





**BHARAT HEAVY ELECTRICALS LIMITED**  
**Heavy Power Equipment Plant, Ramachandrapuram,**

**Modified Specifications of Thermocouple Calibration Furnace(P.R. No. 6000001766)**

 Clause No				DESCRIPTION FOR BHEL REQUIREMENT	Modified Spcification	DEVIATIONS	REMARKS
1				<b>Purpose:</b> High Temperature furnace required for Calibration of Thermocouples.			
2				<b>Scope:</b> The offer shall cover following items:			
	2.1			Thermocouple calibration furnace with temperature range:200°C to 1200°C			
3				<b>SPECIFICATIONS OF THERMOCOUPLE FURNACE</b>			
	3.1	3.1.1		<b>Range :</b> 200°C to 1200°C			
		3.1.2		<b>Stability:</b> Equal to or better than $\pm 0.5^{\circ}\text{C}$ for the range.			
		3.1.3		<b>Uniformity:</b> Equal to or better than $\pm 0.5^{\circ}\text{C}$ for the range with in the block, hole to hole	<b>Uniformity:</b> Equal to or better than $\pm 0.7^{\circ}\text{C}$ for the range with in the block, hole to hole		
		3.1.4		<b>Stabliisation time:</b> Max 20 Minutes after reaching set temperature.	<b>Stabliisation time:</b> Max 30 Minutes after reaching set temperature.		
		3.1.5		<b>Heating Time:</b> Maximum 45 minutes from room temperature to 1200 °C.	<b>Heating Time:</b> Maximum 60 minutes from room temperature to 1200 °C.		
		3.1.6		<b>Cooling Time:</b> Maximum 150 minutes with the block from 1200 °C to room temperature.	<b>Cooling Time:</b> 6 hours(approx) with the block from 1200 °C to room temperature.		
		3.1.7		<b>Operating temperature range:</b> 16°C to 40°C			
	3.2			<b>Temperature Controlling Features</b>			

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		3.2.1	<b>Temperature Setting:</b> Digital display with push-button data entry			
		3.2.2	<b>Set-Point Resolution:</b> Equal to or better than 1°C			
		3.2.3	<b>Display Resolution :</b> Equal to or better than 0.1°C upto 999.9°C and Equal to or better than 1°C for 1000°C to 1200 °C			
		3.2.4	The temperature controller should be PID controller			
		3.2.5	The calibration furnace should have safety controller to control. Monitor the Furnace surface temperature for safety cut out of Furnace Power.			
		3.3	<b>Power Requirements: at 230 Volt±10%,50Hz</b>			
		3.4	<b>Heater: Power Consumption to be specified.</b>			
		3.5	<b>Physical Size:</b> To be Specified by the vendor. Orientation of Heating Block for Loading of Thermo couples			
	3.6	3.6.1	Calibration Certificate of furnace issued by calibration agency shall be traceable to National standards. Calibration certificate covering minimum and maximum points (Minimum 4 point calibration with in range) shall be supplied.			
		3.6.2	The Supplier provide the documental evidence to prove the stability and Uniformity of Temperature in the Block.			
		3.7	<b>Thermal block :</b> a) immersion depth:300 mm max; b) dia 37mm(approx) with six thermo wells; two of them 9.5mm and two with 6.35mm and two them with 4.8 mm			

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4				<b>General requirements:</b>			
	4.1			Commissioning and proving of system is to be done at BHEL.RC Puram Hyderabad free of cost.			
	4.2			The equipment should be guaranteed in respect of design, Material construction,operation and against any manufacturing defects for a period of 24 months, from the date of supply or 18 months from the date of commissioning, whichever is later and 4 copies of guarantee certificates are to be furnished.Free after sales service is to be provided during the guarantee period.			
	4.3	4.3.1		Two sets of Operation and Service Manual shall comprise of operating procedure, calibration procedure.			
		4.3.2		Maintanance manual with circuit diagrams, trouble shooting charts and parts list etc.			
	4.4			Rigid packing for all items of complete equipment, all accessories and other supplied items to avoid any damage / loss in transit			
	4.5			The supplier shall provide training to the staff on detailed operation of system at BHEL RC Puram,Hyderabad			
	4.6			Supplier shall enclose the leaflets /Datasheet having detail specification, Model No & Manufacturers Name, Items quoted.			
	4.7			Equipment should meet all points of our above specification and bidders must furnish point to point replies against as the points of our above specification failing which their offer may not be considered.			
5				<b>QUALIFYING CONDITIONS :</b>			

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	5.1			Only those vendors who have supplied and commissioned atleast one number of furnace for the range of same quoted model for similar applications in the past three years and such is presently working satisfactorily for more than one year after commissioning should quote (prior to the issue of the tender).				
	5.2			The following information is to be submitted by the vendor about the companies where offered equipment has been supplied. This is required from all the vendors for qualification of their offer.				
		5.2.1		Name of the customer/company where offered equipment is installed (Copy of Purches Order should be furnished) preferably India				
		5.2.2		Complete postal address of the customer .				
		5.2.3		Year of commissioning. (Copy of Commissioning report should be furnished)				
		5.2.4		Application for which the equipment is supplied .				
		5.2.5		Name and designation of the contact person of the customer.				
		5.2.6		Phone, FAX no. and email address of the contact person of the Customer.				
		5.2.7		Performance certificate from any one customer, regarding satisfactory performance of the equipment supplied to them and should be issued within one year				