

SPECIFICATION OF INDUCTION HEATER					
SN	DESCRIPTION FOR BHEL REQUIREMENT	SPECIFIED/ TO CONFIRM	OFFERED	DEVIATIONS	REMARKS
1.0	PURPOSE The induction heating system is required to heat the bearings, wipers, inner race and pinion in horizontal position for shrink fitting on the armature shaft of traction machines.	Vendor to confirm			
1.1					
2.0	SPECIFICATIONS:-				
2.1	The equipment should be of latest proven design made of non-magnetic body with steel control panels, shock proof and thermally isolated body sturdy in construction, mounted on strong rubber wheels for easy portability, comprising of features which guarantee reliable service, convenient and safe operating system for best results.	Vendor to confirm			
2.1.1	The induction heater should be suitable for heating jobs of following sizes in horizontal position up to 300 deg C.	Vendor to confirm			
2.1.2	ID = 40mm to 200 mm	Vendor to confirm			
2.1.3	OD = 500mm (max)	Vendor to confirm			
2.1.4	Height = 270 mm (max)	Vendor to confirm			
2.1.5	Weight = 70 Kgs (max)	Vendor to confirm			
2.1.6	Power rating of the equipment 16 KVA (min)	Vendor to confirm			
2.1.7	Two temperature resistant induction coils, 1 at the top & 1 at the bottom	Vendor to confirm			
2.1.8	Four numbers of fibre glass insulated stainless steel covered magnetic conductors of suitable sizes to suit different job dimensions as mentioned above to be placed vertically inside the job which is kept horizontal.	Vendor to confirm			
2.1.9	Demagnetizing device to automatically run the demagnetising cycle after heating cycle to nullify residual magnetism to less than 2A/cm	Vendor to confirm			
2.1.10	Suitable heat resistant, durable and strong steel platform for placing jobs in horizontal position while heating.	Vendor to confirm			
2.1.11	The induction heating system should be supplied complete along with accessories and tool kits ie. Covered to suit different diameters and special tools for changing cores.	Vendor to confirm			

2.2	SAFETY					
2.2.1	Suitable electrical and mechanical system interface, overload protection, etc. should be incorporated in the equipment wherever necessary to prevent the equipment from damage and for safety of operator in case of inadvertent operation and malfunctioning of the same.	Vendor to confirm				
2.2.2	The magnetic conductor and the body should be at ambient temperature throughout the heating cycle to avoid shock to the operator.	Vendor to confirm				
2.2.3	Limit switch to avoid overload of open circuit current in the absence of magnetic conductor.	Vendor to confirm				
2.2.4	Necessary guards and protective covers should be provided to protect the equipment against dirt, dust and liquid etc	Vendor to confirm				
2.3	ELECTRIC SUPPLY & CONTROLS:					
2.3.1	The equipment should be suitable for operation on 415 V +/- 10%, 3 phase, 3 wire no neutral 50 Hz +/- 3% AC supply available at the site. Step down transformer as required for controls, fuses, terminal connections, contactors, indicators, pilot lamps and other auxiliaries are to be incorporated in the equipment itself.	Vendor to confirm				
2.3.2	All electricals should be suitably tropicalised to relevant standards to work under the ambient temperature varyin from 5 degC to 50 deg C abd 95% RH.	Vendor to confirm				
2.3.3	Position of control panel should be easily approachable by maintenance personnel. Wiring to be provided numbered. Electrical components used should be of reputed company like Siemens or equivalent. The control panel should have- 1. Ammeter & voltmeter on the medium frequency output side. 2. ID selector / rotary switch. 3. Digital indicating type temperature controller with demagnetizing device and with clamping type temperature sensor to control the desired temperature to within +/- 2 deg C accuracy. 4. Digital timer - 0 to 999 seconds for controlling the heating cycle in time mode. 5. H.R.C. fuse unit. 6. Start / stop push buttons. 7. Mains indicating lamps. 8. MCB 9. Electronic overload relay.	Vendor to confirm				

2.3.4	Setting selector for both the parameters timer and temperature should be available in the control panel, however at any time only one of the parameter shall be selected for setting and controlling the heating cycle.	Vendor to confirm			
2.3.5	Audio and visual alarm for indicating the completion of heating cycle.	Vendor to confirm			
2.4	MAINTENANCE:				
2.4.1	All the parts of the equipment should have easy accessibility for maintenance works, inspection and repair works without need for excessive dismantling.	Vendor to confirm			
2.5	AMBIENT CONDITIONS & THERMAL STABILITY : Total equipment and all supplied items should work trouble free and efficiently under following operating conditions and should give specified operational accuracies.				
2.5.1	Power Supply: Voltage: 415V \pm 10% Frequency: 50 Hz \pm 3% No of Phase= 3, 3 wire system. (no neutral) Ambient conditions: Temperature = 5 to 50 °C Variation of 25 °C (max) Relative humidity = 95% max	Vendor to confirm			
3.0	SPARES:				
3.1	The supplier should recommend and offer itemwise price breakup of mechanical, electrical and electronic spares to be maintained in sufficient quantity for 2 years of trouble free operation on three shifts continuous running basis.	Vendor to specify			
3.2	List of bought out items to be furnished along with name & address of the supplier and tentative cost of each item.	Vendor to specify			
4.0	PAINTING:				
4.1	The equipment should be given two coats of red oxide primer and finished with two coats of polyurethane paint.	Vendor to specify			
5.0	PACKING:				
5.1	Sea worthy & rigid packing for all items of complete equipment & spares.	Vendor to confirm			
6.0	INSPECTION:				
6.1	The testing and inspection of the induction heater will be witnessed by BHEL at the supplier's works. An inspection call shall be given by the supplier at least 20 days before the date of inspection. Four copies of inspection & test certificate and guarantee certificate shall be submitted and got approved before dispatch.	Vendor to confirm			
6.2	Demonstration / physical inspection of all features, assemblies, subassemblies, control panel, bought out items and all accessories shall be done to the full satisfaction of BHEL representative.	Vendor to confirm			
7.0	ERECTION & COMMISSIONING & PROVING OF THE EQUIPMENT				
7.1	Supplier will be solely responsible for the erection, commissioning and proving the machine at BHEL works.	Vendor to confirm			
7.2	Separate lump-sum charges for erection, commissioning and proving should be indicated in the offer.	Vendor to confirm			

7.3	Actual job shall be proved at Bhopal in all respect for accuracy and performance during commissioning. Special tools for equipment proving, if any, shall be brought by the supplier.	Vendor to confirm			
7.4	During erection & commissioning, BHEL operators & engineers will be trained by the supplier's experts/ engineers.	Vendor to confirm			
7.5	First fill consumables should be supplied with the machine.	Vendor to confirm			
7.6	Compressed air, 3 phase 3 wire 415V AC supply point, and material movement facility shall be provided by BHEL.	Vendor to confirm			
7.7	The induction heating system should be able to give the guaranteed output of the specified temperature.	Vendor to confirm			
8.0	DOCUMENTATION:				
8.1	Four sets of following documents (Hard copies) in English language should be supplied along with the equipment	Vendor to confirm			
8.2	Operating and maintenance manuals of the equipment and supplied accessories. Maintenance manual of equipment should contain System Description, Block diagram, Schematic drawings, Circuit diagrams & hardware details of PCB's, Trouble shooting charts, All Assembly/ Sub Assembly Drawings shall be supplied with the part list.	Vendor to confirm			
8.3	Calibration certificates for instruments and meters from NABL accredited laboratory.	Vendor to confirm			
8.4	Inspection and Guarantee certificate of the equipment	Vendor to confirm			
9.0	GUARANTEE:				
9.1	12 months from the date of acceptance of the equipment. Free after sales services is to be provided during the guarantee period including free replacement of defective parts.	Vendor to confirm			
10.0	GENERAL: THE SUPPLIER SHOULD FURNISH THE FOLLOWING INFORMATION ALONG WITH THE OFFER				
10.1	Equipment model :	Vendor to specify			
10.2	Total connected load (KVA) :	Vendor to specify			
10.3	Total weight of the system	Vendor to specify			
10.4	Floor area required (Length, Width, Height) for complete equipment & accessories	Vendor to specify			
10.5	Detailed catalogues, sketch/ photographs and technical literature of the equipment and accessories/ attachments.	Vendor to specify			
10.6	General arrangement drawing of the equipment showing the constructional features, magnetic conductors and their capacities, induction coils and fixtures etc	Vendor to specify			
10.7	List of standard accessories	Vendor to specify			
10.8	Optional accessories, consumable tools and supporting facilities.	Vendor to specify			

11.0	QUALIFYING CONDITION:				
11.1	Only makes of renowned companies who have supplied at least 2 induction heaters of similar or higher capacity in the past ten years and such equipment is presently working satisfactorily for more than three years after commissioning may be quoted in the tender. The following information is to be submitted by the vendor about the companies where similar equipment have been supplied.	Vendor to specify			
11.2	Name of the customer / company where similar equipment is installed/ supplied. (Copy of purchase order should be attached).	Vendor to specify			
11.3	Complete postal address of the customer.	Vendor to specify			
11.4	Year of commissioning.	Vendor to specify			
11.5	Name and designation of the contact person of the customer.	Vendor to specify			
11.6	Phone, FAX no. and email address of the contact person of the customer.	Vendor to specify			
11.7	Performance certificate from the customers regarding satisfactory performance of equipment supplied to them .	Vendor to specify			
11.8	On verification, if the information furnished above is found false / incorrect, the offer shall be rejected.	Vendor to confirm			