Mecmesin

Cosmetics and personal care Sales brochure

PHYSICAL PROPERTIES TESTERS GROUP

mecmesin.com

Trust starts with quality

Your consumers feel the difference

Consumers judge cosmetics and personal care products by their texture and how smoothly they dispense. Packaging must be both functional and visually appealing - protecting the product while reflecting your brand.

Mecmesin's force and torque test equipment ensures consistent quality at every stage - from product texture and applicator performance to packaging durability and ease of opening.

Testing standards

Mecmesin's force and torque testing systems are widely used in QC, R&D, and production across the cosmetics and personal care industry. We help companies meet both industry benchmarks and bespoke requirements with adaptable solutions and custom fixtures.

- Detecting defects early to minimise waste
- Preventing faulty supplier batches from reaching production
- Optimising material use to reduce costs and meet sustainability goals
- Ensuring packaging integrity to prevent leaks and damage
- Testing product durability to maintain performance throughout its lifecycle
- Guaranteeing batch-to-batch consistency to build customer loyalty

With a global network of experts, Mecmesin supports you in developing tailored solutions to maintain exceptional quality and compliance.

bsi. ASTM ISO

L'OCCITANE EN PROVENCE · Christian Dior · AVON · CHANEL · zellaerosol · L'ORÉAL · P&G · COTY · ESTĒE LAUDER · oriflame · GUERLAIN PARIS · Barry M

> Mecmesin's automated torque tester allows us to enhance our existing test methods and create new ones for our quality control records. It is accurate, provides good reproducibility, and we can totally rely on it for the results we get.

Jérôme Villeval, Homologation packaging. L'Oréal

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Perfect application coverage

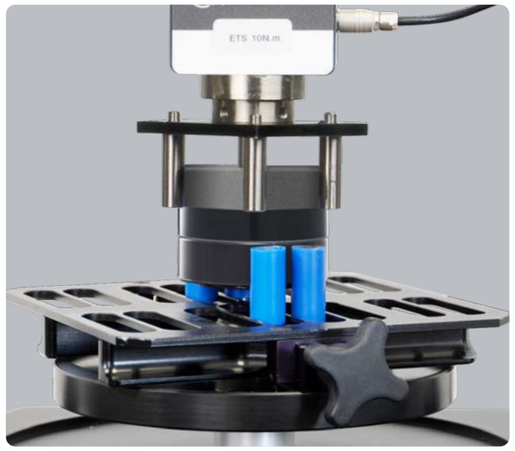
Your guide to testing cosmetic products

Ensuring product quality starts with selecting the right testing method. Torque testing assesses the rotational behaviour of caps, lids, and dispensers, ensuring they function smoothly and with the right level of resistance. Force testing measures tensile, compression, and shear strength in packaging, adhesives, and structural components, verifying their durability and performance. Texture analysis evaluates the physical characteristics of semi-solid products, such as firmness, consistency, and smoothness, ensuring they meet sensory expectations.

Understanding the functional and sensory attributes of your product is key to choosing the most effective testing approach - one that guarantees quality, performance, and compliance.

01 | Torque

Mecmesin's bench-top torque testers measure clockwise and counter-clockwise torque from just a few Nmm up to 10 Nm. Precision is essential for small cosmetic packaging and applicators, where smooth operation and a light yet tactile feel are critical.

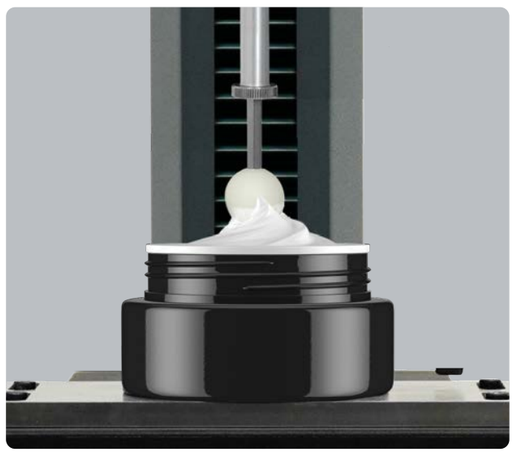


02 | Force

Mecmesin's force testing systems measure tensile and compressive loads up to 50 kN. These Universal Testing Machines (UTM) use interchangeable loadcells to ensure highly accurate results across a range of packaging and product tests.

03 | Texture

Mecmesin's Texture Analyzers apply scientific methods to measure physical textural attributes. Standard fixtures simulate the handling and processing forces experienced by cosmetics, ensuring consistent firmness, and smoothness.

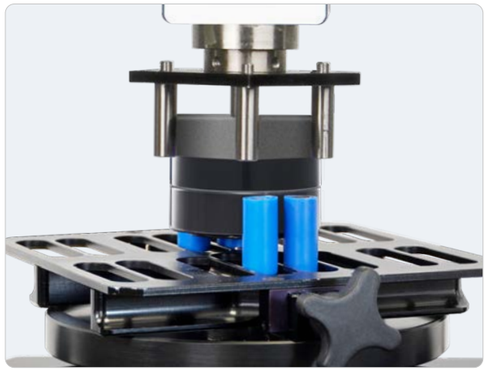


Torque testing

Packaging plays a vital role in the functionality and appeal of cosmetics and personal care products. Often integrated with the product itself - such as lipstick barrels and mascara brushes - packaging must be easy to open, apply, and reseal while maintaining durability and a premium feel. As packaging designs become more intricate, ensuring reliable performance requires precise torque measurement.

Mecmesin's torque testing solutions accommodate a wide range of packaging types, from rigid containers to flexible applicators. With specialist grips and fixtures, our systems measure release and application torque, ensuring products meet quality, usability, and regulatory standards.

Our range includes manual torque testers, which provide an affordable and simple way to check release torque, as well as automated systems, which eliminate operator variability and ensure highly repeatable results. By applying consistent rotation speeds and axial loads, automated testers deliver greater precision and efficiency, reducing strain on operators and improving process reliability.



Lid release torque measurement with a motorised tester

Custom cap mandrel for optimum accuracy

Manual torque test with a cap mandrel

Mascara cap/applicator removal

Eye dropper cap mandrel

Stirrup Fixture

For low torque applications where components are gripped by a fixture which must move vertically as torque is applied.

Lipstick deployment/retraction torque

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Typical applications

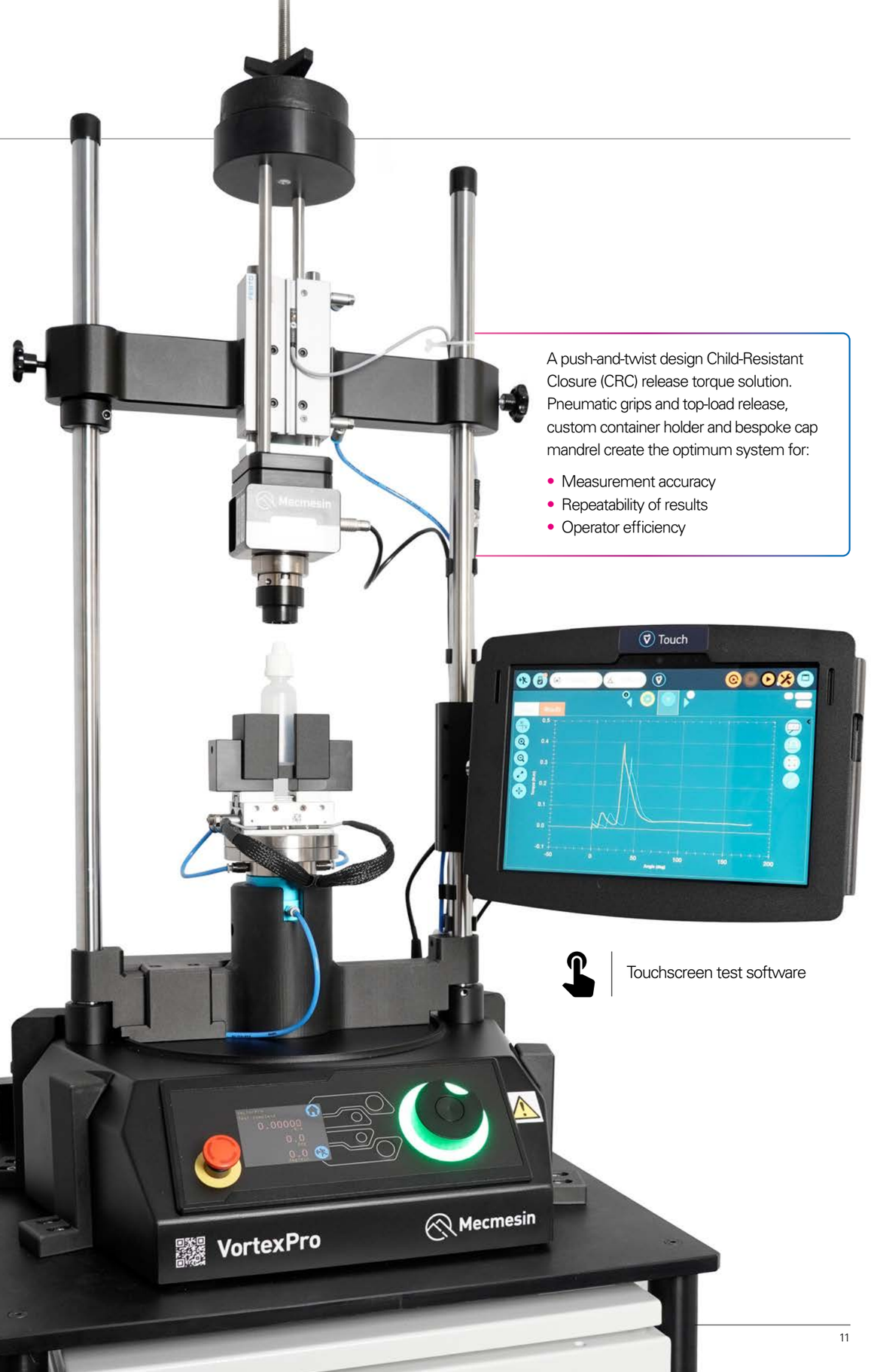
Torque testing is essential for ensuring packaging integrity and ease of use in cosmetics and personal care products. Caps and closures must be secure enough to prevent leaks and contamination while remaining easy to open for consumers of all ages. Measuring application and release torque helps manufacturers verify seal strength, consistency, and capping machine performance across production batches.

Beyond packaging, applicators and dispensers – such as lipstick barrels, mascara wands, and pump sprays – require precise torque control for smooth, controlled dispensing. These components often demand low-torque measurements, making specialist grips and highly sensitive sensors crucial for accurate testing.

By applying repeatable torque measurement, manufacturers can optimise design, material selection, and production processes to ensure their products deliver a premium, reliable user experience.

Combined mascara applicator and twist cap packaging

A manually operated torque tester with adjustable container grip for quick and efficient torque checks



A push-and-twist design Child-Resistant Closure (CRC) release torque solution. Pneumatic grips and top-load release, custom container holder and bespoke cap mandrel create the optimum system for:

- Measurement accuracy
- Repeatability of results
- Operator efficiency

Touchscreen test software

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Force testing

To ensure durability and performance, cosmetics packaging and applicators must withstand tensile and compressive forces throughout their lifecycle. Mecmesin's force testing solutions help manufacturers verify mechanical strength, ensuring products, components and materials meet quality standards and consumer expectations.

From top-load compression tests on bottles to peel and adhesion testing of seals, force measurement plays a critical role in optimising material selection, packaging integrity, and product usability. With standard accessories and specialist fixtures designed for flip caps, aerosol dispensers, and brush applicators, Mecmesin's systems ensure reliable, repeatable results across a wide range of applications.

Coefficient of Friction (COF) measurement for packaging print optimisation

Tamper-evident foil 135° peel force

Dispenser push-to-close effort

Push-to-dispense effort

Applicator brush filament pull-out resistance

A closure-actuator for dispensing a mist by pushing the button on the twist-to-lock cap. Measuring the compression force indicates:

- Ease-of-effort to spray
- Positivity of feel
- Reliability and resilience

We can also test the lock/unlock twist effort.

Typical applications

Force testing is widely used in packaging assessments, measuring top-load strength, burst resistance, and coefficient of friction to ensure materials can withstand handling, storage, and transit conditions. It also plays a key role in testing applicators and dispensers, where smooth, controlled operation is essential to delivering a premium consumer experience.

From ensuring mascara brushes retain their bristles to verifying the actuation force of pump dispensers, force testing helps manufacturers refine product design, enhance performance, and prevent defects.

Flip cap force opening

Mascara force extraction

Jaw clamp grip fixture

Flip caps are a common closure for 'semi-solid' products. Opening and closing forces are evaluated through compression, tension and help with:

- Leak prevention
- Hinge strength
- Longevity and durability

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Texture analysis

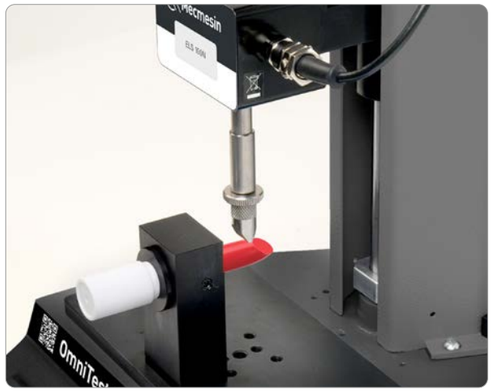
The tactile sensory experience from a cosmetic product - physical attributes like firmness, consistency, and stickiness - is critical to consumer acceptance. Texture analysis helps manufacturers ensure products deliver the desired feel and performance by replicating real-world handling and application forces.

Cosmetic formulations fall into three main categories, each requiring specific mechanical testing methods. Semi-solids, such as lotions, creams, and gels, must spread easily while maintaining some resistance to flow. Solids, including soap bars and lipsticks, should withstand use without crumbling or breaking. Powders, such as foundations and blushers, must disperse evenly without clumping or caking. Mecmesin's texture analysis solutions provide objective, repeatable calculation of scientific textural properties to optimise formulations and ensure consistent quality.

For semi-solid cosmetics which are applied topically, the sensation on the skin is a key quality indicator. Texture analysis of creams, gels and lotions quantifies:

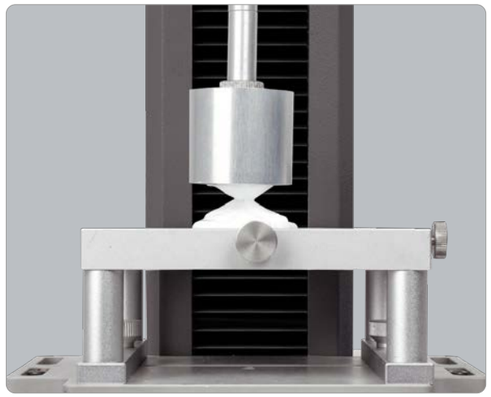
- Firmness
- Spreadability
- Finger feel

We can also evaluate stickiness and flow properties, valuable for manufacturing processes.



Lipstick bullet break resistance

Powder flow, clumping and caking

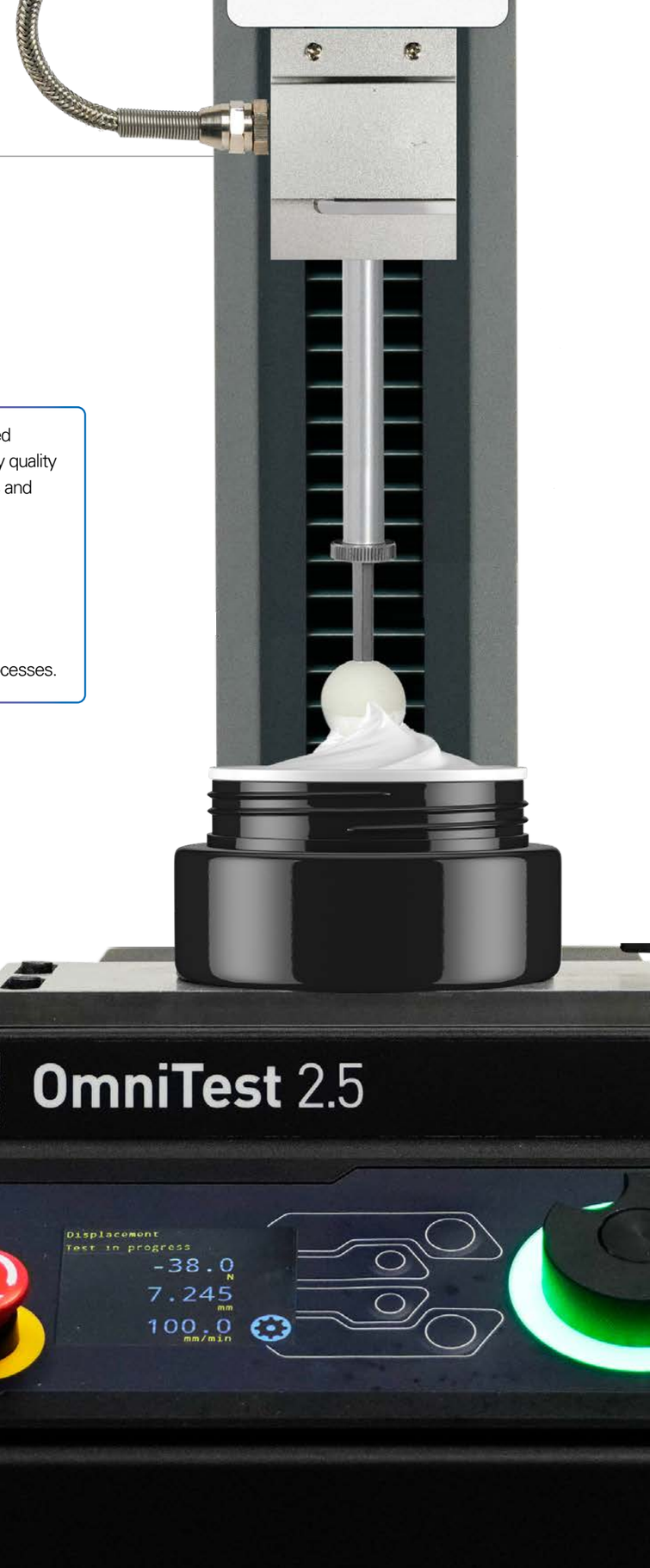


Solid deodorant brittleness

Flow behaviour of moisturisers

Solid deodorant brittleness

Spreadability of moisturisers



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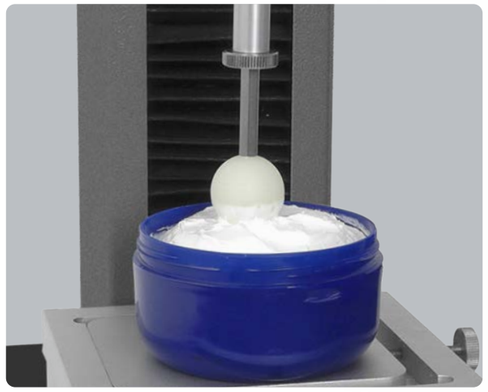
Test methods

Texture testing replicates the forces applied during product use, employing specialist probes to measure compression, shear, adhesion, and penetration resistance. Compression tests assess firmness and deformability in moisturisers and soaps, while shear and bend tests evaluate lipstick durability and balm flexibility. Adhesion tests quantify stickiness in lotions, while extrusion methods determine flow properties in creams, gels, and hair waxes.

For gelling agents, Bloom strength measurement provides essential data to control the composition of final products for desired stability, firmness and flow attributes to achieve application performance.

By using...

Ease of moisturiser application



Firmness of moisturisers

Gel bloom strength

Customisation

Standard accessories and custom fixtures

Every product is unique, and so are its testing requirements. While general purpose grips, fixing tables, and chucks provide versatile holding solutions, many cosmetic and personal care products require custom-designed fixtures to ensure precise, repeatable testing.

At Mecmesin, we collaborate closely with you - working with your product samples to develop tailored fixtures that optimise accuracy and efficiency. From precision 3D-printed closure mandrels for delicate packaging to heavy-duty metal fixtures for high-force applications, our solutions ensure your tests deliver reliable results.

Our standard accessory range includes tensile grips, compression plates, fixing tables, machine chucks, saddle plates, stirrup fixtures, and sachet burst fixtures, with custom options available to meet your specific testing needs.

Adjustable Chuck

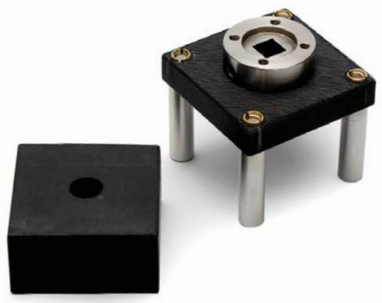
Adjustable chuck with interchangeable jaw faces suitable for gripping round components.

Saddle plate

For use with Fixing Tables to support containers with an uneven base.

Custom 3D printed mandrels

From dedicated closure mandrels, rapidly produced with the latest 3D printing technology, through to heavy-duty metal fixturing, we have a solution for you.



Fixing Table

A general purpose plate which can affix to an ETS sensor or the motor spindle of the tester. Features adjustable runners with threaded holes for fitting fixing pegs or secondary grips. Stainless-steel leadscrew allows runners to open and close.

Discover Mecmesin accessories online - mecmesin.com/accessories

Automation

Automated systems and solutions

Automation revolutionises quality control by eliminating manual variability, improving efficiency, and increasing test throughput. By automating force, torque, and texture testing, manufacturers can ensure consistent, repeatable results while reducing operator workload. Integrated software solutions further streamline workflows, enabling data logging, trend analysis, and compliance tracking with minimal intervention.

Key benefits of automation:

Save time	Enhance accuracy	Reduce costs	Increase throughput
Reduce testing cycles and increase productivity.	Minimise operator influence for consistent, repeatable results.	Optimise resource allocation and lower testing overheads.	Conduct high-volume testing with greater efficiency.

With Mecmesin's automated testing solutions, manufacturers can achieve higher precision, greater efficiency, and improved product quality, all while reducing operational demands.

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Control

Precision testing and automation

Achieving consistent, repeatable results is essential in quality control. Mecmesin's software-controlled force and torque testers provide advanced automation, reducing operator influence and improving efficiency in R&D and production. Our range includes:

HelixaPro – Precision torque testing for delicate applications.
VortexPro – High-capacity torque testing with automated control.
OmniTest 0.5/1/2.5/5/7.5 kN UTM – Versatile force testing for materials and components.
OmniTest 10/25/50 kN UTM – High-force tensile and compression testing.
MultiTest-dV 0.5/1/2.5 kN – Easy-to-use motorised tensile and compression force tester.

For entry-level testing, manual and motorised options are also available, offering a practical step toward automation.

VectorPro® software

VectorPro testing software is at the heart of our OmniTest range of universal testers.VectorPro excels with its user-friendly interface, streamlining the testing process for optimal convenience. Its intuitive design empowers users to effortlessly create, customize, and execute test procedures.

Powered by VectorPro

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VectorPro® software

Software core functionality

VectorPro® is dedicated software for use with our range of force and torque systems. It enables and stores test routines, acquires data from loadcells, torque sensors and angle encoders then performs calculations on the data before generating test results for export and reporting.

By connecting one of our test systems to your own PC (or the touchscreen console of the Touch models) you can take advantage of running in a VectorPro® environment to create a more sophisticated test system. Your configuration is automatically detected and the software guides you through the whole process with only the relevant parameters presented.

Key Features of VectorPro®:

- Real-time graph plotting
- Immediate display of results
- Full data export
- Customised report generation
- Drag and drop interface
- Personalised workspace
- Secure user accounts

Powered by VectorPro®

Discover VectorPro software: visit mecmesin.com/vectorpro

Touchscreen test software

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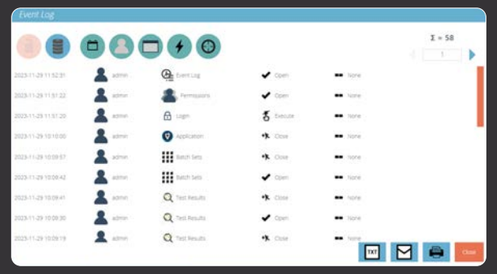
Compliance

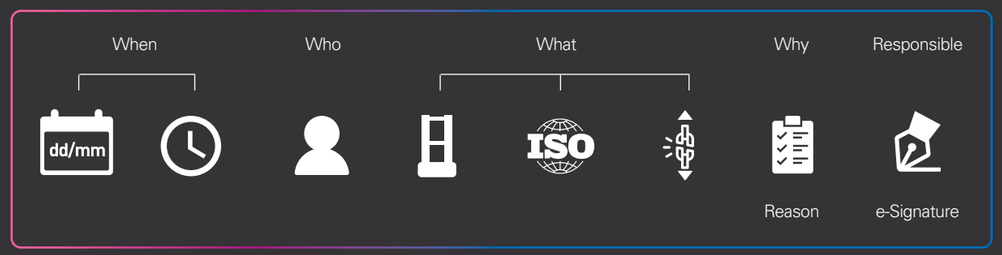
Our guide to FDA 21 CFR part 11 compliance with VectorPro software.

Established by the United States Food and Drug Administration (FDA), 21 CFR Part 11 outlines essential regulations for electronic records and signatures. The primary goal of this regulation is to provide clear guidance on maintaining the reliability and integrity of electronic records, ensuring robust security measures, facilitating effective data retention, and enabling comprehensive audit trails.

This regulation pertains to any organisation under FDA jurisdiction, with particular emphasis on pharmaceutical companies, manufacturers of medical devices, and laboratories involved in FDA-regulated activities.



Audit trail



By connecting the HelixaPro and VortexPro to your own PC (or the touchscreen controller of the HelixaPro Touch and VortexPro Touch) you can unlock the power of VectorPro to create a truly exceptional testing system to meet all your component and product testing requirements.

Touchscreen test software

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visit mecmesin.com/cosmetics

Mecmesin reserves the right to alter equipment specifications without prior notice. E&OE.

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