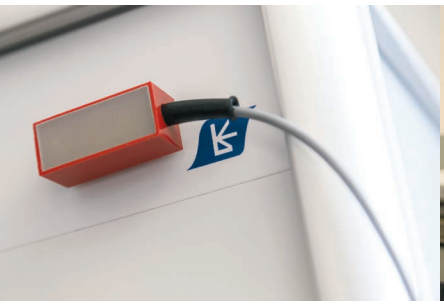
LABORATORIO ELETTROFISICO

AMH-5800 - HARD METAL MAGNETOMETER




Get the fastest, repeatable and accurate measurements

AMH-5800 is the latest technology for measuring the magnetic properties of cemented carbides (WC in Co matrix) and semi-hard magnetic materials. The AMH-5800 provides accurate magnetic parameters to evaluate other correlated properties; for example: hardness or the presence of undesired phases. This revolutionary measuring equipment utilizes a technique that provides the fastest, repeatable and accurate measurements available on the market today.
The AMH-5800 meets the International Standards IEC 60404-4 and ASTM A596.

KEY BENEFITS

- Coercivity HcJ
- Magnetic moment Msat
- Co or any other magnetic material in the alloy
- Weight-specific saturation magnetization σsat
- Magnetic polarization Jsat

STANDARD CONFIGURATION

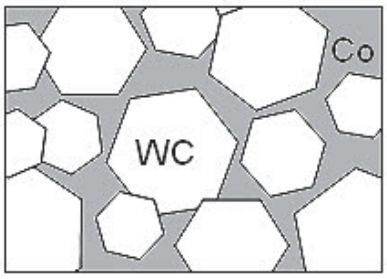
- Main cabinet equipped with fluxmeter, gaussmeter, DC power supply and polarity control
- Electromagnet
- Hall probe
- Inductive Sensor Assembly with sample holder
- Digital scale
- Latest PC processor class and LCD screen

TECHNICAL SPECS

Measurable materials	Semi hard materials and Cemented Carbides
Measurable quantities	M_{sat}, H_c, J_{sat}, weight specific saturation moment σ_{sat}, $\%C_o$
H MEASUREMENT	
Accuracy	Gaussmeter: 0.25% reading + 0.1% range Probe: 0.5% linearity
Resolution	0.1 O_e (300 O_e range), 1 O_e (3000 O_e range)
H_C MEASUREMENT	
Accuracy	+ 2% for Hc>500 A/m
M_s MEASUREMENT	
Accuracy	+ 2% on reading
Resolution	10-4 μWbm (10-10 Tm3, 10-1 emu)
SAMPLE SIZE	
With Coil 5800 MC-1	O 37 mm x h 19 mm (1.45" dia x 0.75" H)
With Coil 5800 MC-2	O 27 mm x h 13.6 mm (1" dia x 0.6" H)
POLES DIAMETER	100 or 120 mm (4" or 4.7")
MAX H FIELD	
With LP-100 mm pole	9700 O_e (776 kA/m)
With LP-120 mm pole	7750 O_e (620 kA/m)
TEST TIME	1 minute (typical)
OPERATING TEMPERATURE RANGE	10° C to 35° C
COMMUNICATION PORT	RS-232 /USB2
MAIN ELECTRICAL CABINET	
Power Supply	220 V, 50/50 Hz
Dimensions	535 x 655 x 550 mm (21 x 26 x 22")
Weight	58.5 kg (129.3 lb)
FLUXMETER	DIGITAL FLUX
Ranges	(1, 2, 5, 10, 20, 50, 100) x 2000 μWb
Resolution	from 1 μWb (range 1) to 100 μWb (range 100)
Accuracy	+ 0.5%
Drift	10k Ω x range
Communication	RS232/USB
MAGNETIC YOKE (Electro Magnet)	LEP/100-4S
Max Pole diameter	120 mm (4.7")
Movement operating	Manual
Poles setting	Micrometric
Dimensions	330 x 410 x 491 mm (12.9 x 16.1 x 19.3")
Weight	350 kg (approx.) 780 lb
PC AND SOFTWARE	Latest PC processor class with LCD Flat Screen Monitor
Operative system	Windows O.S.
Software	5800SW
MANUALS AND DOCUMENTATION	Instruction manual

MAGNETIC PROPERTIES

MAGNETIC PROPERTIES OF CEMENTED CARBIDES
Cemented Carbides are composite materials made with tungsten carbide (WC) mixed in a binder metal, mainly cobalt. The addition of Co allows the final alloy to have both an excellent hardness and a good toughness. The weight percentage of Co in the alloy is usually between 3 to 30%. The measurement of magnetic properties of Cemented Carbides gives useful information on the metallurgical process: the Magnetic Moment provides direct information for the quantity of Co not alloyed in non-magnetic phase. With the 5800 it is now possible to evaluate the quality of the metallurgical bond and the eventual presence of undesired phases. The coercivity Hcj data provides an indication of the grain size: the higher Hcj reading, the finer the grain size.



ACCESSORIES

MC Measuring coil

The measuring coil has an embedded sensor and a slot to insert a Hall probe. The samples are placed in the sample holder and then inserted into the measuring coil. The sample holder has the following dimensions:

Model	Diameter	Height
MC-1	37 mm	19 mm
MC-2	27 mm	13.6 mm

LP POLES

Two types of poles are available for AMH-5800:
LP-100 (100 mm diameter) and LP-120 (120 mm).

STANDARD SAMPLE

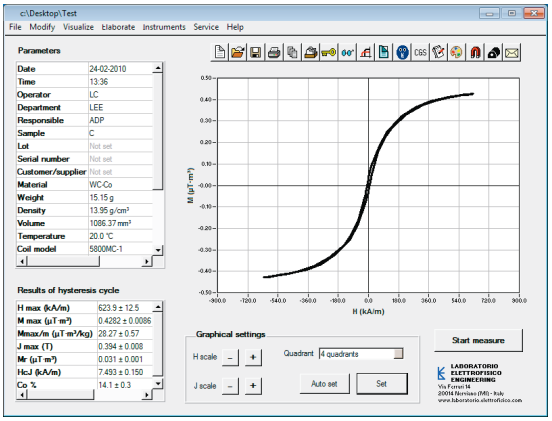
For the best performance a reference standard is available for periodic control and calibration.

Model:	HYS-Ni
Material:	Nickel

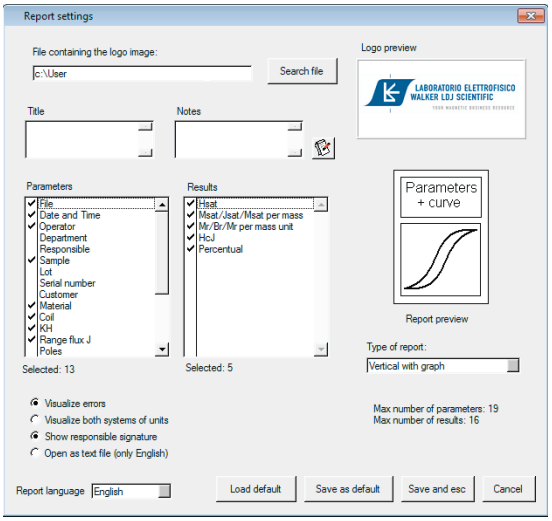
5800SW SOFTWARE

Our proprietary 5800SW software automatically manages measurements for the AMH-5800, including comparison of different curves and statistical analysis. The software ensures the measuring process is accurate and guide the operator to properly set the sample's parameters.

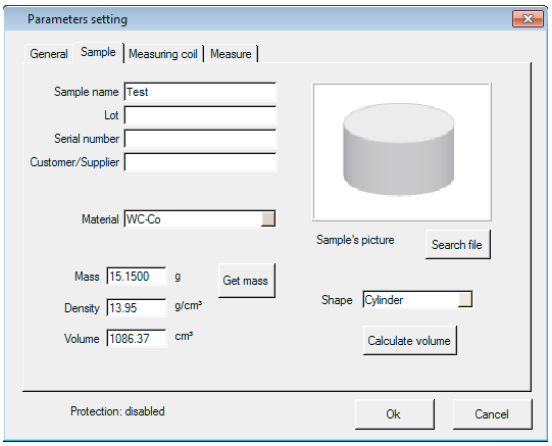
The Automatic Assistant notifies the operator and makes suggestion for the appropriate procedures or settings. The software also provides automatic generation of printing reports, database search feature and curve comparison.



Main Page with parameters set, results and graph



Customizable reports

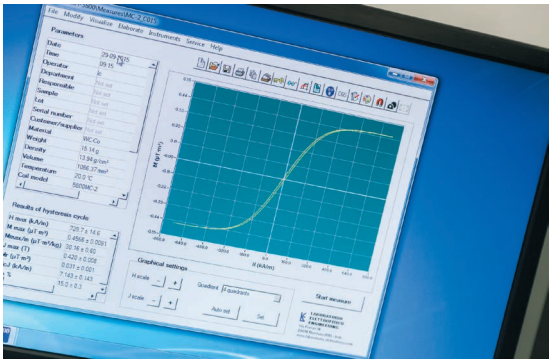


Parameters Settings

FEATURES

Type of measurement
- Measure of hysteresis cycle
- Jsat, saturation magnetic moment
- Weight specific saturation moment σsat
- % of magnetic material in the alloy
- Magnetic units in SI and CGS

Results
- Hsat, Bsat, Jsat, Br, Hc, loop area, relative permeability, specific power losses, losses separation, Steinmetz coefficient and many advanced results
- Magnetic units in SI and CGS, measures in mm and inches, temperature in °C and °F



Database and file searching
- A complete Data Base of measurements is stored with custom search capabilities
- Compatible with Microsoft Excel™

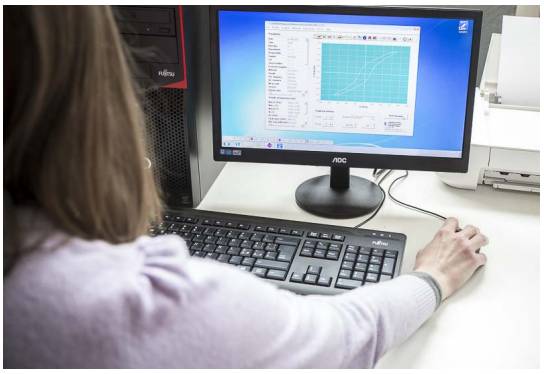
Set of measures
Curve comparison provides the grouping of more curves in sets for comparison and statistical analysis

Setting of measuring parameters
- Manual or automatic operation
- Automatically weights the sample with an electronic scale connected to the AMH-5800
- The final list parameters are shown on the main page
- Automatic fluxmeter drift control

Data elaboration
- Curve comparison
- Curve's interpolation, automatic or using a mathematical function from a list
- Automatic control of the Fluxmeter
- Merging of different curves

Printing a report
- Customization of reports and formats
- Different languages are available for printing
- Prints graphical report
- Measured data can be opened and saved in Microsoft Word™ or other Word processing programs

Protection
Password protection for restricting access according to selected parameters

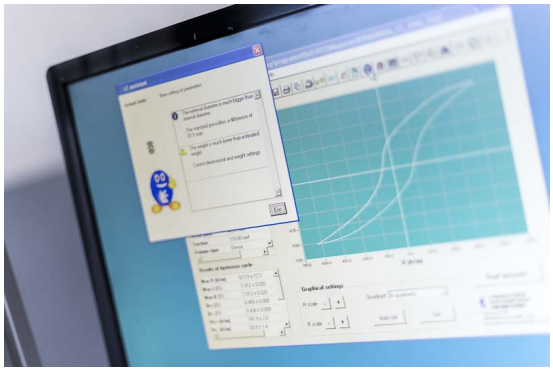


Personalized training

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

Real-time help

The LE Assistant monitors your system in real time and provides suggestions and error messages to improve performance. The LE Assistant is automatically activated if messages or warnings exceed a certain level.



Seamless support

With LE, you're only one button away from expert help. Access support online through TeamViewer screen sharing, Skype us - or send a request for technical assistance directly through your equipment's software. Seamless support for LE equipment is built in.