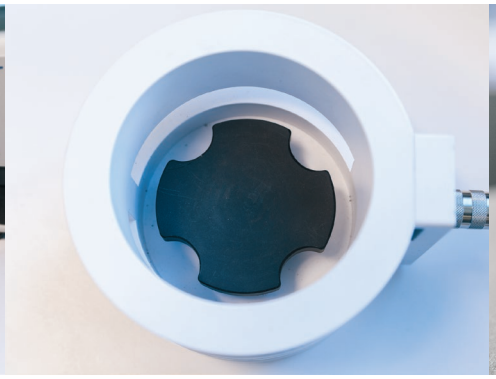
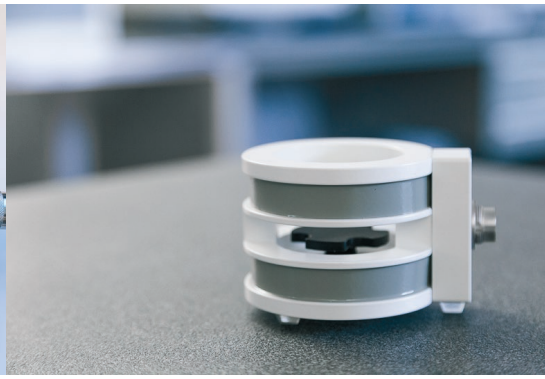
LABORATORIO ELETTROFISICO

HELMHOLTZ COIL - SINGLE AXIS

The simple, economical solution that never goes out of style

Helmholtz coils provide an easy and non-destructive way to control the quality of permanent magnets. The Helmholtz coils can be single-axis or 3-axis. The triple-axis version lets you see the direction of the magnetization with respect to the axes, regardless of how you place the magnet. The complete system to perform this measure consists of a 3-Axis Helmholtz coil and a cabinet containing three fluxmeters and a PC, more detailed specs can be viewed below.

KEY BENEFITS

- Easy to use
- Low cost
- Precise and accurate
- Non-destructive method of testing
- Control of permanent magnets quality (Br)
- Feedback control for calibration and magnetization system
- Meets international standards (IEC 60404-14)

HOW IT WORKS

When connected to a fluxmeter, the Helmholtz coil provides an output flux Φ proportional to the magnetic moment M of the sample: $M=K_H \Phi$ where K_H is the coil's constant (each coil is given with the proper certified constant). This measurement procedure is described in the International Standard IEC 60404-14.

AXIAL MAGNETIC POLARIZATION

axial: $J = \frac{K_H \cdot Ø}{V}$

RADIAL MAGNETIC POLARIZATION

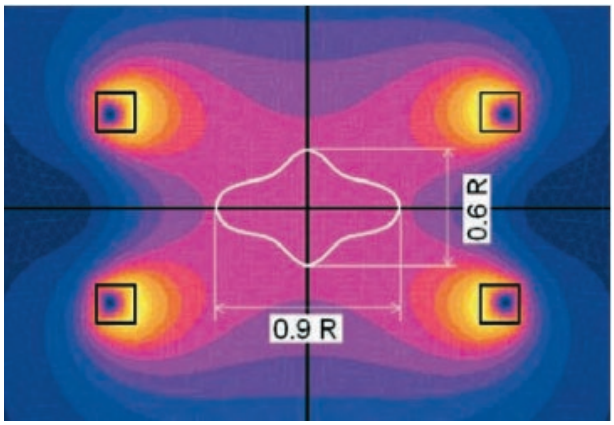
$J = \frac{K_H \cdot Ø}{V} \cdot \frac{\alpha}{\sin\alpha}$ (α in radiant)

HOW TO MEASURE

How to choose the right Helmholtz coil

The wide uniformity volume in the center of Helmholtz coils is approximetely an ellipsoid having one axis of 0.93 R and the other axis of 0.62 R. The magnet to be measured should fit in this volume to have the best reading (uniformity within 1%).

The Helmholtz coil measurement resultant is an absolute quantity (the magnetic moment) that can be used as the reference quantity for inter-comparison (between the supplier, customer or between different quality laboratories within the same company).



MODELS AVAILABLE

Models	Diameter	K_H (typical)	Measurement Volume
HM/R15	32 mm (1.18”)	$4.5 \cdot 10^{-5}$ m	12 mm (0.47”) - H 9 mm (0.35”)
HM/R32	64 mm (2.52”)	$1.1 \cdot 10^{-4}$ m	29 mm (1.14”) - H 19 mm (0.75”)
HM/R58	116 mm (4.57”)	$4.5 \cdot 10^{-4}$ m	53 mm (2.086”) - H 34 mm (1.338”)
HM/R100	200 mm (7.87”)	$2.8 \cdot 10^{-3}$ m	90 mm (3.543”) - H 60 mm (2.362”)
HM/R150	300 mm (11.81”)	$7.3 \cdot 10^{-3}$ m	135 mm (5.314”) - H 90 mm (3.543”)
HM/R250	500 mm (19.69”)	$8.8 \cdot 10^{-3}$ m	225 mm (8.86”) - H 500 mm (19.7”)

Customized are available.

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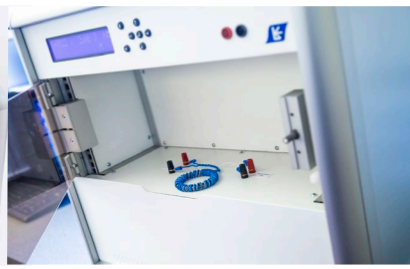

Founded in 1959, Laboratorio Elettrofisico is a global company specializing in engineering, designing, and manufacturing the world's most precise magnetizing and magnetic measuring equipment. Headquartered in Milan, LE has laboratories, testing facilities, support staff, and services centers in the United States, India, and China.

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