

## Hard / Soft Magnetic Materials Measurement System

### 硬 / 軟磁 合金材料B-H Curve 量測系統



PERMAGRAPH 是全球知名的磁性測量標準設備，並且廣泛使用於研究、開發、質量控制和量產中的磁特性要求。硬磁/軟磁材料用於測量靜態磁滯迴線的量測設備滿足國際標準規範 IEC 60404-4 & IEC 60404-5 的所有要求，所有磁性材料內部的特性曲線皆可由此設備完整自動量測完成，加速產品開發及設計的進程。

The PERMAGRAPH is the world-wide known standard equipment for the measurement of magnetic characteristics of permanent magnets/ soft magnetic materials in research, development, quality control and production. The instrument for measuring the (quasi-)static Hysteresis loops fulfils all requirements of the standard IEC 60404-4 and IEC 60404-5. The internal characteristic curves of all magnetic materials can be completely and automatically measured by this device, which speeds up the process of product development and design.

#### Hard Material 硬磁B-H Curve 量測系統



- \* Automatic measurement of the hysteresis loops of permanent magnets.
- \* Determination of characteristic quantities like remanence, coercivity, maximum energy product, etc.
- \* Measurements at temperatures up to 200 °C with heating poles and temperature surrounding coils.
- \* Measurements on the surface of magnets using pole coils.

#### Soft Material 軟磁B-H Curve 量測系統



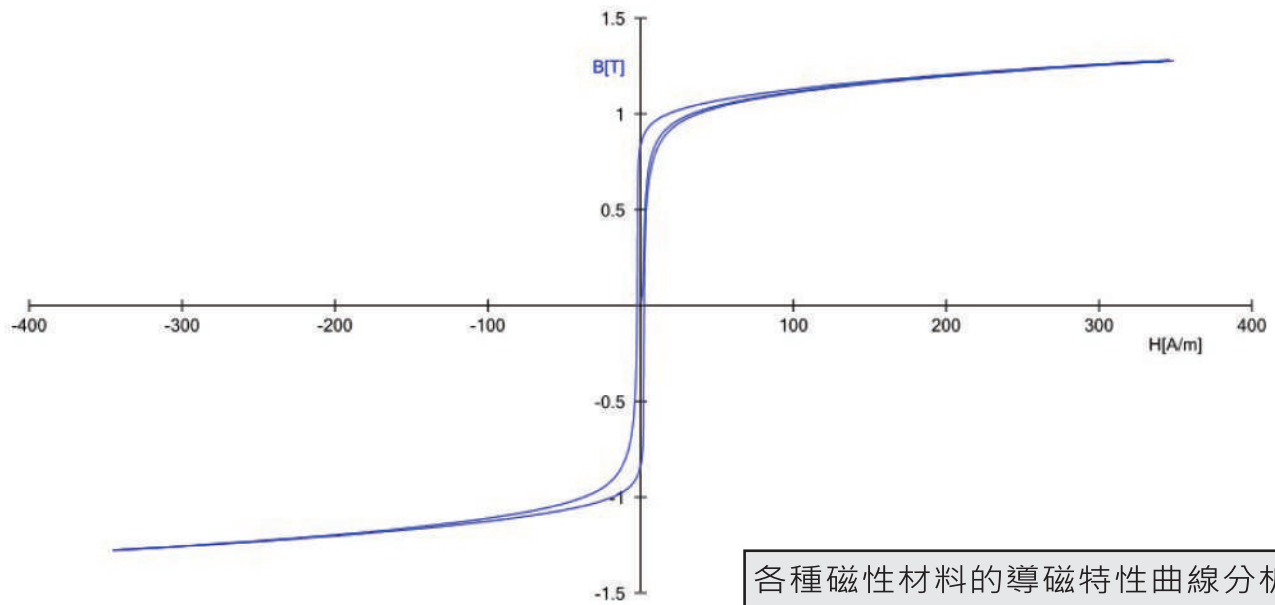
- \* Measurements on ring specimens.
- \* Automatic measurement of the static hysteresis loops of soft magnetic materials.
- \* Measurements on bars or strips in a permeameter yoke.
- \* Precise measurement of the field strength H with a potential coil directly on the specimen surface.



藉由B-H Curve (loop)的量測報告中可以觀察確認各項磁特性重要的參數如Br、Hcb、Hcj、Bmax、Jmax等相關磁特性參數。加載外加電磁場強於待測材料內部同時測得內部材料的反應變化進而量測而成，非常快速且方便的得知磁材料的內部特性，適合用於研發、品管、製程等單位使用。

Through the measurement report of the B-H Curve (loop), you can observe and confirm the important parameters of the magnetic characteristics such as Br, Hcb, Hcj, Bmax, Jmax and other related magnetic characteristic parameters. The applied electromagnetic field is stronger than the inside of the material to be tested, and the reaction change of the internal material is measured at the same time. It is very fast and convenient to know the internal characteristics of the magnetic material. It is suitable for use in development, quality control, manufacturing .

### MOBILSENS TECHNOLOGIES - REMAGRAPH C



各種磁性材料的導磁特性曲線分析

Br	= 835	mT	H[Oe]	B[T]	μ	Turns	: N1 = 5, N2 = 40	Date	: 2021/5/26
HcB	= 0.00224	kA/m	1.256637	1.12	8661	dB/dt	: 0.1 T/s	Customer	: Mobilsens Technologies
HcJ	= 0.00224	kA/m	2.513274	1.20	4666	Room temp.:	: 22 °C	Operator	: Jimmy
μmax	= 133·10 <sup>3</sup>		3.769911	1.26	3265	Spec. temp.:	: 23 °C	Shape	: R ring
μi	= 0					Density	: 8.18 g/cm <sup>3</sup>	Material	: Soft Material
H(μmax)	= 0.0355	Oe				Mass	: 23.797 g	Info 1	:
Hmax	= 0.346	kA/m				Path length	: 109.547 mm	Info 2	:
Jmax	= 1279	mT						Info 3	:
Bmax	= 12.8	kG							<b>T M A G</b>
μ(Hmax)	= 2881							Test No.	:
W	= 0.023	kJ/m <sup>3</sup>						Material No.	:

μmax=133000

- ⚙ Br: Magnetic remanence
- ⚙ HcB: Coercivity of the B(H) hysteresis loop
- ⚙ HcJ: Coercivity of the J(H) hysteresis loop
- ⚙ μmax: Maximum of the relative permeability
- ⚙ H(μmax): Field strength for which the relative permeability
- ⚙ Hmax: Maximum value of the magnetic field strength
- ⚙ Jmax: Maximum value of the magnetic polarization
- ⚙ Bmax: Maximum value of the magnetic flux density
- ⚙ μ(Hmax): Relative permeability at maximum field strength
- ⚙ W: Hysteresis loss (density) (area inside the hysteresis loop)
- ⚙ Turns: Number of windings
- ⚙ Path length: Material magnetic circuit