

Ref. No. NIT No. NML/PUR/NIT/Pre-Bid/2015-16(5) dated: 23.07.2015
Enquiry No. NML-3(02/MST/PKR)/15-PS(12) dated: 23.07.2015

**CHAPTER – XVI TECHNICAL SPECIFICATIONS & OTHER IMPORTANT
REQUIREMENT PERTAINING TO EQUIPMENT INCLUDING INSTALLATION,
COMMISSIONING, ONSITE TRAINING, WARRANTY ETC.**

**FINAL & FROZEN TECHNICAL SPECIFICATIONS AFTER PRE-BID CONFERENCE
(Pre-Bid Conference was held on 12.08.2015)**

Last date & time for submission of offers in Two-Bid Format after Pre-Bid conference.	03.09.2015 upto 2.00 PM [IST]		
Date, time and venue for opening of Technical Bids under Two-Bid Format.	03.09.2015 at 3.00 PM [IST] onwards		
Earnest Money Deposit (EMD) to be submitted alongwith Technical Bid (Part-I)	INR	USD	Euro
	₹ 50,000.00	\$ 790.00	€ 710.00

Annexure I

Technical Specification of Induction Heating System

(This is revised, final & frozen technical specification)

- | | |
|--|---|
| 1. Input Power: | 3Φ, 415V±5%,4Wire, 50 Hz |
| 2. Output Power of induction system: | 15 KW |
| 3. Frequency: | 25 – 50 KHz |
| 4. Technology: | Power MOSFET/IGBT |
| 5. Temperature Measurement: | Laser based pyrometer |
| (Same Laser based pyrometer will also be used for feedback for automatic temperature control against a set value) | |
| 6. Maximum Temperature: | 1100°C ± less than 1% |
| (Maximum temperature will be checked with thermocouple) | |
| 7. Temperature control: | 30°C-1100°C (Automatic temperature control against a set value) |
| 8. Cooling system: | As desirable for adequate cooling |
| 9. Time to reach steady maximum temperature: | Better than 4 minutes |
| 10. Operation of the system: | Continuous |
| 11. On line Temperature measurement: | Interface with computer |



Prabir Kumar Roy
19/08/2015

12. Specimen Heating (Both Provisions):

- (i) Co-axial coil with respect to test specimen (Minimum gap of 14.5mm has to be there for accommodating extensometer [Refer 14(ii) and drawing]
- (ii) Side -ways coil with respect to test specimen

(The two types of coils should be interchangeable using the same point source)

13. Safety Measures: Protection against unbalancing of three phases/single phasing, overload protection, cut off in the event of cooling system failure, induction coil failure, failure indications in the form of video/audio alarm

14. Details of Tensile / Low cycle fatigue specimen (ferritic, austenitic, martensitic steel, nickel base superalloys, titanium alloys):

- (i) Gauge diameter of specimen: 4-10mm
- (ii) Extensometer Gauge length (For Co-axial) 12.5mm
- (iii) Extensometer Gauge length (For Side- ways) 12.5 – 50mm
- (iv) Total length of specimen: 80-150 mm

15. Heat Length: 40-70 mm (Depending upon extensometer gauge length)
(For 12.5mm Gauge length extensometer, heat length will be 40mm)

16. Distance from induction system to induction coil: 2 meter (Approx)

17. Height of the specimen holder from ground: 1.5 meter (Approx)

18. Fixture for up-down movement of induction coil: ± 0.25 meter

19. Both the power control system and cooling system may be transportable from one place to another inside the experimental premises.

20. There should be RFI shielding for nearby equipments as there are many data logger systems in the experimental area.

21. The supplier should run the equipment continuously for seven days and the system should perform at desired level (mentioned in points 1 to 11) satisfactorily.

22. The offer will be for Continuous Induction Heating System only.

23. Suppliers should mention the essential spares in the offer separately. Essential spares for one year should be included in the offer.

24. The supplier should provide layout drawing along with the system in their offer. The requirement of drawing is an essential part of the technical offer.

25. The suppliers should have experience in the supply, installation and commissioning of similar type of induction heating system for tensile/fatigue test specimen. Certificate/s from the user/s of such induction heating furnaces must be incorporated in the offer. This is an essential requirement of the offer.

26. On- site training of the system is an essential part of offer.

27. Warranty should be for one year after the final installation and commissioning of the system.

Prabir K. Das
19/08/2015



28. Prior to technical offer, suppliers are encouraged to make a visit to the site of NML in order to accommodate in our designated physical location, induction coil diameter, length of the coil as per specimen length and pre-installation requirements of the system for final installation and commissioning.
29. Indicative drawing is attached in Annexure II only for axial induction heating of specimen although there will be another requirement for sideways heating of the specimen. This drawing is for visualisation of system for the vendors.

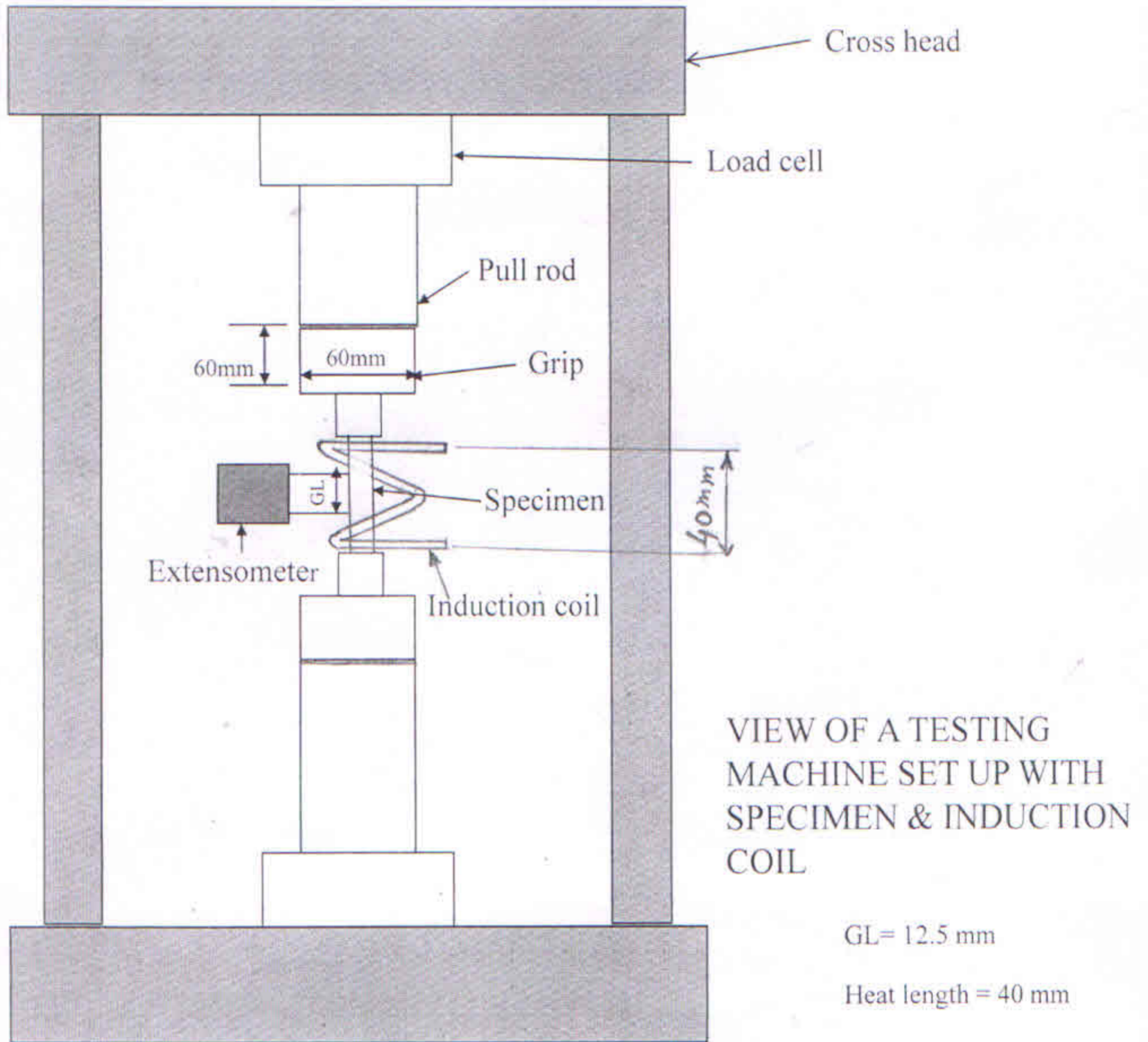
Please see Annexure II for indicative drawing

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19/08/2015



Annexure II

DRAWING



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19/08/2015