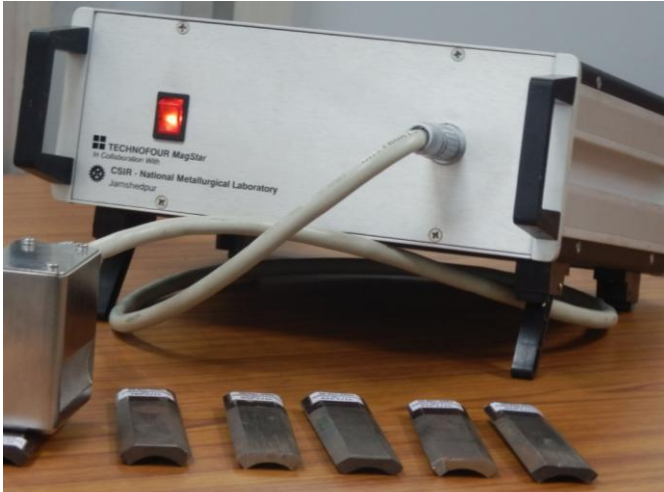


# MagStar

A Portable Magnetic Sensing Device for Non-destructive Evaluation of Steel Structures /Components



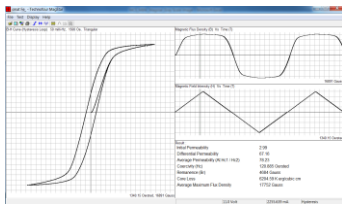
Some typical applications:

- ❖ Evaluation of microstructural changes during heat-treatment/ ageing
- ❖ Determination of ferrite volume fraction
- ❖ Evaluation of ferromagnetic phases and its correlation with mechanical properties (e.g. hardness)
- ❖ Residual stress analysis

MagStar is a Magnetic NDE device developed jointly by M/s Technofour, Pune and CSIR-National Metallurgical Laboratory, Jamshedpur. It measures Magnetic Hysteresis Loop (MHL) and Magnetic Barkhausen Emissions (MBE) using a single magnetizing probe. It has also the option for measuring MHL and MBE separately. The device is portable and light weight.

## MagStar: A computer controlled MHL & MBE combo system

**Sensor :** MagStar sensor is used for transmitting signals of frequency range of 50 mHz to 200Hz for magnetising the test object as well as receiving MBE and MHL signals of from the test object.



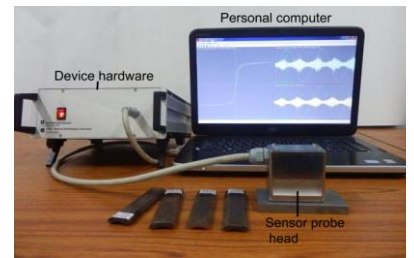
### MHL Output

Hysteresis

Magnetization

Coercivity

Permeability



A cyclic magnetic field of maximum 1500 Oe with an excitation frequency of 50mHz to 200Hz.

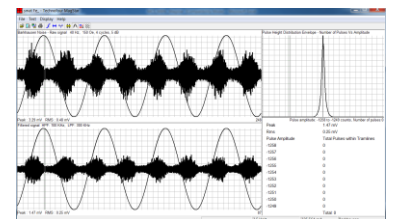
### MBE Output

RMS voltage

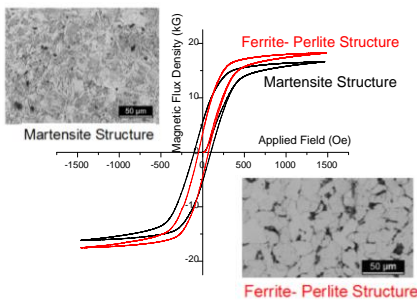
Pulse height distribution

Peak voltage

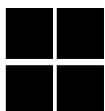
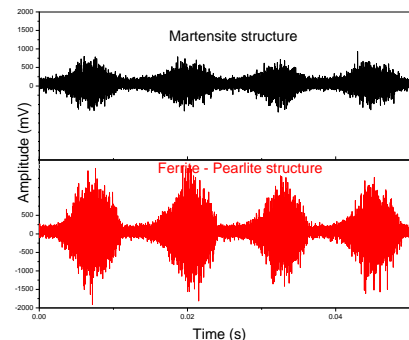
Frequency spectrum



A sinusoidal cyclic magnetic field upto 350 Oe with an excitation frequency of 10-200Hz can be induced for Barkhausen signal with variable band pass filter within 10- 300kHz.



### Phase detection of SA 210 steel through MagStar



**TECHNOFOUR**  
Pune



**CSIR- National Metallurgical Laboratory**  
Jamshedpur

**MHL measurement**

Frequency Range: 50mHz to 200Hz

Excitation: 0-1500 Oe

Wave Shape: Sinusoidal / Triangular

**MBE measurement**

Frequency Range: 10Hz to 200 Hz

Excitation: Up to 1500 Oe

Number of cycles 3 to 10

Gain 0 to 20 dB in steps of 1 dB

Filter setting 10KHz to 300KHz independently variable Low pass and High pass

**Power Requirement**

230V, 50Hz, 200VA

**Weight**

3.25Kg

**Connectivity**

Ethernet

**Control, Display and Analysis**

External laptop /notebook/ personal computer

**Operating System**

Windows 7

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