Indent No.20135294
Date: 17.01.14

Technical Specification

1. The Portable Metals Analyser shall be used for the analysis of elemental constituents of metals & alloys, including ferrous and non ferrous metals, irrespective of sample size,shape & form.
2. While the instrument is expected to operate in the grade analysis & pass-fail modes, the main usage of the instrument shall be accurate elemental analysis only. Supplier to ensure that the model quoted meets this primary requirement.
3. The analyzer shall use a low power X-Ray tube for excitation of the elemental atoms,and, the analysis results shall be displayed either on the integrated screen or PDA.
4. All elements from Magnesium (without need of Helium purging) to Uranium in ferrous and non ferrous matrices shall be analysed & each analysis shall be accompanied by percentage error of each element analysed.
5. The matrices, the elements in these matrices, the range of concentration of the elements that are to be analysed in them are given in Annex. I. For each of these matrices, the supplier shall provide data as to whether each of the elements can be detected ,the detection range and, the percentage errors for this element within this range.
6. The equipment as delivered should be capable of performing the analyses detailed above. If any matrix-element range is not in the standard protocol of supply/ display, the supplier should indicate the same along with the possibility of factory calibrating for these combinations.
7. As far as the internal library of grades is concerned, the supplier shall give a list of grades with their compositions available in the library & the possibility of adding our plant grades in the library. Additionally, it is to be indicated as to how the grade determination is done i.e. the percentage deviation from the nominal composition that qualifies an analysis as belonging to a particular grade.
8. The hardware specification of the equipment shall meet the requirements given below. Supplier shall confirm that each of these parameters can be met.

i.	Design	Ergonomic pistol grip design
ii.	X Ray Source	Low power X-Ray tube. The anode used shall be such as to be capable of detecting 0.05% Ag in Cu matrix. Tube life min. 5 yrs guaranteed.
iii.	Detector	High resolution SDD type
iv.	Power Source	Rechargeable Li-ion batteries with hot swap capability. There should be no data or standardization requirement during swap.Each battery to have minimum 6 hrs continuous operational capability.
v.	Display & Control	Integrated touch screen or PDA with touch screen Analyser should be controllable using this & specimen I.D. etc. should be capable of being entered using this.
vi.	Memory	At least 3000 test results with spectra
vii.	Standardization	Only during startup
viii.	Standard accessories:	1. Four Li-Ion battery packs 2. 220 V charger for battery pack 3. Verification standard 4. X-Ray tube

9. Along with the offer,the supplier shall give complete details of calibration /standardization procedure for the matrix & elemental ranges given above. Supplier to also clearly indicate as to whether a single standardization give accurate results all matrices,or, different types of standards are required,and,if so, what will be the standards required for the above range.

10. Along with the main equipment, the supplier shall separately quote for the following optional items:

a. AC adapter for working directly off 220V, 50 Hz AC supply
b. Spare PDA (where applicable)
c. Adapter for wires & rods
d. Any other accessories/software available with detailed technical writeup regarding utility
e. Extra certified calibration standards with detailed compositions.

11. The equipment shall be commissioned in our laboratory by the suppliers' representative who shall demonstrate the complete functioning of the equipment.,and capability to meet our analytical requirements.

12. The instrument shall be guaranteed/warranteed for satisfactory working for 24 months from the date of commissioning.

13. Along with the equipment, the supplier shall give 3 copies of operation & maintenance manuals with complete circuit diagram of the main equipment & all its accessories.

14. Pre-dispatch inspection is not required

15. Along with the offer the supplier shall give:

a. The details of his service network, with details of service personnel & their experience in repair of the model of instrument offered, especially in the northern region of the country.
b. List of users, with name, complete address, e-mail etc.

16. The offer should be accompanied by detailed technical literature . The offer should address each of the requirements given above with complete technical details. Compliance statements shall not be considered.

17. Supplier to note that the commitment against each & every clause above, shall be checked during commissioning & if not found complying the instrument is liable to be rejected.

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Annexure- I

Element	Iron base	Tin base	Cobalt Base	Copper Base	Nickel Base	Aluminium base
Mn	0.10-25.0		0.1-2.0	0.1-3.0	0.1-30.0	0.1-2.0
Cr	0.1-30.0		0.50-30.0	0.01-1.0	0.1-30.0	
Mo	0.05-5.0		0.5-10.0		0.1-30.0	
Ni	0.02-50.0	0.01-1.0	0.5-15	0.01-30.0	base	
Cu	0.05-3.0	0.1-6.0	0.05-3.0	base	0.1-5.0	0.1-10.0
Fe	base	0.01-2.0	0.5-10.0	0.01-2.0	0.1-20.0	0.01-2.0
Co	0.01-15.0		base	0.001-0.1	0.1-25.0	
W	0.10-25.0		0.50-15.0		0.1-10.0	
Nb	0.05-5.0		0.50-15.0		0.1-5.0	
V	0.05-5.0					
Ti	0.02-10.0				0.05-5.0	
Sn				0.1-10.0		
Zn				0.1-50.0		
Pb		0.01-1.0		0.1-5.0		
As				0.001-0.1		
Sb				0.001-1.0		
Cd						
Ag				0.05-50.0		
Zr				0.001-1.0		
C	0.01-4.0					
Se				0.001-0.1		