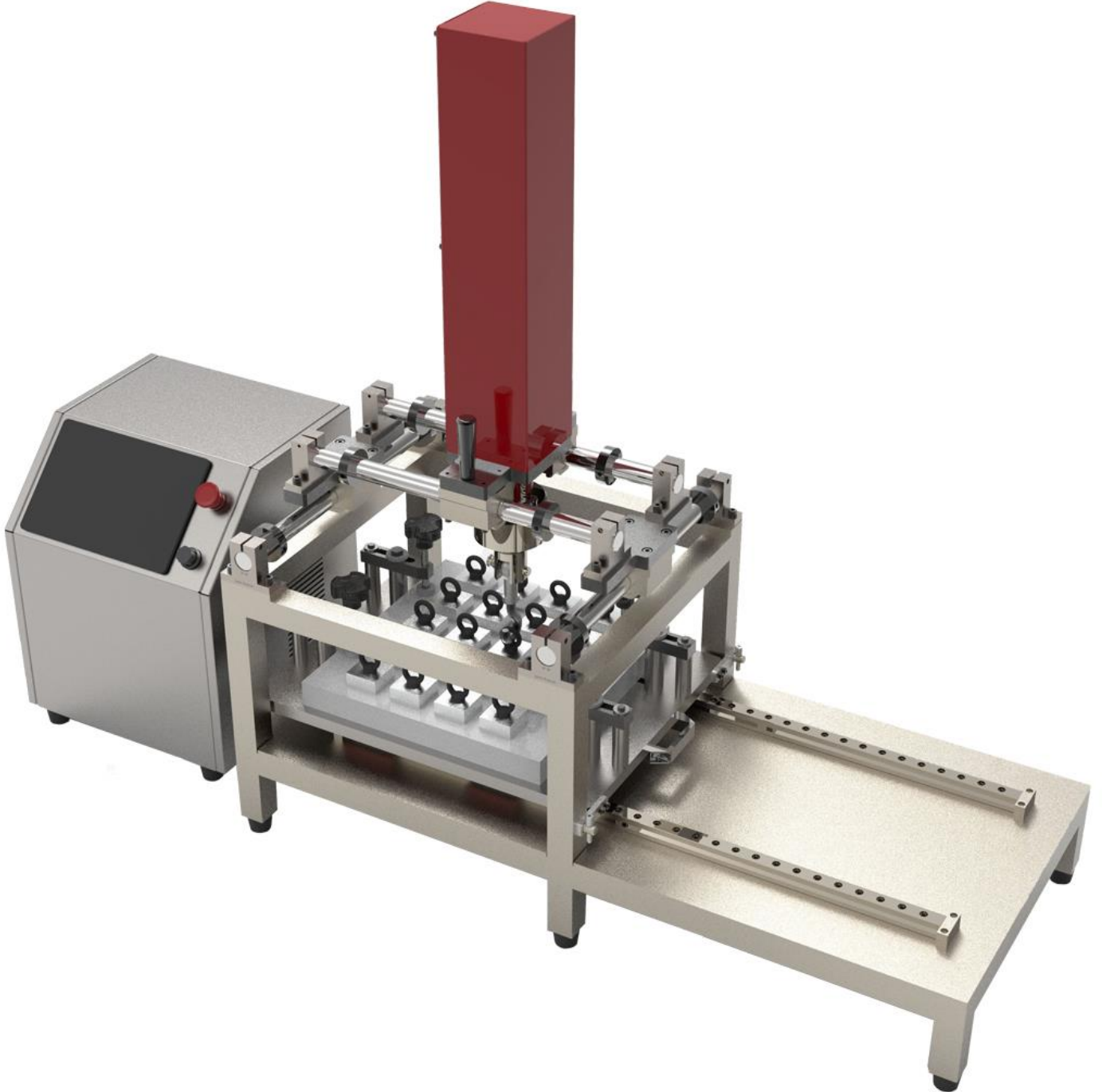# BESMAK BCO-20E/TE Pull-off tester, Automatic

TECHNICAL FEATURES:

Standards: DIN 1048-2, ZTV-ING (2003), EN 1015-12, EN 1348, EN 1542 (1999), EN 12618-2 (2004), EN 13892-8 (2003), DIN EN ISO 4624, ETAG 004

The Pull Off Tester with a capacity of 20 kN determines the surface tensile strength, adhesive strengths and pull of strength of concrete, screed, mortar, adhesives, plaster, coatings, parquet flooring, thermal insulation composite systems (with special accessories)

Advantages:

• The system is load and position controlled.
• Anti-impact system at the preloading period (soft preloading)
• The system provides test results with an accuracy of 1% at an adjustable speed between 0.0001 mm/min and 20 mm/min.
• Thanks to its sensitive servo-electromechanical infrastructure, it does not have resonance and noise problems.
• Provides optimum vertical tensile force and allows the user to perform repeatable tests.
• The system can apply continuous force with its linear actuator and has the features of automatic alignment and automatic tensile load increase.
• 16 samples can be placed in a single plate with locking mechanism so that samples do not move and deviation of test results is prevented.
• Sample can be mounted easily outside the test area thanks to movable mechanism of plate.
• free input of test speeds (N/sec., MPa/sec)
• route-controlled testing (mm/min)
• Test results (Maximum load, speed, test time) can be monitored on Industry 4.0 compatible LCD Screen.

Frame: The 20kN frame will be mounted on a 30x30 cm plate with a capacity of up to 16 samples, conforming to EN 1348 and different standards. Thanks to the sliding mechanism at the top, the tensile tests of the samples can be performed by moving the actuator in double direction.

Load measurement and control is carried out with a load cell with class 0.5 and better sensitivity according to ISO 7500-1 standard. The loading speed can be adjusted between 0.01 kN/s and 10 kN/s.

Position measurement and control can be done with a sensitivity of 0.001 mm with the internal encoder, position loading speed can be adjusted between 0.0001 mm/min and 20 mm/min.
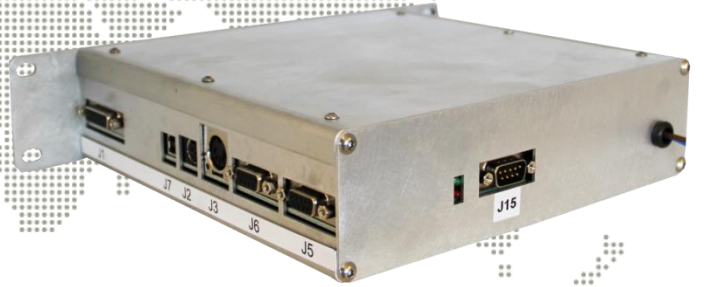
ELECTRONIC CONTROL SYSTEM:

BESMAK BCO-20E/TE series Pull of Tester, Automatic is controlled by "**New generation SEMATRON Electronic Control Unit**". Sematron electronic control system is world's one of the sensitive electronic control system. It controls hydraulic and/or electromechanical systems by closed-loop control method. Sematron Controller has a wide usage area in high technology test machines.

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 at failure, strain at failure, max load, max strain, etc. can be obtained real-time at 1 kHz (1000 data/sec).

The electronic control unit has 6 internal, 1 RS232-485 and 1 debug channels and is suitable for controlling up to 6 sensors and has 5 channels. It can control each of the sensors connected to the electronic control unit separately at a data rate of 1000Hz (1kHz). Thanks to the New Generation Electronic I/O Bus Terminal infrastructure, all sensors (extensometer, load cell, LVDTs, etc.) connected to the electronic control unit are automatically recognized by the system, their limits are automatically detected and their automatic calibrations can be performed. Besides this feature, the system also allows manual calibration of third party sensors. The sensor measurement resolution of the electronic control unit is 24 Bit.

Debug channel enables more than one electronic control unit of the same brand to communicate with each other and to control the system synchronously. Connected, communicating with debug channel electronic control units can control the simultaneous synchronous test or movements of multi-system test systems by working with the master-slave algorithm. Besides, electronic optional channels of the control unit, which can be added upon request, are capable of operating "video extensometer, laser extensometer, LVDT, strain gauge, load cell and position sensor".

The adaptation of the electronic control unit to the test system is done with sensor sockets (eeprom) containing special electronic cards in order to store stable and connected sensor data on a sensor basis.

Sensors (load, displacement meters, etc.) are connected to the control unit with Eeprom, it can keep all calibration data and linearization coefficients in its memory, even if the control unit is changed, there is no data loss. There is a physical electronic safety button on the sensor sockets to change or print the adjustment and calibration data. The communication of the electronic control unit with the computer or software is done via Lan (Ethernet) and Usb ports, depending on the user's request.
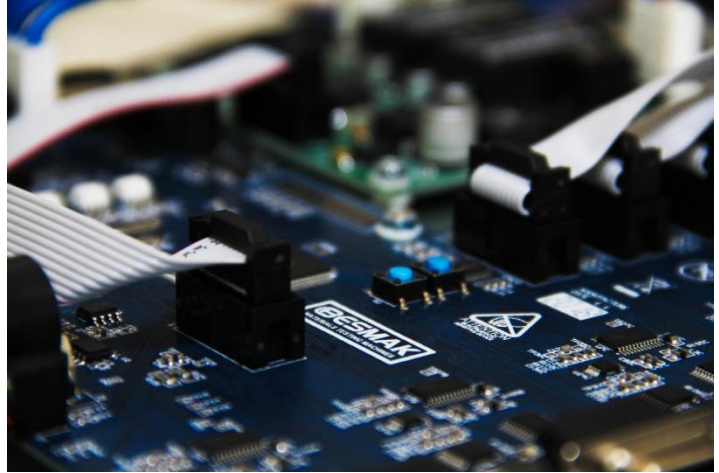
BESMAK UNIVERSAL TESTING SOFTWARE:

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. Universal Testing Software provides solutions to all type of test applications
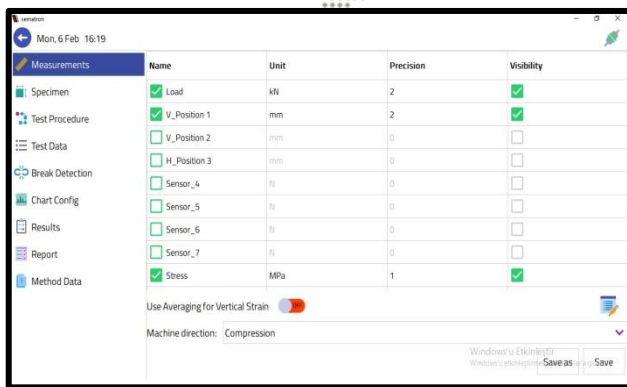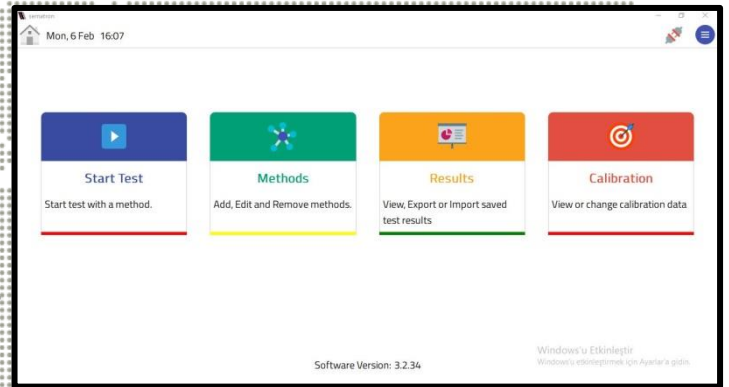
DISPLAY UNIT AND SOFTWARE INTERFACE:

- Capacitive touch screen.
- USB port to get results directly from LCD without use of pc.
- Accurate loading with high accuracy.
- User can attach internet modem directly to LCD controller
- User can email results directly from LCD by using internet.
- LCD has Linux based test software.
- Minimum 2 channels. (Optional)
- Automatic calibration and adjustment.
- 1000Hz (1kHz) data acquisition speed of each channel.
- Closed loop PID and open loop control option is available.
- Results in pdf and can be converted in Excel.
- LCD controller has 2GB built-in data storage space and supports up-to 32GB.
- All type of printers can be attached directly to LCD without PC. And user can take print out of results.
- User friendly, easy to customized.
- Communication with PC/LCD through USB.
- 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
- 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
- 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 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
- Software supports All SI and Matric units for sensors and measurements