
SOLUTIONS FOR ELECTRIC MOTORS



WE IMPROVE THE QUALITY OF PROCESS AND PRODUCT

Loccioni Industry works side by side to the top players of industrial sector, by doing automated quality test of their products, processes and buildings. Day by day challenging projects are faced with enthusiasm, inspiration and proficiency, collaborating with customers from the initial phase of prototype development to the realization of turnkey solutions.

**A bit of Loccioni
in every factory,
all over the world**

SOLUTIONS FOR ELECTRIC MOTORS

THE LOCCIONI SOLUTIONS

Thanks to its experience and competences in Measure and Testing and Industrial Automation, Loccioni Group represents the ideal partner for the companies that want to improve the productivity and flexibility of their production processes and the quality of their products. In particular, in order to support Electric Motors Manufacturers to cope with the issues concerning quality, Loccioni Group designed and developed different solutions for the assembly and testing of their product, from assembly and testing benches to complete manufacturing lines.

SOLUTIONS

- > Assembly systems
- > Test Benches for production and for labs
- > Test Campaigns

Some applications

- > Electric motors for Home appliances (washing machines, HVAC, and others)
- > Electric motors for Automotive (hybrid, electric power steering, alternators, starters, and others)
- > Electric motors for Industry (small and large size)

HANDLING AND ASSEMBLY

Loccioni Group designs and develops solutions to ensure the correct handling and assembly of the products:

- > Chain or belt conveyor with service pallet
- > Palletizing

- > Robotized cells
- > Assembly (O-ring and/or gaskets, coupling pressure parts or screwing or riveting or crimping...)
- > Contact and no contact solutions
- > Dimensional check
- > Welding & Welding check

TESTING

LOCCIONI solutions are suitable both for labs and production lines, and are able to perform different kind of tests:

- > Electrical safety tests
- > Motor break-in
- > Electrical measure
- > RPM and direction
- > Vibration analysis
- > Noise analysis
- > Motor drive simulation
- > Torque
- > Surge test
- > Back EMF Constant
- > Hall Signal Track Test
- > Encoder Signal Test
- > Cogging Torque
- > Low Speed Friction / Magnetic Drag Torque
- > High Speed Friction Torque
- > Energized windings tests
- > Torque constant & Torque Ripple
- > Electric Load simulation for alternator
- > High torque simulation for Starte



1. The automatic system line



2. Handling and automation



3. Assembly

LOCCIONI PROCESS MANAGING SOFTWARE

The managing software developed by Loccioni guarantees the recording of information related to the quality tests and real time localization of the products among the production line..

ADVANTAGES OF LOCCIONI TESTING SYSTEMS

Cost Savings

- > Reduced personnel cost
- > Reduced costs related to:
 - > maintenance/cleaning
 - > electricity

Occupational safety

- > No manual operations at active electric motor

Operations

- > Distributed testing processes
- > Integrated and fully automated tests
- > Reduced test time
- > Complete process traceability and database of test results

Ergonomics

- > Workplace design
- > Automatic connection



4. Managing software

CASE HISTORY - AUTOMATIC TESTING LINE

MOTORS LOADING ON TEST LINE

Automatic manipulators

- > Cartesian axis
- > Antropomorphic robot
- > Pallet transferring units

Association of motor serial number with pallet

START LINE OPERATOR

- > Motor electric connection on pallet

HADLING ON EQUIPPED PALLET

- > Two-level with lower pallet return

ELECTRIC SAFETY TEST STATION

Standard tests

- > Hipot
- > Electric insulation test
- > Ground circuitry continuity
- > Leakage current test
- > Insulation test

Motor board eprom programming if prearranged

FUNCTIONAL TEST STATION

- > Electric absorption under loading
- > Absorption in stand by (with motor board)
- > Motor brake application and torque/speed chartacterization
- > Spinning speed test

VIBRATION TEST STATION

Vibrational analysis

- > Cartesian axis
- > Antropomorphic robot
- > Pallet transferring units

FFT "Fast Fourier Transformer"

- > Transient state
- > Steady state

SCRAP PIECES STORAGE SECTION AND REPAIRING AREA

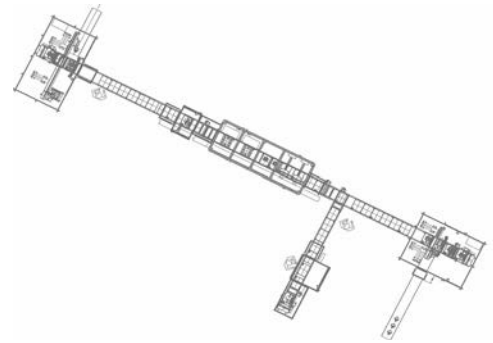
END LINE OPERATOR

- > Electric disconnection
- > Visual check (through operator or smart camera)

MOTORS UNLOADING

Automatic manipulators

- > Cartesian axis
- > Antropomorphic robot
- > Pallet transferring units



CASE HISTORY - ELECTRIC MOTOR TEST BENCH WITH LASER VIBROMETER

THE SYSTEM

In this solution, thanks to the laser vibrometer, the system is able to detect different mechanical defects without touching the product and ensuring high accuracy in measurements.

- > Rotor unbalance
- > Bearing noise
- > Brush noise



5. The test bench

CASE HISTORY - ELECTRIC MOTOR TEST BENCH WITH ACCELEROMETER

THE SYSTEM

This Solution is developed for electrical and mechanical characterization of electric motors.

Thanks to the accelerometers, the solution is able to detect different mechanical defects:

- > Rotor unbalance
- > Bearing noise
- > Brush noise



6. Testing station

CASE HISTORY - TESTING SYSTEM FOR ELECTRIC POWER STEERING MOTORS

THE SYSTEM

The machine performs complete testing of three-phase brushless motors used to control the power steering gear box of cars. The component undergoes electrical, electronic and mechanical tests to evaluate the completeness of the assembly and correct functioning of the component. The mechanical part used to perform

the complete testing of the component consists of a rotating table and is divided into six stations, on each of which particular measurements are performed. Loading and unloading of the unit under test, instead, is manually carried out by an operator.



7. The test bench



8. Testing station



9. Rotating table

RESEARCH@INDUSTRY

Research@industry is a laboratory equipped with the most innovative test systems. From the research of functional and aesthetic testing strategies, to the measurement techniques that better suit different needs, up to the most challenging requests for product development, the laboratory is at our clients' disposal to carry on **test campaigns** and feasibility studies.

The research projects carried out by our **research@industry** lab arise from the meeting between our researchers and the direct requests of our clients. Flexibility, free initiative, responsibility, imagination and integration of competences with Universities and research Centers represent the core of Loccioni innovation process.

Solutions for

- > Products
- > Processes
- > Buildings



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