



**BHARAT HEAVY ELECTRICAL LIMITED**

**RAMACHANDRAPURAM :: HYDERABAD-32**

**SPECIFICATION FOR**  
**POSITIVE MATERIAL IDENTIFICATION INSTRUMENT**

**SCOPE: SUPPLY AND COMMISSIONING OF POSITIVE MATERIAL IDENTIFICATION INSTRUMENT**

<b>SNO</b>	<b>DESCRIPTION FOR BHEL REQUIREMENT</b>	<b>SPECIFIED / TO BE CONFIRMED BY</b>	<b>OFFERED</b>	<b>DEVIATIONS</b>	<b>REMARKS</b>
<b>1.0</b>	<b>PURPOSE OF THE EQUIPMENT</b>				
<b>1.1</b>	Positive material identification of Steam turbine & Gas turbine blades and other components like pin, bush, nut, bolt, rod etc. of steam turbine and gas turbine.	vendor to confirm			
<b>2.0</b>	<b>SCOPE</b>				
2.1	Supply and commissioning of the equipment at BHEL, Hyderabad works including training.	vendor to confirm			
<b>3.0</b>	<b>SPECIFICATION:</b>				
3.1	Non destructive energy dispersive X-Ray fluorescence analysis.	vendor to confirm			
3.2	Instrument shall be capable of analyzing upto 25 standard alloying elements from Mg to U.	vendor to confirm			
3.3	Instrument shall have extensive built in grade library for wide range of alloys including stainless steel, low alloy steel, tool steels, Cr, Cu, Co, Ti, Mo, Mn, Ni alloy.	vendor to confirm			
3.4	Operating temperature -5°C to 50 °C	vendor to confirm			
3.5	Weight shall be less than 2.5 Kg with battery	vendor to confirm			

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3.6	Operating modes: 1) Alloy grade with chemistry (Fundamental parameter analysis, 2) Identification/Match mode, 3) Empirical mode	vendor to confirm			
3.7	Accurate analysis of valuable elements like Cr, Mo, Ti, Ni, Mn, Co, W, Cu etc in 5 to 10 secs Fe base, Cu base & Al base alloys.	vendor to confirm			
3.8	Analysis of hot surfaces upto 400 °C	vendor to confirm			
3.10	Automatic compensation for varying sample shape and size, providing superb accuracy even when analyzing small sample and uneven surfaces (pin, wire, nut screw, pipe, fasteners etc.)	vendor to confirm			
3.11	Components >= 4 mm dia shall be checked	vendor to confirm			
3.12	Universal Standardless FP alloy Calibration- (Mg to U).	vendor to confirm			
3.13	Aluminium FP Calibration for rapid grading of aluminium alloy based on heavier alloying element.	vendor to confirm			
3.14	Empirical Calibration of most common alloys.	vendor to confirm			
3.15	Customer specific calibrations with optional calibration software shall be provided.	vendor to confirm			
3.16	Certified Reference Material (CRM) check sample shall be provided for confirmation of continuous high performance over short and long term.	vendor to confirm			
3.17	4 W X-Ray tube for optimal element excitation	Vendor to confirm			
3.18	Type of Detector used in the instrument- Silicon pin detector	vendor to confirm			
3.19	NEMA3 or equivalent compliant for superior protection against water and dust.	vendor to confirm			
3.20	Typical Duty Cycle shall be 8 to 12 hours per battery.	vendor to confirm			
3.21	Display: Blankview antiglare touch screen	vendor to confirm			
3.22	Data Transfer via USB and Wi-Fi	vendor to confirm			
3.23	For radiation safety Password protection, IR Proximity sensor, Count rate sensor, Four fail-safe warning lights	vendor to confirm			

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3.24	Internal memory shall be >=16 GB	vendor to confirm			
<b>4.0</b>	<b>ACCESSORIES</b>				
4.1	Two rechargeable Li-ion battery	vendor to confirm			
4.2	Battery charger including Plug	vendor to confirm			
4.3	USB and Mini USB Cable	vendor to confirm			
4.4	USB Memory Stick	vendor to confirm			
4.5	Bench top stand with closed sample chamber, two fail to safe interlocks and "X-rays ON" light.	vendor to confirm			
4.6	Light travel stand with safety shield	vendor to confirm			
4.7	Light radiation shield	vendor to confirm			
4.8	Holster for hands-free transportation	vendor to confirm			
4.9	Barcode scanner for sample name input	vendor to confirm			
4.10	Portable Bluetooth printer	vendor to confirm			
<b>5.0</b>	<b>CARRYING AND TRANSPORTATION</b>				
5.1	Water-proof carrying case.	vendor to confirm			
5.2	Lanyard	vendor to confirm			
<b>5.0</b>	<b>COMMISSIONING</b>				
5.1	Supplier shall commission the above equipment at BHEL, RC Puram, Hyderabad	Vendor to confirm			
<b>6.0</b>	<b>DOCUMENTATION: Following documents shall be supplied by the vendor</b>				
6.1	Operating instruction manual - in English - 5 copies	Vendor to confirm			
6.2	Calibration certificate of instrument	Vendor to confirm			
<b>8.0</b>	<b>PRE-DESPATCH INSPECTION AND TRAINING</b>				
8.1	Pre-despatch inspection shall be done at supplier's work	Vendor to confirm			
8.2	Free of cost training at BHEL, RC Puram, Hyderabad, three working days on operation and maintenance of PMI instrument for five persons	Vendor to confirm			

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8.3	Proveout: Instrument shall be proved for carbon steel, low alloy steel, high alloy steel etc. at BHEL works.	Vendor to confirm			
8.4	Gaurantee: 24 Months from date of commissioning	Vendor to confirm			
8.5	Delivery: within 1 month after placement of order	Vendor to confirm			
<b>9.0</b>	<b>QUALIFYING CONDITIONS/ REFERENCE LIST:</b>				
<b>9.1</b>	Only those vendors who have supplied and commissioned at least one same or upgraded instrument and such equipment (w.r.t. clause 3.1) is working satisfactorily for more than one year after commissioning (as on date of opening the tender) , should quote. However, if referred instrument is supplied to BHEL, then referred instrument should be presently working satisfactorily for more than six months after its commissioning and acceptance in BHEL. Vendor shall furnish the following details of such customer with contact person/s' details,order copies and performance certificate of the referred equipment. This is required from all the Vendors for qualification of their offer.	Vendor to confirm			
<b>9.2</b>	Name of the customer/ company where referred instrument is installed.	Vendor to inform.			
<b>9.3</b>	Complete postal address of the customer	Vendor to inform.			
<b>9.4</b>	Month and year of commissioning.	Vendor to inform.			
<b>9.5</b>	Model of instrument supplied and application for which the equipment is supplied..	Vendor to inform.			
<b>9.6</b>	Name and designation of the contact person of the customer.	Vendor to inform.			
<b>9.7</b>	Phone, FAX no. and email address of the contact person of the customer.	Vendor to inform.			
<b>9.8</b>	Performance certificate from the customers regarding satisfactory performance of equipment ( same or lesser analyzing time w.r.t. clause No. 3.1) indicating date of commissioning, model no, element analyzing capability, supplied to them.	Vendor to submit.			
<b>9.9</b>	BHEL reserves the right to verify the information provided by vendor. In case the information provided by vendor is found to be false/incorrect, the offer shall be rejected.	Vendor to accept & confirm.			