



An ISO 9001  
Company

## Bharat Heavy Electricals Limited

(High Pressure Boiler Plant)

Tiruchirappalli – 620014, TAMIL NADU, INDIA

MATERIALS MANAGEMENT / CAPITAL EQUIPMENT

### ENQUIRY NOTICE INVITING TENDER

Phone: +91 431 257 7653  
Fax : +91 431 252 0719  
Email : [skaruna@bheltry.co.in](mailto:skaruna@bheltry.co.in)  
Web : [www.bhel.com](http://www.bhel.com)

TWO-PART BID	Enquiry Number:	Enquiry Date:	Due date for submission of quotation :
Tender to be submitted in Two Parts	2731100011	29.09.2011	29.10.2011

You are requested to quote the Enquiry number date and due date in all your correspondences. This is only a request for quotation and not an order.

Please note that under any circumstances both delayed offer and late offers will not be considered. Hence vendors are requested to ensure that the offer is reaching physically our office before 14.00 Hrs on the date of tender opening


Item No.	Item Description	Quantity
10	Supply of Video Boroscope as per the technical Specification, & commercial conditions applicable (to be downloaded from web site <a href="http://www.bhel.com">www.bhel.com</a> or <a href="http://tenders.gov.in">http://tenders.gov.in</a> )	1 Set.

#### Important Points to be taken care during the submission of offer:-

1. Check list to be filled and enclosed along with the offer failing which, the offer will not be considered for evaluation.
2. Guarantee for the Items to be 18 months from the date of supply or 12 months from the date of commissioning.

BHEL's General guidelines /instructions including bank guarantee formats and list of consortium banks, commercial terms checklist can be downloaded from BHEL web site <http://www.bhel.com> or from the government tender website <http://tenders.gov.in> (public sector units > Bharat Heavy Electricals Limited page) Tender Enquiry reference "2731100011"

Tenders should reach us before 14:00 hours on the due date  
Tenders will be opened at 14:30 hours on the due date  
Tenders would be opened in presence of the tenderers who have submitted their offers and who may like to be present

Yours faithfully,  
For BHARAT HEAVY ELECTRICALS LIMITED  
  
Manager / MM / Capital Equipment



## **SPECIFICATIONS FOR VIDEO BOROSCOPE**

BHE: BARC:BORE :Rev 01

03/09/2011

Boroscopes – flexible or rigid with all its accessories are needed for the visual examination of intricate and in accessible areas. Supply of illumination from power source, Sighting of objects, transfer of images to the viewer / camera / monitor shall be based on fiber optics or any other superior and advanced technology. Welds on Tubular sections, stub weld areas in headers, expansion regions, etc will have to be examined at higher magnifications. There should be a provision inbuilt to examine 360 degree areas of the holes' inner portions at any spot / distance. Also, multiple viewing feature of the boroscopic views are required through state of art digital cameras or other advanced equipments and associated image and movie transport attachments to TV screens / LAPTOP / computer monitors / digital displays / LED displays / LCD displays of the state of art type. Boroscopic images – both still pictures and movies of progressive views have to be recorded and stored (video and still image storing feature) for future retrieval in memory chords / hard discs type of storage / any other advanced and state of art storage devices / Compact discs. 1 GB or more memory (flash memory) is required. Full motion audio and video recording and play back as well as capturing still images including audio capturing and play back are required. Memory capacity of storage is expected to be as high as possible.

The essential requirements of the boroscope are given below.

<b>BHEL'S SPECIFICATION REQUIREMENT</b>	<b>VENDOR'S CONFIRMATION</b>	<b>DEVIATION, IF ANY</b>
1. The diameter to be visually examined starts from 7mm (Inner Diameter) & goes up to 50mm and accordingly, the diameters of the insertion devices / scopes / probes is to be supplied. If any minimum distance is required between probe or light end and the object, it has to be suitably taken care. Both direct (spherical or pointed) and side views are required.		
2. The developed length to be accessed is up to 18000 mm – both straight and bent / helical coiled probe / scope passing are required. .		

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3. The vision system should be of the state of art type with all modern facilities, clarity, resolution and magnification. Large 6.5" or more sized LCD monitors or other advanced versions of high resolution suitable for day light application with minimum internal memory of 1 GB shall be supplied. Chord memory shall be 4 GB minimum. Clear and accurate appearance of images are required for lab and field views.		
4. We should have also provision for CD/DVD/Pendrive copying of images – still and movies - along with a suitable printing facility of visual images.		
5. It is preferable to have Length, width and depth estimation of defects – from the boroscopic images - during inside examinations accurately.		
6. The focussing and antiglare cum filter provisions should be of the best ones with boroscope tip articulating features for thorough and complete examination.		
7. When desired, the selected view - still - shall be photographed by clicking the digital camera or colour CCD camera or other provided devices. The image or movie getting clicked shall be stored suitably for further processing. Suitable memory chord shall be attached to the digital camera / device to store number of such images shall be supplied. It shall be possible to view the image stored in the memory chord through the TV monitor / computer / laptop of other standard versions also for further discussions. If there are any limitations in this, the supplier is to provide details. Memory chord and the camera shall be suitably		

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connected and if needed, suitable connector shall be supplied.		
8. Any local 14 inch monitor should be capable of working with the supplied system and its attachments, if needed. To meet this, if any special interface is required, the same shall be supplied If there are any limitations in this, the supplier is to provide details.		
9. After sufficient number of images storing on the memory chord, the stored images shall be transferred to the hard disc of any of our PC. The memory chord shall be easily connectable to the port of PC for achieving this purpose. To meet this, if any special interface is required, the same shall be supplied. If there are any limitations in this, the supplier is to provide details.		
10. Required software for image viewing on the PC shall be supplied in the form of CD along with the equipment and attachments and the software shall be easily loaded into all types of PCs. This software is required for image transfer from memory chord to PC, storing images in the hard disc of PC, viewing of selected / stored images, etc. It shall be possible for transporting boroscopic images stored / seen on the PC by e-mail or for taking colour print outs of images using our ink jet colour printers. The soft ware and PC port attachment shall be capable of working with any of the locally available PC systems. If there are any limitations in this, the supplier is to provide details. (printer is also needed for good colour prints).		
11. There shall be facility for zooming of images, changing background, brightness, colour and contrast if		

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desired. Required zooming – minimum 3X. Also, facility is required to see the selected image in different magnifications, changing colours / shades etc using the soft ware. Supplier to give complete details.		
12. The total system comprising number of parts / accessories and software shall be capable of operation using normally available 230AC / 50HZ power. In case if the system is battery operated, suitable battery back-up shall also be supplied. Also, one spare set of battery with battery charger shall be supplied. Power cables needed shall also be supplied with the system. AC Adapter shall also be supplied.		
13. The digital camera or the viewing system shall be of very high resolution type with very good digital zoom lens. The memory chord shall have options for good image quality and single as well as multiple shot capture modes		
14. The supplied model shall be reliable to work in tough environments and it should be highly robust and sturdy. Water and dust proof, scratch proof and shock absorbing are very much essential requirements .		
15. Bright and high intensity LED illumination of 400-700NM wavelength or LASER illumination with brightness control is required. The minimum life time expected from illuminator is 10 – 15 years Light source shall be integral part preferably.		
16. Precise articulation and quick menu access are required. Minimum 60 degree bend in articulation in 4 ways (left, right, up and down) along with 360 degree observation, motorized joystick control and articulation locking		

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are essential requirements in this regard. It is preferred to have air pressure operated articulation also. Articulation should be possible during inspections when the probe is passing in coils also.		
17. High density, closely knitted tungsten braid or any other superior variety with abrasion and crushing resistance is to be provided. Operating temperature : 10 deg C to 100 deg C for air and 10 deg C to 30 deg C for water operations.		
18. Spot ranging feature – to display distance between scope tip and object (to facilitate adjustment in order to obtain clear images) is required.		
19. Forward view tip adapter, side view tip adapter and stereo measurement forward tip adapter and stereo measurement side view tip adapter are to be supplied. Rigid sleeves to the maximum possible length in the case of minimum possible sizes to suit to the supplied scope are required. Measuring facilities for dimensional analysis of defects noticed is required. Supplier is requested to provide details in this regard.		
20. Gravity sensor - Indicating gravity directions of the scope tip (on screen display showing scope length inserted & inspected image to clearly differentiate up from down) is required. This is for Knowing clearly the identified inspected area. support for inserting the scope tip into a deep area and Indicator for how far is probe inserted into the object are required.		
21. Insertion probe should have high temperature sensor - minimum 2 stage indicator.		

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22. Lens cleaning function to remove fine drip/dust on the scope tip should be provided by blowing air or by other means during field inspection.		
23. Desirable requirements for LCD: <b>LCD</b> 6.5" minimum daylight view anti reflective type, <b>LCD</b> resolution: VGZ min resolution 640x480, <b>LCD</b> controls: dedicated LCD power, brightness controls, 180 degrees image rotation.		
24. Image sensor shall be CCD with resolution better than 768X576 pixels. Alternately, superior state of art versions are acceptable.		
25. Title, date, time & system settings on. Image notepad allowing up to 10 descriptions to be added to an image. Recording images shall be displayed by thumbnail.		
26. <b>Preferred Recording formats: Still image</b> recording file format JPEG/TIFF, <b>Movie recording</b> file format AVI M JPEG, <b>Audio recording</b> file format WAV. <b>Recording images should be displayed by thumbnail.</b>		
27. <b>Software controls desirable:</b> <b>Image controls:</b> 3X digital zoom, 9 steps digital brightness control, 5 steps contrast adjustment for frozen & retrieved images. <b>Adjustable gain:</b> 4 steps adjustable gain control with exclusive brightness level balancing technology. <b>Color enhancement:</b> Monochrome mode or color emphasis of red/ blue or all primary colors.		

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28. The supplier is requested to provide field of view details for the proposed model for both direct and side views. Data shall be provided for depth of field, field outer diameter and field covered by distal end (tip of the probe).		
<b>29. Stereo tip adaptor</b> - optical system for defects measurement like scalar, distance, point to line, depth, area, lines, offset, profile etc shall be provided. Here also, the supplier is requested to provide field of view details for the proposed model for both direct and side views.		
30. Rugged carrying case for equipment and accessories shall be supplied. Shoulder strap shall be provided. Weight of the equipment shall be in the range of 25-30Kg including case and shoulder strap.		
31. The equipment shall be supplied with the accessories / attachments required for various inspection activities. Supplier to give the list and make recommendations for choice mentioning briefly about applications. The supplier is also requested to provide the list of essential spares for 3 years of equipment's / accessories' trouble free operation		
32. The equipment shall be supplied with INSPECTION certificate..		
33. Operation and maintenance manuals for the equipment and accessories shall be given in both hard and soft form along with the offer in ENGLISH.		
34. The supplier is requested to provide the list of customers using their equipment.		



<b>BHEL'S SPECIFICATION REQUIREMENT</b>	<b>VENDOR'S CONFIRMATION</b>	<b>DEVIATION, IF ANY</b>
35. Only manufacturers or authorized dealers shall quote (in case of authorised dealers, copy of authorization certificate is required). The supplier should be capable of providing after sales service after warranty period from factory trained service personnel in case of any breakdown. The supplier shall demonstrate the full features like ruggedness of the system, operation, performance and any required periodic maintenance, etc for familiarization to our departmental personnel. Detailed technical catalogue/ literature shall be enclosed along with the offer.		
36. Supplier is required to call the customer – BHEL - for the pre-despatch inspection at his works. Also, the supplier has to commission the equipment and accessories at our works. Supplier has to provide a training for 5 days for our staff. Supplier has to give performance guarantee of 12 months for the commissioned item from the date of commissioning.		

### **QUALIFYING CRITERIA FOR THE SUPPLY OF VIDEO BOROSCOPE .**

The BIDDER / VENDOR has to necessarily provide the following details, for making an assessment of the firm's capability and competency:

[The BIDDER is expected to give complete details against each clause in the table given below and wherever necessary an additional sheet may be attached (giving clear reference number) to cover the required details]

<b>S. No.</b>	<b>PARTICULARS</b>	<b>VENDOR's RESPONSE</b>
<b>1.0</b>	Number of Years of Experience of the BIDDER/ VENDOR in the field of supplying VIDEO BOROSCOPES for Industrial measurement and Inspection activities.	
<b>2.0</b>	Number of such equipments supplied & commissioned till date. Model numbers, ranges and the least counts of supplied equipments shall be mentioned.	
<b>3.0</b>	Year of launch of the Model quoted against this Enquiry?	
<b>4.0</b>	Are there any other models launched after the quoted Models? Otherwise, indicate the likely year in which the next model is likely to be launched?	
<b>5.0</b>	Number of VIDEO BOROSCOPES supplied & commissioned till date in the quoted Models.	
<b>6.0</b>	Number of VIDEO BOROSCOPES supplied & commissioned till date for the different applications / customers.	
<b>7.0</b>	Details of Design Set-Up / Codes and Standards used. Facilities for VERIFICATION of full equipments including servicing in house.	
<b>8.0</b>	Details on International standards followed in verification of equipment.	
<b>9.0</b>	Details on functional / performance Testing of the Equipment and all accessories quoted. Gathered data from users on the equipment performance. Sample references (minimum 2) from renowned customers shall be added for similar models.	
<b>10.0</b>	Details on manufacturing and testing aspects of equipment.	
<b>11.0</b>	Any Additional Data to supplement the	

<b>S. No.</b>	<b>PARTICULARS</b>	<b>VENDOR's RESPONSE</b>
	manufacturing capability of the BIDDER.	

The BIDDER / VENDOR has to compulsorily meet the following requirements to get qualified for submitting an offer for the impact tester.

<b>S. No.</b>	<b>REQUIREMENTS</b>	<b>VENDOR's COMMENTS</b>
<b>12.0</b>	The BIDDER / VENDOR shall have a minimum of FIVE Years of Continuous Experience in the Supply of VIDEO BOROSCOPES. Kindly indicate the actual experience.	
<b>13.0</b>	The BIDDER / VENDOR shall have supplied at least 3 numbers of VIDEO BOROSCOPES in the last 5 years. Kindly confirm and indicate the number of equipments (quoted model) sold in 2006/11 in the world.	
<b>14.0</b>	The bidding FIRM should have 'in-house' or 'self-owned' or 'tied-up' facility for MANUFACTURE and TESTING of VIDEO BOROSCOPES. In case of authorised agents of original equipment suppliers, the certificate of authorization copy shall be enclosed with the offer.	
<b>15.0</b>	Reference List of Customers and Performance Certificates from CUSTOMERS (minimum 2 Customers) with full contact details of CONTACT PERSON.	
<b>16.0</b>	The BIDDER / VENDOR should have sound financial position and should furnish Finance Statements (Summary of P & L Statement and Balance Sheet) for the immediate past 3 years.	
<b>17.0</b>	In case of short listing by the Purchaser in the process of vendor assessment, the BIDDER / VENDOR has to co-ordinate for the visit of Assessing Team, to the WORKS of the BIDDER / VENDOR with a notice period of 10 Days.	

The BIDDER / VENDOR has to comply with the following, for accepting the Technical Offer for scrutiny by the Purchaser:

<b>S.No.</b>	<b>REQUIREMENTS</b>	<b>VENDOR's COMPLIANCE</b>
<b>18.0</b>	The BIDDER / VENDOR shall submit the offer in TWO PARTS - Technical (in line with the BHEL's Technical Specifications) & Commercial and Price Bid.	
<b>19.0</b>	The Technical Offer shall contain a comparative statement of Technical Specifications given by BHEL and the Offer Details submitted by the Bidder, against each clause.	
<b>20.0</b>	A just 'CONFIRMED' or 'COMPLIES' or 'YES' or 'NO-DEVIATION' or similar words in the technical comparative statement may lead to disqualification of the Offer.	
<b>21.0</b>	The Technical Offer shall be supported by Product Catalogue, drawings, manuals and Data Sheets in ORIGINAL (soft +hard copies).	
<b>22.0</b>	The Commercial Offer shall contain the Scope of Supply and the Un-Priced Part of the Price-Bid for confirmation.	