FERRITES INDIA

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Setup for studying Magnetostriction under DC Magnetic Fields
Model – BHLT 1121

The equipment is capable of taking measurements of magnetostriction on materials when exposed to DC magnetic fields. The equipment takes measurements at near DC frequency
The equipment is PC based and operates on Windows7 platform. It uses monitor as output device while inputs are made through keyboard and mouse. Entire operation of the equipment is through mouse and keyboard.

System Configuration:

The system uses Electromagnet as a generator of magnetic field and strain gauge mounted on the sample under test generates signal that is further amplified and processed to study the magnetostriction. The system generates and controls the current in the electromagnet, measures magnetic field generated using Hall sensor kept close to sample under test and measures picks-up signal from the strain gauge through the signal-processing unit. The parameters for the sample under test and the data for strain gauge sensitivity etc. is given as input to the system through PC.
The following magnetostriction properties can be measured
Plot of complete cycle of strain Vs magnetic field

Inputs to the system:
A. Sample parameters
B. Strain gauge Sensitivity
C. Maximum field strength up to which measurements are desired.

Detailed Specifications
The set-up comprising of :
A. Electromagnet with power supply
B. Hall Sensor with its signal conditioner for field measurement
C. Wide range strain indicator with analog output
D. 16bits accuracy signal processing unit
E. IBM Compatible PC

Electromagnet:
Electromagnet with power supply:
Pole size: 90mm
Gap adjustable between electromagnet poles: 0-60mm.
Field produced In 10mm gap: 10kA/cm .

Field measurement: 'H' axis (soft)
Field measurement is through Hall sensor range selection.
Number of ranges   : 2 &20 kA/cm FS
Accuracy   : 1% F.S.

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Power source   : 3000VA

Wide Range Strain Indicator with Analog output

Analog output   0-5 volts for Full scale range.
Accuracy: 1% F.S.
Number of Ranges: 350, 3500, 35000 microstrain FS

Signal processing unit:

With USB connectivity to PC
Capable of handling multichannel analog signals
Resolution: 16 Bit

IBM Compatible PC:

Microsoft windows10 operating system

Software for measurements on magnetically soft materials:

- The software supplied is WINDOWS7 based.
- It allows seeing stored results of earlier measurements or taking new measurements.
- It allows entering measurement parameters for the sample under test in either CGS or MKS units.
- It acquires the data, processes it and offers graphical plot of Strain Vs Field and display of measured parameters in text form
- The scales are adjustable at will before or after the measurements.
- The results are saved as only values or as the entire plot.
- It saves and/or prints results on any installed printer.
- Facility to auto plot
- The software allows display of scales to be changed for all plots independently even after the measurements are over. The display can be suitably shrunk or expanded to suit aesthetic printing and presentation of the data.
- The software allows results to be stored in complete graphical form or tabulated in Excel file for creating database enabling statistical analysis.

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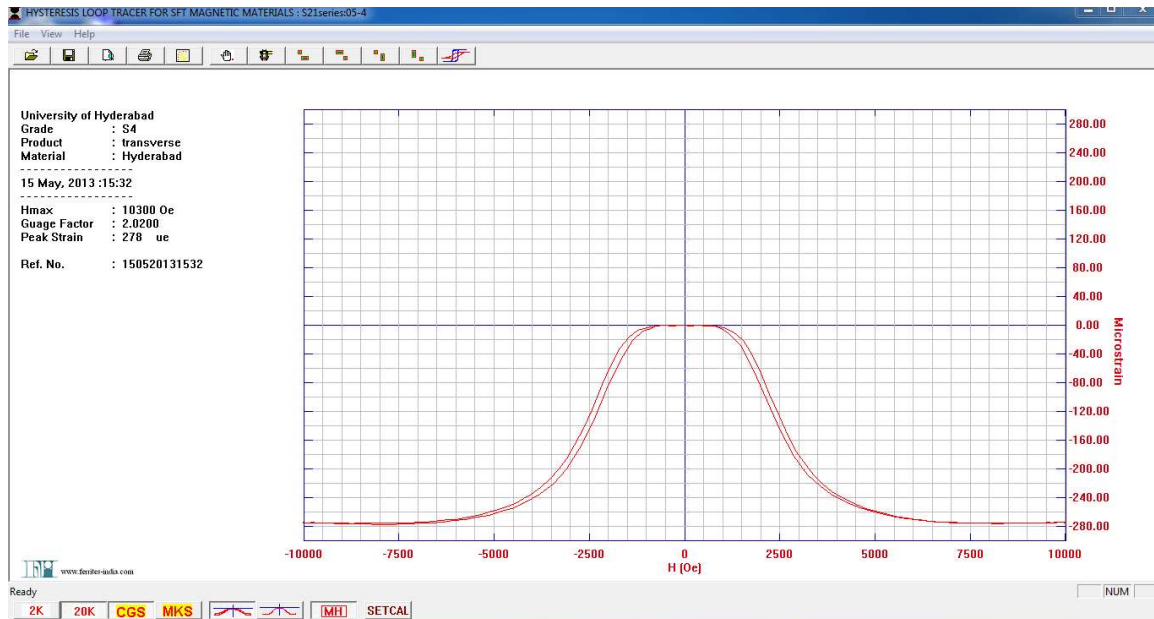Mauli, 10, Silver Oak Park, Bane, Road, Pune 411045, India.
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Typical Setup

Typical Results of Microstrain measurements.

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Digital Output File

Ramaiah University							
Date :	01 November, 2019 :16:22						
Magnetic Test Report							
Supplier C	Ramaiah_Sample						
Batch No:	CG2Q0.1						
Material :	300-30						
Field Oe	Microstrain						
-122.67	0						
-122.67	-0.05						
-122.32	-0.15						
-122.3	-0.24						
-122.08	-0.34						
-122.17	-0.43						
-122.3	-0.52						
-121.7	-0.59						
-121.48	-0.64						
-121.39	-0.65						
-121.45	-0.62						
-121.26	-0.58						
-121.31	-0.49						
-120.97	-0.44						
-120.87	-0.34						
-120.84	-0.26						