 mm

+

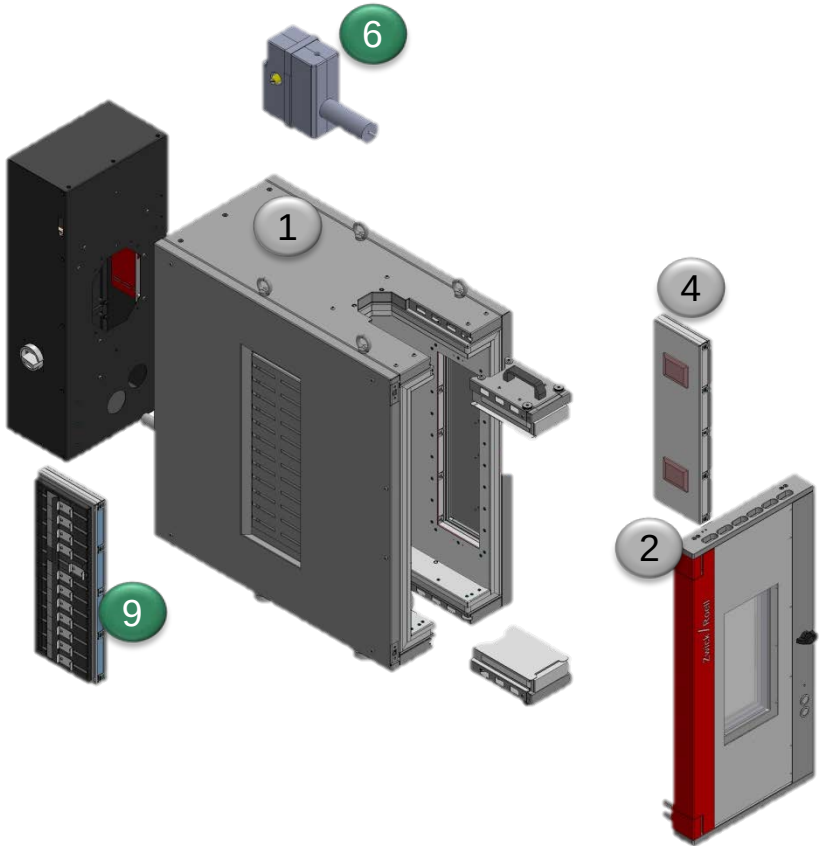


makroXtens

Longstroke

Plastics - Contact-type extensometers

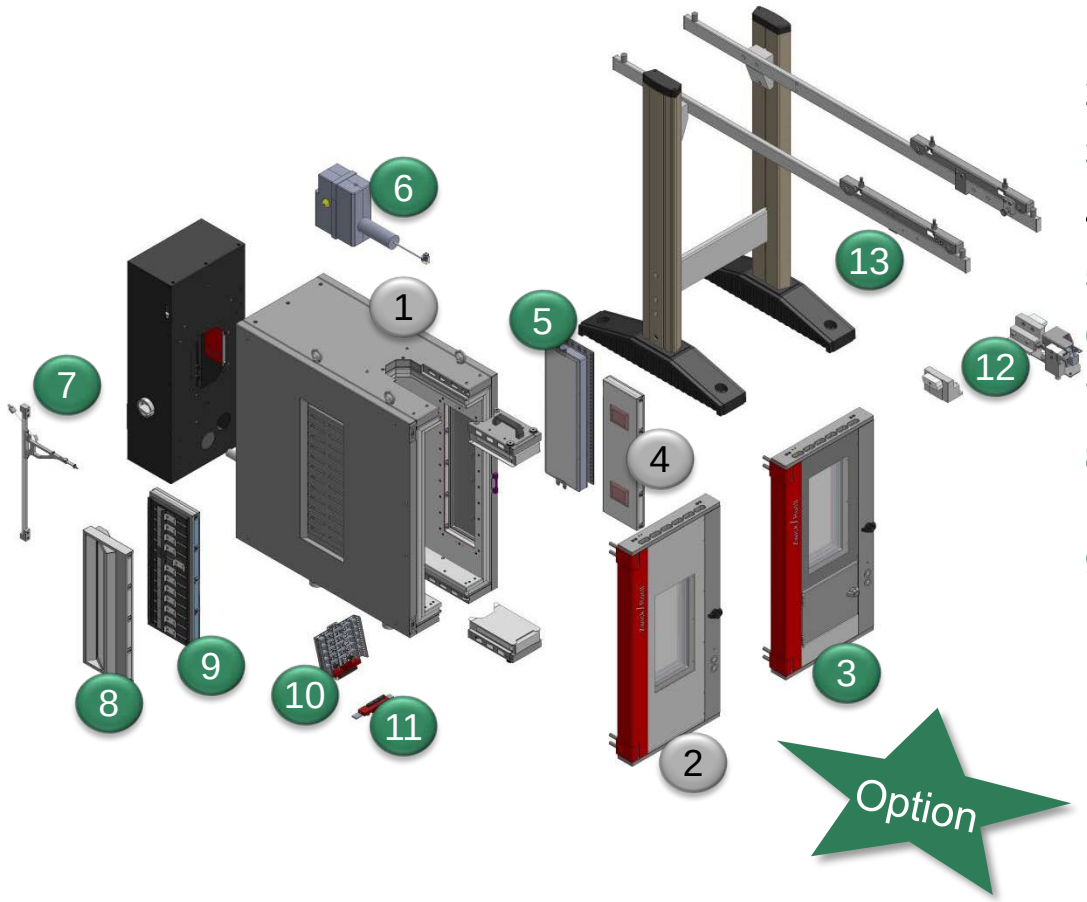
Typical chamber equipment for tensile tests using contact-type extensometers.



1. Basic 400 x 840mm chamber with electronics and slides
2. Door
4. Standard lighting module
6. Cooling system
9. Slide register module
13. Guide rails with removable rail section

Temperature chamber with accessories

The modular concept allows optimum adaptation of the chamber to meet customers' needs.



1. Basic chamber with electronics and slides
2. Door
3. Door with access port
4. Standard lighting module
5. Panel lighting module
6. Cooling unit
7. Specimen-adjacent temperature control
8. Glass module, e.g. for optical extensometers
9. Slide register module, e.g. for contact-type extensometers
10. Specimen magazine
11. Specimen tongs
12. Safety-door switch
13. Slide rails

Innovation - Basic chamber

Low-vibration controllable fan concept ensures precise, reproducible results.

- The new air-circulation concept minimizes influence on extension measurement caused by vibrations and streaks.
  → reliable, standard-compliant test results
  → quiet chamber operation
- Fan rotation speed adjustable via testXpert
  → e.g. for testing films/foils.
- New, improved insulation
  → lower surface temperatures
  → low operating costs (LN_2)
  → less condensation in cooling mode
- Easily removable side-panels
  → all options can be retrofitted on-site
  → integral cable guide
- Advanced control concept
  → temperature control close to specimen
  →Very high temperature accuracy

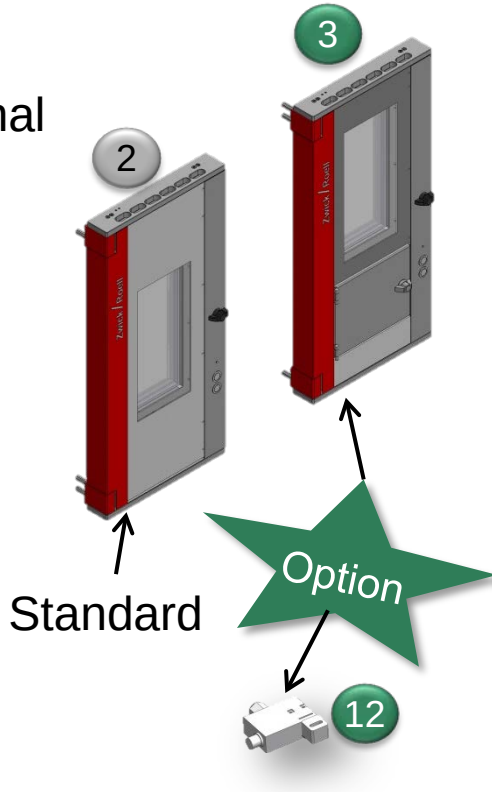
	-80…+40	+40…+100	+125…+180	+125…+250
Gummi ISO23529/ASTM D1349	±2	±1	±2	±2
Kunststoff ISO291/ASTM D618	±2	±2	±2	±3
Metall ISO6892	±3	±3	±3	±3

Innovations - Door variants

Cycle time, safety and design - these are the key tags for the new temperature chamber doors.

- Doors with large, heated windows and design features
  →Free view in the testing area
- The focus is on speed of operation. Option: door with additional access port
  → faster cycle times, lower operating costs
  → uninterrupted view into test area through larger, heated windows (depending on test temperature).
- Safety-door function option, e.g. for testing composites
  →high level of safety

→Modular design allows easy on-site retrofits.



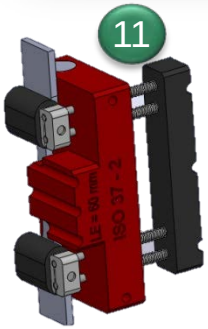
Innovations - Specimen handling

Specimen magazine plus tongs allow rapid specimen changes with no long heating-times plus perfect centering of specimen.

- Magazine can be positioned on an individual basis in the chamber - holds 5 specimens
  →no waiting-times, specimens are preheated
- Magazines are available for diverse ISO and ASTM standards (plastics, rubber and metal)
- Specimens can be placed with the insertion device (11)

  → fast, precise centering of specimen with special specimen insertion device
- Insulated rest for placing 'hot' magazine on outside the chamber

Option



Innovation - Operation

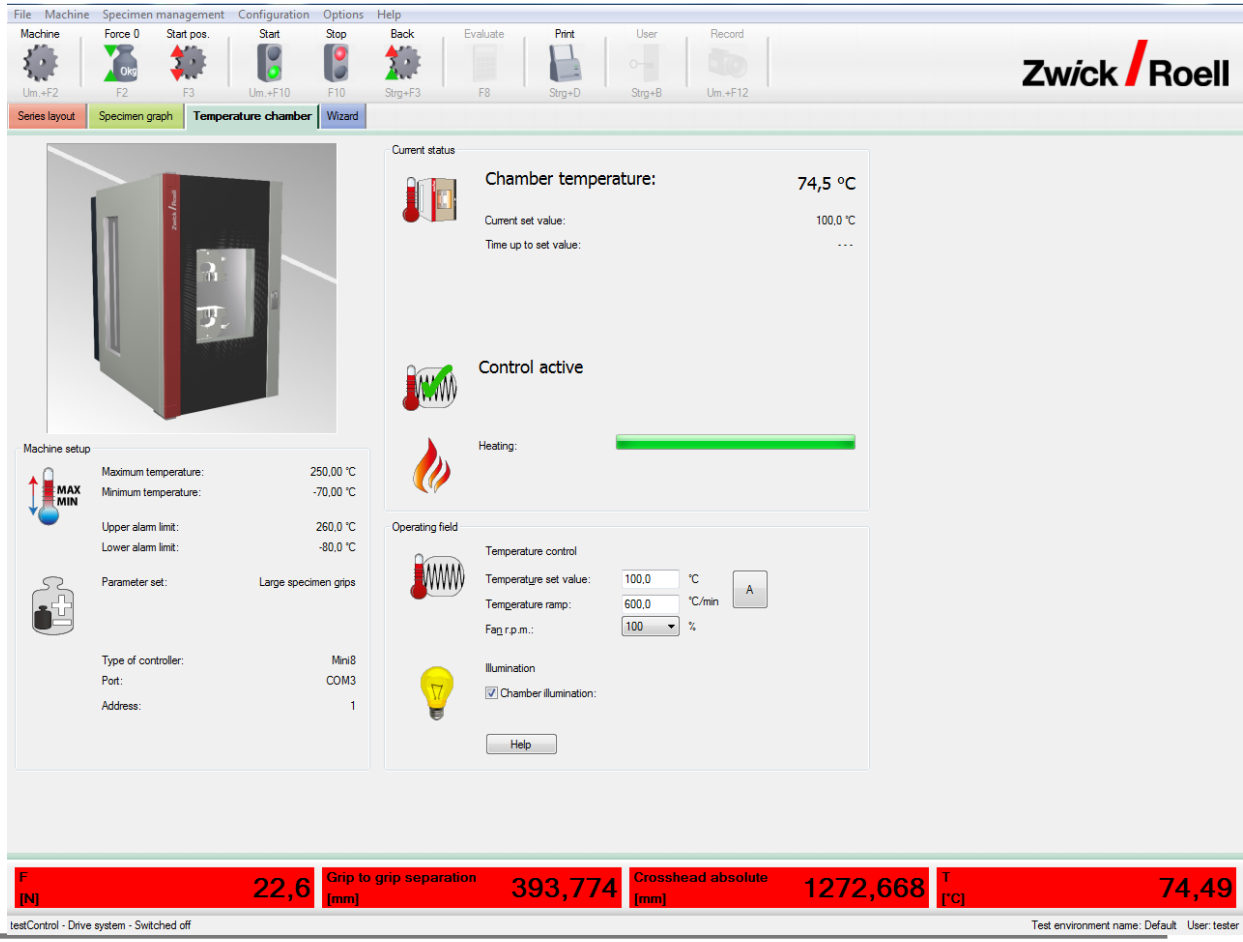
Standardized, convenient and intuitive operation of all chamber functions via the new testXpert control layout with interactive icons.

Operator receives full information on current chamber status directly via testXpert
→Ergonomic and intuitive operation

Preconfigured control parameters
→Accurate and rapid heating-up even with test arrangement changes

All data can be stored
→Traceable
→Reproducible
→Repeatable

Plug & Play
→ The chamber can be used on multiple testing machines



Advantages - Plastics

The new temperature chambers made by Zwick offers you numerous advantages.

Typical equipment

- reliable, standard-compliant test results
- high level of operating convenience via testXpert
- precise temperature control, even with test arrangement changes (tensile test → flexure test)
- fan speed control via testXpert prevents vibration, e.g. when testing films/foils
- future-proof via retrofittable options

Extended equipment

- temperature control close to the specimen ensures the required temperature on the specimen; thermocouple location is via a practical holder (Item 7)
- door with access port and specimen magazine offer time and money savings (Items 3, 10, 11)
- (optical determination of Poisson's ratio possible (Item 5))

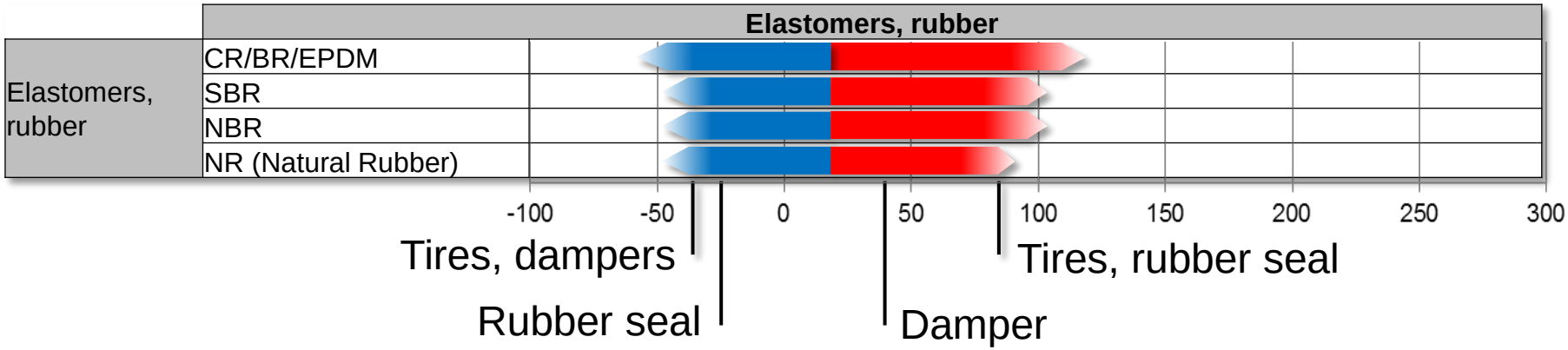
Agenda

Zwick / Roell

- Testing of plastics
- **Testing of elastomers and rubber**
  - Your requirements
  - Our solution
  - Your advantages
- Testing of Composites
- Customer Values

Requirements - Rubber, elastomers

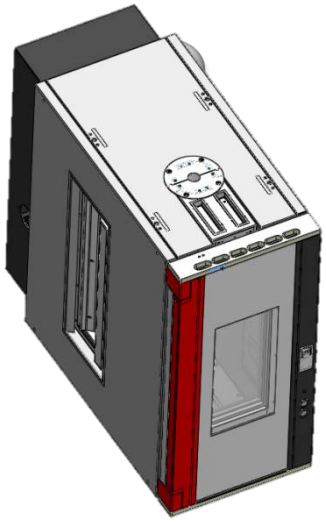
Requirements in the field of elastomer and rubber testing.



- Reliable, standard-compliant test results e.g. as per ISO 23529 and ISO 37
- Flexible and future-proof
- Time and money savings
- High level of operating convenience

Applications - Rubber, elastomers

Typical chamber equipment for tensile tests using optical or contact-type extensometers.



Temperature chamber

400 x 1040 mm

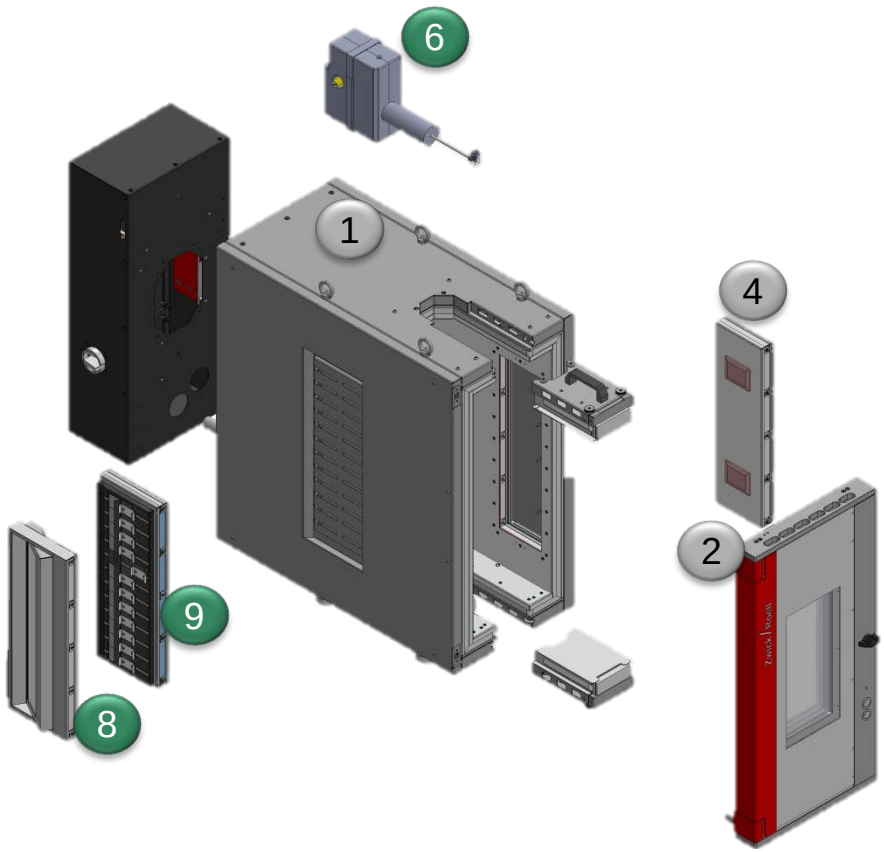
+

lightXtens

Longstroke

Applications - Rubber, elastomers

Typical chamber equipment for tensile tests using optical or contact-type extensometers.



1. Basic 400 x 1040mm chamber with electronics and slides
2. Door
4. Basic lighting
6. Cooling system
8. **Optical:** glass module
9. **Contact:** Slide register module
13. Guide rails
    Optical: without removable rail section
    Contact: with removable rail section

Advantages - Rubber, elastomers

The new temperature chambers made by Zwick offers you numerous advantages.

Typical equipment

- reliable, standard-compliant test results and temperature accuracy, e.g. as per ISO 23529 and ISO 37

  ISO 23529 requires temperature limit deviations with an accuracy of up to +/- 1°C

- high level of operating convenience via testXpert
- future-proof via retrofittable options

Extended equipment

- door with access port and specimen magazine offer time and money savings
- temperature control adjacent to the specimen ensures the required temperature on the specimen; thermocouple location is via a practical holder (Item 7)

Agenda

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- Testing of plastics
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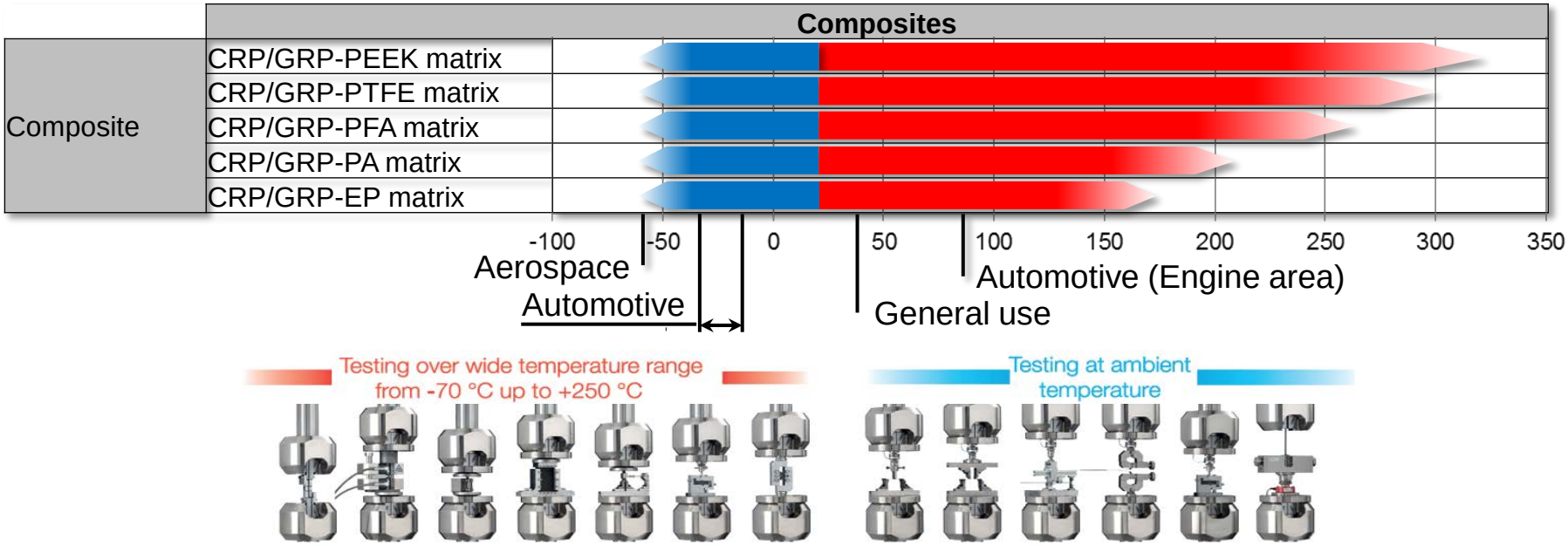
Requirements - Composites

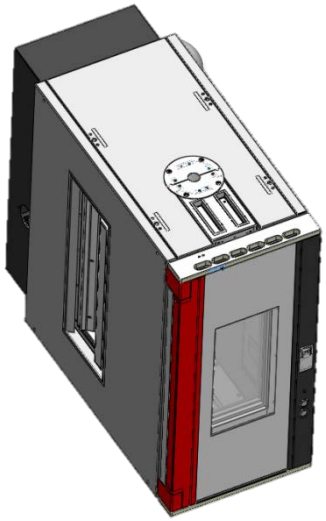
Requirements in the field of composite testing.



- Reliable, standard-compliant test results
- Flexible and future-proof
- Time and money savings
- High level of operating convenience

Applications - Composite

Typical chamber equipment for tensile tests using optical or contact-type extensometers.

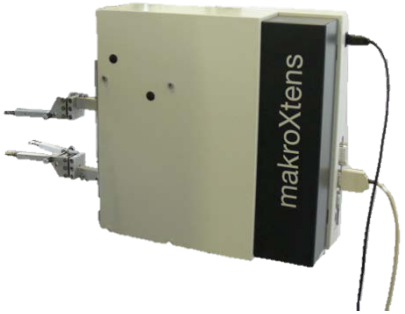


Temperierkammer

600 x 1040 mm

+

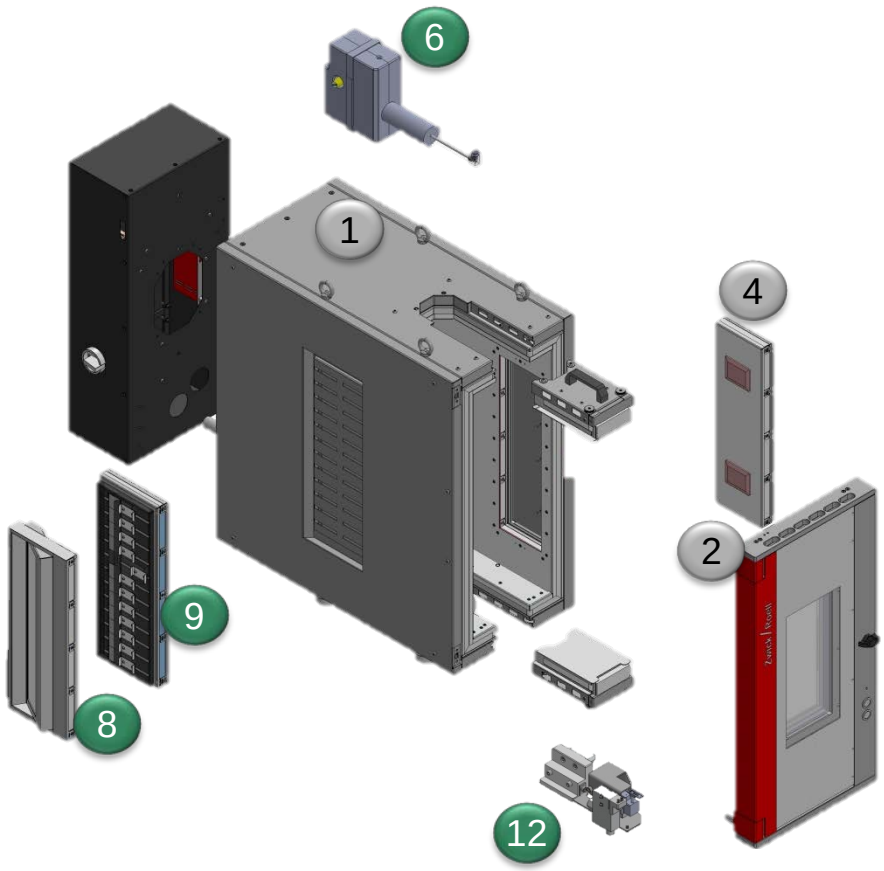
videoXtens



makroXtens

Applications - Composite

Typical chamber equipment for tensile tests using optical or contact-type extensometers.



1. Basic 400 x 1040mm chamber with electronics and slides
2. Door
4. Standard lighting module
6. Cooling system
8. Optical: Glass module
9. Contact: Slide register module
12. Safety door option
13. Guide rails
    Optical: without removable rail section
    Contact: with removable rail section

Innovation - Safety device

The new safety device option ensures a high level of operating convenience.

- Safety-door function option, e.g. for testing composites
  →safety as per machinery directive
  →Chamber position detection and automatic selection of the corresponding safety device

Automatic selection of corresponding safety device

→Modular design allows easy on-site retrofits

Innovation - Lighting variants

Lighting can be adapted to suit customers' requirements. The new optional LED panel-light module allows measurement of transverse strain.

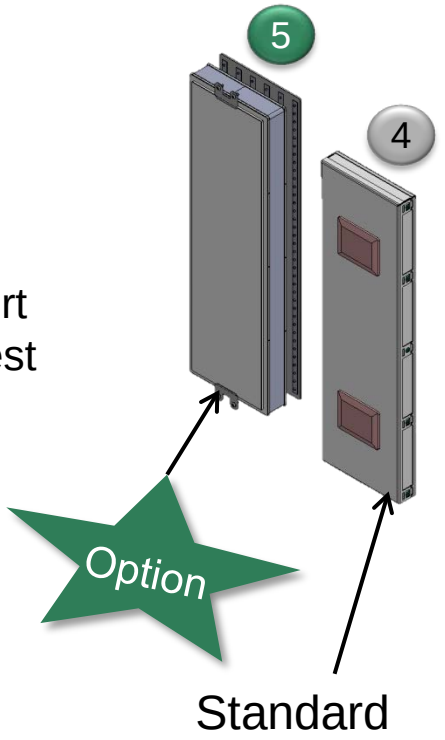
- The lighting modules are located at the front RH side
  - standard lighting module with two lamps
  - option: full-surface LED panel-light module

    →transverse strain measurement with videoXtens up to 30mm specimen width, with cost-effective standard chambers with short delivery time, e.g. for Poisson's ratio or +/- 45° in-plane shear test

    →good illumination of test area, e.g. for video capture

- Lighting switched on and off via testXpert II

  →modular design enables easy on-site retrofits



Advantages - Composites

The new temperature chambers made by Zwick offers you numerous advantages.

Typical equipment

- Reliable test results (accurate, repeatable, reproducible and traceable)
- high level of operating convenience via testXpert and safety door function
- future-proof via retrofittable options
- precise temperature control, even with test arrangement changes (tensile test → flexure test → compression test)

Extended equipment

- temperature control adjacent to the specimen ensures the required temperature on the specimen; thermocouple location is via a practical holder (Item 7)
- door with access port and specimen magazine offer time and money savings (Items 3, 10, 11)
- optical determination of change in width possible, e.g. to determine Poisson's ratio or +/- 45° in-plane shear test (Item 5)

Agenda

Zwick / Roell

- Testing of plastics
- Testing of elastomers and rubber
- Testing of Composites
- Customer Values

Your requirements
Our solution
Your advantages

Customer Values

The new 'Made by Zwick' temperature chambers impress with optimum interaction of all system components.

- **High level of operating convenience**
  All system functions feature convenient, intuitive operation via testXpert II. The control layout adapts interactively to the test sequence and provides direct feedback. All data can be documented traceably with the test series.

- **Reliable test results**
  Optimum integration of the temperature chamber with Zwick extensometry means that reliable test results are guaranteed, regardless of whether optical or contact-type measurement is used. The optional backlight screen enables optical measurement for change of width also.

  To avoid influencing test results for sensitive specimens such as films/foils, the fan speed can conveniently be adjusted via testXpert II during the test sequence.

Customer Values

The new 'Made by Zwick' temperature chambers impress with optimum interaction of all system components.

- **Flexible in use**
  The temperature chamber adapts to suit your application. For example, when changing from a tensile test to a flexure test the appropriate control parameters for the test fixture can easily be called up. Rapid attainment of the exact test temperature is guaranteed, even with widely differing testing applications.

- **Cost and time savings**
  The following features deliver short cycle-times and low operating-costs:
  - specimen pre-tempering in the integral specimen magazine
  - additional access port in door allows rapid specimen change with no significant reduction in temperature
  - fast, precise centering of specimen with special specimen tongs
  - very low energy consumption (cooling and heating)

Customer Values

The new 'Made by Zwick' temperature chambers impress with optimum interaction of all system components.

- **Future-proof**
  If the range of applications is extended, all options can be retrofitted on-site as required.
- **Plug & Play**
  The temperature chamber can be used on multiple materials testing machines. With testXpert II V3.7 the full range of functions is available immediately with no additional software options.