

News & Applications

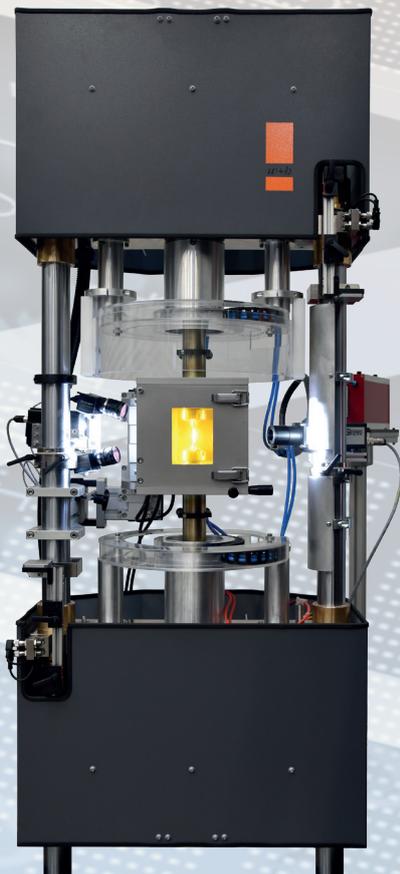
Materials and Components Testing

This year once again we look back on new altitudes we have reached by the development of sophisticated and complex testing solutions at *w+b*. The testing systems we cover with this overview are staying beyond the scope of standard realizations. This would not be possible without our highly qualified specialists and without diligent customers from another side that are constantly striving to the new horizons in materials science and testing techniques.

With pleasure, we are presenting you our novel solutions that we believe are the subject of your interest.

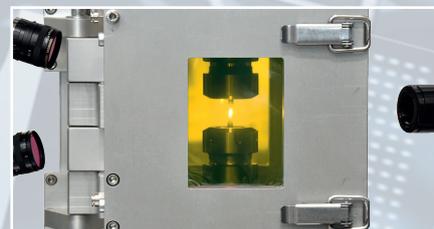
Axial-Torsional Electromechanical Testing Machine LFM-15-T20 for Application on Radiation Beamlines

The high temperature axial-torsional testing system is specifically designed for use on a materials science synchrotron beamline. The system will be used to perform advanced and unique in-situ thermo-mechanical materials studies combining macroscopic and microstructural properties of solids to unveil the fundamentals of structural and functional materials behavior.



The testing system is customized and modular constructed, thus can be adapted for installation and integration on other radiation beamlines. The ultra-high speed digital controller contains five control channels and sixty data acquisition channels with close loop control rate of 14'400 Hz. The testing machine is driven by two electrical actuators designed for symmetrical axial load of specimen that allow the maintenance of an exposed sample volume in the radiation beam during the application of mechanical deformation. Additional two electrical torsional actuators enable the symmetrical torque application on a sample. The specimen, being simultaneously subjected to axial load (± 15 kN) and torque (± 20 Nm), can be rotated within the range of $\pm 110^\circ$ without losing its alignment. This feature is predominantly required for angle scanning during X-ray or neutron tomography and imaging experiments.

The current axial-torsional system is exploited together with a high speed electrical resistive high temperature system up to 1200°C with direct sample heating, by passing a low frequency electrical current through a specimen, while axial load and torque are applied. High speed pyrometer is used for non-contact temperature measurement of stationary or rotating specimen, designed as well for the furnace control. The in-situ experiments are performed inside of specially designed active water-cooled inert gas chamber equipped with a pair of sapphire glasses for optical measurement devices and with two Kapton windows for a passing X-ray beam to minimize its absorption. High precision XYZ-translation stage enables the accurate positioning and alignment of the testing machine in a radiation beam. The application of a specially developed video extensometer allows the continuous measurement of axial deformation and torsion angle of not only stationary samples, but also of rotating specimens. The current testing system is very complex and unique in its kind, therefore can largely contribute to the knowledge of materials science community and move forward the advanced materials studies.



High Capacity Steel Bending and Folding Machine BDM 2000 kN

for Bending, Reverse Bending and Folding of Flat Steel Sheets, Plates and Fracture Toughness Bend Specimens (SEB)



This test system provides high force combined with operator convenience.

Main parts are a vertical servohydraulic long stroke actuator equipped with force measurement system, two horizontal actuators to move and adjust the distance of the lower bend supports, integrated camera system to observe sample cracks, sample handling system and flexible digital control system with application software.

Mandrels of different radii can be easily and conveniently installed as well as lower support rollers can be exchanged. The support distance is automatically adjusted according to pre-defined templates for selected sample. The coaxial integrated camera records the bend sample surface and allows the operator to stop the test once visual cracks in the sample occurs.

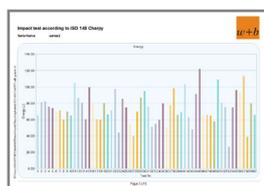
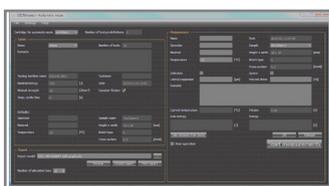
As the system allows testing of large and heavy specimens there is an integrated manual sample handling / loading system that enables the introduction of such bulky specimens easily into the testing machine.

Expandable Pendulum Impact Tester, Series PH Version CHV 200 Now Available up to 900 Joule with Steplessly Adjustable Energy/Velocity

The CHV version of impact testers with adjustable energy and velocity represents a sophisticated series of modular impact testers expandable with instrumented strain gauged striking edges and high speed data acquisition system, patented laser opto-electronic-measuring-system for deflection (bending) and crack opening measurement for the experimental determination of the intensity of stress, K_{IC}/K_{IC}-factor with ultra-high speed ADC board for data acquisition or robot for fully automatic testing in combination with pre-conditioning chambers or without.

The impact testers conform to international standards as ISO 148-1 and ASTM E23, ISO/CD 14556, ASTM E2298 and are suitable for impact bending tests CHARPY and with accessories for IZOD, Impact Tensile and Bruggen tests as well as for sub-sized and DVMK specimens.

The impact tester can be operated without data acquisition software or in combination with DION7Impact platform.



New Cement Testing Platform

Serving the cement and building materials industry for more than 40 years, w+b benefits from vast experience in producing cement testing machines and equipment. Due to our expertise in engineering of complex testing systems we produce and offer complete installations to physical testing laboratories worldwide.

Our new cement testing Platform is the six generation of our D / DB series and includes several enhancements related to ergonomic, advanced control and reliability. These test systems are available as single compression work space with 200, 250 or 300 kN capacity or with additional compression and 10, 15 or 20 kN flexural test space.

They are designed for carrying out compression and bending (flexural) tests on cement and mortar specimens 4 x 4 x 16 cm according to EN 196-1, ASTM C348, C349, compression tests on 50 or 50.7 mm or 70.7 mm mortar cubes after BS 4550 or other types of specimen as cubes, cylinders, cores, etc.



Features:

- Construction design and accuracy according to EN196-1, EN ISO 7500-1, EN 10002-2, NF P18411 Class 0.5
- The compression test assembly is placed between two columns and the flexural testing device on the left side
- Both compression and flexural test spaces are equipped with differential area actuators for the most responsive control, providing smooth and repeatable sample breaking
- Both compression and flexural test spaces are equipped with high precision load cells to achieve grade 0.5 measuring accuracy
- The various compression devices and samples can be placed between the compression plates providing most universal testing virtually without any limitations
- For carrying out compression test on very low stress (load) mortars specimen (4 x 4 cm) a compression device can be easily placed into the flexural test space
- Machine delivered with protection device complies with the machinery directive 89/392/EEC and amending directives 91/368/EEC (29), etc.
- Extensive accessories are available including a range of extensometers



With building material testing software PROTEUS-MT for automatic data acquisition, test performance, storage of tests, print out of test certificates, pre-load drive, unload after specimen break, data export in ASCII file to a network, possibility to enter lab-data. This application software offers many advantages in the field of building materials testing. Test control, data collection, evaluation and reporting capabilities are user-friendly.

Proteus test software offers you both rapid and productive testing as well as specialised applications for advanced testing requirements. The high degree of flexibility brought by template generation with pre-programmed programs according to all relevant standards for testing of concrete, cement etc. and by the test editor allows configuring the program according to exactly needed specifications. Proteus is not only used in cement and ready-mix plants, building material test laboratories, but also for R&D in technical universities. It includes test editor that allows programming complex test sequences with dump-less free control channel change and pre-programmed elements in a simple way.

Package for testing cement, mortar and other binder materials according to all relevant standards as EN196 & EN1015-11 (determination of the compressive and flexural strength), ASTM C109 for the compressive strength of 2" or 50 mm cube specimens, ASTM C 348 for the flexural strength of cement mortars, ASTM 34, BS4450, DIN1164, etc. with automatic test procedure. It including test program editor for virtually free programming of tests sequences according to all standards including complex test sequences

To be prepared for the future, Proteus-MT is available with communication interface to several Laboratory Information Management Systems (LIMS) as:

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|-----------------------|-------------------------|-------------|--------------|
| • LIMS or CIMS of ABB | • Sauter | • La strada | • Lisa Lims |
| • Cobet | • Jouaux | • Limsophya | • FireQ |
| • Dorner | • LIS or PDV Dyckerhoff | • Limsophy | • and others |



Pull-Out Testers for Anchors, Bolts and Nails

This laboratory test system is specially designed for productive execution of pull-out tests on anchors, bolts, nails, pins, screws or other anchoring components.

The AZV series of electromechanical pull-out testers with integrated ball screw drive close the gap between pneumatic and hydraulic drives and offers a leak-free operation combined with compact design.

Units are available with different capacities up to 35 kN.



Features of pull-out devices:

- Compact and weight optimized design
- Integrated pre-loaded ball screw assembly with reduction gearbox for high mechanical resolution and high control accuracy
- With integrated, high accurate load cell for force measurement and closed loop force control
- Integrated digital spindle stroke transducer for displacement measurement and closed loop displacement control
- Handholds with integrated start and stop buttons for ergonomic handling and operation of the unit
- Possibility to configure the system with different electromechanical pull-out units with different load capacities
- Pull-out tester hanging on balancer for convenient and sensitive operation
- Ultra-high speed and 24 bit high resolution digital control system with 14.4 kHz data acquisition and closed loop control rate
- Specialized application software with test-templates for test procedure, data acquisition and protocolling with data export
- Possibility of creating new templates with diverse load rates that comply with different international standards



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