



The automatic DC measuring system made for irregularly shaped samples

The CR-03 Coercimeter measures the coercivity for soft magnetic materials. The CR-03 Coercimeter is a DC automatic measuring system to characterize samples having irregular shapes — in a fast and easy way. The CR-03 Coercimeter detects the stray field emitted from a magnetized sample with a Hall probe in close proximity. By applying an increasing demagnetizing field with the solenoid coil, the stray field is reduced to zero. The result, the demagnetizing field coincides with the coercivity of the material. The coercimeter measurement is automatic and easy to use with the custom LE software that comes standard. Soft materials measured include: iron and carbon steels, soft ferrites, amorphous alloys, nano-crystalline alloys.

KEY BENEFITS

- Manual or automatic settings of parameters
- Magnetizing field up to 140 kA/m
- Coercivity H_c and H_{sat}
- Double-polarity measurements

STANDARD CONFIGURATION

- Cabinet with DC power supply and gaussmeter
- Hall probe
- Solenoid with positioning tool for samples
- Mu-metal shield (optional)
- Dedicated software COER2015
- PC and printer

Accessories

- Sample holder
- Probe holder

HOW IT WORKS

The working principle is based on the detection of the stray field coming from the sample under test. A Hall probe, positioned near the sample, measures the transverse component of this field. The stray field reduces as the axial field of the solenoids demagnetizes the sample. When the transverse field is zero, the axial field coincides with the coercivity of the material.

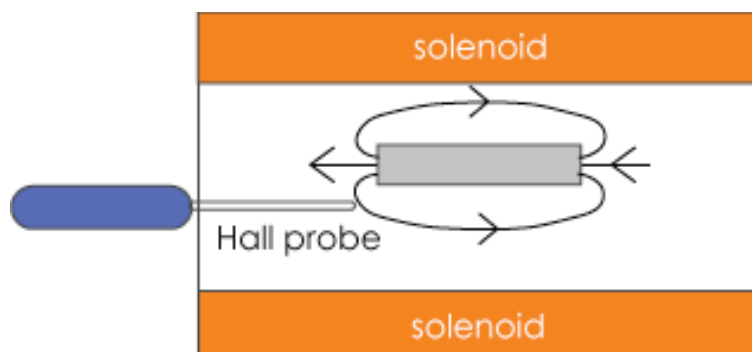
The CR/03 measurement is automatic and very easy to use with supplied custom software.

The measurement meets International Standard IEC 60404-7.

When H_c is lower than 40 A/m, it's required to shield the sample, to avoid influences from external magnetic fields (also the Earth magnetic field can affect the results). For this reason, a Mu-metal shield is provided to guarantee the reduction of external influences to negligible levels, that permits accurate measurement of H_c lower than few A/m.



Examples of irregular shapes measurable



Coercimeter's measuring principle

GENERAL

Measurable materials	Soft Magnetic Materials
Measurable shapes	Regular or irregular
Measurable quantities	H_{cJ} , H_{sat}
H_{cJ} range	from 0.5 A/m to 144 kA/m
H_{cJ} resolution (max)	6 mOe to 1800 Oe

ACCURACY

H_{cJ}	± 1 %
H_{sat}	± 1 %
Transversal field	± 0.5 %
Sample size	20 mm with positioning tool Length 110 mm
Test Time	30 seconds (typical)
Operating temperature range	15 ÷ 40 °C
Frequency	DC

MAIN ELECTRICAL CABINET

Power Supply	2200 Vac, 50-60 Hz, 16 A max absorption
Dimensions	535 x 655 x 550 mm (21 x 26 x 22")
Weight	55 kg (121 lb)

GAUSSMETER

Ranges	35 G, 350 G, 5 kG, 35 kG
Resolution	from 100µG to 1 G
Accuracy	± 0.075% of reading, ± 0.005% of range
Communication port	RS232, IEEE 488

HALL PROBE

Type	Transverse
Stem material	Aluminium
Dimensions	200 x 4.6 x 1.5 mm (8 x 0.8 x 0.06")
Linearity	0.20% to 30 kG
Cable length	2 m (6,5 ft)

SOLENOID

Max Field	1800 O _e (144 kA/m)
Max Current	25 A
Diameter	53 mm - 2.09"
1% uniformity length	110 mm - 4.33"
Dimensions	L280 x W225 x H410 mm - L11.02 x W8.86 x H16.14"

SHIELD

Material	Mu metal
Thickness	1.5 mm (0.06")
Dimensions	L300 x W300 x H545 mm - L11.81 x W11.81 x H21.46"

PC AND SOFTWARE

PC	PC, monitor, printer and all connection cables
Operating System	Windows
Software	COER2015 (English or Italian)
Connection	ethernet/USB

MANUALS AND DOCUMENTATION

	Instruction manual (English or Italian)
	Calibration certificate

LE's proprietary coercivity software COER2015 automatically controls the measurement process. It takes less than 30 seconds to get accurate measurements, display the coercivity, perform a quality control routine, and store data for statistical elaboration. Other available options include: integrated database, customizable print options, and data management.

FEATURES

Type of measurement

- Coercivity H_c and H_{sat}
- Double-polarity measurements

Printing a report

- Customized print options for information and language
- Direct print of a graphical report on printer or file
- The report can be opened and saved with other word processor programs

Protection

Password protection for restricting access according to selected parameters

Setting of measuring parameters

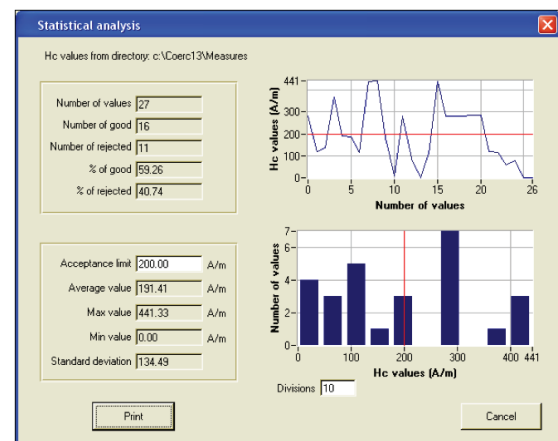
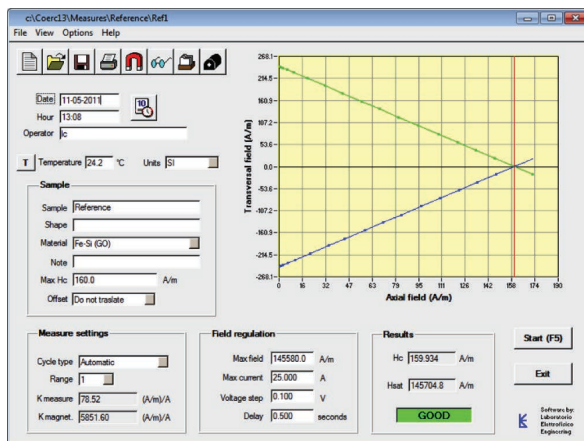
- Manual or automatic settings of parameters
- Magnetic units in SI and CGS

Data elaboration

- Limit setting for good/rejected results
- Statistical evaluation of the results

Data base and file searching

- Data base of measuring file with fast search capability, ordering and selection
- Full compatibility with other spread sheet programs, such as Microsoft Excel™



The screenshot shows the 'File manager' window. It displays a list of files in the directory c:\Coerc13\Measures. The table below shows the search results:

File name	Sample	Material	Hc (A/m)	Max appl. H (A/m)
1 c:\Coerc13\Measures\COER000.pag	Riferimento	Soft steel	281.53	100000.00
2 c:\Coerc13\Measures\COER000.PAG	Riferimento	Soft steel	113.81	97921.60
3 c:\Coerc13\Measures\COER001.PAG	Riferimento 1	Soft steel	136.10	97921.60
4 c:\Coerc13\Measures\COER002.PAG	Riferimento 2	Soft steel	267.76	97921.60
5 c:\Coerc13\Measures\COER003.PAG	Riferimento 3	Soft steel	191.60	97921.60
6 c:\Coerc13\Measures\COER004.PAG	Riferimento 4	Soft steel	186.46	97921.60
7 c:\Coerc13\Measures\COER005.PAG	Riferimento 5	Soft steel	115.81	97921.60
8 c:\Coerc13\Measures\COER006.PAG	Riferimento 6	Soft steel	438.84	97921.60
9 c:\Coerc13\Measures\COER007.PAG	Riferimento 6	Iron	441.33	97921.60
10 c:\Coerc13\Measures\COER008.PAG	Cilindretto 2.25	Soft steel	182.84	97921.60
11 c:\Coerc13\Measures\COER009.PAG	Cilindretto 2.25	Mumetal	9.66	15524.00
12 c:\Coerc13\Measures\COER010.PAG	Riferimento	Soft steel	281.53	100000.00
13 c:\Coerc13\Measures\COER011.PAG	Cilindretto 2.25	Fe-Si (oriented)	87.43	100000.00

Search result: 27 files containing the text "" Existing files: 27

Text to find: ""

Find file with date: between 02-05-2001 e 05-05-2005

Buttons: Search, Statistics, Exit