RAAGEN

Material Testing Machine

ELECTROMECHANIC UNIVERSAL TESTING MACHINES

Raagen ETM Series Load Frame

General Definition

Raagen Electromecaninc Universal Testing Machines have high performance, accuracy, reliability and advanced user-friendly software and users delivers the most accurate results in tests. Electromechanical test systems with servo system running on high precision and efficiency, environmentally friendly oil-free, maintenance costs are low system.The load frame is essentially composed of a base, columns, and moving crosshead. Most units have a single test space between the base and the crosshead. These test systems are generally used in compressive, tensile and flexural test. Also they can use for disbonding, adhesion and cycle tests.
The Raagen electromechaninc universal testing machines can be design according to requirement of load as a four-column soil types. Positioning accuracy is 1 µm. Load accuracy is 0,5% ± class. They can be perform load, position and strain controlled test. Extensometer, tensile grips, 3-4 point bending test equipments and compression tools can be added.

Model Specifications

- Suitable for Tensile, Compression and Bending Tests
- From 100 N to1600 kN Load Capacity
- Floor Type
- Rigid Frame with 4 Colums and 2 Ball Screws
- Easy Test Process Through Doli Remote Control Console (Made in Germany)
- User Friendly Doli T&M Software (Made in Germany)
- Automatic Test End Procedure
- Position and Load Controlled Tests
- Position Control and Measurement Accuracy 1 µm
- Load Control and Measurement Accuracy 0,5% According to ISO 7500-1
- Tensile Test According to the EN 6892-1
- Double Test Space (opsional)

- Load Resolution ±180.000 Steps
- Mitsubishi Electric Servo Motor and Servo Driver (Made in Japan)
- Power supply : Three Phase 380 V + N+ E. 50 Hz.

Metals Testing

Manufacturers of low-strength metal products demand highly efficient test solutions that minimize cost per test while maximizing throughput and operator safety. Raagen Electromechanic Series deliver the reliability and high-speed control technology required to meet the demanding throughput and efficiency requirements typical for lower force specimens such as thin metals and fine wires. Easy-to-use TestWorks software and ergonomic test spaces maximize operator efficiency and facilitate quick test setup and runtime. Integrated test space enclosures help ensure operator well-being and full compliance with the latest international safety directives. Producers of high-strength metal products want durable, turnkey testing solutions and a readily available arsenal of basic test methods to adapt easily to changing requirements. Raagen Electromechanic Series feature a complete selection of grips, fixtures, environmental chambers, furnaces, and standards-compliant test methods to perform a broad range of higher-force, proof load testing of metal specimens such as castings, fasteners, threaded specimens and forgings.

Standard	Description
ASTM E8M	Standard Test Methods for Tension Testing of Metallic Materials
ISO 6892-1	Metallic Materials – Tensile testing at ambient temperature
EN 10002-1	Tensile Testing of Metallic Materials
ASTM E9	Standard Test Methods of Compression Testing of Metallic Materials at Room Temperature
ASTM E290	Standard Test Methods for Bend Testing of Material for Ductility
ISO 7438	Metallic Materials – Bend Test
ASTM E21	Standard Test Methods for Elevated Temperature Tension Tests of Metallic Materials
ISO 783	Metallic Materials – Tensile testing at elevated temperature
ASTM E517	Standard Test Method for Plastic Strain Ratio for Sheet Metal
ASTM E646	Standard Test Method for Tensile Strain-Hardening Exponents (n -Values) of Metallic Sheet Materials

Polymers Testing

Consumer goods manufacturers require easy-to-use test solutions that can maximize throughput and serve as a foundation for repeatable, standard testing methodologies. Raagen ETM Series feature a diverse array of standards-compliant test methods and compact, universal load frames to efficiently perform a full spectrum of lower force, peak load testing of polymer-based specimens such as consumer products, thin films, biomaterials and packaging. Combined with TestWorks software's intuitive, multi-language testing interface and powerful analysis and reporting capabilities, these systems provide an excellent means for establishing and sustaining a truly global, standardized testing program.
The production of high-strength polymers and composites necessitates solutions that can safely test strong, brittle specimens at high speeds under extreme environmental conditions. MTS Criterion Series 40 Systems include medium to higher-force universal load frames and a full complement of grips, fixtures and environmental simulation systems to perform fast, high-elongation testing of the high-strength polymers and composites commonly used in the aerospace and automotive industries. The easy-to-maintain MTS Criterion test space and selection of optional integrated safety enclosures are of particular value in this test environment.

Standard	Description
ASTM D790	Standard Test Methods for Flexural Properties of Unreinforced and Reinforced Plastics and Electrical Insulating Materials
ASTM D412	Standard Test Methods for Vulcanized Rubber and Thermoplastic Elastomers – Tension
ASTM D624	Standard Test Method for Tear Strength of Conventional Vulcanized Rubber and Thermoplastic Elastomers
ASTM D638	Standard Test Method for Tensile Properties of Plastics
ASTM D695	Standard Test Method for Compressive Properties of Rigid Plastics
ISO 178	Plastics – Determination of flexural properties
ISO 1798	Flexible cellular polymeric materials – Determination of tensile strength and elongation at break
ISO 527	Plastics – Determination of tensile properties
ISO 604	Plastics – Determination of compressive properties
ASTM D882	Standard Test Method for Tensile Properties of Thin Plastic Sheeting

Construction Materials Testing

Construction materials manufacturers need highly robust test solutions that keep costs low while maximizing testing flexibility and operator safety. Featuring the easy-to-maintain Raagen ETM Series test space and a selection of optional integrated or isolated safety enclosures, high-capacity Raagen ETM Series material testing machines are well-suited for demanding construction materials testing

environments. These affordable systems combine a complete selection of accessories, standards-compliant methods and TestWorks software test-definition capabilities to accommodate a full range of medium to very high-force testing of construction
materials, including building materials, wood products, concrete, rock, rebar and structural steel.

Standard	Description
ASTM C1609 / C1609M	Standard Test Method for Flexural Performance of Fiber-Reinforced Concrete (Using Beam With Third-Point Loading)
ASTM A370	Tensile Testing & Bend Testing Steel Rebar
ISO 15630	Steel for the reinforcement and pre-stressing of concrete – Test methods – Part 1: Reinforcing bars, wire rod and wire
ISO 1920-4	Testing of concrete – Part 4: Determination of flexural strength; Determination of tensile splitting strength
ASTM A185/ A185M	Standard Specification for Steel Welded Wire Reinforcement, Plain, for Concrete
ASTM A615M	Standard Specification for Deformed and Plain Carbon-Steel Bars for Concrete Reinforcement
ASTM A82/ A82M	Standard Specification for Steel Wire, Plain, for Concrete Reinforcement
EN 10080	Steel for the reinforcement of concrete. Weldable reinforcing steel
ISO 15630-2	Steel for the reinforcement and pre-stressing of concrete – Test methods-Part 2: Welded fabric
ASTM F606	Standard Test Methods for Determining the Mechanical Properties of Externally and Internally Threaded Fasteners, Washers, Direct Tension Indicators, and Rivets

Benefits

• Long lived performance and reliability

• Allows you to control more quickly ease and efficiency of the testing process.

• High productivity, ensures maximum energy savings.

Raagen engineers offers to customers with their experience unique testing solutions.

User-Friendly Software

The advantages of our controllers are:

- A/D-Conversion with high resolution (Standard: ±180.000 steps)
- Digital control
- Own power amplifieres for DC drives
- Additional parts like RMCs, aso.
- Complete delivery with a "Corporate Design"
- Simple communication between the producer software
- Large Know-How in the range of testing techniques

- On-time deliveries

ETM-700-S2

TEST&MOTION

The Intelligent Solution for your Test Applications

A test software should be able to:

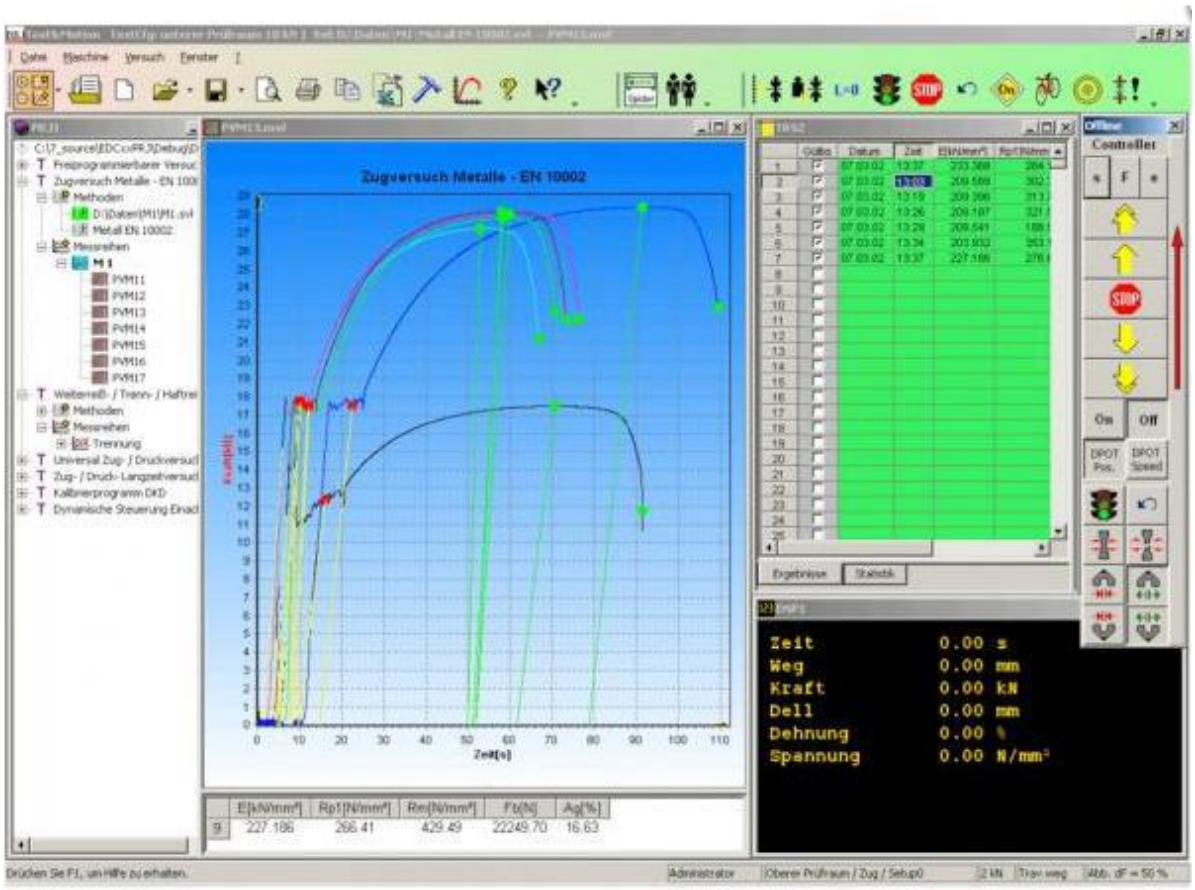
1. display everything **I want to**
2. evaluate everything **I need**
3. give everything out the way **I like it**

DOLI combined these tasks in the **Test&Motion** Software. Different information is shown in different windows at the same time.

Test&Motion was developed in a modular design. It consists of the basic software containing a simple but adaptable tension/compression test and different modules for almost all kinds of testing applications. The special module Free Programming offers the possibility to design tests individually. (the Free Programming packet is needed to extra charge)

All sorts of signal sources can be displayed. Load, position and strain are standard, but other transducers or calculated results can be displayed, also.

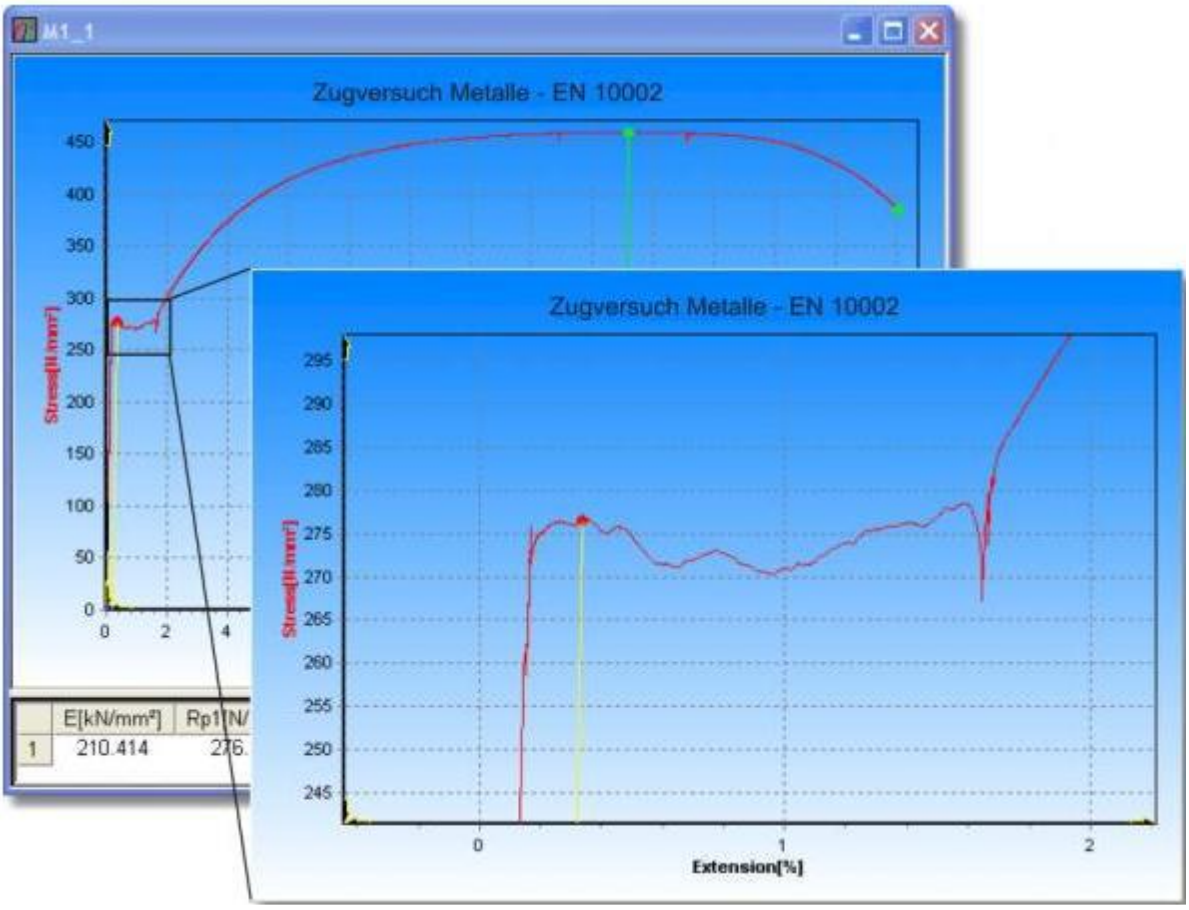
Test & Motion graphic display:



Variables are shown as curve in X- or Y-direction or listed digitally. Furtheron, you have the possibility to: change the names of the variables (e.g. load or F), zoom the grafic several times and store remarks within the grafic.If a bigger view of the curve is needed, the graphic window can be drawn up to screen size. Due to the organization in single windows, you do have the possibility, to move important values to a point where you can still see them.T&M is able to process several EDCs in a multiaxial manner. EDCs can be cascade and - what is even more important - synchronized, resulting in absolute identical signals for all channels. T&M can communicate with several EDCs at the same time.

T&M Basic - The basic software with a simple tension/compression test

- User surface for all T&M modules
- The test can be adapted to almost all kinds of applications
- User surface; parameter input and storage; graphic X/Y-display on-line
- Possible X- and Y-axis quantities: load, stress, X-head travel, strain, technical strain, time (from test start), true strain, nominal strain, time and defined signal input Determination of five values on the X- or Y-axis, maximum, breach as X- and Y-value. Corresponding determination of values for compression tests.
- Statistic functions: mean value, min/max value, range, median, standard deviation, practical limit of error, aso.
- Display of all data sent by the instrument: load, X-head travel, strain and defined signal input



The Application Modules - the perfect Module for each Application

- Metal tension/compression- and bending tests
- Continuing tearing-, separation-, peeling test
- 3-point-/4-point-bending test
- Plastics test acc. to DIN, ASTM D etc.
- Textile tensile test acc. to DIN
- Cyclic ring stiffness- and pipe pressure tests acc. to ISO 9969
- Torsion test (Tension/Torsion)
- Adaptable tests: seam shifting resistance, spring test, cyclic load, 3 integral, ball indentation hardness, compression stress, calibration of load transducers aso.
- The tests results can be obtained by purchasing several different packages.

ELECTRONIC CONTROL UNIT FEATURES

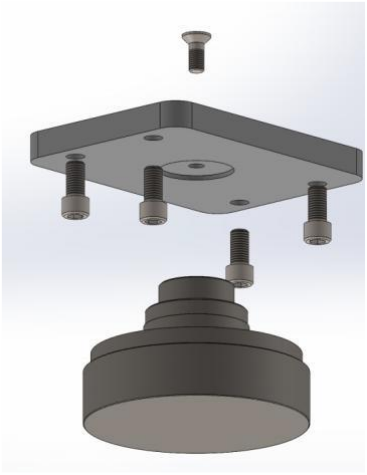
DOLI EDC CONTROLLER

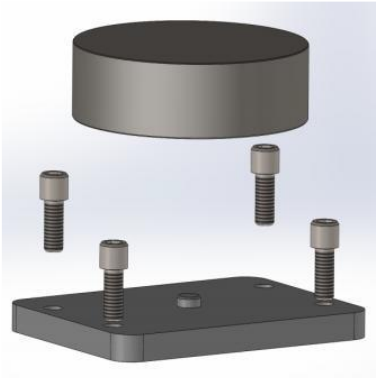
- 1000Hz Control Frequency
- High-speed transfer to the computer through an Ethernet connection
- Ability to connect to the computer via USB
- The control unit load step resolution channel is ± 180 000

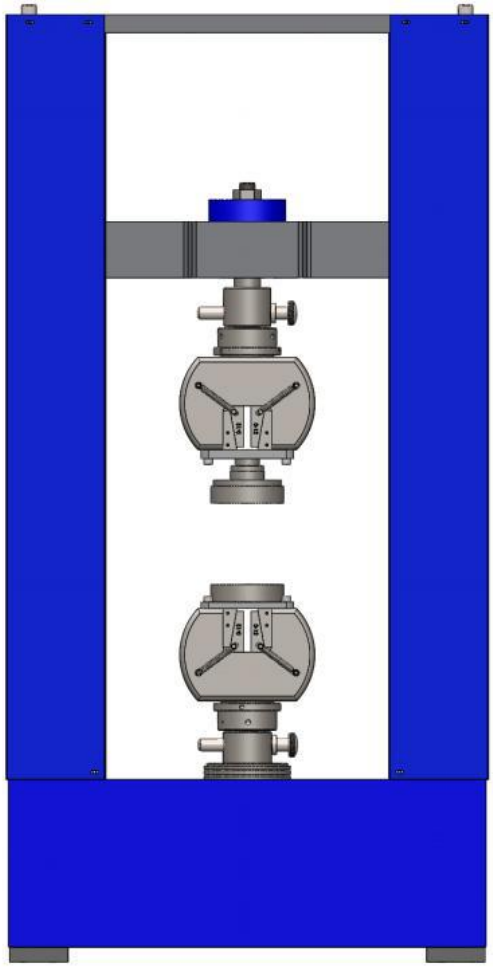
Apparatus

Raagen enginners can produce many kind of apparattus that depend on customer requirements.All of the design, engineering and production of the secific apparatus has Raagen. Raagen can designe different apparatus that for different standards.

We design by ourselves and we produce ourselves







After Sales Services

Training

Until user can be competence, onsite and remote training support provided by our software engineers.

Remote Training Support

We can check the test computer with a remote connection you make with your machine. When the connection is established, our software engineers, as well as if the machine may intervene. Thus, the problem can be solved quickly and efficiently in your laboratory.

That may be interfering with the remote connection conditions;

- Software verification and inspection
- Remote execution
- Video conferencing
- Updates