



MATE SRL – Testing | Training



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WHO WE ARE



- MATE is an independent testing laboratory accredited by Accredia with number 1773L, operating in accordance with the requirements established by the **ISO 17025 standard**.
- It conducts a wide range of tests, including environmental testing, mechanical testing, corrosion testing, and verification of IP protection.
- MATE collaborates with leading companies in the sectors of **Automotive, Aerospace, Defense, Biomedical, E-mobility, Railway, and Naval**, ensuring high-quality and reliable standards for every project.
- In addition to testing activities, MATE organizes training courses for companies and professionals in the field, aimed at providing in-depth knowledge of regulations, measurement techniques, and testing methodologies in the sector.

The laboratory is part of the group **ART – Advanced Research Technologies**.



Cybersecurity/Functional Safety



Automotive / Motorsport



Test & Measurement



ACCREDITATION



ACCREDITED

➤ ISO 17025

Since 2019, we have been accredited for **CLIMATIC, VIBRATION, and SHOCK TESTING** in the **AUTOMOTIVE, RAILWAY, INDUSTRIAL, and AERONAUTICAL** sectors.

As of September 2024, we have added three new accredited methods:

- Vibration Resistance **ANSI C136.31**
- Salt Fog **ISO 9227**
- Solar Radiation **DIN 75220**

[CLICK HERE TO DOWNLOAD THE LIST OF ACCREDITED TESTS](#)

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ACCREDITED

➤ RTCA DO 160G

MATE is the first laboratory in Italy accredited for testing in the aeronautical field in accordance with the **RTCA DO-160G** standards.

Denominazione della prova / Campi di prova	Metodo di prova	Tecnica di prova
Accreditazione per la prova di resistenza alle vibrazioni (vibrazione stradale/Luminaires for road and street lighting)	ANSI C136.31:2018	-
Apparecchiature elettriche ed elettroniche e materiali metallici/Electric and electronic equipment and metal materials	60068-2-53:2010, IEC	-
Prove ambientali - Prove combinate (vibrazione/urto)/Environmental testing - Combined climatic (temperature/humidity) and dynamic (vibration/shock) tests	60068-2-53:2010	-
Apparecchiature elettriche, elettroniche e meccaniche, componenti e materiali/Electric, electronic and mechanical equipment, components and materials	60068-2-1:2007, EN 60068-2-1:2007, IEC 60068-2-1:2007	-
Prove ambientali - Prova A: Freddo/Environmental testing - Test A: Cold (da -70 °C a +10°C)	CEI EN 60068-2-2:2008, EN 60068-2-2:2007, IEC 60068-2-2:2007	-
Prove ambientali - Prova B: Caldo secco/Environmental testing - Test B: Dry heat (da +50°C a +175°C)	CEI EN 60068-2-78:2002, CEI EN 60068-2-78:2013, EN 60068-2-78:2001, EN 60068-2-78:2013, IEC 60068-2-78:2001, IEC 60068-2-78:2012	-
Prove ambientali - Prova Cab: Caldo umido, regime stazionario/Environmental testing - Test Cab: Damp heat, steady state	CEI EN 60068-2-67:1997/A1:2020, EN 60068-2-67:1996/A1:2019, IEC 60068-2-67:1995/AMD1:2019	-
Prove ambientali - Prova Cy: Calore umido, stato stazionario, prova accelerata principalmente rivolta ai componenti/Environmental testing - Test Cy: Damp heat, steady state, accelerated test primarily intended for components	CEI EN 60068-2-30:2006, EN 60068-2-30:2005, IEC 60068-2-30:1980/A1:1985, IEC 60068-2-30:2005	-
Prove ambientali - Prova Db: Caldo umido, ciclico (ciclo di 12h + 12h)/Environmental testing - Test Db: Damp heat, cyclic (12 h + 12 h cycle)	CEI EN 60068-2-27:2012, EN 60068-2-27:2009, IEC 60068-2-27:2008	-
Prove ambientali - Prova Fc: Vibrazioni (sinusoidali) /Environmental testing - Test Fc: Vibration (sinusoidal) (5-2000 Hz; 1-300 m/s ²)	CEI EN 60068-2-6:2009, EN 60068-2-6:2008, IEC 60068-2-6:2007	-
Prove ambientali - Prova Fh: Vibrazioni aleatorie a larga banda e guida /Environmental testing - Test Fh: Vibration, broadband random and guidance (5-2000 Hz; 1-350 m/s ² rms)	CEI EN 60068-2-64:2012/A1:2020, EN 60068-2-64:2008/A1:2019, IEC 60068-2-64:2008/AMD1:2019	-
Prove ambientali - Prova Fi: Vibrazioni (mixed mode) /Environmental testing - Test Fi: Vibration (mixed mode) (5-2000 Hz; 1-300 m/s ² rms)	IEC 60068-2-80:2005	-
Prove ambientali - Prova N: Cambio di temperatura/Environmental testing - Test N: Change of temperature (da +25°C a -35°C)	CEI EN 60068-2-14:2011, EN 60068-2-14:2011	-



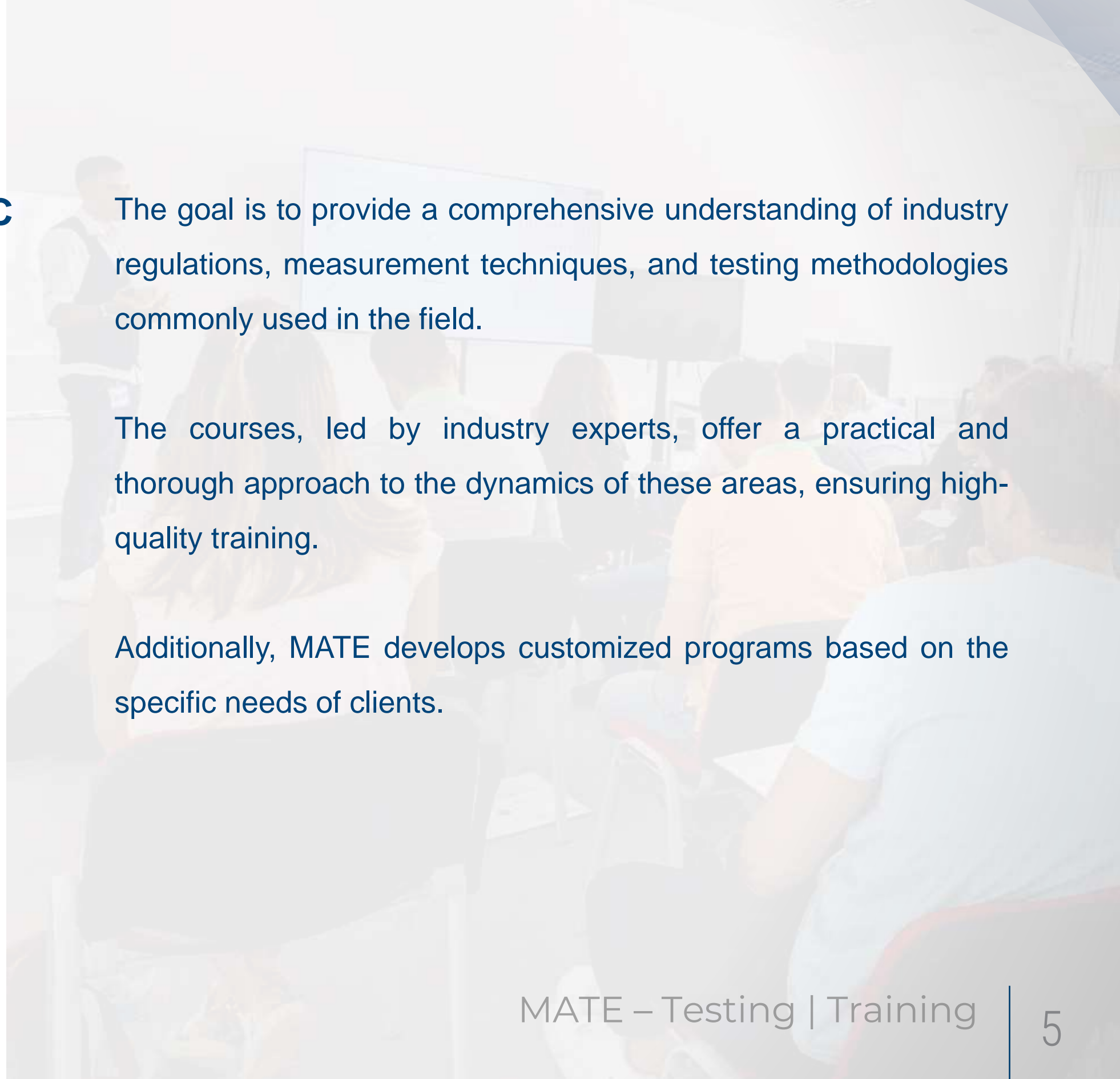
➤ CUSTOMIZED TRAINING FOR STRATEGIC SECTORS

MATE ACADEMY is a personalized training program aimed at companies and professionals active in the aerospace, automotive, railway, and defense sectors, who wish to acquire skills in the fields of environmental testing, mechanical testing, and IP classification

The goal is to provide a comprehensive understanding of industry regulations, measurement techniques, and testing methodologies commonly used in the field.

The courses, led by industry experts, offer a practical and thorough approach to the dynamics of these areas, ensuring high-quality training.

Additionally, MATE develops customized programs based on the specific needs of clients.





➤ PROFESSIONAL GROWTH AND CONTINUOUS TRAINING: A FUNDAMENTAL VALUE FOR OUR TEAM

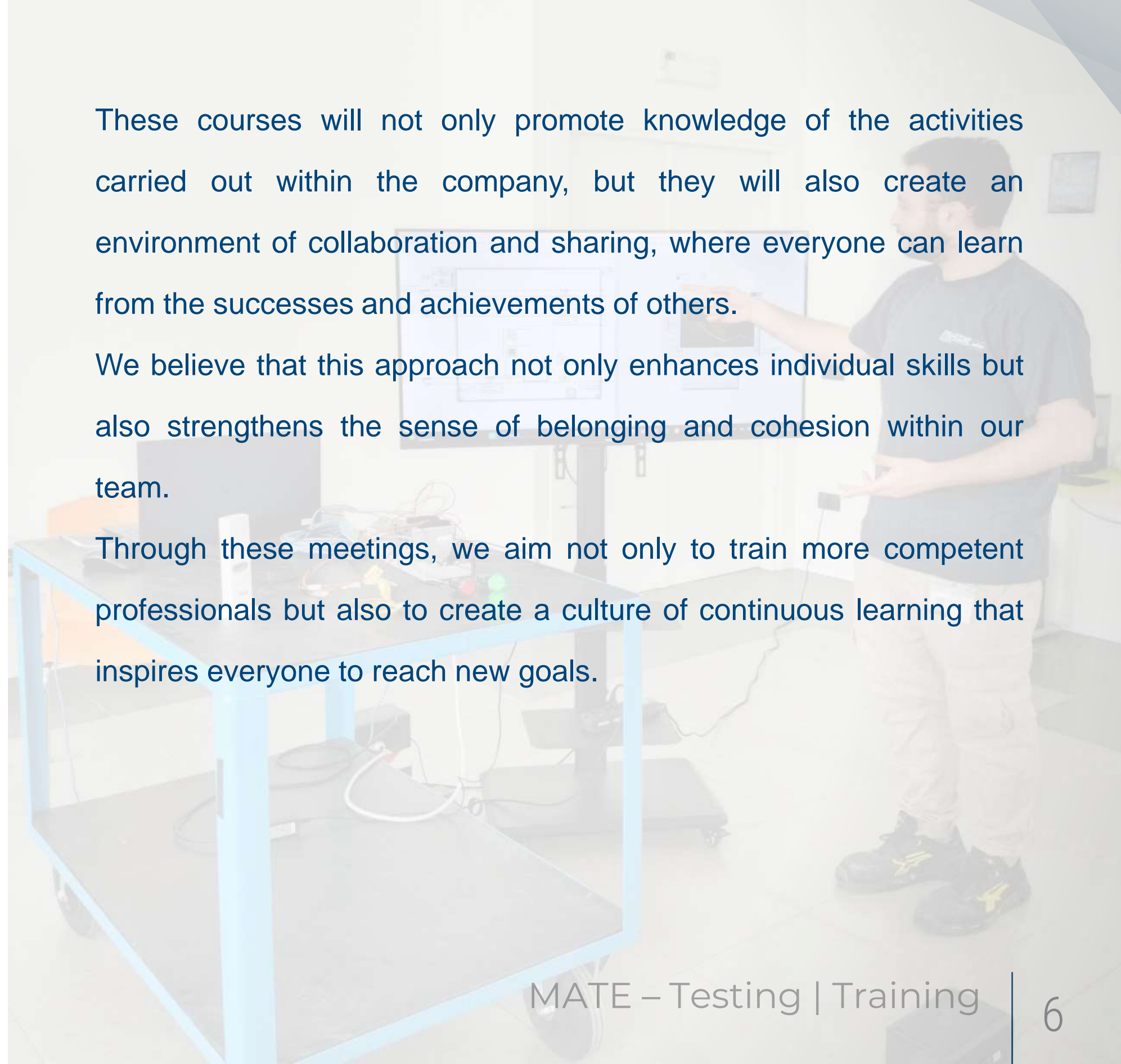
Training courses for our employees are a fundamental pillar of our company philosophy, as we firmly believe in the professional growth of our team.

For this reason, we regularly organize training sessions where our collaborators take on the role of teachers, sharing their experiences and skills.

These courses will not only promote knowledge of the activities carried out within the company, but they will also create an environment of collaboration and sharing, where everyone can learn from the successes and achievements of others.

We believe that this approach not only enhances individual skills but also strengthens the sense of belonging and cohesion within our team.

Through these meetings, we aim not only to train more competent professionals but also to create a culture of continuous learning that inspires everyone to reach new goals.



LABORATORY TEST



- ENVIRONMENTAL TESTS
- CORROSION TESTS
- VIBRATION TESTS
- MECHANICAL TESTS
- IP TESTS (INGRESS PROTECTION TESTS)
- FLUID CONTAMINATION
- ENDURANCE TEST
- UN38.3 BATTERY TESTS
- TRANSPORT TESTS
- IK TESTS (IMPACT PROTECTION)

Laboratory tests are essential for companies looking to launch a product.

Assessing resistance, durability, and safety helps to prevent issues, avoiding market recalls and protecting the company's image.



ENVIRONMENTAL TESTS



ISO 17025

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➤ SOLAR RADIATION

With solar radiation testing, it is possible to expose any product whose aesthetics and performance may be compromised by prolonged exposure to sunlight to simulated solar radiation.

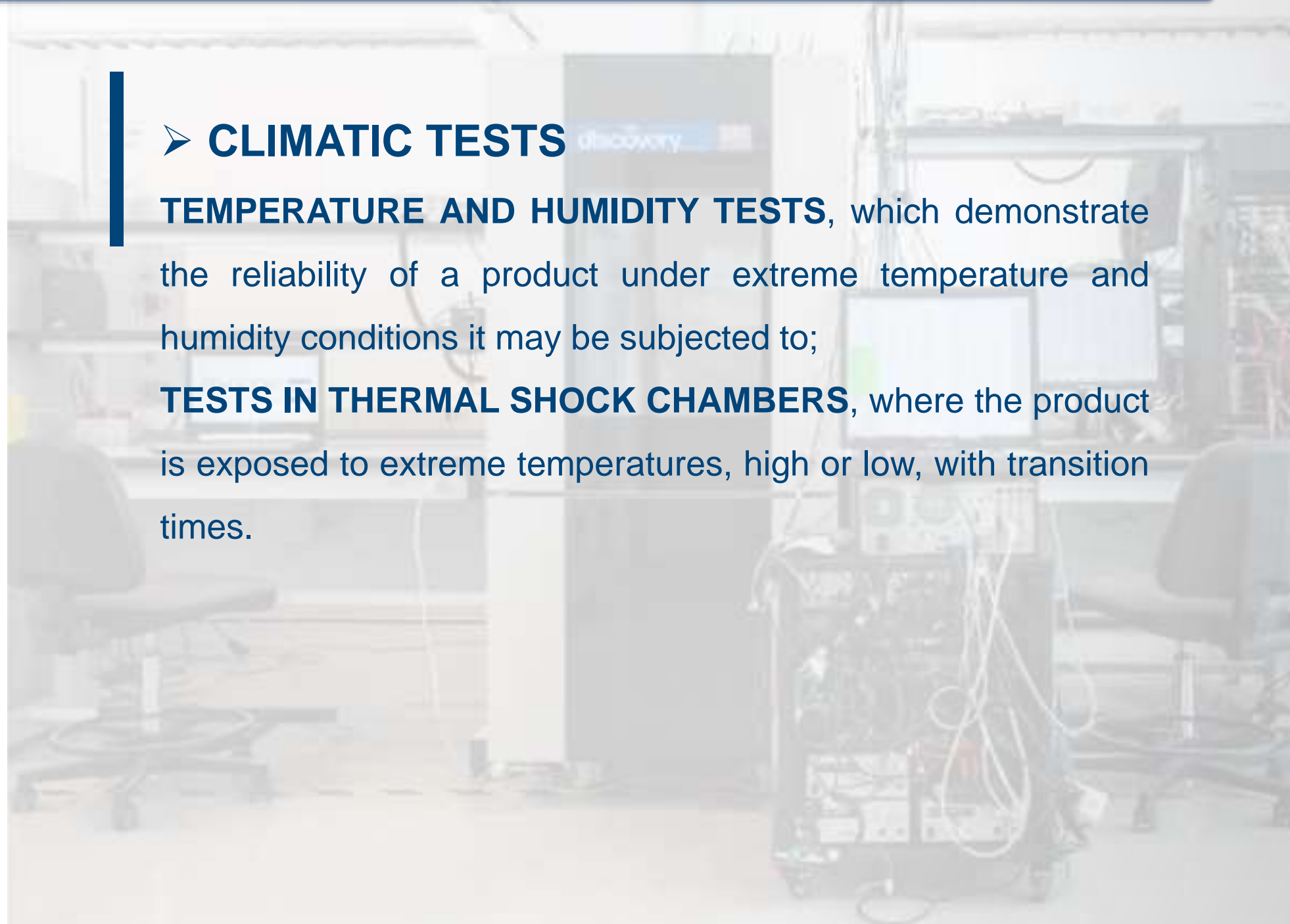
➤ ALTITUDE TEST

Low pressure tests allow determining whether the object can withstand and function at high altitudes of approximately +70,000 ft (+21,336 m) and 4.44 kPa, as well as endure sudden changes in pressure (decompression tests).

➤ CLIMATIC TESTS

TEMPERATURE AND HUMIDITY TESTS, which demonstrate the reliability of a product under extreme temperature and humidity conditions it may be subjected to;

TESTS IN THERMAL SHOCK CHAMBERS, where the product is exposed to extreme temperatures, high or low, with transition times.



CORROSION TESTS



ISO 17025

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➤ TEST IN SALT FOG

Salt fog corrosion tests are globally recognized by standards such as ISO 9227 and ASTM B117. These tests are among the most effective for simulating the actual lifespan of a material or a specific treatment and assessing its resistance to deterioration in aggressive environments.

➤ CONDENSATION TEST

The salt fog test is often conducted in conjunction with a condensing humidity test. This combination of tests can provide essential information about the corrosion experienced by a product over its lifespan.

➤ TEST IN CYCLIC SALT FOG

In addition to the standard salt fog test (continuous test with saturated environment according to ISO 9227), cyclic corrosion tests have been incorporated, which replicate the accelerated corrosion process that is closest to natural aging.

➤ ASSESSMENT OF COATING SYSTEMS AND COATINGS: CYCLIC SALT SPRAY TESTING

Tests are conducted to analyze adhesion, subcoating corrosion, delamination, and defects such as blistering, rusting, cracking, and flaking, following ISO 4628 standards.

VIBRATION TEST



ISO 17025

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➤ ACCELERATION TEST

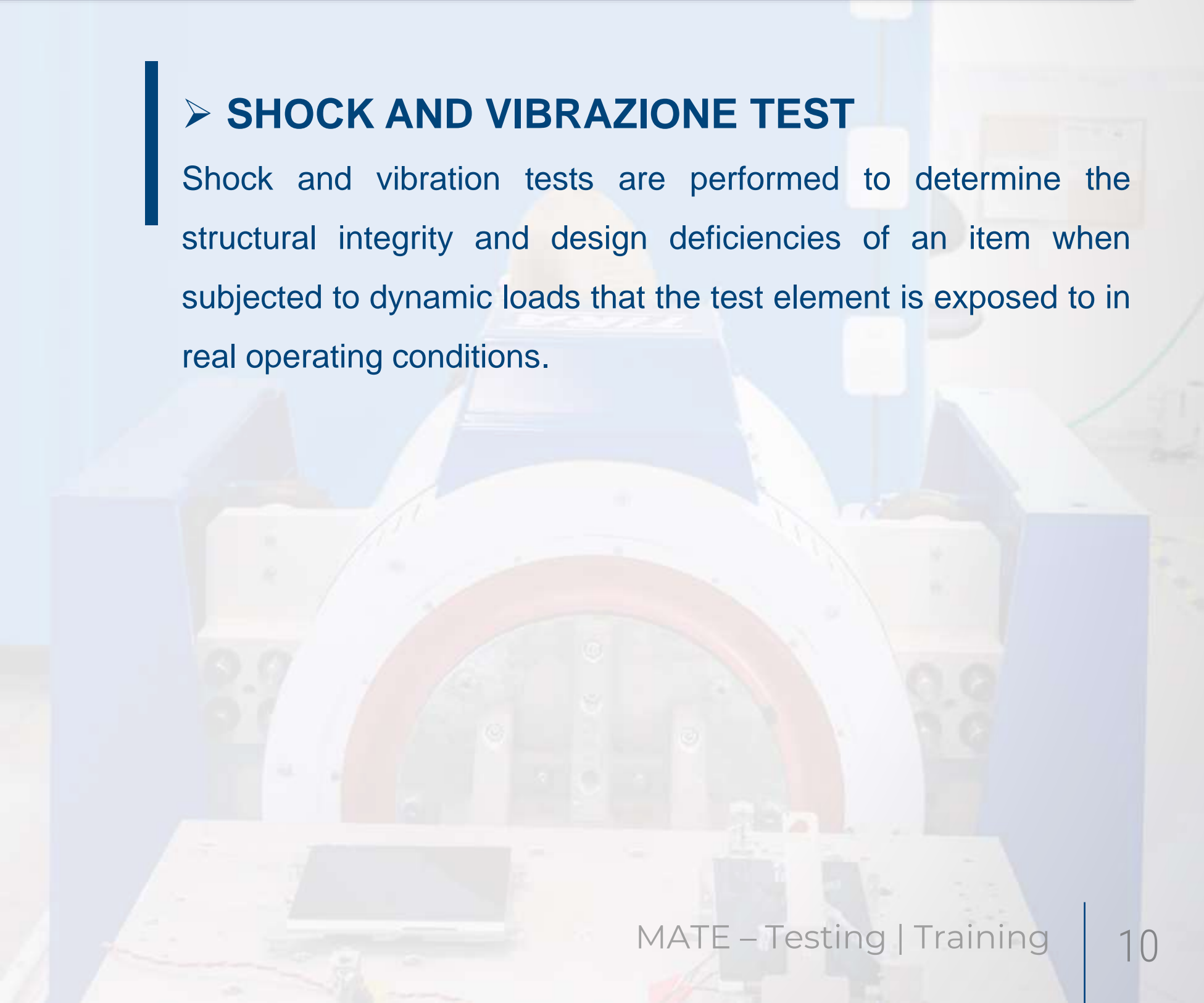
The acceleration test is conducted to ensure that materials, particularly the fastening systems of a component, can withstand the inertial loads induced by centrifugal acceleration.

➤ COMBINED CLIMATE VIBRATION TEST

Mechanical stresses combined with climatic factors can alter the life of the component, drastically reducing its performance and durability. To ensure the highest level of safety and reliability, the products undergo vibration tests in combination with variable temperature cycles.

➤ SHOCK AND VIBRAZIONE TEST

Shock and vibration tests are performed to determine the structural integrity and design deficiencies of an item when subjected to dynamic loads that the test element is exposed to in real operating conditions.



MECHANICAL TESTS



➤ MECHANICAL TESTS

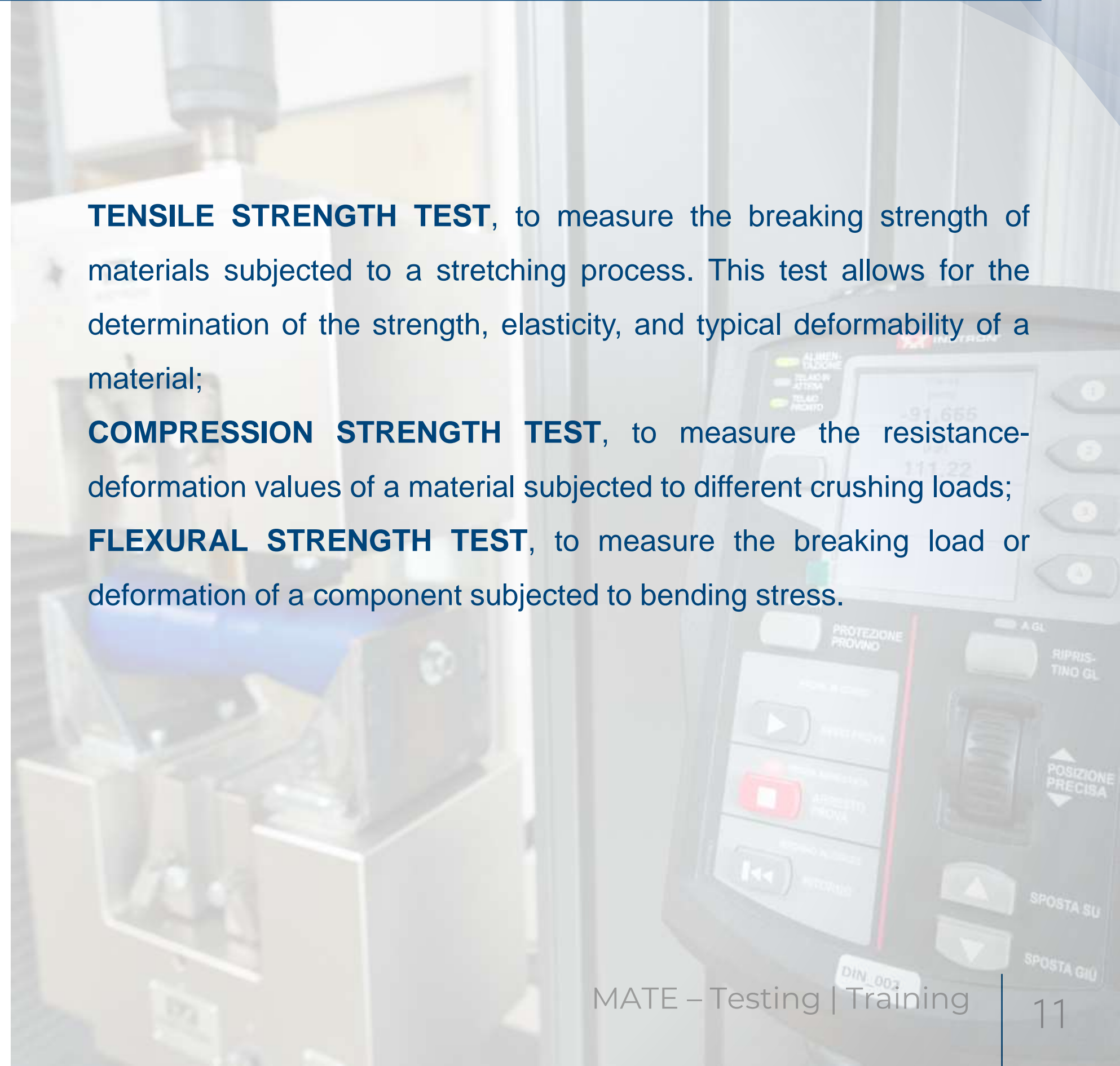
Mechanical tests are carried out to assess the mechanical properties of materials when subjected to extreme forces.

These properties can be determined by subjecting the material to different types of stresses. Therefore, the testing activity is a very important phase in ensuring that the product complies with design requirements.

TENSILE STRENGTH TEST, to measure the breaking strength of materials subjected to a stretching process. This test allows for the determination of the strength, elasticity, and typical deformability of a material;

COMPRESSION STRENGTH TEST, to measure the resistance-deformation values of a material subjected to different crushing loads;

FLEXURAL STRENGTH TEST, to measure the breaking load or deformation of a component subjected to bending stress.



IP TESTS (Ingress protection)



➤ **IP TESTS** are used to assess the level of protection provided by mechanical enclosures and electrical panels against the penetration of foreign solid bodies such as dust (dust test) and water (water protection test).

The international classification system for the effectiveness of airtight sealing against the penetration of foreign bodies into the equipment uses the letters IP "Ingress Protection" followed by two digits:

- The first digit indicates the level of protection the enclosure provides against access to hazardous parts (such as electrical conductors or moving parts) and the entry of foreign solid objects;
- the second digit indicates protection against the ingress of liquids.

The laboratory conducts tests for dust and water resistance to determine the IP rating against the penetration of foreign bodies in accordance with the standards:

IEC 60529/AMD2/COR1 ISO 20653.





➤ FLUID SUSCEPTIBILITY TESTS

Fluid susceptibility tests are performed to ensure that components effectively withstand exposure to aggressive fluids, maintaining their performance even under particularly extreme environmental and operational conditions.

This type of test, which involves in-depth assessments of resistance to oils, fuels, solvents, and other potentially harmful agents that materials may come into contact with during their life cycle, is essential to ensure that materials retain their physical and mechanical properties even after prolonged exposure to aggressive chemical substances.

The tests are conducted in accordance with rigorous international standards, ensuring the quality and reliability of components even under extreme conditions and exposure to aggressive chemical contaminants.

The following standards are included:

- **MIL-STD-810, Method 504 (Contamination by Fluids);**
- **RTCA DO-160, Section 11.0 (Fluid Susceptibility);**
- **ISO 16750-5 (Road Vehicle - Chemical Loads).**

To meet the specific requirements of automotive manufacturers, the laboratory performs tests in compliance with standards requested by major manufacturers, including:

- **FCA CS.00056**
- **VW80000**
- **LV 124**

Custom tests are also carried out, tailored to meet the specific requests of our clients.



ENDURANCE TEST



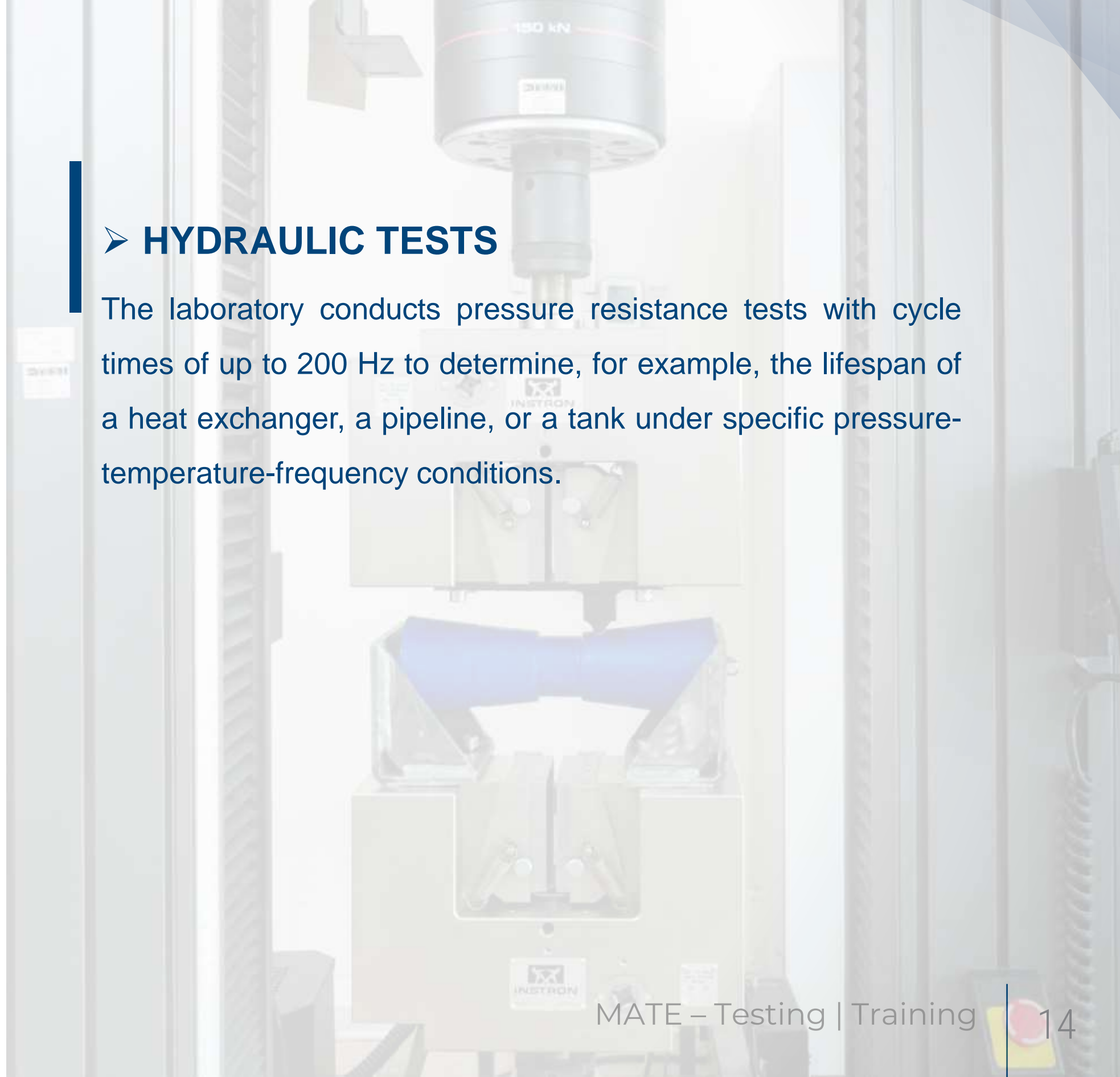
➤ FATIGUE TESTING

UNIFIED SAMPLES FATIGUE TEST determines the behavior and duration of the material when subjected to the established fatigue cycles;

FATIGUE TESTING ON SAMPLES the component is subjected to accelerated loading cycles that simulate, in a reduced timeframe, the number of cycles that the component will experience over its lifespan.

➤ HYDRAULIC TESTS

The laboratory conducts pressure resistance tests with cycle times of up to 200 Hz to determine, for example, the lifespan of a heat exchanger, a pipeline, or a tank under specific pressure-temperature-frequency conditions.



UN38.3 BATTERY TESTS



➤ BATTERY TESTS

To be transported safely (by air, sea, rail, or road), batteries must not break, disassemble, leak, or catch fire, and for this reason, they undergo a rigorous series of tests conducted by an independent testing laboratory.

The laboratory conducts tests on lithium batteries (both small and large batteries) in accordance with **UN 38.3** and **IEC 62281**, specifically:

T.1: Altitude simulation

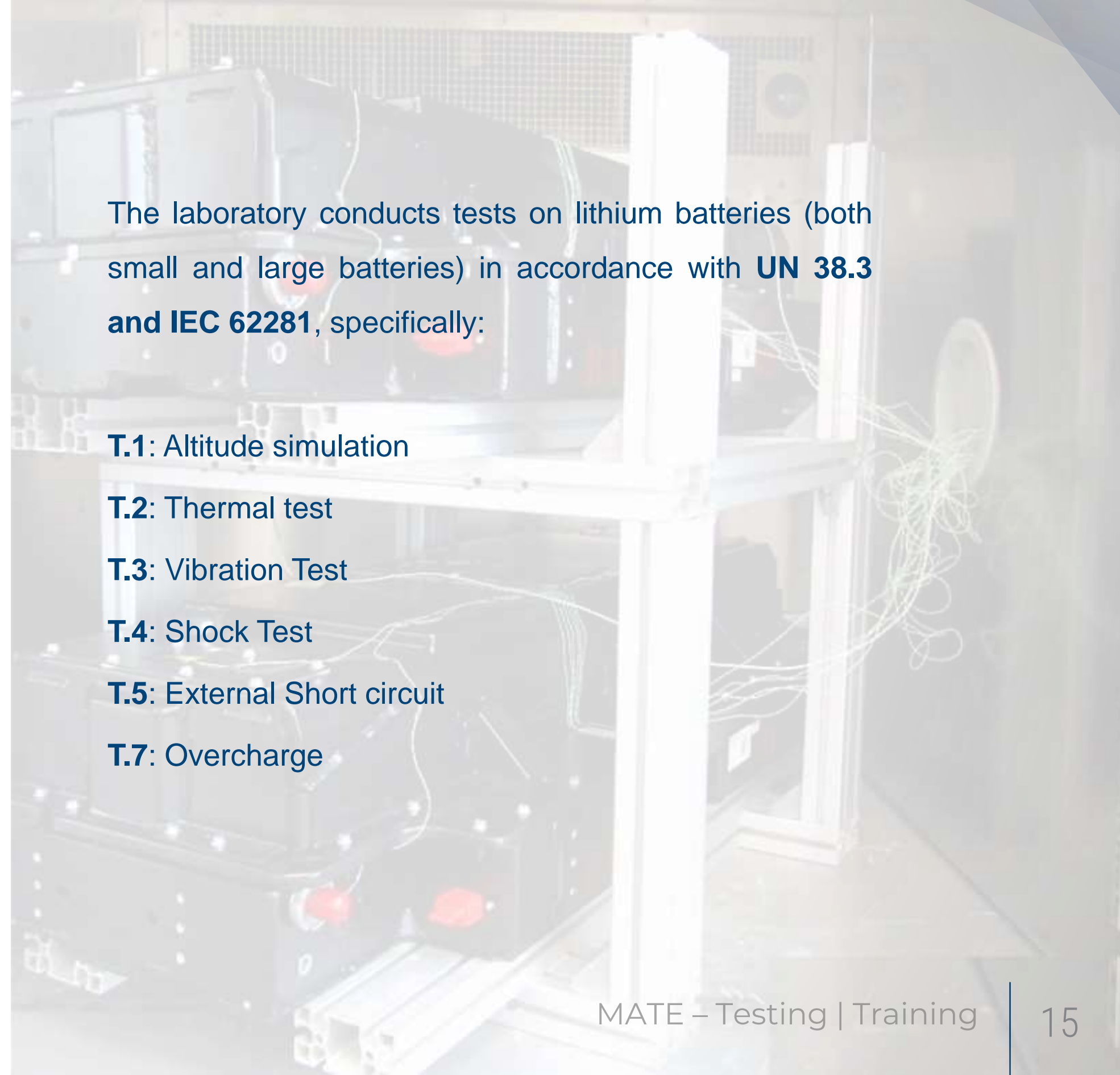
T.2: Thermal test

T.3: Vibration Test

T.4: Shock Test

T.5: External Short circuit

T.7: Overcharge





➤ TRANSPORT TESTS

Product packaging tests include a series of trials designed to assess the suitability of packaging materials and, consequently, the durability of the product inside.

The laboratory conducts tests that represent all transport conditions in accordance with the main regulations:

- **IEC 60721-3-2** – Classification of environmental conditions – Part 3-2: Classification of groups of environmental parameters and their severities – Transportation and Handling;
- **MIL STD 810H** – Method 514.8;
- **ASTM D 7386** – Performance Testing of packages for Single Parcel Delivery Systems;
- **ASTM D 4728** – Random Vibration Testing of Shipping Container;
- **ASTM D 6344** – Concentrated Impacts to Transport Packages;
- **ASTM D 5276** – Drop Test of loaded Containers by Free Fall;
- **ASTM D 4169** – Performance Testing of Shipping Containers and Systems.



IK TEST (Impact test)



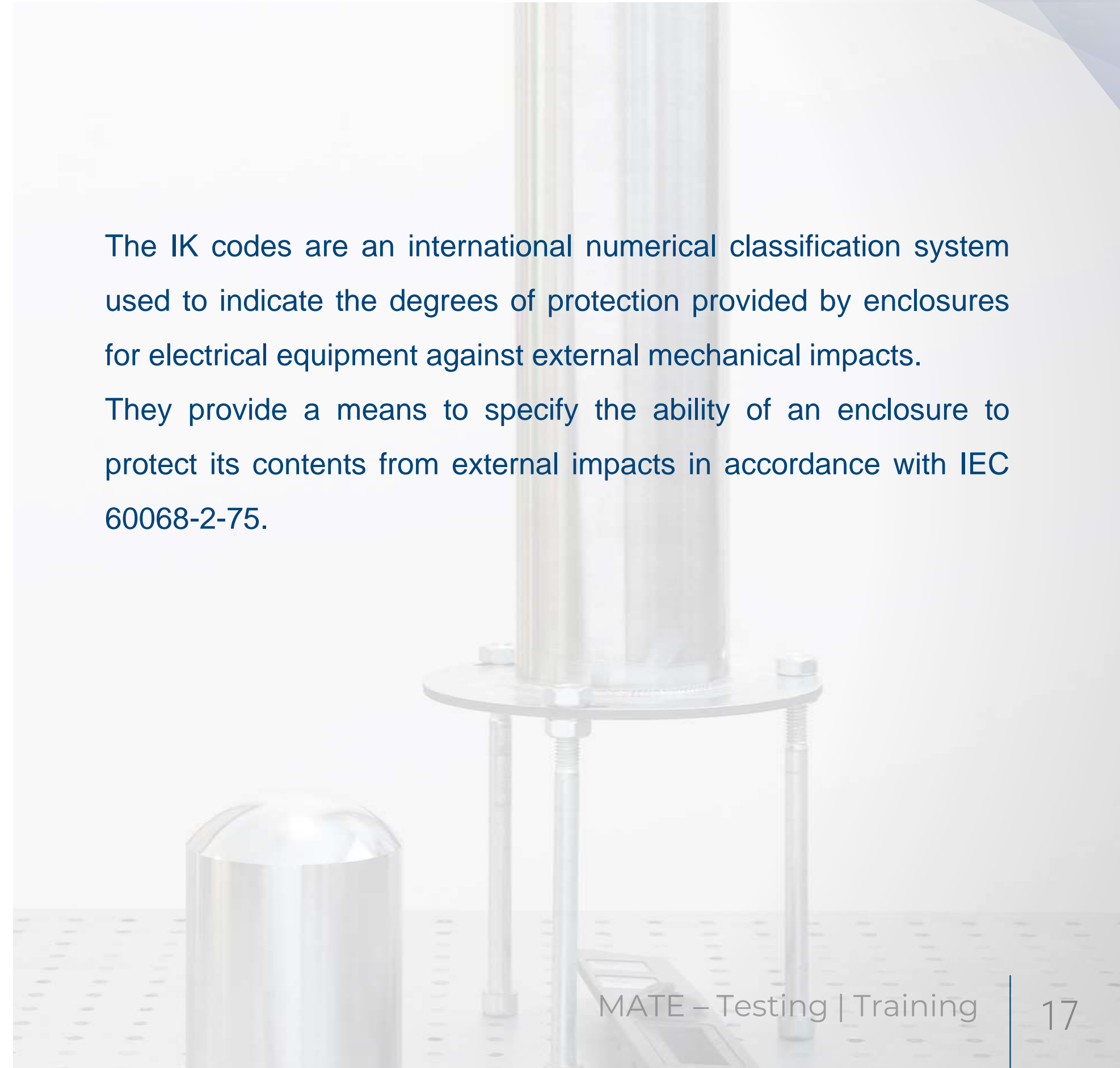
➤ **IMPACT RESISTANCE TESTS**

The impact resistance tests (IK) are performed to determine the level of protection against shocks in electrical equipment such as cameras and other devices.

The IK classification allows for specifying the degree of protection that is guaranteed by the device's enclosure against external mechanical impacts.

The IK codes are an international numerical classification system used to indicate the degrees of protection provided by enclosures for electrical equipment against external mechanical impacts.

They provide a means to specify the ability of an enclosure to protect its contents from external impacts in accordance with IEC 60068-2-75.



VISUAL INSPECTIONS



ISO 17025

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➤ VISUAL INSPECTIONS – ISO 9712

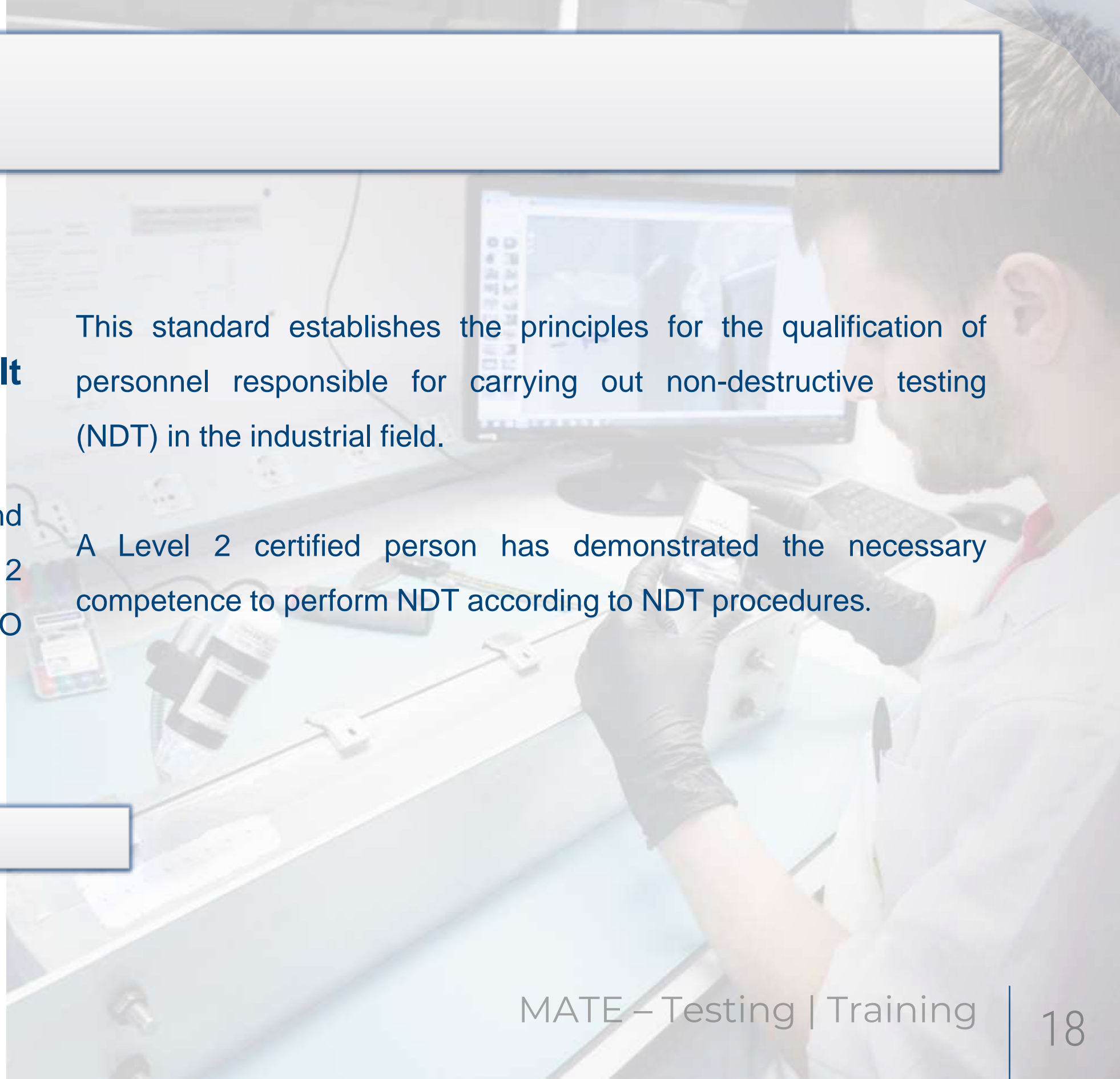
Laboratory accredited for visual inspections after salt spray corrosion tests according to ISO 4628.

Mate guarantees reliable visual inspections thanks to repeatable and reproducible methods, as well as highly qualified and certified Level 2 personnel – VISUAL METHOD – in accordance with the UNI EN ISO 9712 standard.

[CLICK HERE TO DOWNLOAD THE CERTIFICATE](#)

This standard establishes the principles for the qualification of personnel responsible for carrying out non-destructive testing (NDT) in the industrial field.

A Level 2 certified person has demonstrated the necessary competence to perform NDT according to NDT procedures.



MEASURES



➤ MEASUREMENTS IN THE FIELD AND LABORATORY MEASUREMENTS

Experimentation is sometimes the only reliable method to investigate specific technical aspects.

The Laboratory is capable of designing and implementing measurement chains, both traditional and innovative, customized or commercial, based on the needs of the clients.



SECTORS



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