

BMT-E & BMT-ES
BESMAK

SERVO-ELECTROMECHANICAL
UNIVERSAL
TESTING
MACHINES



As a BESMAK we manufacture with high quality trouble-free devices in compliance with international standards. We always aim to develop new products and present it to our global partners and its customers.

In the material Testing Sector BESMAK provides solutions to all type of sectors. Our R&D department is a key factor for all sectors like automotive, aeronautical, metal, paper and corrugated board, plastics and wood sectors, among others...

We offer our solutions for static & dynamic testing on materials and components which are globally employed by R&D engineers to achieve the best results. If you are looking for a special design system we are able to produce for you

with excellent experience in this sector. BESMAK is a company who manufacture everything in-house including mechanical parts, hydraulics, electronic control units and software so we can also provide technical services to our customers. We have an extensive experience in material testing sector our worldwide.

A large part of our customers are composed of companies in their respective fields in US and Europe, also we have supplied laboratory equipment and test machines to private and public sector in Turkey and finished many successful projects. In Turkey we have Directory for Waterworks (DSI), Directory of highways (KGM) and many prestigious universities and scientific institutions among our customers.

Exports in More Than 40 Countries!

Awarded "The Stars of Export" 2014 Award.



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In the construction sector soil, asphalt, concrete, aggregates, cement, rock mechanics and construction materials for quality control testing laboratories aimed to provide high quality products using advanced technology and experience since it was established. In this way it's been one of the pioneering company in the international sector. Our company imports, exports and technical support and has been producing hi-tech CNC machines on the 6300 m closed area. We keep going R D with our experienced engineers and we produced new design products in sector. Also electronic control units and software design made by our company too.

The large part of our productions produced to leading companies in their respective fields at the mainly United States and European

countries. In addition, laboratory equipment has been supplied by us to the public and private sector institutions in Turkey and has accomplished many great projects. We also provide services; State Hydraulic Works, General Directorate for Highways, General Directorate of Public Works headquarters and area offices, engineering faculties of universities and scientific institutions and organizations. As well as our production, We're the representative of largest companies in industry which are the active in many countries around the world and sales of Construction Laboratory Testing Equipment.



Electromechanical Universal Testing Systems

BESMAK BMT-E series Universal Testing Machine, designed with 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. 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 Thousands of accessories to meet test requirements in almost any application or industry: biomedical, automotive, electronics, plastics, metals, composites, elastomers, aerospace, textiles, and many more Remote control unit with Live Display, Soft keys and Specimen Protect for enhanced usability and productivity.



*BESMAK is Your Global Solution
Partner, Bringing a New Perspective
in Material Testing Sector!*

BEYOND QUALITY

*A QUALITY
STEP TO A
SECURE FUTURE*

Besmak Material Testing Machines has been aiming at continuous improvement since the first day of its establishment and using advanced technology in material testing industry, it has made it a principle to provide quality service to its customers and thus become a world brand. We export %70 of the production to the leading companies in the USA, Germany and the UK. We are also the largest provider of materials testing machines in the Middle East market.

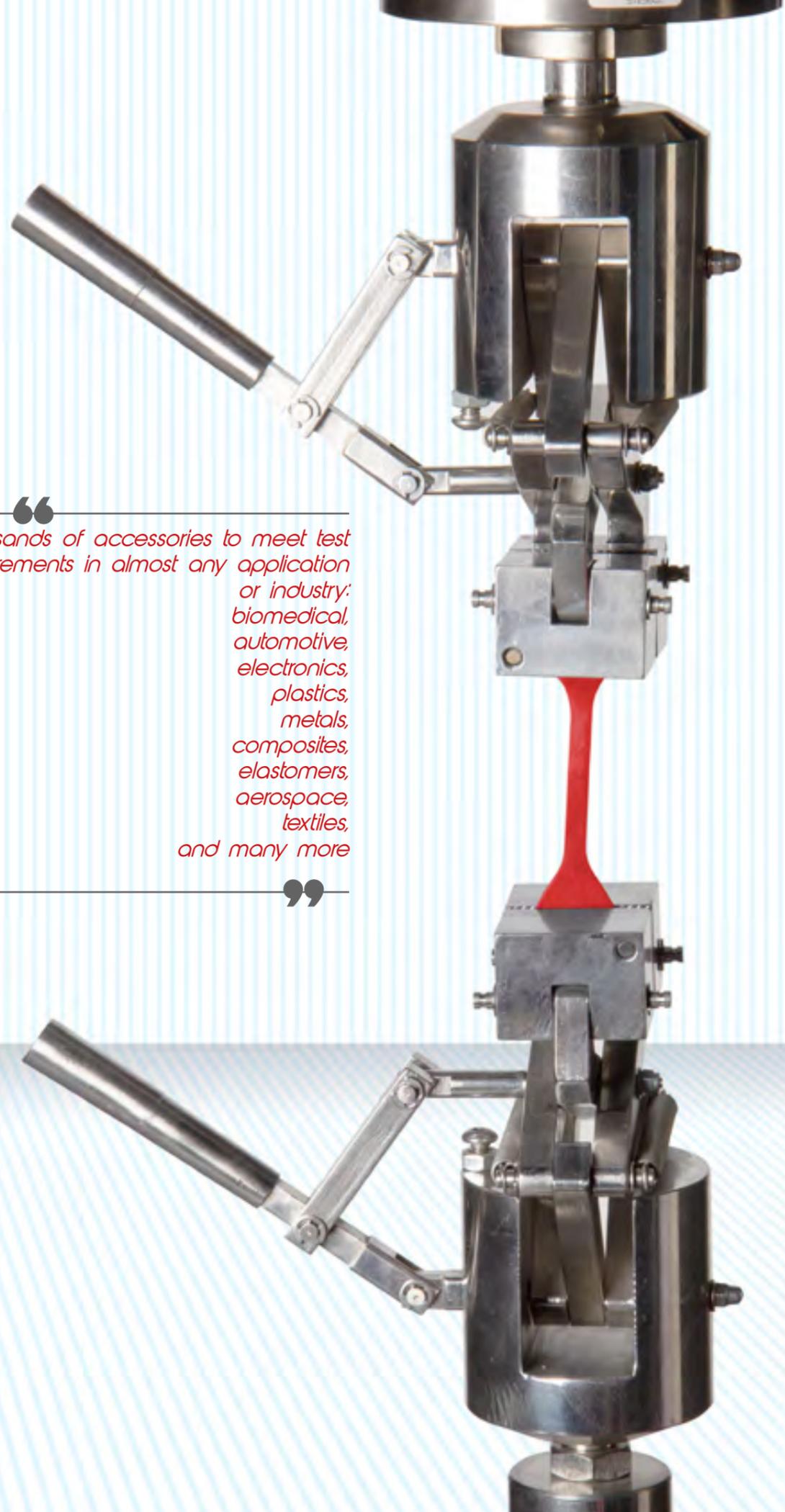
Content

SINGLE COLUMN BMT-ES	6
DOUBLE COLUMN BMT-E	10
CONTROL UNIT	14
SOFTWARE	18
ACCESSORIES	20

BMT-ES Single Column series are designed for testing of a wide range of different materials. This system easy to use and measurement system for accurately and precisely determining simple load, distance and break applications. It can be also equipped with an extensive range of fixtures . They are designed with features that increasetesting efficiency and improve the testing experience for the operator. This Systems perform tensile, compression, bend, punctrure, creep and cyclic tests.



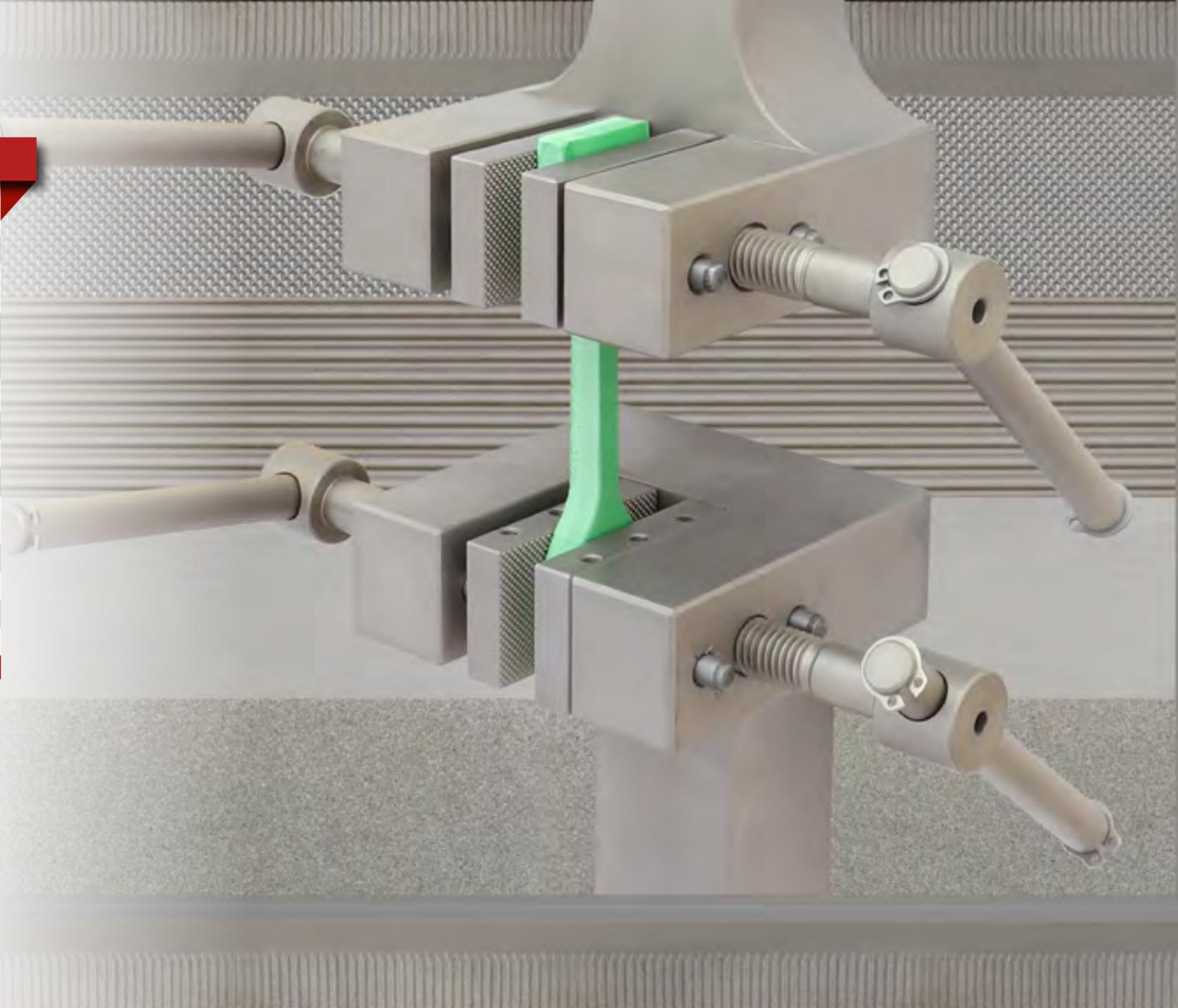
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Thousands of accessories to meet test requirements in almost any application or industry: biomedical, automotive, electronics, plastics, metals, composites, elastomers, aerospace, textiles, and many more
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BMT-ES Single Column Series Technical Features

Load Capacity	0.1 kN – 10 kN
Frame Type	Rigid frame in Single Column construction
Electronic Unit	New generation SEMATRON Electronic Control Unit with 1 kHz (1000 data/sec) data acquisition and control system
Control	EDC Controller Besmak Universal Testing Software (Load and Deformation/ Displacement Control)
Accuracy	± %0,5
Load Measuring	Class 0.5
Resolution	24 bit
Displacement Resolution	0.0001 mm
Testing Speed range (Min- Max) at Full Force	0.0001 - 1000 mm/min
Vertical Test Area	1000 mm* (Without Accessories)
Horizontal Test Area	According to Accessories*
Software	Besmak Universal Testing Software
Power Requirement	220 Volt, 50/60Hz

* Contact us for other requirements

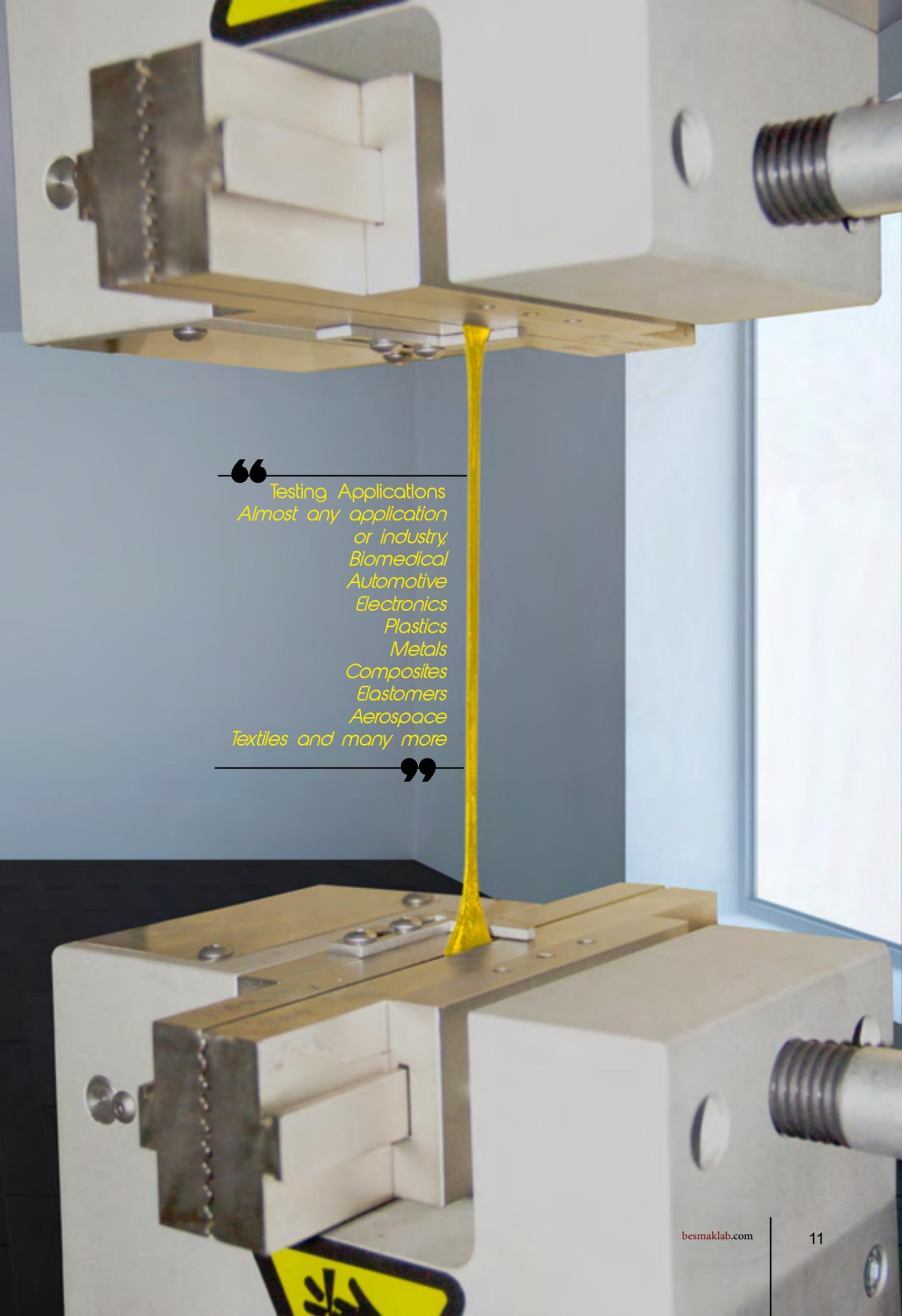


Key Features

- Accurate Measurement and Excellent Control
- Compact and Space Saving Design
- High Technology and Economical Price
- Very User Freindly and Flexible Test System for A wide Range of Materials
- High Response Closed-Loop Control System
- Overload Protection
- The machine is free-standing and can be placed onto stable table
- Thousands of different accessories for in almost any application or industry: plastics, metals, biomedical, elastomers, components, automotive, textiles, and many more
- Supported by the BESMAK Service organization; calibrations, training, preventative maintenance, and technical support

Due to the advanced control system developed by BESMAK, many type sensors such as Loadcell, Strain gauge, LVDT, Displacement sensor and Extensometer are able to connect, recognize and control automatically. Supported by the largest global Service organization in the industry; delivering high-quality calibrations, training, preventative maintenance, and technical support. This configuration is ideal for universities and research institutes.

BESMAK BMT-E series Universal Testing Machine designed with 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.



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Testing Applications
 Almost any application
 or industry
 Biomedical
 Automotive
 Electronics
 Plastics
 Metals
 Composites
 Elastomers
 Aerospace
 Textiles and many more

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BMT-E Double Column Series Technical Features

Load Capacity	Up to 1000 kN
Frame Type	Rigid frame in Double Column construction
Electronic Unit	New generation SEMATRON Electronic Control Unit with 1 kHz (1000 data/sec) data acquisition and control system
Control	EDC Controller Besmak Universal Testing Software (Load and Deformation/ Displacement Control)
Accuracy	± %0,5
Load Measuring	Class 0.5
Resolution	24 bit
Displacement Resolution	0.0001 mm
Testing Speed range (Min- Max) at Full Force	0.0001 - 750 mm/min (Subject to cahnge according to capacity and application)
Vertical Test Area	1450 mm* (Without Accessories)
Horizontal Test Area	According to Accessories*
Software	Besmak Universal Testing Software
Power Requirement	220 or 380 Volt, 50/60 Hz

* Contact us for other requirements

Key Features

- BESMAK BMT-E 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
- Thousands of accessories to meet test requirements in almost any application or industry: biomedical, automotive, electronics, plastics, metals, composites, elastomers, aerospace, textiles, and many more
- 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
- Deflectometers, Compresometers
- Special Testing Fixtures
- Fastener Fixtures
- Custom Made Fixtures for special applications



Control Unit:

BESMAK BMT- E Series Universal Testing Machine is controlled by "New generation EDC Electronic Control Unit". EDC electronic control system is world's one of the sensitive electronic control systems and used since 1975. It controls hydraulic and/or electromechanical systems by closed-loop control method.

Test can be done with both load and displacement/deformation control mode 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 2.5 kHz (2500 data/sec).

Load cell, video extensometer, automatic extensometer, etc. can be connected automatically to electronic control units. Besmak Universal Testing Software and EDC controller can recognize these sensors automatically due to sensor Eeprom connectors, 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.

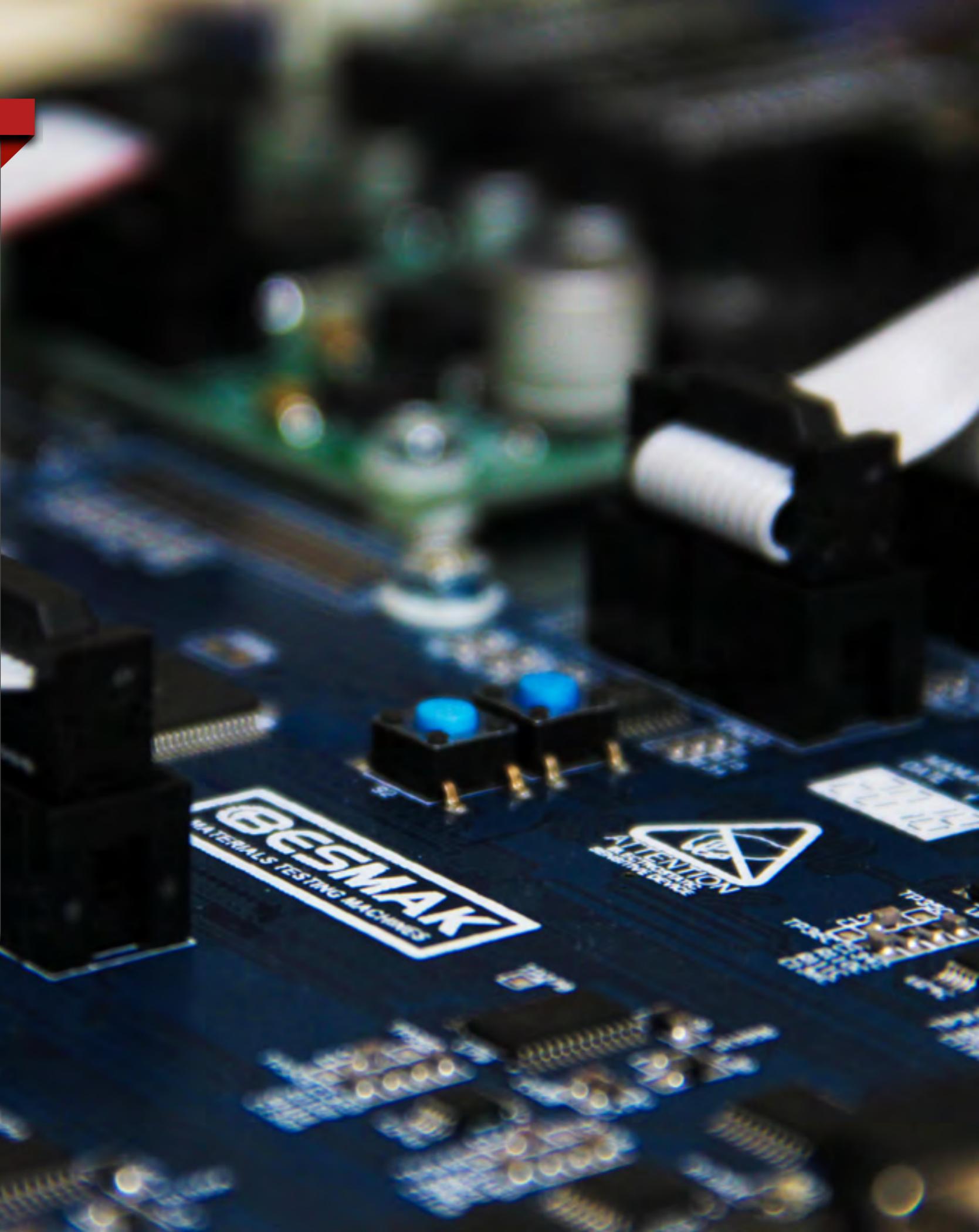
User can control test, can adjust device settings and can control hydraulic grip by PC software and/or Remote control panel. Tests can be carried out by a single button.

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.



ELECTRONIC CONTROL SYSTEM

With the help of Remote Control Unit user can perform test, can control speed of actuator for sample adjustment, grips control, load/deformation/displacement and strain values display in real time, adjust and control movement/positioning of grips, assign max.-min. limit etc.

The most important feature provided by Remote Control console unit is the user does not have difficulty when placing the specimen on the grips because of the flexibility/mobility of device.

In an emergency case, test can be stopped immediately by pushing the emergency button on the Remote Control console model 7.

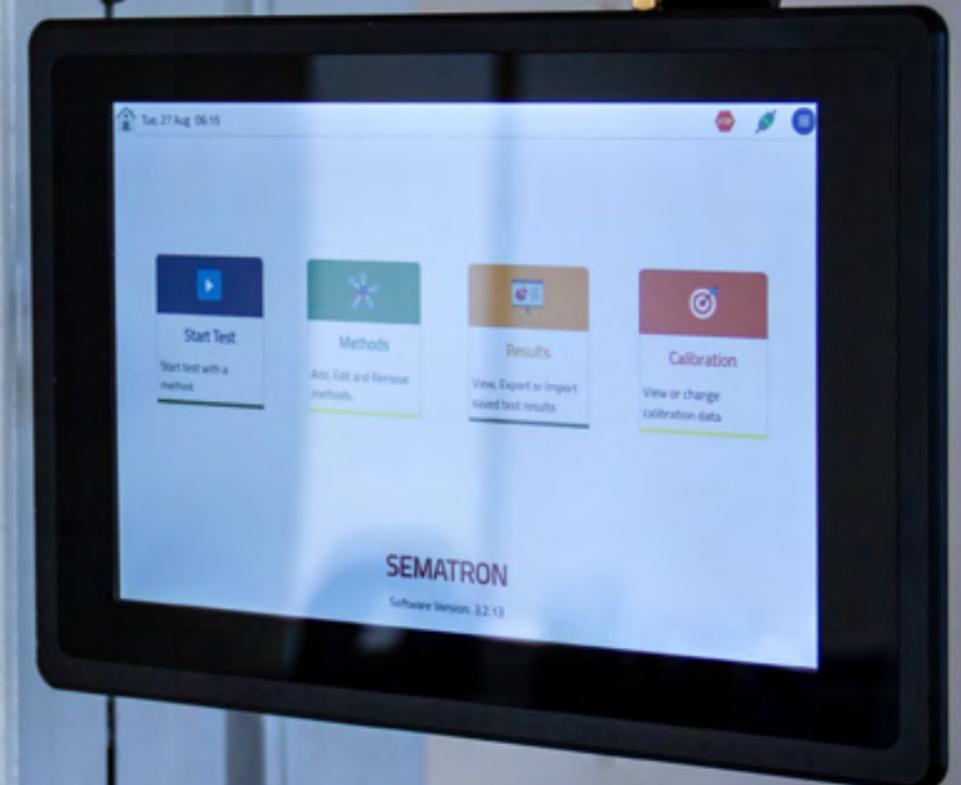
Features of Remote Console:

- 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 Touch Screen Control Unit Specifications

• Internal Storage:	8 GB eMMC
• External Storage:	TF card, Up to 32GB SDHC
• Display:	10.1 Inch IPS LCD, 1280*800 Pixel Resolution, 16:9
• Touch:	Ten-Point Capacitive Touch
• USB:	2 x USB 2.0 Host, 1 USB OTG
• LAN:	1 GB LAN, Support POE.
• Working Temperature:	-20°C to +70°C
• OS:	Linux
• RAM:	2 GB DDR3
• CPU:	iMX6Q, Quad Core -A9, 1GHz (Arm v7)
• Dimension:	280*185.5*27.5mm
• Power Input:	12~36V DC
• Audio:	3.5mm Audio In/Out Connector, 2W Speaker Internal
• Other:	HDMI, WIFI, Bluetooth, RTC, Buzzer

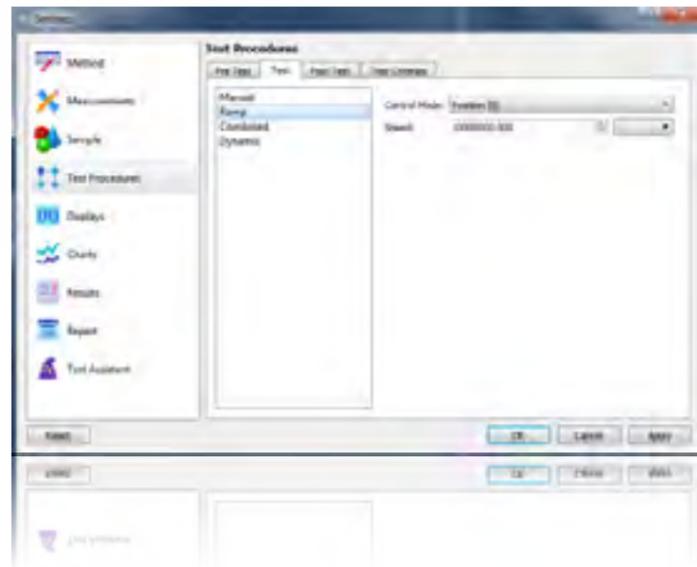
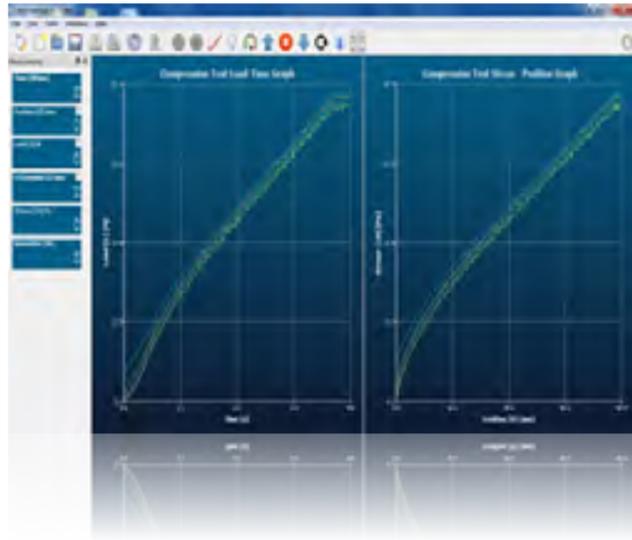
It is easy to use with its user-friendly interface and is compatible with all devices. 10.1 inch as standard and other options available. Provided with special SEMATRON software installed and templates enable test run in a few simple touches.



BESMAK

UNIVERSAL TESTING SOFTWARE

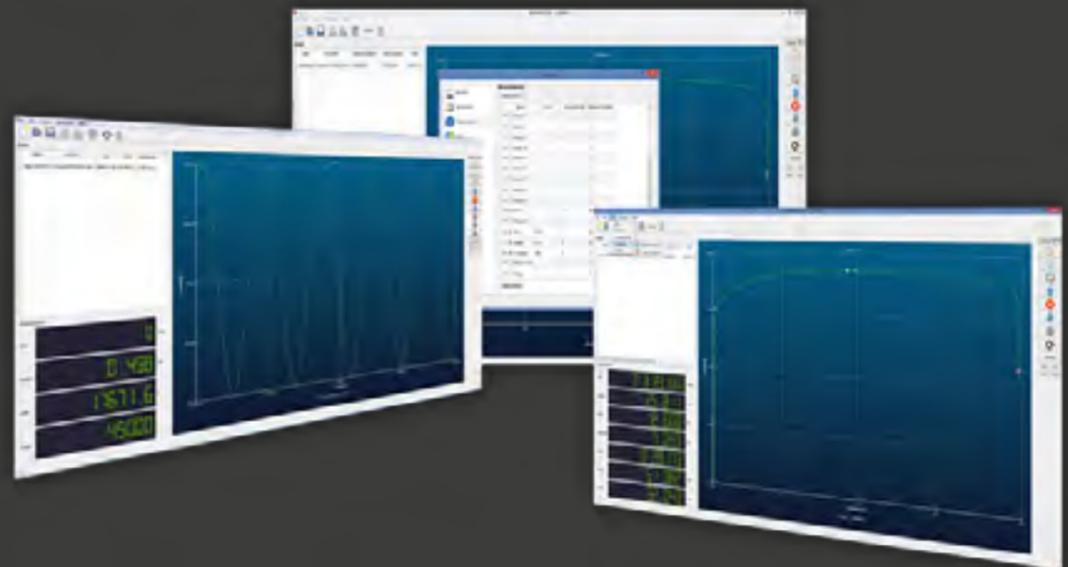
Tests can be carried out on computer by Besmak Universal Testing Software. Real time data, test graphs and results can be observed on software. Results and graphs can be saved on computer and printed. User can personalize the software and report format according to company/corporation etc. Besmak Universal Testing Software is compatible with Windows7 and higher operating systems. Universal Testing Software provides solutions to all type of test applications.



Key Features of Software



- User Friendly, easy to use interface
- Easy-to-understand icons and workflows make it easy to train new or experienced users, simplifying operator training, and allowing you to start testing even faster
- Meticulously crafted visual design, gives the most 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 speed
- Automatic sensor and setup identification
- 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, test templates, loading sequences and device settings can be easily done by the software
- Besmak Universal Testing software supports multi languages which make it attractive for international users
- Besmak provides 7/24 online support to our customers.
- Over load detection and sample protection features for advance testing applications to protect 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)



UNIVERSAL GRIPS



Besmak grips are notable for their quality and design, and offer a choice between hydraulic, manual or pneumatic operation. Also, if a special grip is required the Hoytom R&D team will design a wedge to suit the test the customer wishes to perform. The range of capacities and wedges are the perfect accessory to Hoytom's universal testing machines.

COMPRESSION PLATES



Wedges for testing flat or cylindrical specimens with different thicknesses and diameters. Adaptable to multiple materials. Their ribbed shape ensures specimens are held and do not move, thereby minimising any possibility of error during test calculations.

VICE GRIPS



Lightweight grips for universal use for small samples

- For load cells < 50 N

VICE GRIPS (pneumatic)



- Lightweight grips for universal use for small samples
- For load cells < 50 N

Designs with different pneumatic options.

BENDING FIXTURES



Besmak bending fixtures can perform tests with variable length support points. They adapt to standard or customer specifications via their rollers and punches.

WEDGE GRIPS



small wedge grip 10kN, with locking function for safe sample insertion and removal.

ROPE GRIPS



- Depending on type, applicable for tensile tests on fibers, fine wires, cords, filaments, yarns, etc.
- Guide horn with centering groove
- Specimen is wrapped 180° around the bollard to prevent the breakage in the clamping area by generating a slow notch free stress relief

THREAD HEAD GRIPS



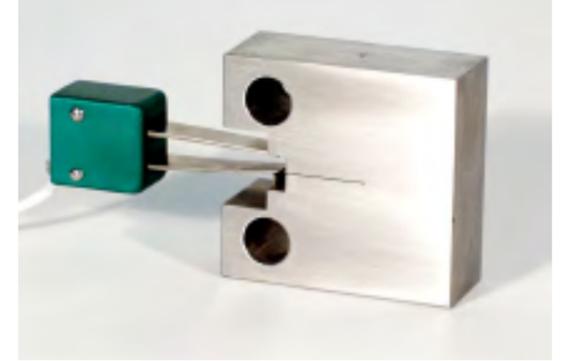
Standard grip for testing threaded fasteners such as screws, bolts, studs, etc.

SAMPLE PREPARATION



The pneumatic operated sample cutting Press test machine is easy to use and safe way to produce samples from materials such as plastics, fabrics, boards and paper. This machine operated up to 7 bar. Test sample cutters to any International standard.

MECHANICAL EXTENSOMETER



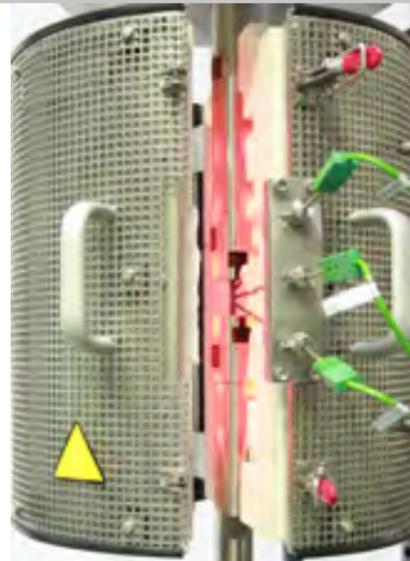
Fracture Mechanics Clip-On Gages
3 models cover a broad range of gauge length, measuring ranges and temperatures, for fracture tests in compliance with various standards

CAPSTAN RIBBON GRIPS



To test metal foils, ribbons, straps, etc. Manual and pneumatic modifications available.

HIGH TEMPERATURE FURNACE

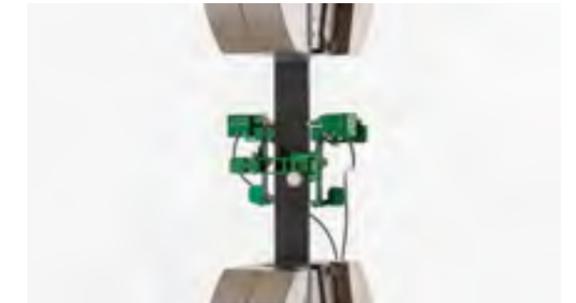


The furnace and climate chamber are especially used for universal testing machine according to the required temperature to equip with corresponding load frames various metallic or nonmetallic materials.

TEMPERATURE CHAMBERS



- Standard temperature chambers
- -70°C - 280°C
- Stainless Steel
- 2300 Watt 220Volt
- Window heating
- Top and bottom hole 50mm
- Service hole on back side
- Special adapters



Axial Extensometers
6 models in this group cover tension, compression and cyclic testing Huge variety of gauge lengths and measuring ranges Cover temperatures from -265 to +200 °C (-450 to +400 °F)

High Temperature Axial Extensometers
5 models cover a variety of applications for high temperature testing 1 un-cooled model for use inside chambers up to 540 °C (1000 °F) Other models for use with split furnaces and induction heating, up to 1600 °C (2900 °F)

Transverse and Diametral Extensometers
3 models cover most any test requirement and can be used with axial extensometers at the same time Miniature and standard units, also r-value units Available options cover temperatures from -265 to +200 °C (-450 to +400 °F)

LONG TRAVEL EXTENSOMETER



1. Measuring system ERO 1470
1 μm resolution (fourfold counting)
2. Measuring head for climatic chamber -50° ... $+350^{\circ}\text{C}$
Arm length 400 mm and 490 mm
3. Measuring arm for bending tests / Arm length 400 mm and 490 mm
4. Measurement of tube's inner diameter
 \varnothing 100 ... 1000 mm / Arm length 600 mm
5. Measurement of ring stiffness according to DIN EN ISO 9969
 \varnothing 50 ... 900 mm / Arm length 228 mm

VIDEO EXTENSOMETER



Video Extensometer is a contactless optical measurement system based on a digital camera and real time image processing. It measures the longitudinal and transverse strain between two applied lines with a rate of up to 4000 Hz. The strain data is transferred e.g. via an analogue signal or digital interface to the test machines for further processing or controlling.



PEEL GRIPS



Peel grip, roller diameter 25 mm
Max. specimen width 50 mm,
Specimen thickness 1 mm

WHY BESMAK?

SPECIALIZED ENGINEERING

Besmak, which has realized the firsts for 20 years, offers versatile solutions with its expert engineer staff.

RD & INNOVATION

It is expanding its product portfolio every day with more than 600 product variety, more than 5 patents and numerous R&D works.

SUPERMINENCE

By developing high quality, innovative products, it contributes to the safety of human life.

ADVANCED TECHNOLOGY

RD and innovation, developed with products, high technology, by bringing together, gives direction to the sector.

BESMAK

Material Testing Machines



10+ Awards



150+ Clients



25+ Experience



40+ Completed Projects



40+ Countries We Export



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