WAVEMATRIX[™]3 The Difference is Measurable







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WAVEMATRIX[™]3 The Difference is Measurable

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WaveMatrix is the industry's market leading software suite for dynamic and fatigue testing that is trusted by scientists, engineers and quality managers worldwide.

The latest version of the software builds upon the potential of its predecessors and introduces new features such as **Test Review**, **Specimen & Test Inputs** and **Security**.

Developed to work seamlessly alongside the latest PC software and firmware, WaveMatrix3 will save time, enhance productivity, improve confidence in the results being produced and help to futureproof facilities needing to adapt to new technologies.

Designed for customers, with the support of customers, WaveMatrix3 guarantees that when advancing the boundaries of material testing; **the difference is measurable**.





Specimen – & Test Inputs

Additional features have been added to the Method section that increases the quantity of additional test control options and simplifies the management and collection of test information.



Always-on-Top Display

Console comes as standard with all systems hosting WaveMatrix software and is the bedrock for many Instron[®] innovations such as specimen protect and its patented stiffness-based tuning.

Security

New easy-to-use features improve test reliability and auditability will maximize customer confidence.

Tutorials

Quick video-based guidance highlighting both new and old features helps owners to quickly become product experts.

Test Review -

A completely new section of the software allows a user to instantly and retrospectively inspect, edit, annotate and interpret their test results.



| | FEATURE | WAVEMATRIX3 | WAVEMATRIX2 | WAVEMATRIX |
|-------------------|--------------------------------------|-------------|-------------|------------|
| AVE TIME | Intuitive User Interface | ~ | | |
| | Retrospective Test Review | ~ | | |
| | Auto-Calibration | ~ | ~ | v |
| SA | Stiffness Based Tuning | ~ | ~ | v |
| | Quick Test Setup | ~ | ~ | |
| ANCE PRODUCTIVITY | Customizable Specimen & Test Details | ~ | | |
| | Integrated Virtual Test Information | ~ | | |
| | Specimen Protect | ~ | v | v |
| | Example Methods | ~ | ~ | |
| ENF | Video Tutorials | v | V | |
| ICE | PIN-Coded Accessibility | v | | |
| FIDEN | User Defined Access Rights | v | | |
| E CON | Visual Test Space | * | ~ | ~ |
| PROV | Intuitive Test Setup | v | ~ | |
| Σ | Visual Sequence Builder | ~ | ~ | v |
| FACILITIES | Microsoft Windows 11 Compatibility | v | ~ | |
| | WaveMatrix Backwards Compatibility | v | | |
| ROOF | Always-On-Top Display | v | v | ~ |
| 'UREP | Automatic Logging | v | ~ | ~ |
| FUT | Robust File Structure | ~ | V | V |



Reducing the time taken to accurately perform tests has been a continuous focus for product innovation and with WaveMatrix3, this concept was central to development. Designed using expert customer feedback, the following features have been produced to accelerate the process of reviewing a test.



Intuitive User Interface

Modifying the layout of graph and control charts that are commonly used to compare cycles, overlay waveforms, observe hysteresis loops and view peak data for specific parts of a test are easy to customize, will repopulate instantly and facilitate the rapid manipulation of multiple datasets.



Retrospective Test Review

Data generated during previous tests can now be viewed once the session has finished, removing the timeconsuming process of exporting the data and processing it using 3rd party software consequently accelerating the assessment stage and eliminates the potential to compromise the integrity of the original data.





Auto-Calibration

When selected, a simple and robust step-by-step process which has been integrated into the software can swiftly calibrate and setup both Instron and 3rd party transducers prior to tuning.



Stiffness Based Tuning

Making testing machines accessible to users of all abilities, this patented game-changing technology reduces tuning time by up to 75%, avoids pre-cycling and helps to ensure that a test runs correctly first-time, every-time.



Quick Test Setup

Materials testing system operators can set-up simple fatigue tests in seconds when using the intuitive, user friendly and flexible interface that is located on the quick access home-screen.



Improving productivity can occupy a significant part of any organization's continuous improvement efforts and is a key component of sustainable growth and unlocking employee potential. WaveMatrix3 has been designed to improve throughput and minimize the inefficiency of routine testing.

| Enter Specimen Details | | | | | I |
|--|-------------|--|-------------|---|----------------------------|
| men Details Especimen Type: Thickness (1): Widbh (2): Cross Sectional Areas: ut Custom Dimensions: Name | Value Units | Titt Specimen 10.00000 5.00000 50.00000 | 2 9 9 | > | |
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By simplifying the testing workflow so that user can input and record key test information, it is now easy to carry out tests in stress control and remove the need to complete pre or post test force or stress calculations.



Integrated Virtual Test Information

Being more efficient when collecting insights and entering inputs during a test reduces the potential for post-test data entry errors and allows an operator to focus on performing and repeating high quality tests.



* A Before running any of these methods on your system, watch the totorial video "Using Example Hethods" to under advert, answe you are trained and familiar with all the hazards associated with restards toting system before caused Current Con Waveforms - Envelope Times for Waveforms This method shows how the Start and End Envelope function (found in the Envelop tab for cyclic waveform types) can be used to smooth the starting cycles of a war and egually to gently wid down the waveform. aveforms - Superimposed Waveform using Sample Data eforms - Impulse Waveform using Sample Data This has the effect of gently increasing the amplitude of the control wave neeks are met Waveforms - Frequency Sweeps Waveforms - Specimen Self Heating Control Demo nd envelope time is set to 5 seconds to allow you to the toot Data - Using Trend Monitor to Log Additional Cycles Data - Auto Balancing Transducers ata - Processing Loop Data free air without a specimen installed. You Data - Velocity and Acceleration Calcu Data - Elastic Stiffness Calculation User Inputs Part 1 - Manually Advancing a Test Workflow User Inputs Part 2 - Skipping Multiple Steps vents Part 1 - Using Events to Change Test Workflow Events Part 2 - Using Events to Handle Unexpected Behavior User Calculations Part 1 - Add a Fixed Trend line to a graph User Calculations Part 2 - A Fixed Trend Line Only on Step 2 User Calculations Part 3 - Add a Step Dependent Trend Line Jser Calculations Part 4 - Create a Simple Countdown Time User Calculations Part 5 - Calculated Error from Target Value User Calculations Part 6 - Calculated % Error from Target Value

Specimen Protect

By automatically helping an operator to remove unwanted tensile, compressive and torsional forces during test setup, the risk of accidental harm to the system, test sample and operator is reduced.

Example Methods

A ready-to-use library of 20+ methods that have been optimized to work on the testing system without the need for special fixtures are able to be reviewed and edited to suit an operators needs.



Video Tutorials

An array of pre-configured example methods and a source of effective contextual help is included and provides a practical and effective means of empowering a user to extract the maximum potential from their testing system.



Resources required for test validation are necessary and critical to ensuring the quality of test data. WaveMatrix3 features help to simplify the conformity process so that laboratories are more effective, the potential for human error is reduced and confidence in the result is improved.



PIN-Coded Accessibility

With the optional ability to limit access to authorized users only, the potential to deliver superior test method quality control and maximize the integrity of test data can now be aligned to meet the demands of your IT security network.





User Defined Access Rights

With three different pre-defined profiles to select from, it is possible to configure the workspace to suit the needs of different users and limit the functionality that is available to an individual. Doing so limits the complexity of the software; reduces the time taken to train and upskill staff and simplifies the auditing process.



| - 8 | Method B Tutorials | Admin | | | |
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Visual Test Space

The customizable workspace which can be configured to display the most relevant information via a range of graphs, progress indicators and data tables also hosts an automatic validation feature that will flag errors and warnings before the start of a test.

Intuitive Test Setup

Build and understand complex test methods at a glace, rename devices, steps and data channels, control the test workflow using; loops, events, user interactions, digital inputs and the trend monitor and expand machine testing capabilities with additional devices.



Visual Sequence Builder

Confidently design, visualize, modify and refine the test method sequence safe in the knowledge that your specimen will be tested correctly; limiting waste, unlocking productivity and reducing costs.



As the world advances into the 4th industrial revolution, the demands for automation and data exchange in the materials testing industry has increased. Software has often been used to solve this challenge and WaveMatrix3 has been designed to meet these challenges and ensure testing facilities are as futureproofed as possible.





Microsoft Windows 11 Compatibility

Developed to work with the latest PC operating system ensures that when using WaveMatrix3, test facilities are as futureproofed as possible; minimizing the risk of downtime associated with aging digital infrastructures.



WaveMatrix Backwards Compatibility

Upgrading to WaveMatrix3 means that all the valuable features available in previous versions can be still be used alongside the ability to seamlessly import existing test data and methods that were previously created.







Always-On-Top Display

Critical real-time operation and status information for the overall system is always displayed in a fixed location and cannot be covered; resulting in improved familiarity, enhanced safety and continuity between different users.

Automatic Logging

All test folders contain a time-stamped log of all test events, an archived copy of the test method used to produce the result and a results datafile including referenced cycle, step and loop numbers to aid post-test processing.

Robust File Structure

Designed to maximize traceability and data accessibility, a clearly defined structure that organizes project data and individual test results is used to generate an open CSV file that can be used for the post-test analysis.



ADDITIONAL MODULES Upgrade Your Software and Unlock New Capabilities



Calculations

Use live calculations and process data in real-time to gather more insightful data quicker whilst reducing posttest processing time. Choose from an extensive library of 20+ built-in algorithms (such as cyclic energy, or dynamic modulus) or create your own.



Advanced Control

Use an increased range of control modes and waveform types which automatically adjust the applied loading. Combine with live calculations to create sophisticated adaptive tests.



Specimen Self-Heating Control

Specimen Self-Heating Control helps to accelerate test programmes for polymer composites where specimens generate heat internally under cyclic loading. Adaptively controlling frequency in response to specimen temperature reduces time for long life tests and improves consistency between stress levels.







ElectroPuls® All-Electric Dynamic and Fatigue Test Systems Linear electric motor driven dynamic test machines for fatigue and fracture mechanics testing



General Purpose Hydraulic Fatigue

General purpose servohydraulic systems ideal for high-cycle and low-cycle fatigue, fracture mechanics and quasi-static testing.





THE WORLD STANDARD

We stake our reputation on the integrity of data. From the measurement of primary test data to result generation, we design and manufacture the full data integrity chain (e.g. load cells, sensor conditioning, and software). Additionally, we calibrate more than 90,000 of these sensors annually with the lowest accumulated uncertainty.

30,000+

We service and calibrate more than 30,000 Instron systems in active use worldwide every year.

96%

96% of the Fortune 100 list of the world's largest manufacturing companies use Instron test systems. 18,000+

Instron systems have been cited in more than 18,000 patents since 1975.

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