



Fully automated ease with micrometrical accuracy

The Magnetoscan is a magnetic measuring scanner, designed to measure the magnetic field generated by permanent magnet devices that exhibit axial or radial multipolar magnetization, as is the case with rotors or stators.

HOW IT WORKS

The Magnetoscan works by rotating a magnetic device and recording the magnetic field versus the angular displacement at a particular level and distance. The measurement is taken by a 3 axis Hall probe, which is connected to a gaussmeter. The Hall probe is positioned with micrometrical accuracy at every distance from the surface of the sample by a precise mechanical tool with 3 axes. The sample is fixed to the rotating base through a shaft holder chuck that allows clamping samples with a rotor shaft size up to 100 mm and external diameter size up to 300 mm. Once the rotor is set on the support and the probe is positioned to the desired distance and height, the measurement is carried out in a fully automated mode. The sample performs 2 complete revolution in about 6 seconds, during which the field is measured and sent to the connected PC, which processes and displays the measured values. The measurement is fully automated and controlled by a dedicated software program that records 80000 measurements per revolution, with a resolution accuracy of 0,0045°. The software provides many forms of scanned data, including visualization of graph angle-induction, peak detection, angular shift, harmonic distortion, and FFT.

CONTROLS THESE PARAMETERS

- Field peak amplitude (max value and value at the centre of the pole)
- Pole width
- Pole Area
- Sinusoidal shape control and Total Harmonic Distortion (THD)
- Zero Position
- Angular control for skewed rotors
- Analysis of filtered curve

STANDARD CONFIGURATION

- Mechanical positioning tool with axes micrometrical controls
- Electrical base, containing DC electrical motor, encoder and all electrical circuits
- Hall probe (model could vary with application)
- Position tool for Hall probe and samples (customized)
- Holder's set: set of holders for different shaft's diameters
- Touch screen for manual settings and visualization of coordinates
- Instruction manual

TECHNICAL SPECS

GENERAL

Measurable materials	Magnetized devices containing hard magnetic materials
Measurable quantities	B-field profile, FFT
Type of magnetization	Triaxial probe
Max sample's weight	200 kg (441 lb)
Axes	2 axes, adjustable and measurable (by touch screen)
Axes ranges	0-300 mm (vertical axis); 0-200 mm (horizontal axis)

MECHANICAL SPECIFICATION

Available movement	Radial, axial
Linear displacement precision	± 0.02 mm (radial), ± 0.02 mm (axial)
Distance probe-sample	0,2 mm (with laser)
Angular resolution	0.045°
Number of data/revolution	80000
Scansion speed	typical: 6 seconds (2 revolutions)

GAUSSMETER (STANDARD MODEL)

Range	± 2 T
Accuracy	$\pm 0,5$ %
Frequency Bandwidth	DC - 2,5 kHz
Communication	analog output

HALL PROBE (STANDARD MODEL)

Type	3 axis (B_x , B_y , B_z)
Linearity	0.5% / 30 kG
Magnetic sensitive volume	0.15 x 0,15 x 0,01 mm
Temperature range	0 ÷ 35 °C, with automatic temperature compensation
Zero stability with temperature	± 50 μ T/°C
Calibration stability with T	$\pm 0,01$ %/°C

PHYSICAL

Power	220 Vac, 50/60 Hz, 16 A
Dimensions	1220 width x 640 depth x 1860 height (mm)
Weight	550 kg

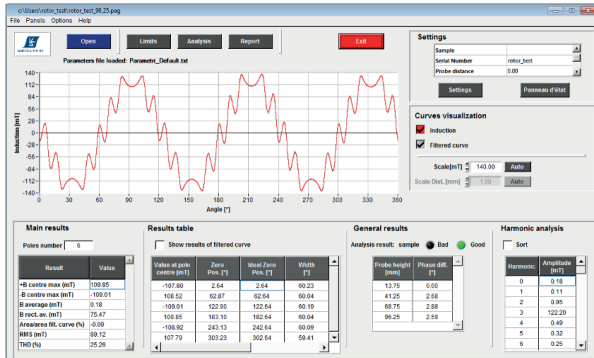
ACCESSORIES

Magnetic zero chamber; key of clamps

MANUALS AND DOCUMENTATION

Instruction manual (default: English), CE mark,
Calibration certificate

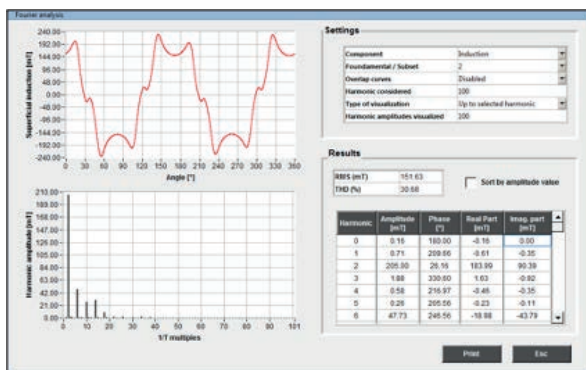
The software Magnetoscan manages and controls the measurement with scanner. The software program enables automatic data collection saved to a file. The operator only must select the parameters prior to the measurement, the MagnetoScan does the rest. Setting different distances and axial levels of measure, the software automatically performs all the scansions, that are then elaborated by the software and conveniently presented in 2D or 3D graphs.



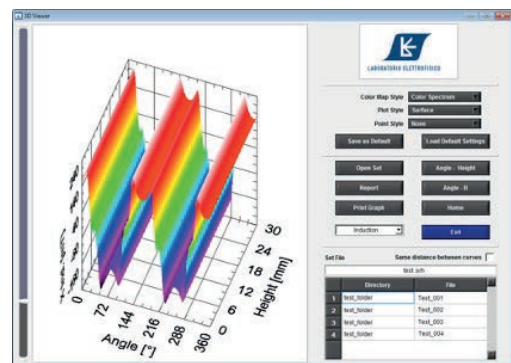
Main Page with parameters set, results and graph



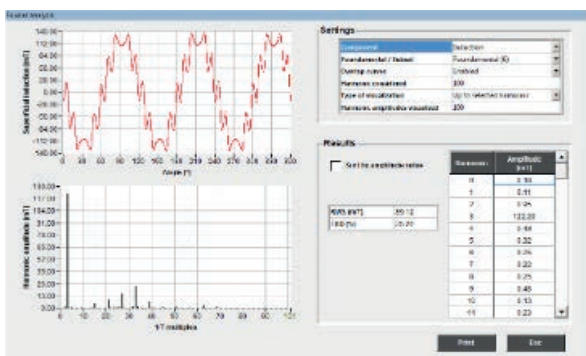
Curves comparison



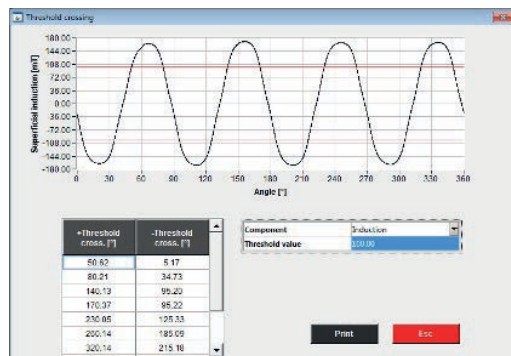
Fourier Analysis page



3D viewer



Harmonic Analysis



Threshold crossing page

FEATURES

Type of measurement

- Superficial magnetic field profile

Setting of measuring parameters

- Manual or automatic settings of parameters. The final list of parameters is shown in the main page
- Possibility to change graphical parameters, limits of acceptance and filters configuration
- Limit setting, with possibility to have notification on how many poles are in specification
- Laser control of the distance between sample and Hall probe

Results

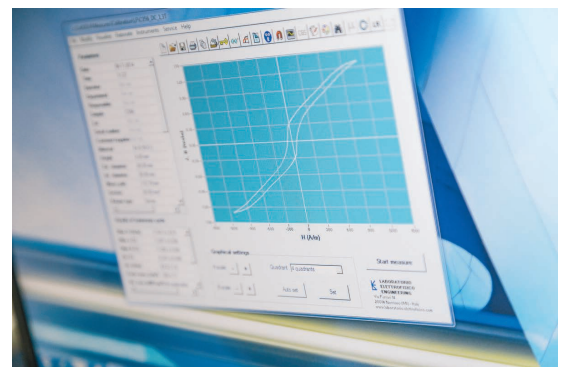
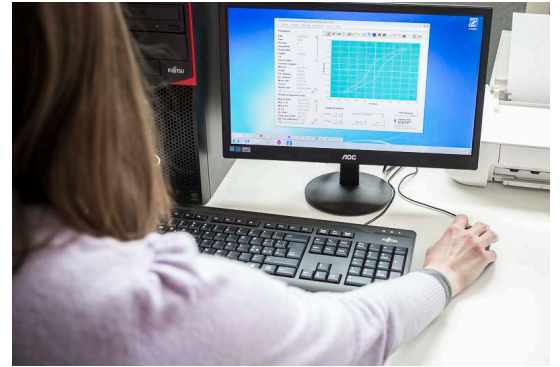
- Angle-induction diagram, Bmax, Bmin, B value in the centre of the pole, B average, DC offset, total average angular shift, harmonic distortion, FFT and more advanced results
- Magnetic units in SI
- Compatible with spreadsheet programs, as Microsoft Excel™

Printing a report

- Print reports containing data and graph, or only a text containing only data
- 2D or 3D graph generation

Data elaboration

- Curve comparison. Fourier Analysis through Fast Fourier Transform (FFT) algorithm
- Math elaboration to calculate parameters such as zero crossing, threshold crossing points, pole width, slopes, area, etc.
- Poles out of specification are marked in red
- Measure of skew angle



TRAINING AND SUPPORT

Personalized training

Rely on our team of experts for personal training during the acceptance period at Laboratorio Elettrofisico. After delivery, additional training can be arranged at your facility. We'll be happy to create a custom training plan to fit your needs.





LABORATORIO ELETTROFISICO

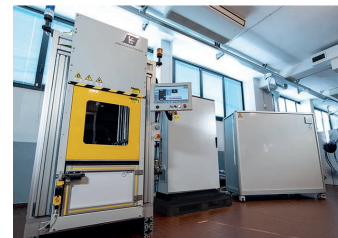
CUSTOM
MAGNETIZING FIXTURES



HIGH EFFICIENCY
MAGNETIZERS



MAGNETIZING STATIONS



MAGNETIZING SYSTEMS FOR INDUSTRY 4.0 AND MEASURING EQUIPMENT FOR ALL MAGNETIC MATERIALS

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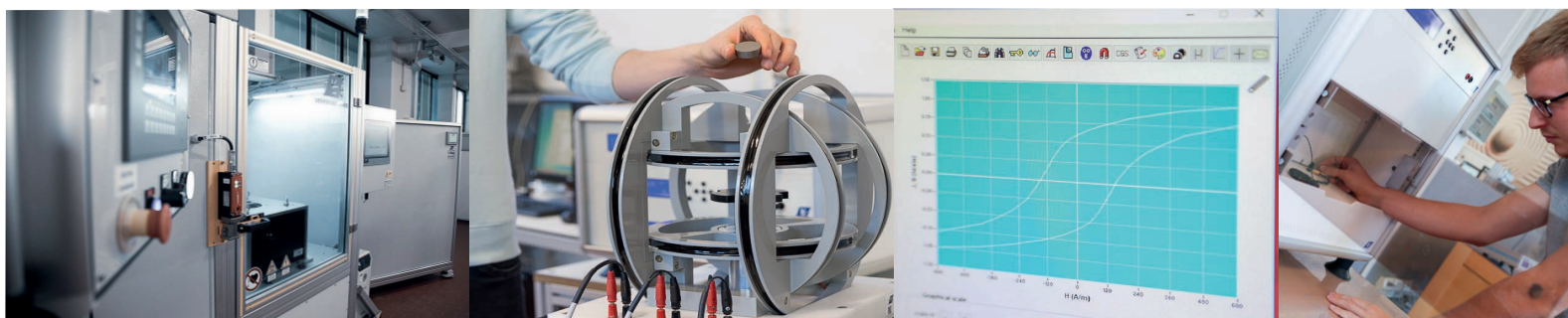
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Founded in 1959, Laboratorio Elettrofisico is a global company specializing in the engineering, design, and manufacture of the world's most precise magnetizing and magnetic measuring equipment.

Headquartered in Milan, LE has laboratories, testing facilities, support staff, and services centers in the United States, India, and China.

We reserve the right to make changes to these specifications without notice.
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