

CSIR-National Metallurgical Laboratory  
Jamshedpur (Jharkhand) INDIA  
CORRIGENDUM

REFERENCE NO. :- P/NC/103/AKP/SM/OTE/22-23

DATE: 13/03/2023

NAME OF EQUIPMENT: VIBRATING SAMPLE MAGNETOMETER (VSM)

**NOTE:** The Bids must be submitted in the Central Public Procurement Portal (URL:<https://etenders.gov.in/eprocure/app>) only. Manual/Offline bids shall not be accepted under any circumstances. Bidders should quote in INR only.

CONSEQUENT TO THE PRE-BID MEETING HELD ON 03/03/2023, THE REVISED SPECIFICATION IS GIVEN BELOW:-

**SPECIFICATIONS:-**

**Detailed Technical Specifications (Revised)**

**1. Vibrating Sample Magnetometer (VSM) with following specifications :**

The equipment is capable of measuring magnetic properties of metallic materials in the form of metallic alloys, powders and thin films.

**1.1 Magnetic field requirement of the superconducting magnet**

1.1a. Magnetic field strength :  $\pm 3$  Tesla or better

1.1b. Magnetic Field ramp rate : 100 Oe/s or higher

1.1c. Compatible power supply for magnet.

1.1d. Suitable cooling system.

1.1e. Demagnetization facility.

**1.2 Magnetic Moment**

1.2a Measurement range:  $10^{-5}$  emu (or lower) to 20 emu (or higher).

1.2b Sensitivity range: Minimum:  $10^{-5}$  emu or better.

**1.3 Samples to be tested:**

Equipment should be capable to measure magnetic properties of metallic ribbons (20-50 micron thick), polycrystalline alloys, thin films, powders, solids in the form of lumps.

**1.4 Temperature measurement**

1.4a. Temperature range: 50K (or Lower) to 1000K (or higher)

Above temperature measurement can be in following spans:

(i) Low temperature span: 50K (or lower) to 300K (or higher)

(ii) High temperature span: 300K (or lower) to 1000K (or higher)

1.4b. Temperature precision : 0.5K or lower

**1.5 Computer and Software for operation and analysis**

**1.5a Computer**

To provide a compatible computer (latest version) loaded with software for operation of the VSM and data analysis. The soft copy of licensed version of the operation and analysis software(s) should also be provided.

### **1.5b Software**

- (a) Software control protocol for ;
  - (i) Magnetic field (M-H) at controlled ramp rates
  - (ii) High temperature measurement (M-T) at controlled heating rates.
- (b) Pre-installed Software for performing experiments and analysis of
  - (i) DC Hysteresis curve, M-H
  - (ii) Temperature dependent magnetization curve, M-T
  - (iii) Isothermal magnetization curve within the specified temperature.
  - (iv) Minor loop

### **1.6 Experimental output parameters**

The raw data from experiment should be accessible by the user to calculate the following:

- (a) Moment (emu).
- (b) Moment/gram (emu/g).
- (c) Saturation Magnetisation.
- (d) Coercivity
- (e) Susceptibility
- (f) Remanence / retentivity

Any upgraded software or higher version should be installed free of cost during the warranty period.

### **1.7 Calibration samples**

Standard samples must be provided for periodic calibration of magnetic moment at low and high magnetic fields/temperatures.

### **1.8 Electronics**

System should have suitable power supply system with overvoltage protection with necessary control electronics for magnetic field and temperature.

### **1.9 Sample holder**

1.9a. Easy access to load and unload sample

1.9b. Sample holders

- (i) For bulk samples at low temperature span i.e 50K (or Lower) to 300K (or higher): 01 No
- (ii) For bulk samples at high temperature span i.e 300K (or Lower) to 1000K (or higher): 01 No.

## **1.10 Spares**

### **1.10a. Sample Holders**

- (i) 02 nos. each for bulk samples at low temperature span i.e 50K (or lower) to 300K (or higher)
- (ii) 02 nos. each for bulk samples at high temperature span i.e 300K (or lower) to 1000K (or higher)

### **1.11 Power supply:**

The power supply to the equipment should be as per Indian Standards.

### **1.11 UPS System**

The Vibrating sample magnetometer should be provided with compatible Uninterruptible Power Supply (UPS) system.

### **1.12 Instruction Manual :**

- 1.12a. The system should be provided with detailed instruction manual (Installation, Operation and maintenance) for measurement system and probe(s).
- 1.12b. Both soft and hard copies of the instruction manual are to be provided. All the documents should be in English language.

### **1.13 Warranty:**

The supplier should provide one year comprehensive warranty for trouble free operation of the Vibrating sample magnetometer. The warranty should be valid for both hardware and software of the measurement system. Period of warranty will be counted from the date of successful installation of the equipment.

### **1.14 Infrastructure:**

Vendor shall provide details of infrastructural requirements (water supply, electricity).

### **1.15 Installation, commissioning and training:**

Installation, commissioning and onsite training should be provided by the supplier or its representative at CSIR-NML premises free of cost.

### **1.16 Support and maintenance:**

- 1.15a. Vendor should provide tools and tackles for the system.
- 1.15b. Vendor should commit to provide spares parts and support for a minimum period of 10 years after expiry of warranty period for the maintenance of equipment.

**1.17 Service Centre in India**

The vendor should have service centre in India with trained service engineer for attending the equipment as and when required.

**1.18 Delivery, Installation and Training**

1.18a. The Vibrating sample Magnetometer should be delivered at National Metallurgical Laboratory, Jamshedpur within 6 months from the date of receipt of purchase order by the supplier.

1.18b. The instrument should be installed at National Metallurgical Laboratory, Jamshedpur without any installation charges.

1.18c. During installation and commissioning, training for operation and maintenance should be provided to 4 persons for a period of 4 days.

**THE REVISED DEADLINE FOR BID SUBMISSION END DATE AND DATE OF OPENING OF BIDS ARE AS FOLLOWS:**

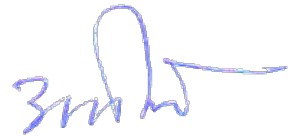
Last Date for Submission of Bids	05/04/2023 by 15:30 P.M. (IST)	Opening of Bids	06/04/2023 by 15.30 P.M. (IST)
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**BID Securing Declaration Form should reach this office by 05/04/2023.**

The above amendments shall amount to amendments of the relevant terms of our Bid Document for CSIR-NML Tender No.P/NC/103/AKP/SM/OTE/22-23.

All other Tender terms and conditions remain unchanged.

Bidders should quote only in INR.



Stores & Purchase Officer  
For and on behalf of CSIR-NML

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