# ADVANCED TESTING SYSTEMS

UTEST Advanced Testing Systems has been designed to examine the mechanical properties of building materials that require advanced test setups and data acquisition systems. UTEST Advanced Testing systems are ideal systems that can be used by research centers, R&D laboratories and Universities.Those Systems are modular systems that can be build according to the customer requirements and needs. UTEST advanced testing system is user friendly equipment that allow user to rapid test setup and execution.

The main advantage of the UTEST advanced testing system is the modularity. The main item is the UTC-4850, UTC-4860 and UTC-4870 Advanced Servo Controlled Automatic Power Packs with proportional and servo valve. All UTEST compression, flexure or tensile testing frames can be connected to those power pack. Thus any test configuration can be designed to make wide range of applications including, Elastic modulus, Poisson ratio, fracture toughness, post peak residual strength, energy absorption, rock triaxial and also conventional failure tests.

UTEST Advanced Testing systems can do tests under control of Load / Stress, Displacement and Strain Rate depend on power pack used.

You can find the detailed information about frames, power packs and accessories on different section of this catalogue.

The UTC-4850 and UTC-4860 Automatic Power Packs with Proportional Valve and The UTC-4870 Automatic Power Packs with Servo Valve are advanced power packs can be used on any testing system ideal for R&D laboratories and Universities for advanced tests with P.I.D. Closed loop control. It can perform tests under load and displacement controls. The frequency of the P.I.D controller and data acquisition is 1000 Hz. UTC 4850 and 4860 Automatic power packs are designed to supply the required oil to the load frames for loading, unloading or low cycle dynamic testing. All the operations of Data Acquisition and Controls System can be controlled from the touch screen front panel of a 240x320 LCD display or computer.

The UTC-4850 and UTC-4870 can control up to 2 different frames, UTC-4860 and UTC-4880 up to 4 frames. There are an extra 3 analogue channels for other sensors such as load cells, pressure transducers,displacement transducers, extensometers, etc. built in the system as an addition to the loadcell (pressure transducer) or the pressure transducer on the frame selected by the user.

The power pack automatically controls and supplies oil to the frame which is chosen by the user via the touch screen LCD digital control unit or by choosing the test type from the computer software.

The type of displacement transducer can be TTL or analogue
( It must be same type for all frames )

**The main specifications of the UTC-4850 and UTC-4860 power packs are;**

- **1 litre/minute pump delivery (max) 315 bar, 1.1 kW motor rate**
- **Loading-unloading with ±1 % rate accuracy**
- **Staying at constant load within 0,01% resolution of the maximum load**
- **The control of the load starts from 2% of the maximum load capacity of the system.**

**The main specifications of the UTC-4870 and UTC-4880 power packs are**

- **5 litre/minute pump delivery (max) 280 bar 3 kW motor rate**
- **Loading-unloading with ± 0,5% rate accuracy**
- **Staying at constant load within 0,005% resolution of the maximum load**
- **The control of the load starts from 1 % of the maximum load capacity of the system.**

All power packs can be connected to the computer through Ethernet port for advanced test cycles, data acquisition and reporting. The modulus of elasticity, Poisson's Ratio and compressibility parameters is easily and properly evaluated by attaching displacement tranducer or extensometers on to the sample. All the calibration values of the transducers and also all the test parameters for the last test is automatically stored on the control unit. All power packs incorporate a pressure safety valve for each frame separately and a cooling unit.

UTC-4850

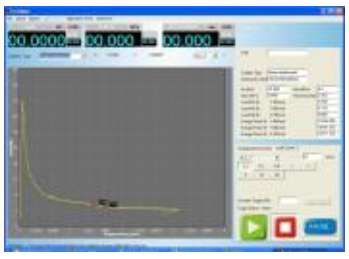
## Main Features of Power Packs

- 3 analogue channels for displacement transducers, extensometers, etc. built in the system as an addition to frame loadcells/pressure transducers or displacement transducer
- Instrumentation amplifiers for sensor excitation and amplification
- 1/65.000 resolution and 1.000 Hz control for each channel
- Ethernet port for connecting to computer
- 240x320 pixel LCD display
- Touchscreen operator panel
- Can control 2 frames (UTC-4850 and UTC-4870) or 4 frames (UTC-4860 and UTC-4880)
- Can execute load, displacement or strain controlled tests. For post peak applications UTC-4870 or UTC-4880 must be selected.
- Free of charge PC software for test control and advanced report printout
- Pace rate control from 0.01 kN/s to 100 kN/s (depend on the specimen stiffeness)
- Multiple language support
- Real time clock/date

## Data Acquisition & PC Software

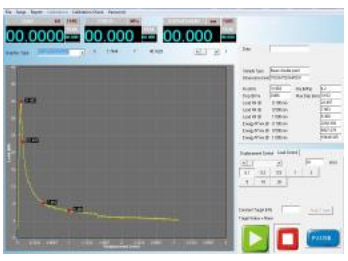
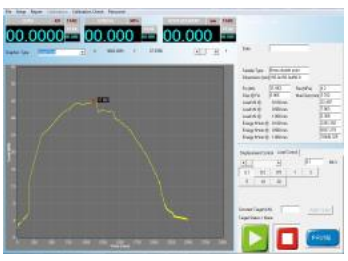
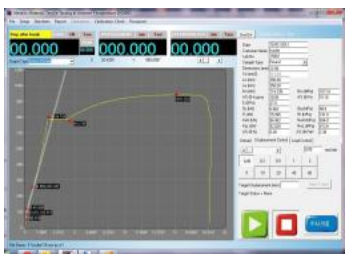
Advanced Testing Systems can be controlled (Start, Stop commands) by a computer with the software (given free of charge by UTEST). This software provides data acquisition and management for compression, flexure and splitting tensile test throughout the test execution for UTC-4850, UTC-4860, UTC-4870 and UTC-4880 advanced power packs.

The software is capable of running the machine in load control, displacement or strain control. The type of graph or test rate can be changed on the fly. The user can set load or displacement values for making machine to wait until the next command. Engineering functions of elasticity modulus, poisson ratio, yield value and energy ( for UTC-4870 and UTC-4880) is automatically calculated. The software can adjust the axes of graphs, supports different type of graphs and calculates 3 different type of elasticity modulus called tangent, linear and secant moduluses. It also calculates poisson ratio. It can set the gains of the closed loop control, make calibration to the pressure transducer or loadcell. It has an easy calibration check facility such as machine waits at %2, %5, %10 of its maximum capacity for easy check of calibration.



Test speed or mode ( displacement and load control) can be changed by user-friendly buttons during the test.

The advanced functions for data base management provide an easy navigation of all saved data. The test results certificate includes all descriptive information. Therefore, test parameters can be set and details about the test carried out such as client details, test type, specimen type, user info and other information required can be entered and printed out as well as test report and graph. The results are exported to Microsoft Excel for advanced research purposes. The data can also be filtered for obtainining intuitive results. The software prepares a summary report.

# ADVANCED TESTING SYSTEMS

Following tests can be done with The UTEST Software with proper test machines.

| Standard Code | Description |
|---|---|
| EN 12390-3 | Compressive Strength of Concrete Cylinders or Cubes |
| EN 12390-5 | Flexural Strength of Concrete Beams |
| EN 1340 | Flexural Strength of Concrete Kerbs |
| EN 12390-6 | Tensile Splitting Strength of Concrete Cylinders or Cubes |
| EN 1338 | Tensile Splitting Strength of Concrete Paving Blocks |
| EN 772-1 | Compressive Strength of Masonry Units (Clay, Concrete with Dense and light – weight, aggregates and Autoclaved aerated, Natural and Manufactured Stone, Calcium silicate) |
| EN 13748-1 | Breaking Strength/Load of Terrazzo Tiles for Internal Use |
| EN 13748-2 | Breaking Strength/Load of Terrazzo Tiles for External Use |
| EN 538 and EN 491 | Flexural Strength of Clay or Concrete Roofing Tiles |
| EN 196-1 | Compressive Strength of Hydraulic-Cement Mortars |
| EN 196-1 | Flexural Strength of Hydraulic-Cement Mortars |
| EN 12504-1 and EN 12390-3 | Compressive Strength of Cored Concrete Specimens |

| Standard Code | Description |
|---|---|
| BS-1881part121 | Static Modulus of Elasticity |
| ASTM C 469 | Static Modulus of Elasticity and Poisson's Ratio of Concrete in Compression |
| ASTM C 1609 | Flexural Performance of Fiber-Reinforced Concrete (Using Beam With Third-Point Loading) |
| EN 14651 | Test method for metallic fibre concrete - Measuring the flexural tensile strength (limit of proportionality (LOP), residual) |
| EN 14488-3 | Flexural strengths (first peak, ultimate and residual) of fibre reinforced beam specimens |
| ISO 1920-9 | Testing of concrete -- Part 9: Determination of creep of concrete cylinders in compression |
| ISO 1920-10 | Testing of concrete -- Part 10: Determination of static modulus of elasticity in compression |
| EN ISO 6892-1 | Tensile Test of Metallic Materials |
| EN 12390-13 | Testing hardened concrete - Part 13: Determination of secant modulus of elasticity in compression |

- **Foreign Language Support and Customizable User Interface**
- **Capability to Save 24 test results of different specimens in one test folder**
- **Graphical data on the screen is refreshed simultaneously during test procedure**
- **Able to save frequently used texts in memory and recall them when necessary**
- **Capable to Access and use previously done test data**
- **Able to edit test parameters of the testing equipment through Software**
- **Graphical outputs and reports can be saved as a MS Excel worksheet**
- **Maximum Flexibility to edit report and graph templates**

UTC-5700 UTC-4850 UTC-5730

UTC-4850 with UTC-5730 Four Column Frame 3000 kN and UTC-5700 Flexural Frame 300 kN, C Type

UTC-5700 UTM-7001 UTC-4710 UTC-4860 UTC-5730

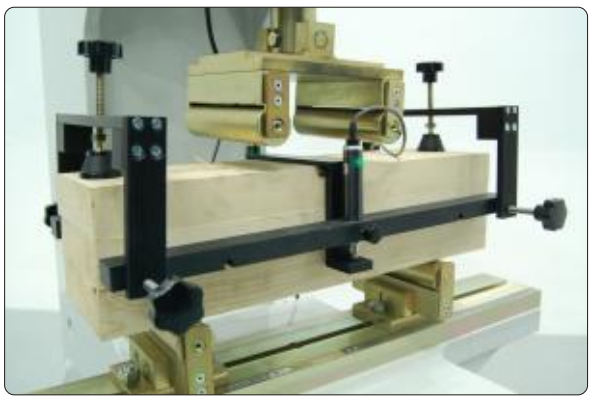
UTC-4860 with UTC-5730 Four Column Frame 3000 kN, UTC-4710 1500 kN Capacity Frame, UTC-5700 Flexural Frame 300 kN and UTM-7001 Tensile Testing Frame, 1000kN

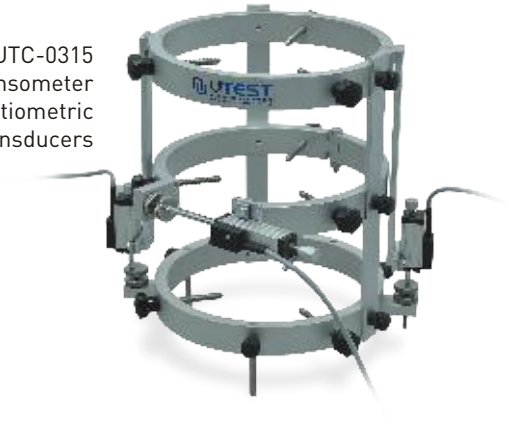
UTC-4850 with UTC-5730 Four Column Frame 3000 kN and UTM-7001 Universal Testing Machine Frame, 1000kN

UTC-4860 with UTC-5730 Four Column Frame 3000 kN, UTM-6001 Universal Testing Machine Frame, 600kN and UTC-5700 Flexural Frame 300 kN

UTC-4850 with UTM-6001 Universal Testing Machine Frame, 600kN and UTC-5700 Flexural Frame 300 kN

UTC-4850 with UTM-6001 Universal Testing Machine Frame, 600kN and UTC-4720 2000 kN Capacity Frame, EN



UTC-5507
Auxiliary Testing Frame for
The Measurement of Deflection

UTC-0315
Compressometer-Extensometer
with 3 Linear Potentiometric
Displacement Transducers