

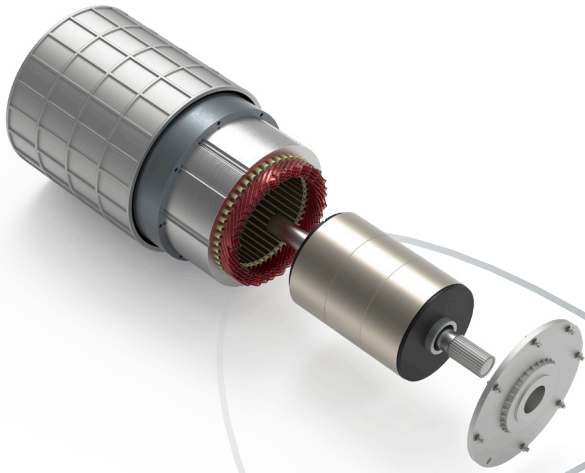


MARPOSS

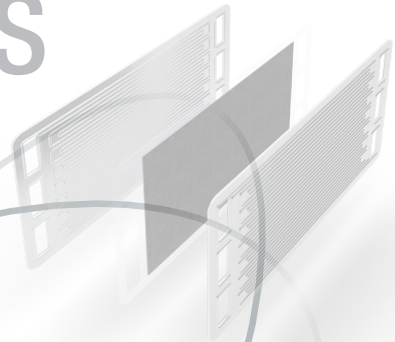


**E.D.C.
E-MOTOR
ELECTRICAL
TESTING**

MARPOSS OFFERS MEASUREMENT, INSPECTION AND TESTING SYSTEMS FOR ALL PRODUCTION AREAS OF THE ELECTROMOBILITY INDUSTRY



FUEL CELLS



ELECTRIC MOTORS

FOR HYBRID AND ELECTRIC VEHICLES

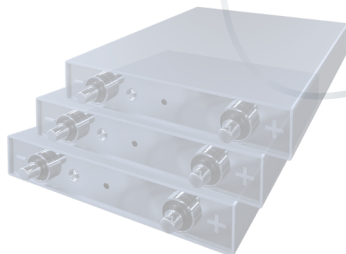
SAFETY



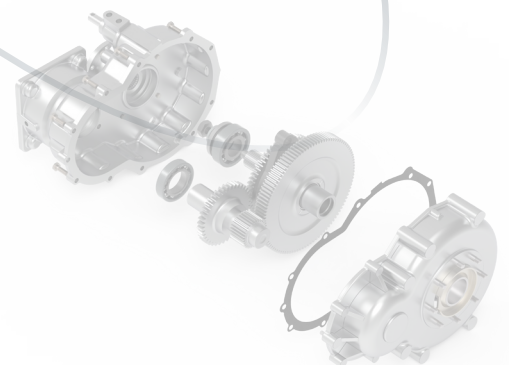
QUALITY

RELIABILITY

TRACTION BATTERIES



GEARBOX

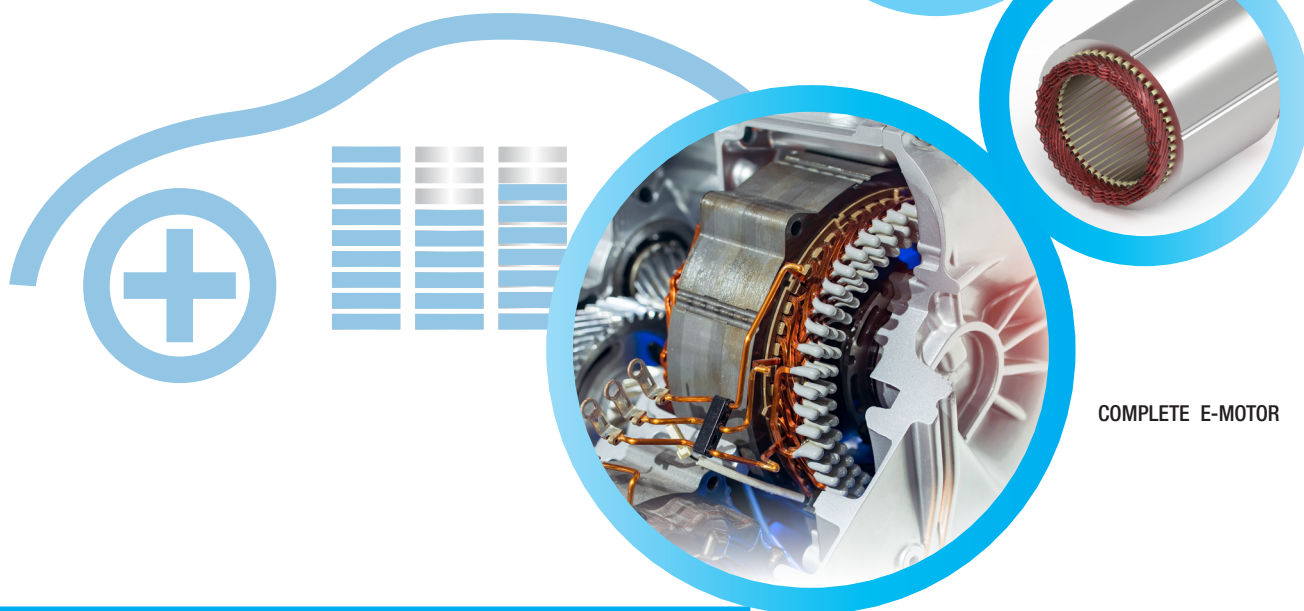


YOUR GLOBAL PARTNER FOR MEASURING, INSPECTION AND TESTING SYSTEMS

MARPOSS

E-MOTOR

THE CORE ELEMENT OF AN ELECTRIC VEHICLE



To meet the high-quality requirements for an e-motor both in mobile and stationary use, measurement and testing technology must be applied systematically in the production process.

First: to meet the demand for safety and performance, second: to shift the production towards higher quality classes.

The insulating system of the electrical machines plays a fundamental role on reliability of high voltage motors because insulation failure may result in system breakdown; in particular for e-motors powered by inverter, since its insulation is exposed to increased thermal/electrical stresses.

Marposs comes up to the market of the electric motor testing with the acquisition of e.d.c., an Italian company specialized for decades in design and production of testing systems for all kinds of electric motors and their components (stators and rotors) in laboratory and production environments.

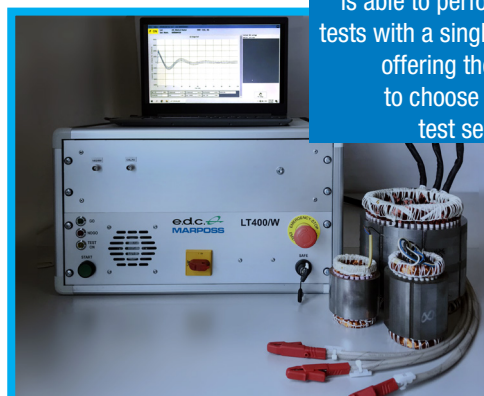
e.d.c. stands out in the market for Partial Discharges Measurements System based on Capacitor Coupling technology (first European company since 1998) that allows to detect 100% of defects, even the latent ones that standard tests cannot identify (Dielectric Strength and Surge).

The consequence of permanent partial discharges is a slow but continuous weakening of functional parts

of the insulation system. For this reason, the goal should always be not to have any partial discharge in the electric motor during operation.

The range of e.d.c. products also includes customized inline/offline solutions for all electrical tests and detection of insulation problems at all phases of development and production of e-motors and their components, such as:

- Stator Tester for production lines (wound or hairpin)
- Test bench for all kinds of rotors: with permanent magnets, squirrel cage, wound.
- Automatic EoL Motor Tester, with LOAD/NO LOAD tests
- Dynamometer for motor Load Test & Life Simulation Cycles for laboratory
- Advanced Windings and Insulation Quality Analyzers for laboratory



e.d.c. LT400 is able to perform all electrical tests with a single electronics unit, offering the possibility to choose the desired test sequence.

E-MOTOR ELECTRICAL TESTING



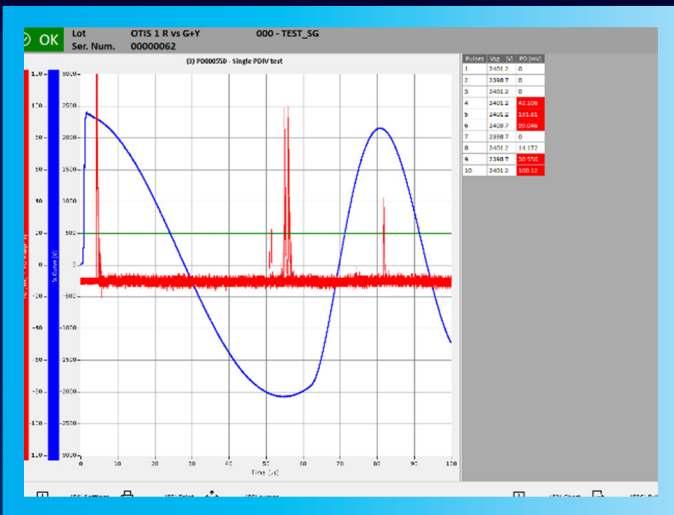
AUTOMATIC STATOR TESTER FOR PRODUCTION LINE

The synergy between Marposs and e.d.c. offers to the customer turnkey solutions for electrical testing stations for e-motors and their components, with a high level of automation.



WIRE OUT OF THE SLOT INSULATION TOUCHING THE STACK

Standard tests are not enough to identify all the defects. Many defects produce only partial discharges and can be identified only with the Partial Discharge Measurements that should be performed in addition to the standard tests (Dielectric Strength and Surge).



COMPARISON OF PARTIAL DISCHARGE METHODS

The e.d.c. partial discharge testing method is based on Capacitor Coupling technology that is more robust in relation to electromagnetic noise and consequently more suitable compared to Antenna method for the use in the production environment.



EOL TEST BENCH FOR COMPLETE E-MOTOR

Customized EoL testing system for completely assembled e-motor to be integrated inline or offline for operator use.

Design to order test benches for all kinds of rotors: Back EMF analysis for permanent magnets rotor, identification of defects of the cage bars for squirrel cage rotor.

MEASUREMENT, INSPECTION AND TEST FOR QUALITY AND PROCESS CONTROL



worldwide present in

34
countries

offices worldwide

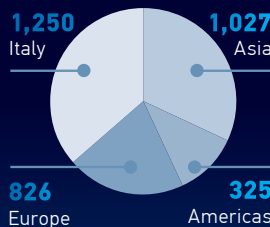
80

exports

94%

approx.

3,500
employees



28

key acquisitions since 2000

8%

resources invested in R&D

Marposs was founded in 1952 and since then has provided shop-floor solutions for the quality control in the production environment. Marposs' solutions include gauging equipment of mechanical components, before, during, and after the production process, monitoring solutions on machine tools, assembly, and testing systems, automatic machines, and checking stations for production lines.

Marposs is one of the main suppliers of the top automotive manufacturers, but operates as well in the aerospace, biomedical, hi-tech, and glass industries.

Marposs Group's employees are more than 3500, located around the world, with presence in thirty-four countries with more than eighty sales offices.



MARPOSS
www.marposs.com

For a full list of address locations, please consult the Marposs official website

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Marposs has an integrated system to manage the Company quality, the environment and safety, attested by ISO 9001, ISO 14001 and OHSAS 18001 certifications.