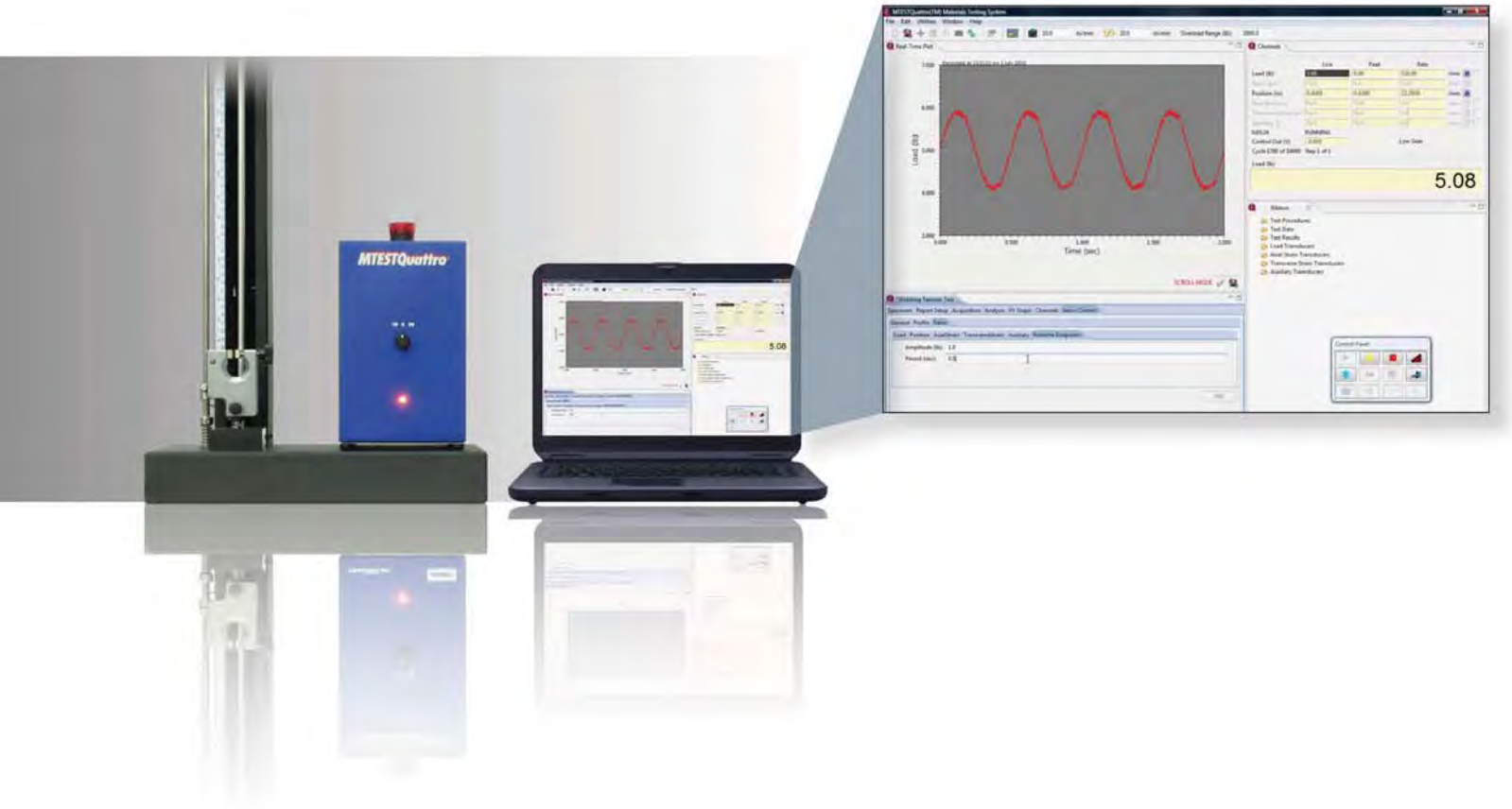
MTESTQuattro®

Materials Testing System

System Brochure



MTESTQuattro®

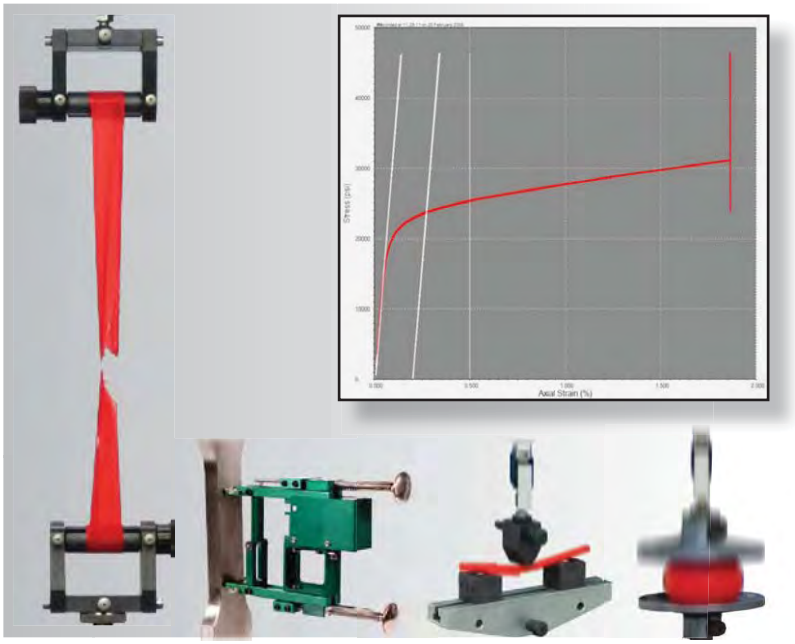
Materials Testing System

Power, Versatility, and Ease of Use.

ADMET's most advanced materials testing system.

MTESTQuattro® is a versatile easy to use PC based solution for mechanical testing of materials, components and products. The flexible interface provides connectivity to electromechanical and servo hydraulic testing systems. It can also be used to retrofit/upgrade virtually any manufactures testing machine regardless of age or machine type. MTESTQuattro® includes multiple channels of high resolution input, fast sampling and servo update rates for accurate control and measurement of static and dynamic fatigue tests. An all inclusive analysis suite plus the ability to develop your own test procedures provides the flexibility to perform virtually any test according to ASTM, ISO or customer test specifications. In order to streamline maintenance costs, FBMS also provides all calibration passwords, to you the owner.

Overview



MTESTQuattro® will perform tension, compression, flexure, torsion and biaxial tests. Its ease of use makes it ideal for quality control testing. MTESTQuattro®'s power and versatility also allow researchers to run complex tests. Pre-packaged or customer generated test procedures provide the capability to perform adhesive peel, bend, tear, tensile, compression, cyclic, fatigue and creep tests. Advanced reporting capabilities clearly and concisely display results that can be printed, exported to third party programs or emailed. Users have the freedom to organize, share and store test procedures, test data, and reports locally or across a network. FBMS will also develop custom test methods to meet your requirements.

Test with Certainty.

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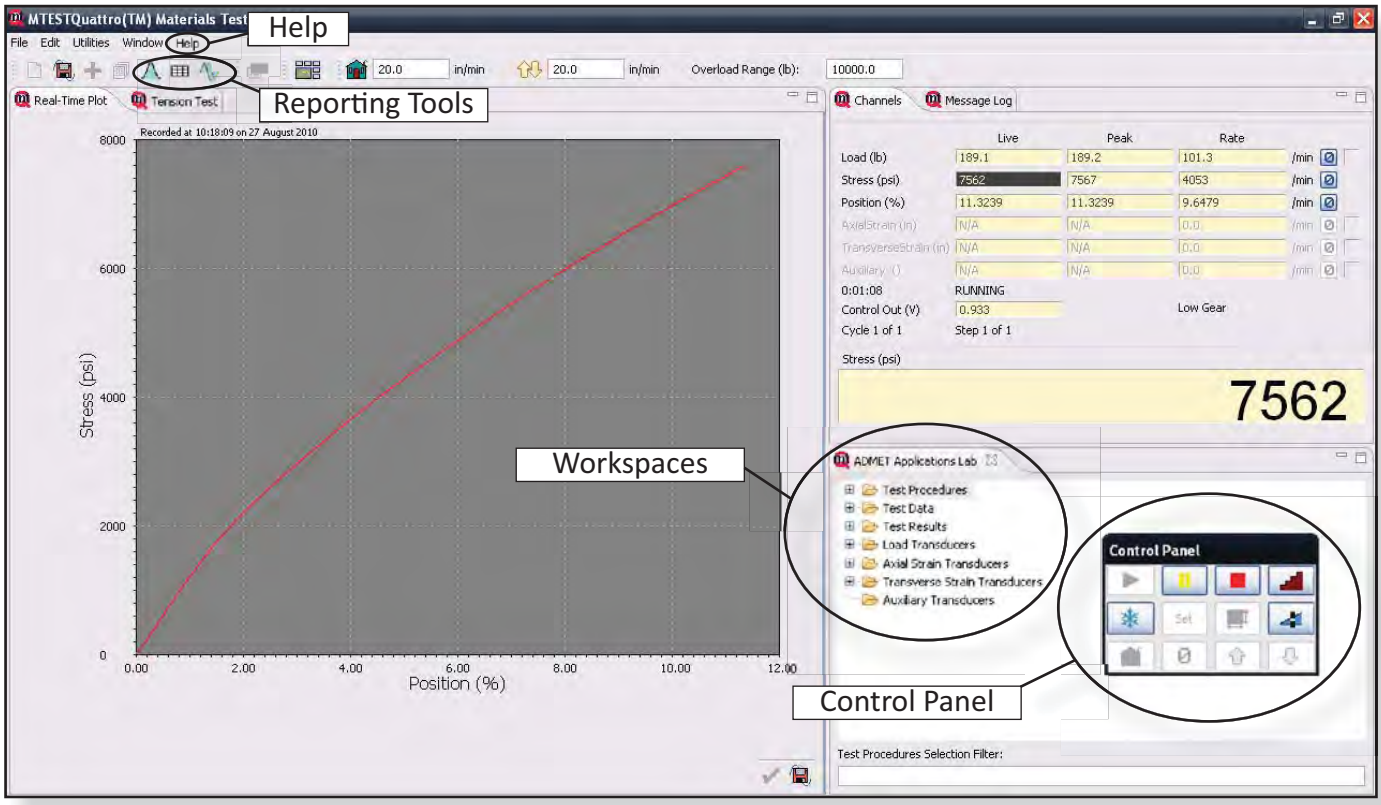
Overview Cont.

Reporting and Analysis Tools

Generate group test reports that include a multi-plot graph with XY curves and results from each test displayed in tabular form. Generate single test reports from the current test or recall previous stored tests for further analysis and viewing. View the raw test data in a spreadsheet table. Export reports in jpg image and pdf file formats. Export results and data in comma delimited csv format for easy import into common spreadsheet and database programs.

Help

MTESTQuattro® comes with extensive help in many forms. A built in context-sensitive help menu provides detailed feature descriptions and how to guides. Tutorials are also provided that include instructions on how to run a test or calibrate all inputs. With the purchase of each system, FBMS also provides on-line training at no additional cost.



Workspaces

Test procedures, test data and test results are organized according to user definable workspaces. Workspaces are storage locations that can reside locally or on a network and are used to organize your testing. For example, workspaces can be defined for each job, material, lot number or product type. The bottom line: test procedures can be quickly accessed for accurate and repeatable testing; test data and results are safely stored for later recall and reporting.

Control Panel

The testing machine control panel includes intuitive buttons for efficient test setup, sample loading and test execution. Use the Quick Start button to quickly enter specimen information and geometry. Jog up/down and Go Home icons facilitate pre test crosshead positioning. The Tare Channel icon zeros residual channel values. Start, Pause, Next Step, Stop and Freeze icons provide full control of the machine during test.

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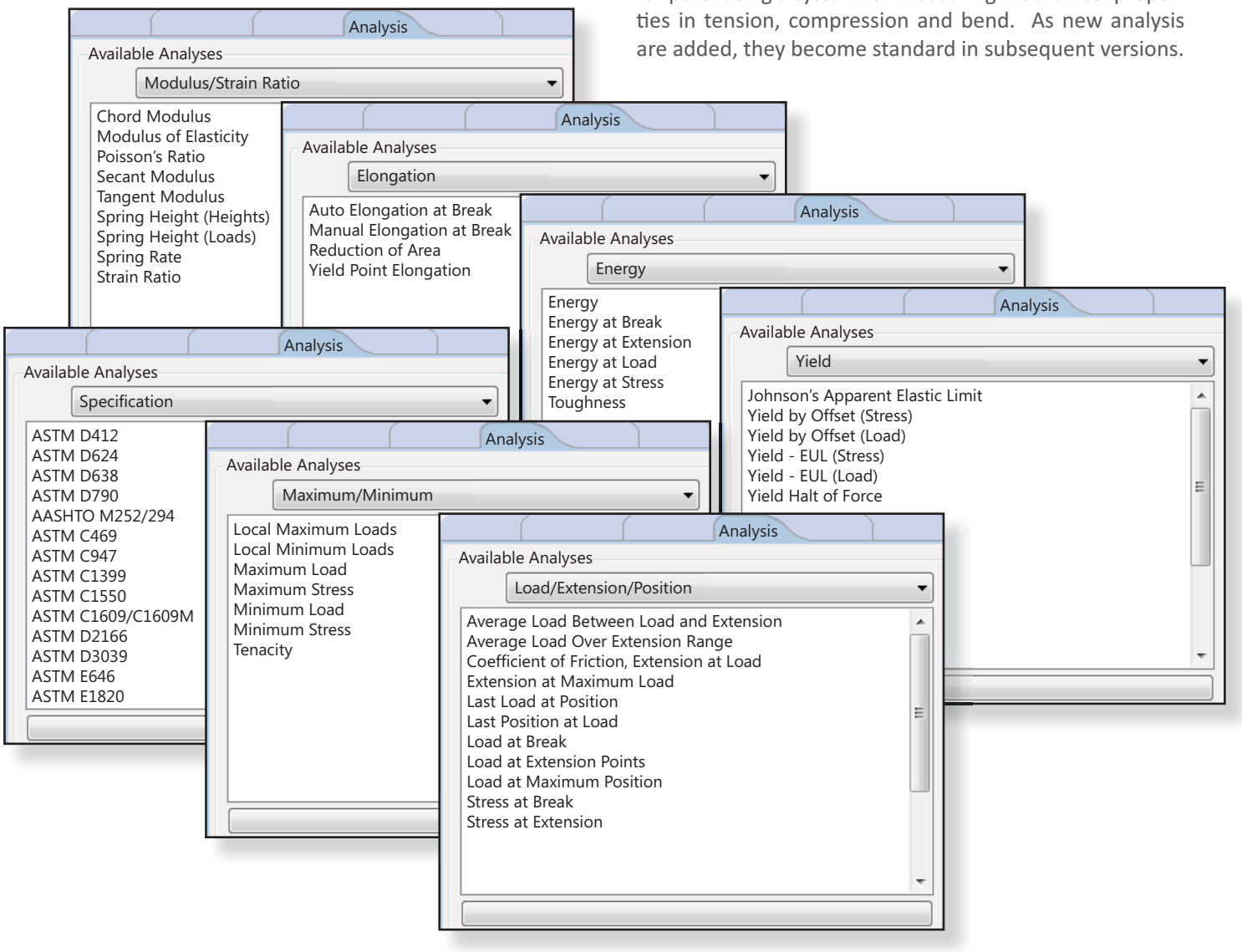
Analysis

MTESTQuattro® offers extensive data analysis capabilities for calculating important mechanical properties of adhesives, biomaterials, composites, foams, metals, packaging materials, plastics and textiles in tension, compression, bend and torsion. Ultimate Strength, Offset Yield Strength, Modulus of Elasticity, Percent Elongation, Poisson's Ratio, Toughness, N R & K values for sheet metal and Peel Strength are just a few of the standard analysis in MTESTQuattro®. All analysis are implemented according to ASTM and ISO test specifications and are validated by factory generated test data. In contrast with our competitors, each MTESTQuattro® system includes the complete analysis library. You will not be charged extra for purchasing a system for measuring mechanical properties in tension, compression and bend. As new analysis are added, they become standard in subsequent versions.



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Reporting

MTESTQuattro® offers powerful, easy to use data management and reporting tools. Store and organize all your test data and quickly create single or group test reports with charts and tables.

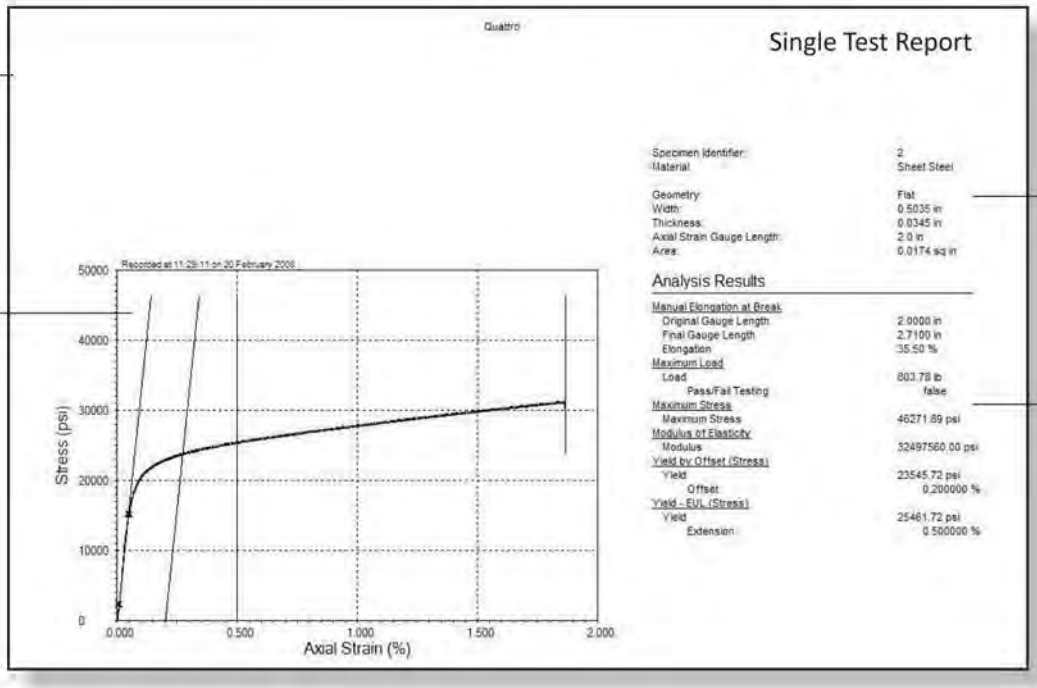
Single Test Report

Single Test Reports include: user defined parameters such as Specimen ID, Lot No, material type, and test rate; specimen type and dimensions; calculated mechanical properties; an XY curve with modulus and yield lines if applicable; and operator comments. Reports can be output as hard-copy printouts or as .pdf and .jpeg image files. Image files can be easily imported into your lab reports that include data from other test apparatus.

Features:

- Print hard copies or create .pdf or .jpeg image files of single test reports, group test reports and X-Y plots.
- Export test data in ASCII delimited format for easy import into popular spreadsheet and database programs.
- Include up to 10 user-definable test information and 20 report header fields on each report.
- Overlay up to 10 test curves on a multi-plot graph.

Single Test Reports are generated from recorded test data that can be manually or automatically saved after each test. Saved tested data can be recalled at anytime on a live or demo version of MTESTQuattro®. Recalled test data is used to generate Single Test Reports or can be exported in ASCII delimited format to common spreadsheet programs for further analysis.



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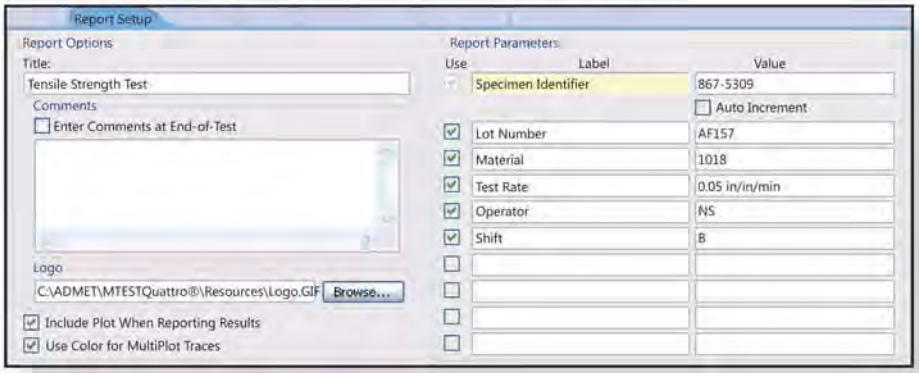
Reporting Cont.

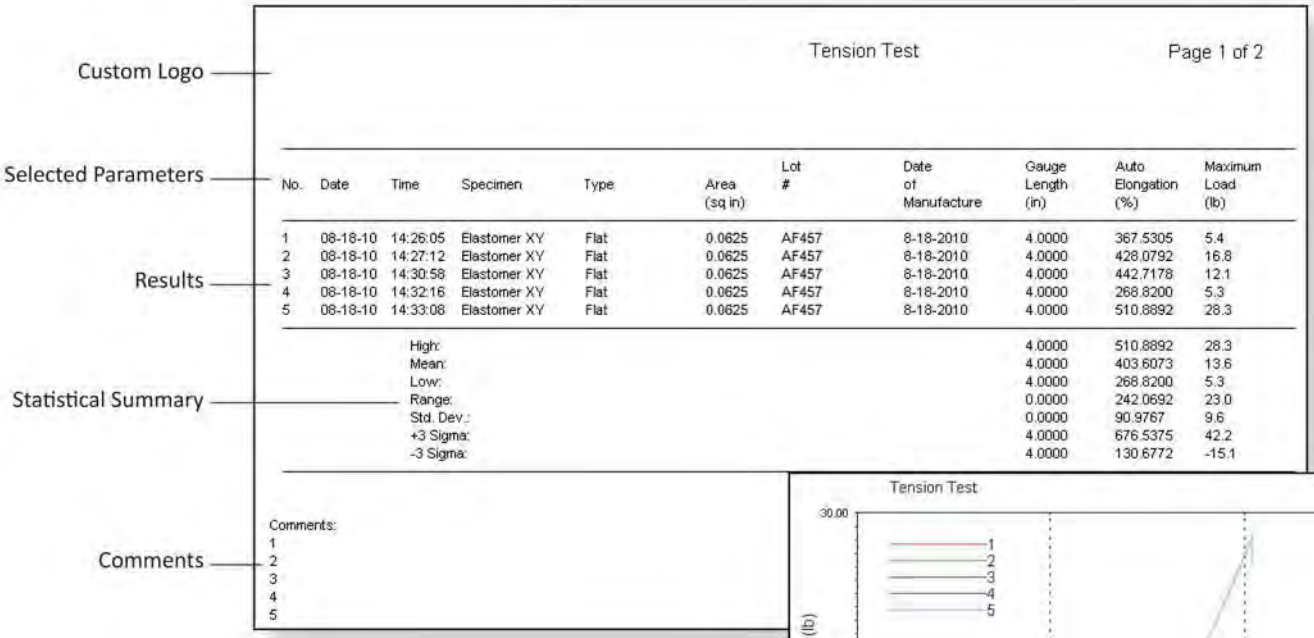
Group Test Report

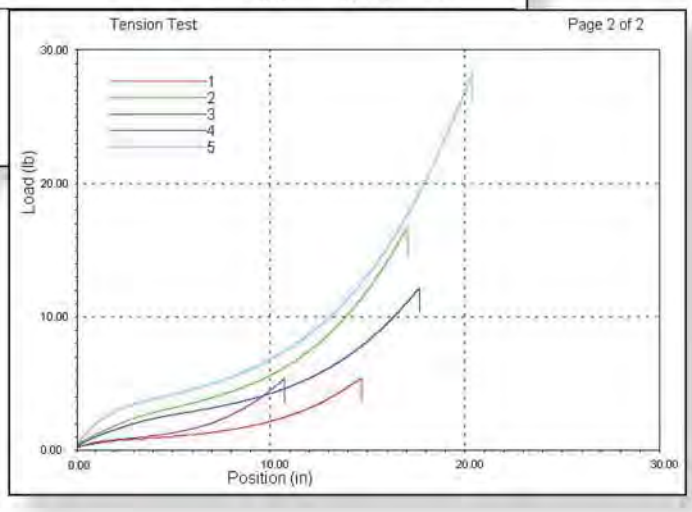
Group Test Reports display the mechanical properties for a group of like tests in tabular form. Included in the table is a statistical summary for each mechanical property, comments from individual tests, specimen information, and report parameters. The Group Test Report also includes a chart with test curves overlaid on the same set of graph axes.

Report Setup

Add a title, your company data, and logo. Choose your report parameters including user-definable test information fields.







Multi-Plot

Includes a chart with up to 10 curves overlaid on the same set of graph axes.

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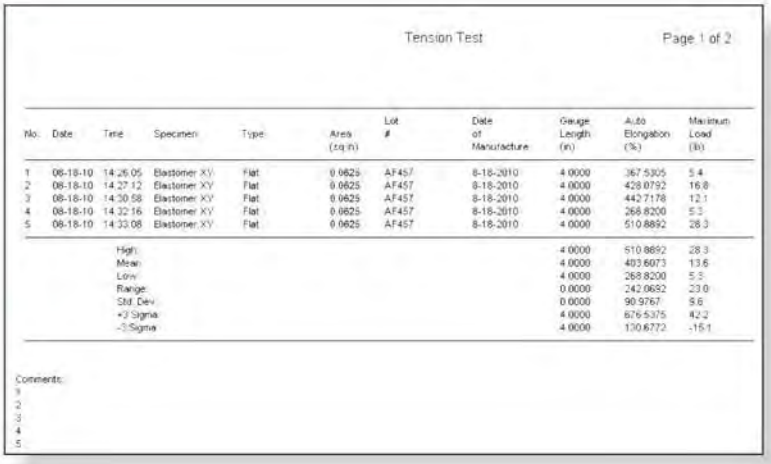
Reporting Cont.

Export Results and Test Data

Export results and test data in ASCII delimited format so results can be easily imported into many common spreadsheet and data base programs.



Tension Test — Page 1 of 2

No.	Date	Time	Specimen	Type	Area (sq in)	Lot #	Date of Manufacture	Gauge Length (in)	Auto Elongation (%)	Maximum Load (lb)
1	08-18-10	14:26:05	Elastomer XY	Flat	0.0625	AF457	8-18-2010	4.0000	367.5305	5.4
2	08-18-10	14:27:12	Elastomer XY	Flat	0.0625	AF457	8-18-2010	4.0000	428.0792	16.8
3	08-18-10	14:30:58	Elastomer XY	Flat	0.0625	AF457	8-18-2010	4.0000	442.7178	12.1
4	08-18-10	14:32:16	Elastomer XY	Flat	0.0625	AF457	8-18-2010	4.0000	268.8200	5.3
5	08-18-10	14:33:08	Elastomer XY	Flat	0.0625	AF457	8-18-2010	4.0000	510.8892	28.3
			High:					4.0000	510.8892	28.3
			Mean:					4.0000	403.6073	13.6
			Low:					4.0000	268.8200	5.3
			Range:					0.0000	242.0692	23.0
			Std. Dev.:					0.0000	90.9767	9.6
			+3 Sigma:					4.0000	676.5375	42.2
			-3 Sigma:					4.0000	130.6772	-15.1

Comments:
1
2
3
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5

reportExport0001

	A	B	C	D	E	F	G	H	I	J	K	L	M
1							Flat	Flat		Gauge	Auto	Maximum	
2	No.	Date	Time	Specimen	Type	Area	Width	Thickness	Lot	Length	Elongation	Stress	
3						(sq in)	(in)	(in)		(in)	(%)	(psi)	
4													
5	1	09-09-10	14:06:18	Elastomer	Flat	0.0625	0.125	0.5	AF457	2	88.1538	269.771	
6	2	09-09-10	14:07:34	Elastomer	Flat	0.0625	0.125	0.5	AF457	2	126.5492	861.39	
7	3	09-09-10	14:07:51	Elastomer	Flat	0.0625	0.125	0.5	AF457	2	85.9657	564.558	
8	4	09-09-10	14:08:05	Elastomer	Flat	0.0625	0.125	0.5	AF457	2	75.472	490.35	
9	5	09-09-10	14:08:16	Elastomer	Flat	0.0625	0.125	0.5	AF457	2	68.2352	512.36	
10													
11	High:										126.5492	861.39	
12	Mean:										88.8752	539.686	
13	Low:										68.2352	269.771	
14	Range:										58.314	591.619	
15	Std. Dev.:										22.5498	212.219	
16	+3 Sigma:										156.5245	1176.342	
17	-3 Sigma:										21.2259	-96.97	
18													

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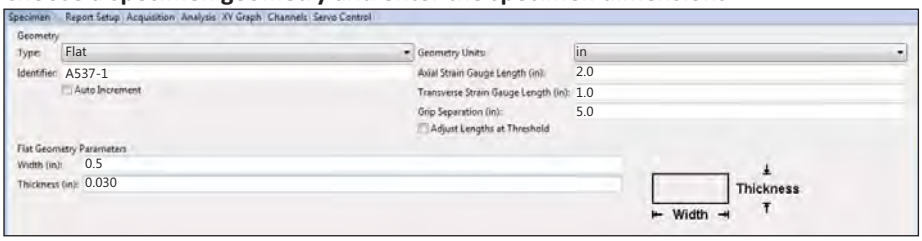
Build Your Own Test Procedure

Standard with MTESTQuattro® are many test procedures that follow common ASTM test specifications. If you need to create your own test procedure, here's how, it is quick and easy.

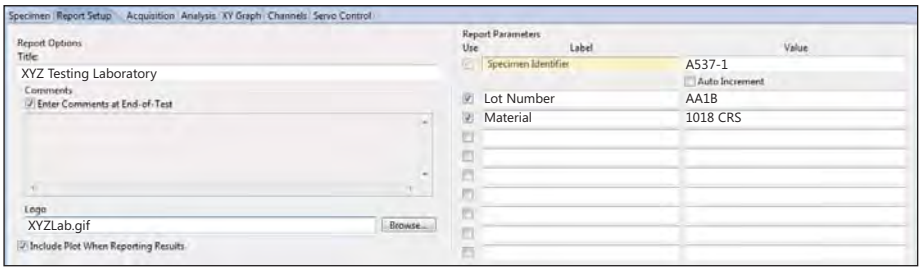
Step 1

Choose a specimen geometry and enter the specimen dimensions



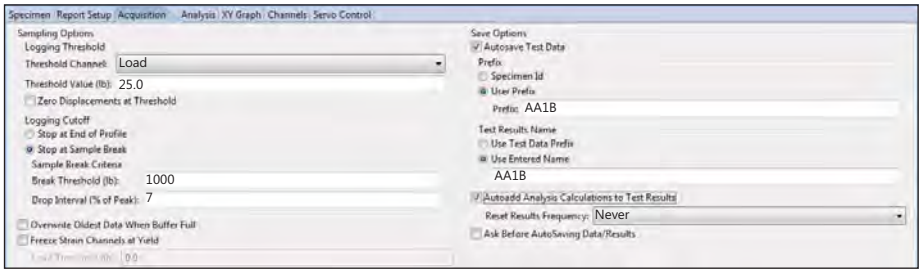
Step 2

Enter test parameters and specimen identification information



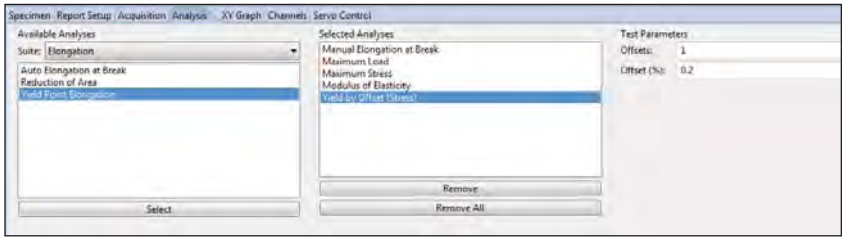
Step 3

Define the start and end of test and where your test data and results are to be stored



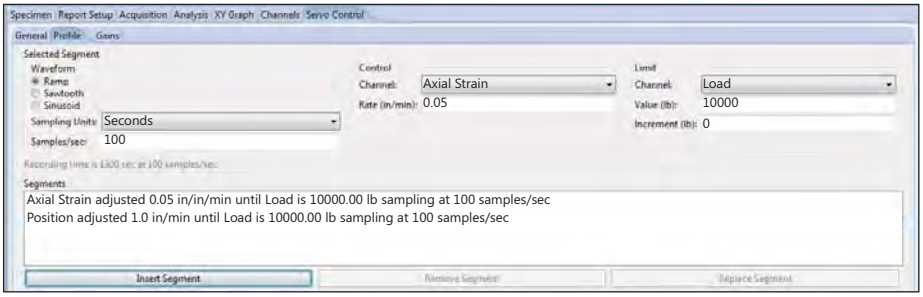
Step 4

Select the mechanical properties you want to measure



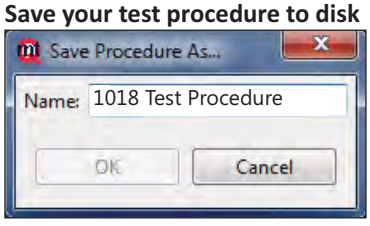
Step 5

Build a servo test profile that includes load rates, strain rates and end points



Step 6

Save your test procedure to disk



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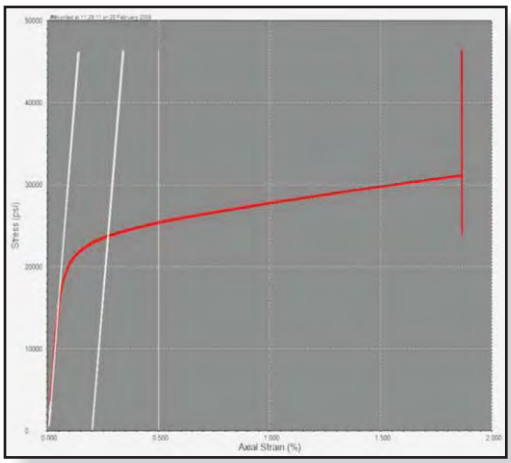
Servo Control

Servo Control

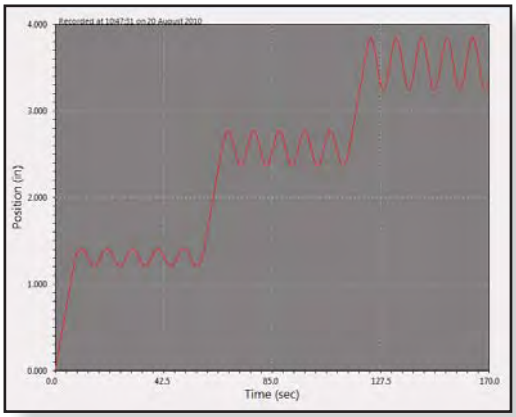
MTESTQuattro® features a responsive fast acting servo loop with a digital PID (Proportional Integral Derivative) filter for precise control. It's 8 kHz servo update rate is tops in the industry and provides accurate control of static and dynamic fatigue tests. Users can easily define ramp to break, ramp and hold, sawtooth, squarewave, sinewave and complex cyclic control profiles. MTESTQuattro® also has the flexibility to switch control channels and endpoints between profile segments. Users can modify the control gains and end points while the test is proceeding to ensure that the end point values are being met, which is ideal for system tuning during dynamic fatigue tests. Some examples of MTESTQuattro®'s control capabilities are shown.

Tensile Test



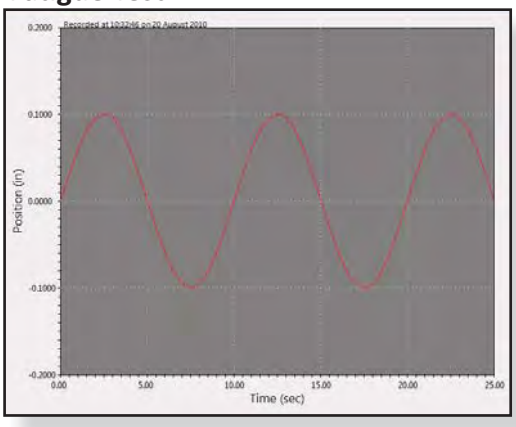
MTESTQuattro® is well suited to perform tensile tests on all types of materials. An example is the control profile for a metals test. The first control segment loads at the prescribed ASTM E8 strain rate through yield. Once the extensometer is frozen and removed from the specimen, MTESTQuattro® automatically switches to crosshead or piston position rate control until specimen failure.

Complex Multi-Segment Test



Users can construct complex control profiles with unlimited number of control segments. Ramp, hold, sawtooth and sinewave segments with changes in control channels and rates can be linked together to perform the test you need. Complex profiles can also be repeated to generate more complex cyclic profiles.

Fatigue Test



A sinewave is a common profile for dynamic fatigue tests. MTESTQuattro® allows users to modify the amplitude and period of the waveform during test. Users can also modify the PID control gains during test to optimize machine response. MTESTQuattro®'s advanced plotting features allow you to place the live graph in oscilloscope mode to zoom on the waveform. The live screen also reports time elapsed from start of test and the number of cycles completed. FBMS also provides access to the live test data real-time so that you can use external software to log data over long periods of time.

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Testing Configurations

Universal Testing Machines

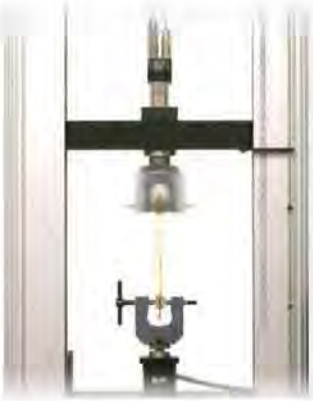
MTESTQuattro® UTM is the materials testing system for measuring the mechanical properties of materials, components and products in tension, compression and bend. The UTM version will perform static and dynamic fatigue tests to 20 Hz. It is equipped with five channels of force, crosshead position, axial strain, transverse strain and auxiliary inputs. An additional three channels of auxiliary inputs can be added for a total of eight. MTESTQuattro® UTM will operate all FBMS electromechanical and servo hydraulic testing systems. Additionally, FBMS offers MTESTQuattro® retrofit/upgrade packages for users that want to update their existing testers for enhanced capability and productivity. Our retrofit packages are compatible with existing testers regardless of age, model or machine type.

Torsion Testing Systems

MTESTQuattro® TWIST measures the mechanical properties of materials in torsion. The TWIST version will perform static and dynamic fatigue tests to 20 Hz. It is equipped with four channels of torque, angle, shear strain, and auxiliary inputs. An additional three channels of auxiliary inputs can be added for a total of seven. MTESTQuattro® Twist will operate all FBMS electromechanical and servo hydraulic torsion testers. Additionally, FBMS offers MTESTQuattro® retrofit/upgrade packages for users that want to update their existing torsion testers for enhanced capability and productivity. Our retrofit packages are compatible with existing testers regardless of age, model or machine type.

Biaxial Testing Systems

MTESTQuattro® BIAXIAL is capable of performing biaxial and planar biaxial tests. FBMS biaxial testing systems which include a linear force actuator and a rotary torque actuator are offered in two configurations; adding a torsion actuator to a standard eXpert single column or dual column testing machine or by adding a linear actuator to an FBMS eXpert torsion tester. FBMS also offers engineered test rigs for performing planar biaxial tests that include two linear force actuators.



Biaxial test system - Torsion Actuator added to eXpert 2600 series dual column testing machine

System Compatibility

Operating Systems – Microsoft Windows XP/Vista/7; All 32 bit and 64 bit versions.

FBMS Testing Systems – All electromechanical and servo hydraulic universal testing machines, torsion testing machines and biaxial testing systems.

Retrofits/Upgrades – Baldwin, Instron®, MTS, SATEC™, Tinius Olsen, United, Zwick. All electromechanical and servo hydraulic models regardless of age or machine type.

Peripheral Devices- Brown and Sharpe Electronic Calipers, Omron Temperature Controllers, Laser Extensometers, Vision Systems

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Service and Training

FBMS strives to make its materials testing products powerful and easy-to-use. Free phone support is standard with the purchase of any FBMS product. We also offer an array of services to help you create a state-of-the-art laboratory. These services include:

- On-site installation and training.
- Custom analysis and report generation.
- Computer networking.
- Creation of, or connectivity to, your in house database program.
- Network integration of all your laboratory instruments to stream-line data transfer.
- Online training using GoTo Meeting.

Calibration and Maintenance

FBMS offers a variety of calibration and maintenance services to meet your needs and budget. As a matter of course, we provide all calibration passwords to you at the time of your instrument or machine purchase. This enables you to choose who performs calibration and maintenance on your systems.

Calibration and Maintenance Contracts - Customers who wish to mainstream calibration in their laboratories or production plants can setup calibration contracts with FMBS. These contracts offer automatic calibration services based upon each customer's required calibration interval. Our experience in maintenance programs has proven itself by reducing customer down time on production testing equipment. The maintenance contracts can be customized to your specific equipment and needs.

ASTM and ISO Calibration Standards offered:

- E4 Force Verification
- E83 Extensometer Verification and Classification
- E1012 Test Frame and Specimen Alignment
- E2309 Crosshead Displacement Verification
- E18 Rockwell Hardness and Superficial Hardness
- E10 Brinnell Hardness
- E384 Microindentation Hardness
- E23 Charpy Impact