

# Material Testing Machines

2024  
CataLog

  
Your Partner Of Testing & Measuring Innovation Technology

**MATERIAL  
TESTING  
MACHINES**  
Product Overview

# BESMAK

01



1993

It was established in 1993 with an infrastructure in Electronics and Mechanics, and the first domestic control device was developed.



1994

02

The first pulling device was produced, and mass production began.



1995

03

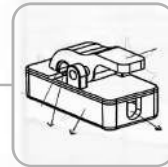


Construction material testing machines were developed, and mass production began.

2001

04

The first sensor was developed, patented for protection, and the first export was achieved.



2014

05



In 2014, the first Export Award was received.

# TIMELINE

2015

06

ODTÜ KTM, Ion Metal, and Besmak collaborated to establish a static and dynamic testing laboratory for welded structures.



2017

07

With DATEM, the first static and dynamic devices for rail systems were developed in Turkey. Additionally, it received the title of the first R&D center in its sector.



2020

08

In 2020, it was involved in Turkey's first earthquake isolator residential project and developed a seismic table.



2022

09

It is the first and only company in Turkey capable of performing both torsion and fatigue tests simultaneously on a single device.



2023

10

It developed pioneering press machines with servo technology in the compact field.



## BMT-E SERIES UNIVERSAL TESTING MACHINE

### • DESCRIPTION

**BESMAK®** BMT-E series Universal Testing Machine designed with a rigid frame in Column type construction. Can perform tensile, compression, bend, creep, and cyclic tests on all raw materials and finished goods. These testing instruments are engineered for precision, built for durability, and offer flexibility for changing requirements. They are designed with features that increase testing efficiency and improve the testing experience for the operator.

### • MAIN FEATURES

- Meets or exceeds requirements of all international standards: ISO, ASTM, BS, DIN, EN, AFNOR
- Convenient working height and ergonomic controls improve operator productivity and comfort
- Remote control unit with Live Display, Soft keys and Specimen Protect for enhanced usability and productivity
- High precision load measurement with sensitive load cell class 0.5
- Load Cells can be replaced according to different load ranges to make much more accurate and sensitive measurements
- Load measurement resolution is 24 bit
- Hydraulic/Pneumatic/Mechanical Grips and several special fixtures can be attached easily to machine



**BMT-E & BMT ES series using SEMATRON comprehensive control system. It is easy to use with its user-friendly interface and is compatible with all devices. 10.1 inch touch panel as standard and other options available. Provided with special Universal testing software installed and templates enable test run in a few simple touches.**



## BMT-ES SERIES UNIVERSAL TESTING MACHINE

### • MAIN FEATURES



- **BESMAK®** BMT-E & BMT-ES series UTM Meets or exceeds requirements of all national and international standards, namely ISO, ASTM, BS, DIN, EN, and AFNOR
- Convenient working height and ergonomic controls improve operator productivity and comfort
- Remote control unit with Live Display, Soft keys and Specimen Protect for enhanced usability and productivity
- High precision load measurement with sensitive load cell class 0.5
- Load Cells can be replaced according to different load ranges to make much more accurate and sensitive measurements
- Load measurement resolution is 24 bit
- Hydraulic/Pneumatic/Mechanical Grips
- Clip-on Extensometer, Semi-Automatic Long travel Extensometer, Fully Automatic
- Extensometer, Video type Extensometer
- Deflectometer, Compresometers
- Special Testing Fixtures
- Fastener Fixtures
- Custom Made Fixtures for special applications
- Thousands of accessories to meet test requirements in almost any application or industry:

- Plastics
- Electronics
- Biomedical
- Automotive
- Elastomers
- Aerospace
- Composites
- Metals
- Textiles and many more..



## BMT-S SERIES UNIVERSAL TENSILE AND COMPRESSION TESTING MACHINE

### • DESCRIPTION

**BESMAK®** BMT-S series Universal Testing Machine, designed with a rigid frame in Column type construction and single workspace. Load measurement is made by a Load Cell. It is suitable for testing long samples or the samples having high strain capacity with its long-range piston stroke. BMT-S series UTM conform to many international standards, including (but not limited to)

- ASTM A370, A615, C39, C109, E4, E8, E9, E290, F606
- ISO 6892-1, 6892-2, 7438, 7500-1, 9513, 15630-1
- BS 4449
- EN10002-1, 10002-2
- JIS Z2241, Z2248 (Contact us for additional compliance information)

### • MAIN FEATURES

- Up to 2000 kN axial force capacity according to customers or/and test application requirement
- Special Electro-magnetic displacement sensor accurately
- An ideal system for testing common sized specimen with non-adjustable crosshead design
- Convenient working height and ergonomic controls improve operator productivity and comfort
- Long stroke, high speed actuator is well-suited for tension applications requiring repetitive testing of similar sized specimens
- Anti-rotation system prevents the actuator from rotating during test stroke
- Choice of hydraulic configuration and machine performance to suit application



**HYDRAULIC UNIT**

## • DESCRIPTION

**BESMAK®** BMT-SD Series Universal Testing Machine, designed with a rigid frame in Column construction and double work/test space. Load measurement is made by a Load Cell. It is suitable for testing long samples or the samples having high strain capacity with its long range piston stroke system.

## • MAIN FEATURES

- Load frame has double workspace, rigid Column compact design and bidirectional movement which make this machine feasible for tensile, bending and compression tests.
- System is suitable for different type and size of flat and round specimens and it has a long movement space
- High precision load measurement and control with load cell of class 0.5.
- Load Cells can be replaced according to different load ranges to make much more accurate and sensitive measurements on small samples.(Additional Load cell is an optional feature which provided on request.)



- System equipped with special wedge type (V type) jaws. Grips can be replaced easily for different types and sizes of flat and round specimens.
- Distance between grips can be adjusted automatically by computer and RMC handheld unit.



## • DESCRIPTION

**BESMAK®** ElectroDynamic series fatigue test machine is a state-of-the-art, electrical actuation test instrument designed for dynamic and static testing on a wide range of materials and components. It includes **BESMAK®** advanced SEMATRON control unit, fatigue-rated load cell, universal static and dynamic software, electrically operated cross head lifts and a T-slottable for flexible test setups. Powered from a single-phase supply it requires no additional utilities for basic machine operation (for example, pneumatic air, hydraulics, or water).

## • MAIN FEATURES

- SEMATRON Dynamic Controller; 10 kHz Data Acquisition
- BESMAK Universal static and dynamic
- Fatigue-Rated Load Cell Accuracy Class  $\pm 0.5\%$
- Non-Contact Position Sensor Accuracy 0.001 mm
- Piston Stroke 100mm (Different stroke range available on request)
- Frictionless Electro-Magnetic actuator
- Highly Rigid Frame with Anti-Vibration Design
- Designed for both dynamic and static testing on a variety of materials and components
- High dynamic performance, capable of operating at over 100 Hz
- $\pm 1000$  N dynamic load capacity
- Electrically powered from single phase main supply, no need for hydraulic or pneumatic air supplies
- Temperature-controlled air-cooling system
- High-stiffness, precision-aligned twin column load frame with actuator in upper crosshead
- Versatile T-slot table for regular and irregular grips and specimens
- Thousands of accessories to meet test requirements in almost any application or industry:

- Biomedical
- Electronics
- Metals
- Elastomers
- Textiles
- Plastics
- Automotive
- Composites
- Aerospace
- and many more...





## • DESCRIPTION

**BESMAK®** Servo-hydraulic systems are the main systems of any laboratory. They can perform a wide variety of low and high cycle fatigue, crack propagation, fracture toughness and other dynamic tests. Each system can be readily configured with appropriate sized servo valve, manifold and hydraulic power unit to suit the particular application. All systems are equipped with the advanced features of the SEMATRON Controller, Dynamic Testing Software and unique fatigue-rated load cells. **BESMAK® Universal™** Dynamic Testing Software provides the backbone for running many dynamic tests. Another application specific software module allows other standardized tests to be run. These dynamic systems, when combined with **BESMAK® Universal™** Dynamic Testing Software and appropriate accessories, are ideal for running a variety of static tensile, dynamic, fatigue, compression, flexure and friction and many more tests.



## • MAIN FEATURES

- Up to  $\pm 1000$  kN axial force capacity according to customers or/and test application requirement
- Designed for both dynamic and static testing on a variety of materials and components
- Highly stiff, floor-standing Servo-Hydraulic load frames for different ranges of force requirements
- High-stiffness, precision-aligned load frame with twin columns and actuator in lower base
- Standard or extra-height frame options available
- Versatile and User-friendly software with powerful test design capabilities
- Digital controllers with high channel density,
- High-capacity and superior configurability
- Special fatigue rated load cell
- Rugged, High-performance grips and fixtures
- Wide range of grips, fixtures, and accessories
- Compatible with a large range of grips, fixtures, chambers, video extensometers, protective shields, and other accessories
- Choice of hydraulic configuration and dynamic performance to suit application
- Advanced **BESMAK® Universal™** Dynamic Testing Software

**• DESCRIPTION**

The BMT-E Series Servo Electromechanical Glass Testing Device is a highly efficient and precise testing system that is designed with a rigid frame in wall type construction. It is equipped with a highly precise and efficient AC servo motor and gapless electromechanical drive system, and a BESMAK electronic control unit. The system is electromechanical motor driven and software controlled via computer, making it easy to use and functional. This testing device can perform a range of testing applications, including tensile, compression, and bending tests with high precision and stability. It can be used in a variety of industries, including automotive, defense and aerospace, medical, iron and steel, building materials, and more. The system is designed to meet the basic universal physical testing needs of many sectors and offers extensive testing flexibility for users to meet changing requirements.

**• MAIN FEATURES**

- Rigid 20 kN capacity wall type test frame
- SEMATRON electronic control unit
- Universal testing software
- A 3-point and 4-point bending test accessory
- A C type tensile jaw with a capacity of 2 kN
- Pull lathe jaw
- Glass tensile jaw



## • DESCRIPTION

BESMAK offers advanced solutions for all varieties of building materials testing, including standard and static testing. Backed by more than 30 years of experience, BESMAK provides the technology and the specialized expertise labs need to perform accurate, repeatable tests that ensure materials and components meet standards. These complete solutions include:

- \* Highly stiff, floor standing servo-hydraulic load frames for a range of force requirements
- \* Intuitive, versatile and user-friendly software with powerful test design capabilities
- Digital controllers with high channel density (8 channels), high capacity and superior configurability
- A new Hydraulic Power Pack (without using servo valves nor ventilation system) able to apply loading, unloading, load control, deformation control, cyclic loading for different functions (Sinusoidal, Triangular, Pulse, etc).
- Rugged, high-performance grips and fixtures

A compression test determines behavior of materials under crushing loads. The specimen is compressed and deformation at various loads is recorded. BESMAK can provide and offer a lot of options for users such as

4-Column and Wall Type Frame Structures, Fully and Semi Automatic, Membrane and Touch Screen concrete compression machines.

BESMAK offers a classical membrane type compression machine without touch screen for its price sensitive customers.

BCO-C/S series compression machines comes with

- \* Rigid welded wall type frame
- \* Hydraulic unit
- \* 2 x 50 and 1 x 70mm distance pieces
- \* 8 channel electronic controller
- \* PC software
- \* Software user manual

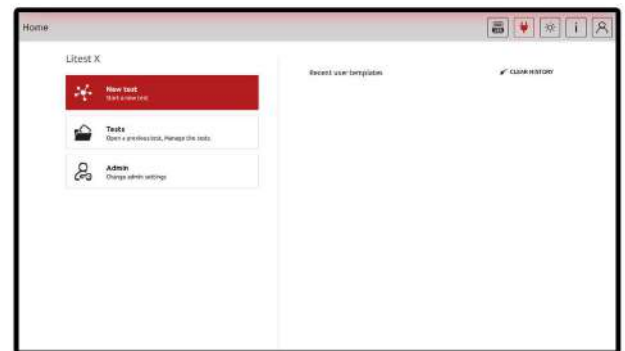


**"Patented Technology,  
Superior Performance"**

## •UNIVERSAL TESTING SOFTWARE

Tests can be carried out on computer by Besmak Universal Testing Software. Real time data, test graphs and results can be observed on software. Results and graphs can be served on computer and printed, User can personalize the software and report format according to company/corporation etc.

Besmak Universal Testing Software Is compatible with Windows7 and higher operating systems. Universal Testing Software provides solutions to all type of test apolications.



## •KEY FEATURES OF SOFTWARE

- User Friendly, easy to use interface
- Meticulously crafted design provides a comprehensive view of the test workspace!
- User can make and save test templates with specific name/test standard etc.
- Automatic Save option for test report and/or raw values
- User defined graph axis to get real time vales of desired sensor
- User defined report setup and results definition
- High speed data display with 2.5kHz data acquisition
- Series test option to combine test graphs and results of multiple samples
- Real time graphic analyzing feature to see graph data point to point
- User can perform tensile, compression, bending, shear and special test easily
- Test settings, templates, sequences, and device settings are easily configured.
- Besmak provides 24/7 online support to our customers.
- Besmak Universal Testing software supports multiple languages
- It has a sample protection feature for sensitive samples.
- Auto tare option for each connected sensor
- Auto positioning and return after test feature for actuator
- Software supports All SI and Matric units for sensors and measurements
- PC connection with LAN and USB cable (both available)



**• CONTROL UNIT**

**BESMAK Test Machines** are controlled by “New generation Sematron V4 Electronic Control Unit”. Sematron Control Unit system is world’s one of the most sensitive electronic control systems and used since 1993. It controls hydraulic and/or electromechanical systems by closed-loop control method. Test can be done with both load and displacement/ deformation control up to 0,1 micron with closed loop control technology. With displacement/ deformation control, user can obtain much more accurate and sensitive readings. Load of failure, strain of failure, max load, max strain, etc. can be obtained real-time at 1 kHz (1000 data/sec).

Load cell, video extensometer, automatic extensometer, etc. can be connected automatically to electronic control units. Besmak Litest X Testing Software and Sematron V4 Electronic Controller can recognize these sensors automatically due to sensor **Eeprom zconnectors, and calibration can easily be done with the software.**

Controller has the excessive load protection system and can detect the failure automatically. Also, user can reset the load at the beginning of the test which gave easiness in daily tests. User can control test, can adjust device settings and can control hydraulic grip by PC software and/or Remote control panel. Tests can be carried out by a single button.

Controller can detect indirect loads before the test (these loads can occur because of grips and mechanical system, etc.) and can prevent them affecting the test results. \*Sample protection feature. Return of piston can be done automatically by electronic controller unit and Remote control panel. Besmak Universal Testing Software has all SI and metric units of sensors. Electronic control unit can be connected to computer via USB or Ethernet. Machine has emergency button which stops the test immediately when activated. User can use the button whenever an unwanted situation occurs.



## • SEMATRON CONTROL SYSTEM SPECIFICATIONS

### Universal digital measurement and control electronics for testing machines

- Analog input amplifier with DC supply and 24-Bit resolution
- Test frequency up to 100 Hz
- Measurement and control frequency up to 1 kHz
- Configuration, calibration and control tuning with PC software
- Suitable for all kind of static and dynamic testing
- 3 channels independent incremental digital sensors
- 4 separated fully differential analog channels
- Analog amplifier Input range: +/- 5 mV to +/- 10 V
- Adjustable filter time with up to 1000ms @ 1 ms system time
- Operating unit remote-control based on RS-485 communication
- Safety emergency system
- 8 channels logical sensors with SI units
- 8 channels controller parameters
- 8 channels linearization each channel up to 12-points
- 4 channels calculated sensors
- 16 channels Universal digital IO
- Control IO feature with selectable functions
- Synchronous Serial Interface input
- ± 10 V analog and digital command output
- Serial interface for external electronics • Monitoring of safety relevant drive signals
- Support of position limit switches
- Grip control feature
- Supply and monitor of drive control signals
- Ethernet and USB communication
- Firmware updating capability



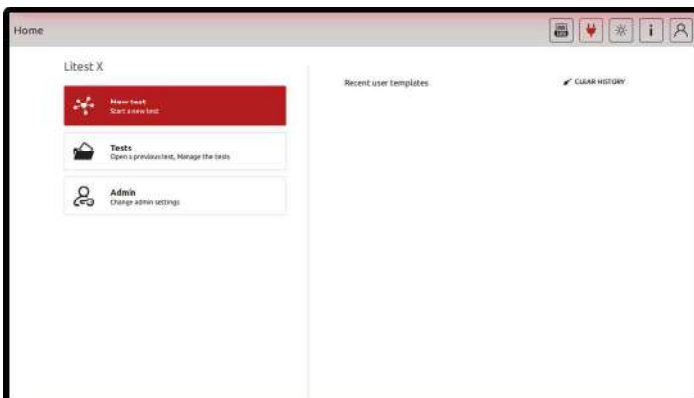
## • FEATURES OF REMOTE CONSOLE

- Remote Control Console for machine controlling via keys and DigiPoti (Smart Key)
- OLED monochrome display to show real time values and status LEDs
- Magnetic rear for clipping to testing machine chassis
- Connecting cable length 3 m for easy and flexible use



## • BESMAK UNIVERSAL TESTING SOFTWARE

Testing at low impact speeds of 2.2m/s requires a larger drop weight; if testing at 6.6m/s is required, acceleration is necessary. This drop weight tester caters for both situations, making it the perfect instrument to satisfy the requirements of a wide range of automotive industry specification standards. The feed and safety concept provides optimum operator convenience and safety. With this drop weight tester pre-conditioned test plates can be inserted and impacted in less than five seconds, allowing many puncture tests to be performed without the need to install a temperature chamber. The instrument can also be used for CAI, Charpy and Izod tests.



## • DESCRIPTION

**BESMAK®** Actuators provide an integrated, high-performance solution to your static & dynamic force generation requirements. Each of the actuator components and options helps simplify the process of designing and building high-performance testing systems. Actuators are used worldwide in demanding vehicle dynamics, structural fatigue, and component test applications.

Actuators are manufactured for years of reliable operation in test systems. Materials are used in such a way that the friction and the stiction are minimized and reliability and wear resistance are maximized. These fatigue-rated actuators are precision-engineered to deliver the strength, durability and versatility required for optimal performance in a variety of structural testing applications.

Actuators are specifically designed to provide the highest levels of fidelity in the application of controlled power.



## • MAIN FEATURES

- Selectable load capacity between 1 kN-2500 kN
- Highest precision and controllability of loadings
- Exceptional life and operational safety  
Minimum maintenance
- Highest quality "Designed, made and proven in Turkey"
- Special-design options are available according to customer/test requirements





### • DESCRIPTION

**BESMAK®** BMT-T Series Torsion Testing Machine is mainly used to test the plasticity of metal wires and ropes under torsion conditions. Surface flaws of steel wires may be shown out during the testing process. It is most suitable for quality inspection of departments related to steel wire. The revolution is displayed on special **BESMAK®** testing software or digital touch screen controller. The revolution values are automatically held at the break of specimens.



### • MAIN FEATURES

- Available in different torque capacities
- Maximum stiffness ensures very accurate high rotation angle measurement resolution over the whole torque range
- High resolution of torque measurement
- High resolution of rotation angle measurement
- Maintenance-free AC servo drives
- Operation with standard BESMAK® testing software and/or touch screen controller
- Designed for production, quality assurance, and research and development
- Maximum flexibility in handling and operation thanks to state-of-the-art software control
- BESMAK's comprehensive range of optional accessories

**• DESCRIPTION**

**BESMAK®** Successful static and dynamic testing deliver the proof for the load capacity of rail/sleepers and their suitability for line sections. The certified quality of modern railway sleeper technology is becoming increasingly significant in the high-speed sector. BESMAK adapts the tests to the specific national and international standards and specimen geometries. Solid test technology is essential when testing perfecttrack systems at speeds over 300 km/h. In contrast to standard solutions, designs customized to the respective specifications offer the clear advantage of sample dimensions and handling is taken into account. BESMAK® servo hydraulic rail and sleepers test machine with 4-column type rigid frame design is feasible to perform bending tests on rail and sleepers samples. Machine can perform load controlled and/or displacement controlled tests for both rail and sleepers. Special sample carriage system is available to make test application easier. The important thing is, the bending test of sleepers can also perform on single machine with same accuracy. Machine can perform static and semi dynamic test applications.

**• MAIN FEATURES**

- Machine capacity: Up to 3000 kN
- Meets or exceeds requirements of all national and international standards; namely ISO, ASTM, BS, DIN, EN, and AFNOR
- Convenient working height and ergonomic controls improve operator productivity and comfort
- 4-columns frame, differential cylinder and high precision load measurement
- Solid cylinder, surface hardened and ground fine for a minimum friction
- Up to 500 mm piston stroke with anti-rotation system
- Fully automatic test execution with preset loading rate
- **BESMAK®** universal testing software

## • DESCRIPTION

**BESMAK®** Sheet metal must have good forming properties. Typical forming processes, such as deep drawing and stretch forming are regulated by standard testing methods.

**BESMAK®** sheet metal testing machines test these properties with drawing forces up to 1,000 kN. Another important but complex test is the determination of the forming limit curve, from which engineers can derive limit strains that should not be exceeded during forming processes.

**BESMAK®** works in close collaboration with highly specialized partners to develop the optical measurement technology required for recording strains during the drawing process.

A great number of further sheet metal forming tests can be carried out using our Universal Sheet

Metal Testing Machines, equipped with suitable testtools:

- Olsen or Persoz cupping test
- Bore expanding test(KWI test)
- Fukuitest
- LDHtest
- Bulge test
- Tests applying drawing speeds up to 30 m/min
- Cupping Tests at temperatures up to 550 degrees C and many more...
- Square cup test
- Deep drawing cup test acc.to Swift
- Engelhardt test
- Determination of the forming limit curves (FLC)



## • DESCRIPTION

Testing at low impact speeds of 2.2m/s requires a larger drop weight; if testing at 6.6m/s is required, acceleration is necessary. This drop weight tester caters for both situations, making it the perfect instrument to satisfy the requirements of a wide range of automotive industry specification standards. The feed and safety concept provides optimum operator convenience and safety. With this drop weight tester pre-conditioned test plates can be inserted and impacted in less than five seconds, allowing many puncture tests to be performed without the need to install a temperature chamber. The instrument can also be used for CAI, Charpy and Izod tests.

## MAIN FEATURES

- Excellent test area accessibility
- No manual opening of safety devices in test area
- Easy, manual feed of cooled specimens
- Fast, safe, easy changeover between different configurations
- Automatic series mode in testXpert III allows series testing with no operator intervention between individual specimens
- Automatic lubrication of striker
- High natural measuring frequency enables accurate test results.
- High data acquisition rate (4MHz) for all measurement channels allows excellent resolution for measured curves.
- Large transient memory allows measured values for brittle and ductile materials to be stored at full resolution.
- Full coverage of AITM 1.0010 energy ranges.



## • MAIN FEATURES

- Accuracy class 1 in accordance with EN ISO7500-1
- For testing of hardened concrete: concrete beams, slabs, and kerbstones:
  - EN12390-5 flexural strength
  - EN1339 concrete slabs
  - EN1340 concrete kerbstones
- Servo-controlled
- Torsional rigid press frame without play, with maximum load up to 1000 kN
- Dual-action low-friction testing cylinder with long piston stroke mounted on the upper crossbeam
- An anti-rotation protection system prevents turning of the piston rod with the upper bending beam and the optionally available load cells
- Adjustable bearing plates are installed in the testing zone
- Linear guides, without play, enable simple and exact adjustment of the bearing plates
- The upper bending beam can be very simply converted from a 3-point to a 4-point testing configuration
- As options, other testing equipment is available for installation
- The drive and control components are located in a separate control cabinet
- Class 1 Measuring
- Piston stroke: Up to 350 mm
- Fast response Real-Time graphic display
- Automatic Calibration feature for all connected sensors
- Users can hold the load at any desired point for a specific time



## • DESCRIPTION

**BESMAK®** Compression pipe testing machine was designed to conduct vertex compression testing with full load testing without impact or blows on tubes and preformed parts which are made of concrete, composite, plastic PVC, steel fiber concrete and reinforced concrete. Test pipes with diameter 200 mm – 4000 mmz

## • MAIN FEATURES

- Control Unit: SEMATRON Closed-Loop Controller
- Capacity: Up to 200 kN
- Displacement Measurement resolution: 0.1 micron
- Displacement Control Speed: 0.0001 - 500 mm/min
- BESMAK Universal testing software
- Convenient working height and ergonomic controls improve operator productivity and comfort
- Remote control unit with Live Display, Soft keys and Specimen Protect for enhanced usability and productivity
- High precision load measurement with sensitive loadcell class 0.5
- Load Cells can be replaced according to different load ranges to make much more accurate and sensitive measurements
- Load measurement resolution is 24 bit



## • DESCRIPTION

The Electromechanical Creep Testing Machine offers a wide range of applications.

• Creep tests • Creep rupture tests • Stress rupture tests • Relaxation tests • Creep crack tests • Definition of individual stepless sequences of load and temperature • Advanced creep- Tests • Creep fatigue tests • Creep strain modeling • Creep ductility • Creep property deterioration due to service exposure • Creep data from component tests • Additional load-, stress- and strain-controlled tests such as tensile, compression, flexure, LCF or fracture toughness • Ambient or elevated temperature • For long term tests (reaching up to 10,000h)

## • MAIN FEATURES

- Up to 1000 kN axial force capacity according to customers or/and test application requirement
- Special Electro-magnetic displacement sensor accurately measures actuator travel at the center of the load string
- Ideal system for testing different sized specimen with adjustable crosshead design
- Convenient working height and ergonomic controls improve operator productivity and comfort
- Long stroke, high speed actuator is well-suited for pipe testing applications requiring repetitive testing of similar-sized samples
- Anti-rotation system prevents actuator from rotating during test stroke
- Choice of hydraulic configuration and machine performance to suit application
- Convenient working height and ergonomic controls improve operator productivity and comfort



## • DESCRIPTION

It is designed to provide solutions for maintaining constant loads for long term creep and stress rupture testing applications of materials in accordance with different standards. These tests can run from only a few hours up to and exceeding 10,000 hours. The long duration of these tests makes the hydraulic system cost-effective and highly reliable. The hydraulic unit pumps oil to the frame and it finishes pumping at a requested constant level. After this process frame starts to apply creep to the specimen by integrated springs.

## • MAIN FEATURES

- Available in different capacities according to test specifications
- Meets or exceeds requirements of all national and international standards
- Convenient working height and ergonomic controls improve operator productivity and comfort
- Absolute-type deformation measurement sensors
- Special creep test software for short-term and long-term creep test
- Extrapolation feature for long-term creep test





## • DESCRIPTION

The Electromechanical Creep Testing Machine offers a wide range of applications.

- Creep tests • Creep rupture tests • Stress rupture tests • Relaxation tests • Creep crack tests
- Definition of individual stepless sequences of load and temperature • Advanced creep-Tests
- Creep fatigue tests • Creep strain modeling • Creep ductility • Creep property deterioration due to service exposure • Creep data from component tests • Additional load-, stress- and strain-controlled tests such as tensile, compression, flexure, LCF or fracture toughness
- Ambient or elevated temperature • For long term tests (reaching up to 10,000h)



## MAIN FEATURES

- Highstiffness, precision and flexibility by 4-columns design and double screw design  
Precise axial alignment according to ASTM
- E 292 by precision crosshead guiding and special seating load train  
Requires no special base or foundation
- Includes vibration isolation with
- Sylomer-dampers under the load frame
- High resolution crosshead resolver and high resolution load channel permits excellent control characteristics
- Precise speed of +/-0.1% of set speed in range of 1µm/h to 100 mm/min measurement (average over 5 sec or 10 mm)
- High durability by use of brushless AC-motors
- Drive control sampling and adjustment frequency 6 ms
- Load capacity 50 kN / 100 kN
- Test area-depth unlimited
- Crosshead strokes 1290 mm
- Return speed 100 mm/min

## • DESCRIPTION

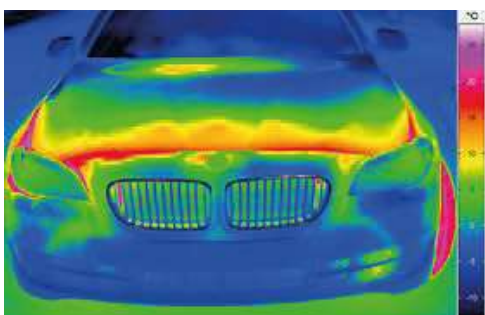
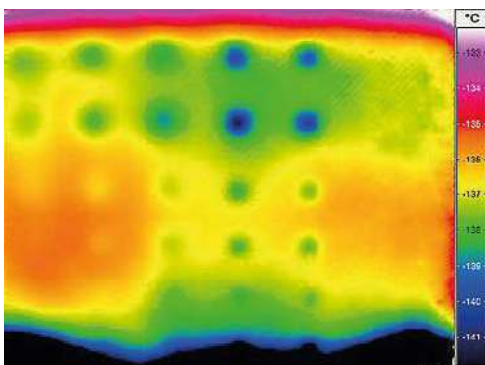
**BESMAK®** A brand new video extensometer, developed by **BESMAK®**, based on the latest Digital Image Correlation technology reaches the latest technology. Hardware device ONE is today's top exciting device for strain measurement. ONE combines high-precision measurement with a user-friendly graphical interface to focus the experiment during tensile, compression, bending, shear, torsion and fatigue testing.



## • MAIN FEATURES

- Default single cam measurement length: 240mm (130mm)
- Default res. ISO9513:Class 1 (Class 0.5) ASTM E83-10: Class B-1
- Gauge Length: Selectable single or multiple gauge lengths
- Data acquisition rate: 75-200Hz
- Axial and radial neck detection
- Torsion testing
- Lighting: Auto-switching light
- The device is stackable. In case you need longer measurement length two or three ONES can be mounted next to each other.
- User-friendly graphic interface - easy to use
- Wide range of digital outputs and protocols
- Easy Upgradable

**BESMAK®** A brand new video extensometer, developed by **BESMAK®**, based on the latest Digital Image Correlation technology reaches the latest technology. Hardware device ONE is today's top exciting device for strain measurement. ONE combines high-precision measurement with a user-friendly graphical interface to focus the experiment during tensile, compression, bending, shear, torsion and fatigue testing.



## Active thermo graphy in materials fatigue testing

- Motivation
- Active thermography
- Thermography in fatigue testing
- High-emissivity paintings
- Conclusion

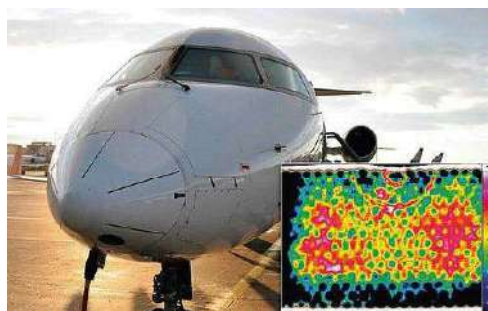
## Fatigue properties

- Material property influencing component lifetime
- Material fracture can occur during its long-time cyclic loading
- Critical in many technical applications - testing required
- Time consuming and expansive testing

## Active thermography testing

- Infrared testing using external excitation
- Defects in a material effect heat transfer processes
- Material response measured by an infrared camera
- Infrared Testing - fast, efficient and non-contact method

Specific thermo-mechanical behavior of materials under mechanical loading brings possibilities for usage of the active thermography for the fatigue properties analysis



## BCO-W SERIES WALL TYPE CONCRETE COMPRESSION TEST MACHINE

### • MAIN FEATURES

- Accuracy is according to ISO 7500-1 class 1, EN 12390-4, ASTM C39
- Suitable for testing 150×150×150, 200×200×200 mm cube and 150×300, 160×320 mm cylinder samples
- Rigid load frame in welded type construction
- Fully automatic compression test machine with close-loop touch screen advanced controller
- Available in different capacities between 250 – 3000 kN
- Automatic user-defined pace rate adjustment with high accuracy
- Upper platen spherically seated to allow an inclination up to 3° for homogenous loading
- Lower platen marked to allow centering of both cubes and cylinders
- Single-acting type piston machined from the solid metal for high stability
- Distance plates for different size samples (10 mm, 20 mm, 50 mm, 80 mm)
- At the end of the test process to start a new test the piston returns to the default position
- Safety door for secure operations
- Fast response Real-Time graphic display
- Automatic Calibration feature for all connected sensors
- User can hold the load at any desired point for a specific time
- Users can perform Module of Elasticity tests according to different standards.  
(This option need Displacement Sensors to read strain)



# BCO-C SERIES 4-COLUMN TYPE CONCRETE COMPRESSION TEST MACHINE

## • MAIN FEATURES

- Accuracy is according to ISO 7500-1 class 1, EN 12390-4, ASTM C39
- Suitable for testing 150×150×150, 200×200×200 mm cube and 150×300, 160×320 mm cylinder-samples
- Rigid load frame in 4-column construction
- The columns are screwed free from play to the machine's upper and lower blocks
- Fully automatic compression test machine with close-loop touch screen advanced controller
- Available in different capacities between 250 – 10000 kN
- Automatic user-defined pace rate adjustment with high accuracy
- Upper platen spherically seated to allow an inclination up to 3° for homogenous loading
- Lower platen marked to allow centering of both cubes and cylinders
- Single-acting type piston machined from the solid metal for high stability
- Distance plates for different size samples (10 mm, 20 mm, 50 mm, 80 mm)
- At the end of the test process to start a new test the piston returns to the default position
- Safety door for secure operations
- Fast response Real-Time graphic display
- Automatic Calibration feature for all connected sensors
- Users can hold the load at any desired point for a specific time
- Users can perform Module of Elasticity tests according to different standards. (This option need Displacement Sensors to read strain)



## BCO-C SERIES SERVO-HYDRAULIC COMBINED COMPRESSION AND BENDING TEST MACHINE

### • MAIN FEATURES

- EN 12390, EN 1339, EN 1340, ASTM C39  
For testing hardened concrete
- Accuracy Class 1 acc. to EN ISO 7500-1
- Consisting of a test frame and a separate control unit
- Capacity: 3000/150 kN (Other capacities also available)
- 4-column frame with side arm for flexure
- Strain test acc. to EN 12390-4
- Compression range 0-3000 kN
- Class 1 measuring range: 60 kN up to 3000 kN
- Other gradations of class 1 measuring ranges possible
- Compression plates dia. 320 mm, hardness min. 53HRC
- With centering on the lower pressure plate
- Protective grid, stop switch on safety guard and piston stroke limiter
- The load frame is arranged for 3-4 points-bending tests
- Bending range 0-150 kN
- Class 1 measuring range 3 kN up to 150 kN
- Other gradations of class 1 measuring ranges possible.
- Fast response Real-Time graphic display
- Automatic Calibration feature for all connected sensors
- Users can hold the load at any desired point for a specific time
- Users can perform Module of Elasticity tests according to different standards.(This option need Displacement Sensors to read strain)
- Test chamber size compression machine 340 mm Piston stroke: 60 mm



# BCE-DP DUAL CAPACITY CEMENT TEST MACHINE

## • MAIN FEATURES

- Accuracy is according to ISO 7500-1 class 1, machines comply to BS, EN, ASTM and ISO standards
- Suitable for testing 40×40×40, 50×50×50 mm cube and a different size of core cylinder samples
- Rigid load frame in 2-column construction
- The columns are screwed free from play to the machine's upper and lower blocks
- Fully automatic compression test machine with close-loop touch screen advanced controller
- Available in different capacities between 100 – 600 kN in the compression side and 1-100 kN in bending side
- Automatic user-defined pace rate adjustment with high accuracy
- Upper platen spherically seated to allow an inclination up to 3° for homogenous loading
- Lower platen marked to allow centering of both cubes and cylinders
- Single-acting type piston machined from the solid metal for high stability
- Distance plates for different size samples (10 mm, 20 mm, 50 mm, 80 mm)
- At the end of the test process to start a new test the piston returns to the default position
- Safety door for secure operations
- Fast response Real-Time graphic display
- Automatic Calibration feature for all connected sensors
- Users can hold the load at any desired point for a specific time
- Users can perform Module of Elasticity tests according to different standards.
- (This option need Displacement Sensors to read strain)



# BMT-DP ELECTROMECHANICAL COMPRESSION & BENDING TEST MACHINE

## • MAIN FEATURES

- Meets or exceeds requirements of all international standards: ISO, ASTM, BS, DIN, EN, AFNOR
- Convenient working and ergonomic controls improve operator productivity and comfort
- Load measurement resolution is 24 bit
- High precision load measurement with sensitive load cell class 0.5
- Load Cells can be replaced according to different load ranges to make much more accurate and sensitive measurements
- Feasible to attach different grips and fixtures for compression and bending applications
- Fully automatic closed-loop configuration with integrated PID
- Touch screen controller with advanced testing features
- User-defined adjustable test speed (Load or displacement/deformation controlled) according to test standards

### Applications

- Tiles
- Ceramics
- Concrete
- Plastics
- Composites
- Wood and any more...





## BMT-25VT SERIES BAR CAPACITY VALVE PRESSURE TEST MACHINE

### • DESCRIPTION

The greatest cost associated with valve inspection, testing and repair, is the time consumed with the valve test setup and breakdown. The hydraulic actuation of clamping arms secures the valve on the uniquely designed Table of Pressure seals immediately after the valve has been placed on the bench. The **BESMAK®** Valve Test Bench, operated by one person, can secure the valve, pressure test both seating surfaces, test the bonnet and the stem packing, and release the valve within two to five minutes. Experience has shown that one operator, with one **BESMAK®** Valve Test Bench, can test valves up to ten times faster than using conventional testing methods. In some cases, it is equal to installations using as many as eleven test shop personnel and six work stations.

### • MAIN FEATURES

- Clamping: Manual fast clamping system
- Clamping force: 50 to
- Clamping range: DN10-DN400 1/2" - 16"
- High pressure air/gas inlet
- Stainless steel control cabinet
- Anodized, acid proof front panel
- Stainless steel tubing PN600
- Gauge quick connection
- METERS precision needle valves
- Bubble counter (DIN/EN, ASME and API)



## • DESCRIPTION

**BESMAK®** BMT-ST Shaking Table is designed to perform earthquake simulation in a workshop or lab to test earthquake effects on different products. It has a rigid base frame and a moving table that is connected with an Electro-Mechanical or hydraulic actuator controlled by **BESMAK®** dynamic controller and simulation software.

### **BESMAK®** Seismic Simulators

Across the globe, civil engineering researchers rely on **BESMAK** simulation technology and expertise to accurately replicate earthquake ground motions in laboratory settings. They deploy **BESMAK®** seismic simulators to evaluate the behavior of everything from small structural components to fullscale structures under true earthquake conditions. This robust uni-axial and multi-axial systems help governments and research organization ensure the safety, durability and reliability of buildings, bridges and a wide array of other civil structures.

## • MAIN FEATURES

- Capacity: Up to 500 kN
- Load accuracy class: 0.5%
- Position resolution: 0.1  $\mu\text{m}$
- Special **BESMAK®** dynamic controller and simulation software
- Servo-Hydraulic or/and Electro-Mechanical actuators
- Dynamic speed up to 1000 mm/s
- Heavy duty and reliable
- Easy to operate, control with computer and remote control

**BESMAK®** special-purpose Seismic Simulator systems

**BESMAK®** Special-purpose Seismic Simulators are designed to evaluate specimens that are either too large for other simulators or specimens that can be evaluated with fewer degrees of freedom. A Special-purpose simulator can be more economical than a full six degree of freedom system.

- » Biaxial bridge testing
- » Uniaxial wall testing
- » Seismic isolator testing



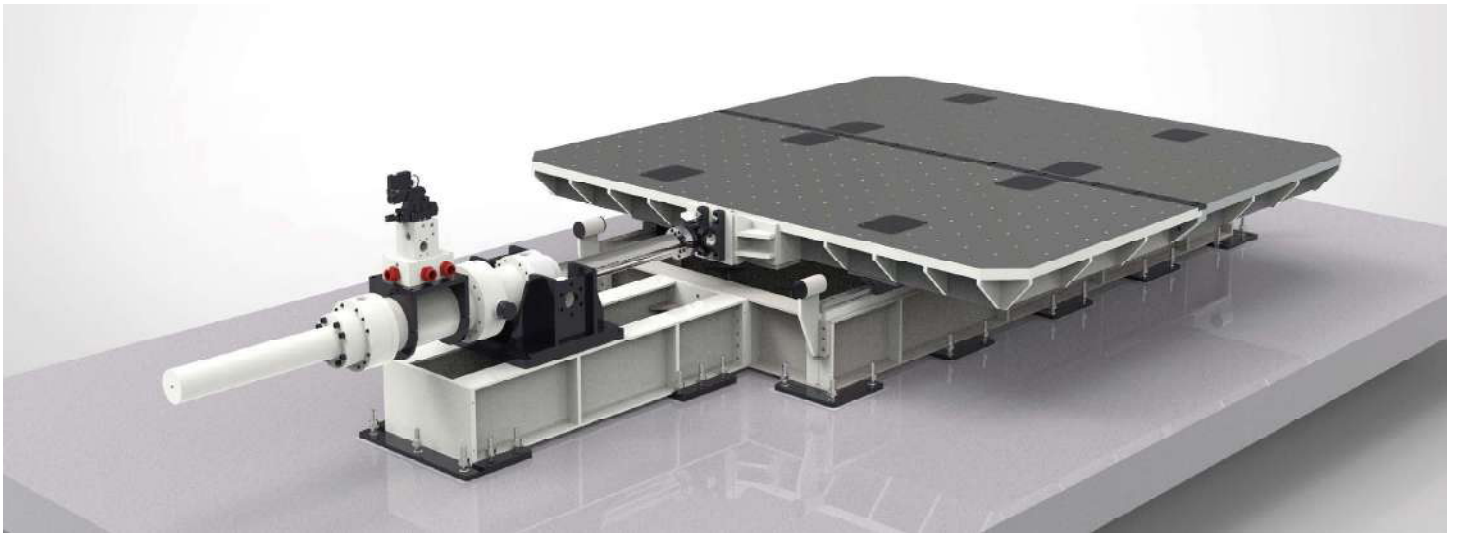
## • DESCRIPTION

### **BESMAK® Uniaxial Seismic Simulators**

**BESMAK®** 1.5 and 3.0 meter Uniaxial Seismic Simulators evaluate the performance of structures during earthquake conditions with superior quality and reliability, at a lower price than comparable systems.

**BESMAK®** Uniaxial Seismic Simulators offer compact, safe, and integrated solutions for your lab's growing seismic testing needs. These systems are ideally suited for:

- » Performing basic research and component qualification tests.
- » Quick installation and integration into existing systems.



### **Full Sixdegrees-of-freedomSeismic Simulators**

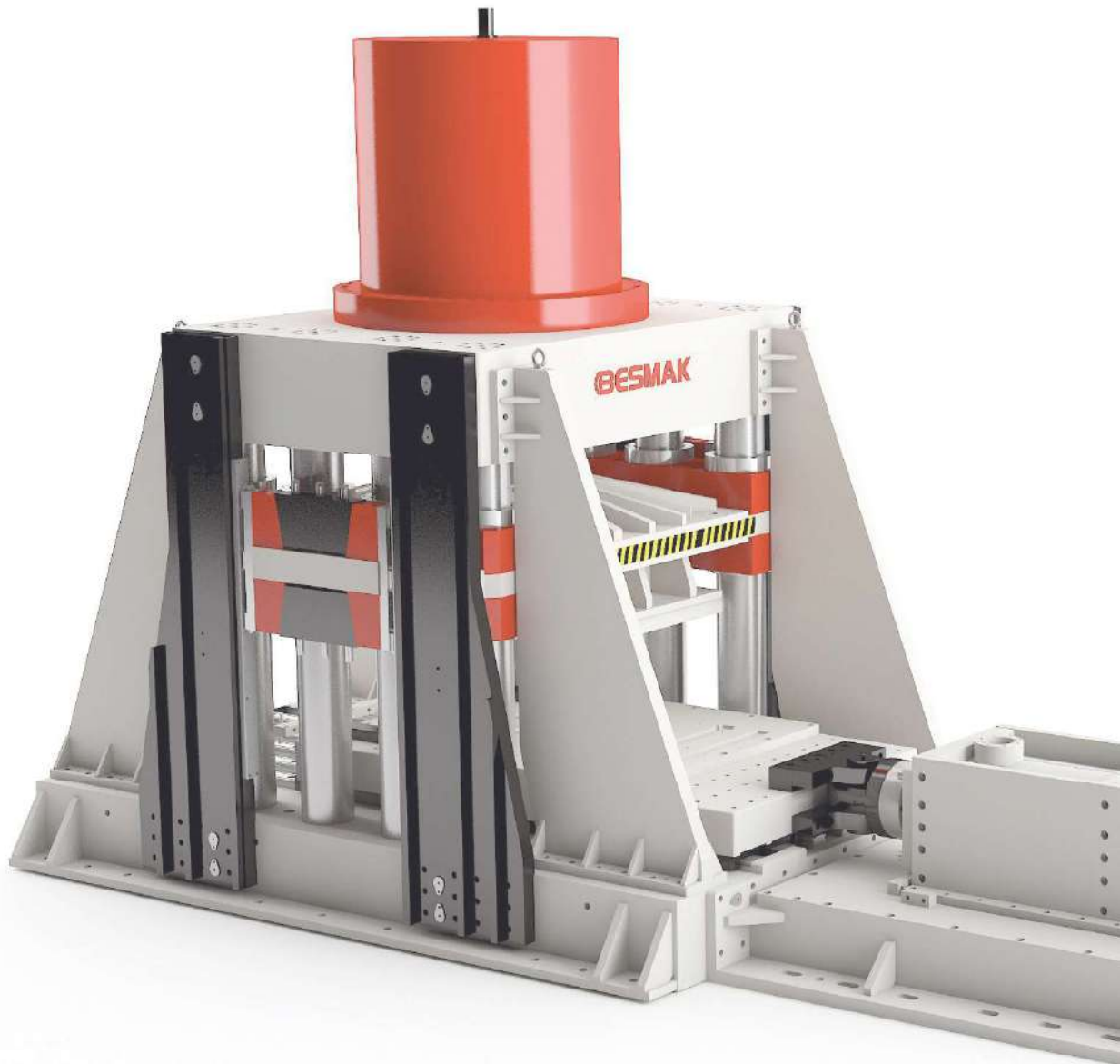
BESMAK's premier seismic simulators provide a full six degrees of freedom that recreate the true conditions of a real earthquake. Featuring a compact design, these systems minimize your laboratory size requirements. These shaking table systems are specially designed to meet your specimen size and dynamic motion requirements.



## • DESCRIPTION

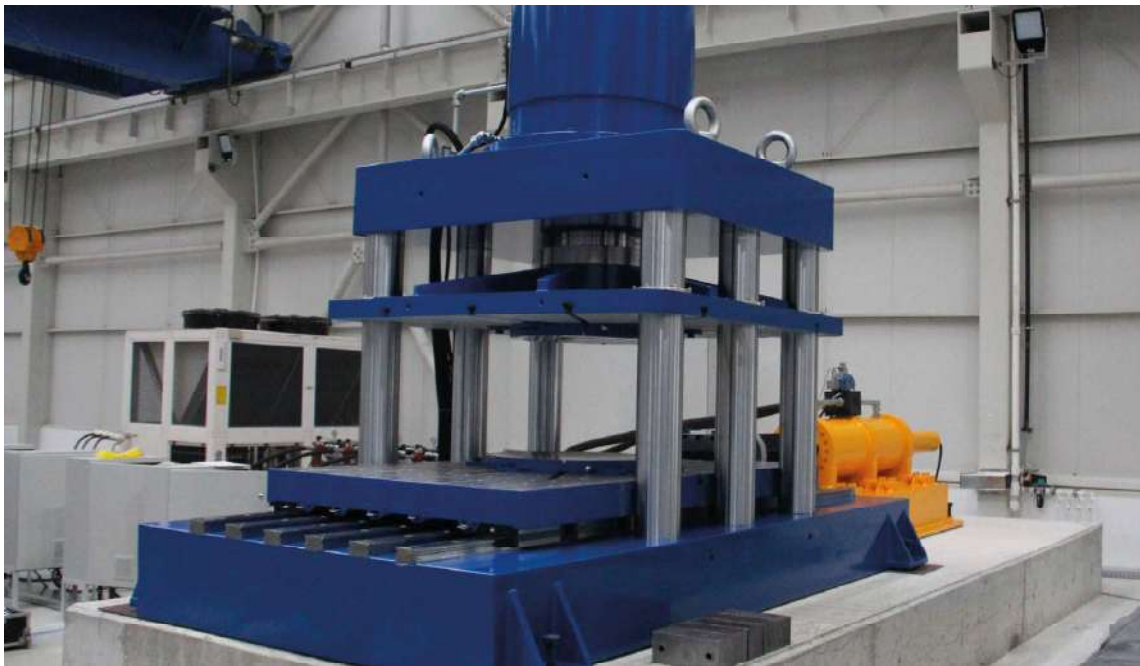
### Complies with EN-15129 and EN-1337 standards;

Seismic isolation testing focuses on the rubber bearings, friction pendulum-type bearings and dampers used to protect structures from damage during earthquakes and other seismic events, revealing important information about how these devices perform under different frequencies. Typically, bearings undergo a biaxial test with a high-force dynamic load applied vertically and a cyclic load applied horizontally. Dampers are generally tested only in one direction. In both cases, forces range from 1,000 kN to 20,000 kN and more, making these tests demanding to perform accurately. With more than 25 years of experience developing high-force and high-performance special test systems for civil structural applications, **BESMAK®** provides both the expertise and technology to conduct successful seismic isolation tests.



## • MAIN FEATURES

- Vertical load capacity: Up to 20000 kN
- Horizontal load capacity: Up to 2500 kN
- Measurement accuracy: class 1
- Test speed: Up to 1000 mm/s
- Displacement resolution: 1  $\mu$
- Data acquisition and control speed: Up to 10 kHz
- Column type rigid frame structure
- Special double-acting low friction dynamic actuator
- **BESMAK®** universal simulation software





**MODERNIZATION  
OF YOUR  
TESTING MACHINE**

# BESMAK

## Material Testing Machines



As **BESMAK®**, manufactures both static and dynamic test machines for all kinds of materials we also have the capabilities to successfully modernize obsolete machines regardless of machine brand.

Our modernization period will be on-site or can be transported to our 6300 m<sup>2</sup> covered area factory, in both options our R&D engineers, do quality control that is one of BESMAK modernization period. Due to **BESMAK®** policy, Our technical personnel will guarantee to ensure to achieve maximum customer satisfaction. Owing to **BESMAK®**'s cutting-edge technological expertise and systems modernized machines can provide  $\pm 0.5\%$  force and 0.001mm displacement accuracy. Automated load control (increase, decrease and hold), high frequency and amplitude options can be provided by the modernized machines.

**BESMAK**  
Material Testing Machines

 **TESTINDO**  
Your Partner Of Testing & Measuring Innovation Technology

# Contact Us

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