

**BHARAT HEAVY ELECTRICALS LIMITED**CORPORATE RESEARCH & DEVELOPMENT DIVISION  
VIKASNAGAR, HYDERABAD - 500 093, INDIA

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RD:DP:MPX:F-04

**ENQUIRY**

To

Enquiry No:	Enq Date:	Due Date:	Delivery By:
980703841	18-AUG-07	04-OCT-07	31-JAN-08

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 PLEASE SUBMIT YOUR QUOTATION IN SEALED COVER  
 SUPERSCRIBED WITH ENQUIRY NO, ENQUIRY DATE AND  
 DUE DATE SUBJECT TO OUR TERMS AND CONDITIONS  
 ENCLOSED, FOR THE FOLLOWING MATERIALS SO AS TO  
 REACH US ON OR BEFORE THE DUE DATE BY 12 NOON. THE  
 TENDERS WILL BE OPENED AT 2 PM ON THE SAME DAY

Pin

Email :

Attn. .

PLEASE GIVE REFERENCE OF ENQ NUMBER , ENQ .DATE AND DUE DATE IN ALL YOUR CORRESPONDENCE FOR PROMPT ACTION. IN CASE IF YOU ARE NOT MAKING THE OFFER PLEASE POST A REGRET LETTER AND RETURN THE DOCUMENTS.

SL NO	DESCRIPTION / SPECIFICATION	UNIT	QTY
1	MICROPROCESSOR BASED VIBRATION DIAGNOSTIC SYSTEM (AS PER SPECIFICATION ATTACHED)	NO	1

Note: Please submit your offer in two parts as per the enclosed annexure "aa" in separate sealed covers as detailed below:

1) First cover shall contain the following:

A) Technical commercial bid along with compliance statement, mentioning applicable duties, taxes etc., and delivery time clearly, (terms, conditions and compliance form enclosed)

B) A copy of the price bid without the prices (unpriced price bid)

2) Second cover containing price bid

3) If the price bid is found to be different from the unpriced price bid in any way, your offer will be rejected

4) Guarantee Certificate : Required

5) Manufacturer's Test Certificate : Required

Important: Taxes & duties quoted by you will be taken for cost evaluation and order placement and no change will be entertained later except in the case of changes made by the government. Changes in taxes and duties because of the changes in turnover etc also will be to the supplier's account. In case no tax/duty is included, a self declaration for the exemption may be attached along with the offer.

AS WE ARE ENGAGED IN R&D ACTIVITY "C" FORM WILL NOT BE ISSUED

Yours faithfully

for

BHARAT HEAVY ELECTRICALS LTD

PLEASE FILL UP THE ENCLOSED VENDOR REGISTRATION FORM AND SEND IT ALONG WITH YOUR QUOTATION. OTHERWISE YOUR QUOTATION WILL NOT BE CONSIDERED. (IGNORE THIS IF YOU HAVE ALREADY SUBMITTED THIS FORM)

SEETA RAM. M

Dy General Manager

**Email: msetaram@bhelrnd.co.in**

## Microprocessor based Machinery Vibration Diagnostic System

Microprocessor based online vibration monitoring and analysis system (as per API 670) shall be used for condition monitoring of Rotating machinery like Compressor. The specification is given in three parts.

1.Part A – Description.

2.Part B – Detailed Specification

3.Part C – Other requirements.

The offer must satisfy the requirements given in all three parts. The offer should be written in a way conforming to our requirement and for easy understanding.

### PART - A

#### Online Machinery Protection & Monitoring System

Latest monitoring system should be supplied. The monitoring/protection system should be compliant to API670 and must meet the detailed specifications placed below :

The Vibration Monitoring System shall be furnished on a system basis including vibration pads/ Brackets,

Sensors should be Non Contact Eddy Current sensors of 200mv/Microns with 8 mm and 5mm Tip Diameter as per API 670 for Shaft Vibrations (1\*)/ For Casing Vibration Piezo Velocity vibration transducers connector type having sensitivity of around 4 mv/mm/sec +/- 5% ( +/- 3db ) at 100 Hz having frequency response of 2Hz to 4000 Hz having Natural frequency @ 15Khz (2\*) with low noise flexible cables of 10meter from sensor connector in flexible stainless steel conduit, terminated in local IP65 , FRP type Junction boxes.

Necessary Oscillators /Drivers if required for Eddy Current sensors ( If applicable ) mounted in local IP65 , FRP type Junction boxes.

The vibration monitoring system shall include all power supplies, interconnecting cabling, calibration equipment, indicators, integrating units, signal conditioning devices and all other accessories, erection hardware required for monitoring of Vibration at each point. The equipment vendor shall provide the vibration pads.

Vendor can offer Dual Channel Vibration monitors (3 a to g \*) as per API 670 With Alphanumeric Display LCD. Monitor should have Digital Display of Vibration readings along with Bargraph display, Alarm set points , OK LED , Hi and Hi Hi LEDs on Monitor front. Each Monitor should have individually programmable by front keypad . No separate software and monitor should be required to

any changes in settings to ease the service by any personnel in the field.

Every Monitored channel should have 2 potential free relay contact outputs for high and high alarm. It should be programmable by individually monitor front keypad.

It should have trip multiplier facility during start up.

Every Channel should have BNC connector for buffer out put for Portable analyzer connection.

The 19 Inch Rack should be modular in construction with plug in type cards, Mother board , Dual hot Redundant power supply in rack , Back Terminal for all interfaces , No hardwiring inside rack is allowed.

Vibration monitor front face status indications shall be available for indications of healthy conditions of pick up circuit, monitor circuit and power supply. Also set point indication with set point adjustment facility for setting alarm & trip levels shall be provided.

The facility shall be available from front of mounting rack for functional checking of monitors with inhibition of alarm and trip contact outputs during test.

The allocation of channels shall be such that loss of one monitor shall not affect more than one side of the bearing of one machine.

Vibration monitoring system shall give output of 4-20 mA DC (min. two) for each point monitored. The signal shall be suitable for use as an input to DDCMIS as well as for analog recording & analysis, linear in proportion to vibration velocity as well as displacement. Monitor shall provide vibration indication calibrated in velocity units along with provisions of changing to displacement unit in the field for each measurement point in both horizontal & vertical planes.

In addition to the above Analog output to DDCMIS, RS 485/ Ethernet communication link with MODBUS/OPC protocol shall be provided. Necessary interface shall be provided for this purpose.

Cables/cabling from transducers local JB to Vibration Monitoring system should be hardwire individually for each JB should be multi pair , armored ( No Digital cabling in the field ) in Control Room/Control Equipment Room shall be provided by the Vendor. (Distance from JB To Control Room is about 10 meter)

The Vibration monitor racks with power supplies shall be mounted in a separate self-standing cabinet of IP55 to be located in Control Equipment Room. Vendor shall feed the vibration monitoring cabinet from redundant UPS feeders with Auto changeover scheme. Power supply will be provided by BHEL.

All vibration monitoring equipment shall be functionally tested for circuit continuity and output response. All the components & interconnection cables shall be tested to ensure compliance with the specification requirements & all other applicable codes & standards.

#### Analysis & Diagnostic System (4\*)

##### Analysing Communication Processer:

The communication processor should collect static as well as dynamic machinery data under steady state as well as start-up & shutdown conditions from the interface module within the machinery protection system. The communication interface unit shall store this information and then download to the Condition Monitoring System Computer running the Condition Monitoring Windows NT software.

The processor will provide TCP/IP Ethernet link for data transfer to condition monitoring software. This unit shall also have the ability to communicate the monitor values directly to DDCMIS. The communications to the Condition Monitoring System shall utilize a high speed Ethernet network communications link .This shall enable high speed data download to the Condition Monitoring host computer.

- These sampling methods shall be determined when the processor collects steady state and or transient data from the monitors.
- All transient (start-up and shutdown) data shall be collected in parallel fashion simultaneously (not in channel after channel scan mode), and fully online from all monitor channels connected to the Communication Interface Unit.

##### Condition Monitoring Software:

The condition monitoring software shall run on the Windows NT or later platform. It shall be capable of collecting data both

asynchronously and synchronously (with a Keyphasor signal) and store the data in the original time domain format.

From the stored time domain sample, it shall be possible to reproduce a spectrum in addition to other time domain data formats at any time for review of data saved in historical trend files.

The software shall collect and store data from the monitor racks and communication processors. The software shall have the capability to take process data directly from DDCMIS and correlate this data with vibration data.. The software shall display at least the following plots:Steady State Plots (Virtual probe rotation, Current values, Alarm event and system event listing, Bargraph of current values, Machine train diagrams, Fast trend, Trend,Orbit & Time base,Shaft Centre line ,Spectrum, X versus Y Plot,Waterfall, Plot orbits & plus Spectrums,Quick View) and Transient data (during start-up/shutdown conditions) plots (Bode plots for 1X & 2X vectors during startups & coast-downs, Polar plots for 1X & 2X vectors during start-ups & coast-downs

Plot display formats: Must have the ability to select and store transient or steady state data, from stored Alarm Event Data, or from Baseline Data. This must include current data, in which case, the computer requests a sample of the current signal(s) from the associated monitor channel.

#### Diagnostic System :

The Automated Diagnostic System shall utilize vibration & shall be an extensive and accurate knowledge base to enable quick determination of the condition of a machine by providing alarm notification of the machinery malfunction.

Types of malfunctions: The Diagnostic System shall be able to specifically evaluate the available data while checking for the presence of the most frequently occurring machine malfunctions .

#### Critical Measurement Parameters for Online Monitoring, Protection of Critical Machinery – Transducer Systems

- a. Compressor: The following parameters shall be measured on Compressor directly by the machine monitoring, protection & management systems:-
  - i) X&Y radial shaft vibration -4 No.s

- ii) Absolute bearing vibration using solid-state velocity transducers :- 4 No.s
- iii) Axial measurement :- 1 No.
- iv) Key Phasor :- 1 No.

- b. Monitoring system
- c. Analysis & Diagnostic System

PART – B

**BILL OF MATERIAL**

**1. Shaft Vibration**

- a) Non contact eddy current probes:13(Nos)  
 Probe Diameter: 5mm – 4Nos(X,Y)+ 1 (Key phasor) + 1 No. spare = 6 Nos, 8mm- 4 Nos (X,Y) +1 No Axial Measurement+ 1 No. Key Phasor + 1 No. spare = 7 Nos  
 Sensitivity 8 mV/microns (within +/- 0.5mv/micron)  
 Frequency response: at least DC to 10 KHz (-3dB) at 400 microns pk-pk  
 Operating Temperature -40 to +177° C  
 Linear range : over 2000 microns  
 Cable length:1 mt
- b) Extension cable; Nos  
 Armored cable, length – 8 meter  
 Operating temperature : -40 to +177° C
- c) Driver for each system (for both 5mm & 8mm probe) :5 mm (6 No.s) + 8 mm (7 No.s) = 13 Nos (one spare)

**2.Casing Vibration:**

- Piezo velocity transducers : 4 No + 1no spare.
- Top connector
- Sensitivity; Around 4 volts/mm/s pk +/- 5% at 100 Hz, at 25° C
- Maximum velocity: 1250 mm/s pk
- Natural Frequency: >14 Khz.
- Extension cable 10 meter with SS Conduit-5 No.s

**3.Monitoring system.**

- a) 2 channel shaft vibration Monitor for shaft : 8 nos
- b) Two channel seismic Monitor: 2 Nos
- c) Two channel thrust monitor:1 No

- |                             |   |
|-----------------------------|---|
| 1. Alarm set point          | 4 points (Danger1, Alert1, Danger2, Alert2) for a&b, 8points<br>H-Danger1, H-Alert1, L-Danger1, L-Alert1, H-Danger2, H-Alert2, L-Danger2, L-Alert2 for c. |
| 2. Alarm set range          | 0 to 110% of monitor range  |
| 3. Alarm set accuracy       | +/- 1.0% of F.S or less   |
| 4. Alarm set repeatability  | +/- 0.1% of F.S or less   |
| 5. Alarm set output         | 5 points (Danger1,Alert1,Danger2,Alert2,OK) or<br>6 points (Danger1,Alert1,Danger2,Alert2 ,OK1, OK2)  |
| 6. Measured vibration value | LCD digital meter with 5 digits(7 segments with back light)<br>LCD bar graph meter (40 segments with back light)  |

7. Alarm indicator	Danger: red LED Alert: yellow LED
8. Abnormal: alarm indicator	OK green LED
9. Bypass indicator	BYPASS red LED
10. TRANSDUCER INPUT	From shaft vibration, seismic vibration and seismic probes Number of input points in each: 2 points
11. External contact input (From rear panel)	Contact type: dry contact Contact for external reset Contact for sequence (not for c)
12. Bar graph meter	Recorder output conversion accuracy +/- 2.5% of F.S
13. Digital meter	Recorder output conversion accuracy +/- 1.0% of F.S
14. Recorder output conversion Accuracy	+/- 0.5% of f.s at 100 Hz at 25deg C +/- 2.0% of f.s at 100 Hz at 0 to 65 deg C
16. Recorder output (from Rear Panel)	Voltage and Current output proportional to the monitor range 1 to 5 VDC output impedance=250 Ohms 4 to 20 mADC (max load resistance : 500 ohms) 0 to -10VDC*, 0 to 10 VDC*, 0 to -5VDC*, 0 to 5VDC* Output impedance 100 Ohms (*option.) Number of output points : 2 Points
18. Monitor output (from Front, Rear Panel)	input signal is output via a buffer amplifier Signal level : -0.8 to -22VDC (for eddy current probes), +/- 15 V for seismic probes Output impedance : 100 ohms
19. Temperature range	operating temperature: 0 to 65 deg C Storage temperature: -30 to 85 deg C Relative humidity: 20 to 95%
21. Material and Finish	face plate : aluminum Munsell N-4.0 (equlv)
22. Mass	each monitor max 0.7 kg

d) Phase Marker unit

POWER SUPPLY	: To be supplied from instrument rack
PHASE MARKER	: Phase marker: 2 channel max.
SIGNAL	Input Impedance : approx. 10 k ohms
INPUT VOLTAGE	: 0 to 25 VDC
BUFFER OUTPUT	: Phase marker signal : 2 channel Output voltage : -1 to -20 VDC Output impedance : 50 ohms
PULSE OUTPUT	: Shaped pulse signal is output via a buffer amplifier Signal level : -1 to +1V(P <sub>L</sub> ), 4 to 6V(P <sub>H</sub> )
TRANSDUCER POWER SUPPLY	: - 24 VDC +/- 1 volt, - 20mA
POWER SUPPLY OK INDICATOR	: PWR SUPPLY OK : (green LED)
SEQUENCE STATE INDICATOR	: SEQUENCE ENABLE : (yellow LED)
TRIGGER INDICATOR	: TRIGGER : (yellow LED)
TEMPERATURE RANGE	: Operating temp. : 0 to 65°deg C

Storage temp. : -30 to +85° degC  
 Relative humidity : 20 to 95% RH (non-condensing)  
 FINISH : Face plate : Aluminium Munsell N-4.0 (equiv.)  
 MASS : Unit : max. 0.6 kg

e) Relay Output module:

POWER OUTPUT FOR TRANSDUCER	4mA 24VDC (input code : 1) - 24VDC, 40 Ma (input code: 2)
CONTACT RATING (LOAD RESISTANCE)	250 VAC, 5A 30 VDC, 5 A
CONTACT LIFE	100,000 or more (rated load)
PROTECTIVE CONSTRUCTION	Plastic Seal
TEMPERATURE RANGE	Operating temperature: 0 to 65°C (+32 to +149 °F REF) Storage temperature : -30 to 85 °C(-22 to + 185°F REF.) Relative humidity : 20 to 95% RH (non-condensing)
MASS	Max. 0.4 kg (Max. 0.9 lb REF.)

f)Dual redundant Instrument Rack 19"

INPUT FOR OPERATION (FROM REAR PANEL)	Alarm reset (normally open) Sequence (normally open) Filter Enable (normally open) Contact Type: Dry contact
SERIAL INTERFACE INPUT/OUTPUT CONNECTOR *6	D-Sub connector 9 P 2 pc. (IN,OUT) Housing fix screw: #4-4 OUNC or M2.6x0.45 Specified when ordering Unless specified otherwise, preset to #4-40 UNC Recommended connector (Socket side)  Connector Housing XM2D-901 XM2S-0913(#4-40UNC) XM2S-0911(M2.6x0.45) [OMRON] GM(E)-9F GM-9LD55GU(#4-40UNC) GM-9LD55G(2.6x0.45) [HONDA]
OPERATION SWITCH	DANGER Bypass Switch
INDICATOR	Power supply 1 OK indicator : Green LED Power supply 2 OK indicator : Green LED
ALARM CONTACT OUTPUT	Function: System OK (common to all channels)*3 Contact capacity: Load resistance : 250 VAC, 5 A : 30 VDC, 5 A Contact type : C contact - Dry contact
CONTACT LIFE	100,000 times or more (rated load)
PROTECTIVE	Plastic sealed



	Unless specified otherwise IN 1:1 (can be changed by internal switch)	IN 2:2
TERMINAL SETTING	ON or OFF Specified when ordering Unless specified otherwise IN 1: ON (can be changed by internal switch)	IN 2: ON
PHASE MARKER OK STATUS	TB (Valid) or FIX (invalid) Preset to FIX (invalid) (can be changed by internal switch)	
TEMPERATURE RANGE	Operating temperature : 0 to 65 °C (32 to 149°F)(without battery) 0 to 50 °C (32 to 122 °F)(with battery) Storage temperature : -30 to +85 °C (-22 to +185 °F (without battery) -20 to +55C (-4 to + 131 °F) (with battery) Relative humidity : 20 to 95% RH (non-condensing)	
MASS	Monitor : max. 0.4 kg	

#### **4) Analysis and Diagnostic software**

**a) Analysis Processor Rack (to house PCB and Connections) -1 No.**

**b) Sampling cards –Two inputs per card -7 Nos**

**c) Process Data input card I/P card (to interface process parameters for 4- 20 mA inputs)- 1 No.**

**d) Terminal Box. -1 No.**

**e) Analysis software with Modbus Output having following features**

##### Steady state plots:

- Virtual probe rotation
- Current values
- Alarm event and system event listing
- Bargraph of current values
- Machine train diagrams
- Fast trend
- Trend
- Time-base
- Orbit & time base
- Shaft centerline

##### Transient data (during start-up/shutdown conditions) plots:

- Bode plots for 1X & 2X vectors during startups & coast-downs
- Polar plots for 1X & 2X vectors during start-ups & coast-downs

- Spectrum
- X versus Y Plot
- Waterfall
- Plot orbits & plus Spectrums
- Quick-view

f) Diagnostic Software

Should be able to automatically diagnose and display following faults.

High vibration

- Unbalance
- Shaft bow
- Oil (Whirl and Whip)
- Misalignment
- Rotor rub
- Loose rotating parts
- Gear mesh problems, pump cavitations

g) Host computer for Software configuration, archiving ,display and connectivity to Monitor Racks.

h) Ethernet cable – 30 meters.

## PART-C

### Scope of Work , Supply and other terms and conditions

1. During installation and commissioning of the Machinery Monitoring Systems to install, verify and calibrate on site all the transducers and monitoring systems being supplied for all critical machinery documentation of the complete installation.
2. All support that may be required from the Machinery Monitoring & Management Systems vendor during the warranty period.
3. Vendor may please quote for the compatible PC and the printer for hard copy along with their specifications.
4. Required training for use of the system is to be provided along with installation and commissioning.
5. Vendors should get clarifications from the indentors (BHEL) for any technical queries in the specifications

7. Vendors would have supplied similar system for protection and monitoring of main Turbine Generator set in any 200/210/500 MW Thermal Power Plant in India. Vendor should submit an authentic list and certificate of such supplies in last two years. This is a prequalification. Without this prequalification the bid will not be considered.

#### Service/Warranty Plan

The bidder must include a three (3) year service plan for both hardware and software from the date of supply. This service plan shall begin from the date of actual commissioning as it is envisaged the vendor of these systems will be hired for installation and commissioning.



# BHARAT HEAVY ELECTRICALS LIMITED

CORPORATE R&D DIVISION, VIKAS NAGAR, HYDERABAD – 500 093, AP, India

Ph: 0091-40 – 23778474, FAX: 0091-40 – 23770698

## General Terms and Conditions of Enquiry & Contract for the Purchase of Goods/ Services

1. The quotation and any order resulting from this enquiry shall be governed by these General Terms and Conditions of enquiry and contract for the supply of goods and the supplier quoting against this enquiry shall, unless specifically stipulates any different terms or conditions, be deemed to have read and agreed to the same.
2. Sealed quotations in double cover with tenderer's distinctive seal, superscribing enquiry number, date and due date are to be submitted so as to reach on or before due date & time, addressed to **Additional General Manager(MM), Bharat Heavy Electricals Limited, Corporate Research & Development Division, Vikasnagar, Hyderabad, Andhra Pradesh, India – PIN-500 093, India.**

In the case of **Two-part bid**, each inner cover shall clearly be labeled as a) **Technical & Commercial Bid** containing technical data/ drawings/ catalogues/ quality plans along with commercial terms and conditions & copy of the price bid with the price columns left blank (unpriced price bid), b) **Price bid** containing prices quotes. Installation and/or Commissioning charges shall be spelt out in absolutely lucid terms, taking into account total charges, rather than quoting vaguely, such as charges per man-day or charges per engineer per day etc. **If the price bid was found later to be different from the unpriced price bid in any way, the offer will be rejected summarily.**

3. **Tender/ Technical bid Opening:** Unless specified otherwise, tenders/ technical bids will be opened on appointed date and time as mentioned in the enquiry or as communicated changed date/time, if any, in the presence of such of those tenderers who may be present.
4. **Delayed/ Late Tender:** Tenders, which have been posted by registered post through the postal department in time before opening date but received after tender opening, shall be treated as regular tenders. Other tenders received after tender opening time shall be treated as late tenders and normally they may be rejected.
5. The Quotation should be free from overwriting and erasures. Corrections and additions, if any, must be attested. Supplier should indicate in the quotation dimensions (Size), weight, rate etc., in the metric system unless the enquiry calls for different unit.
6. **Validity of Quotation:** All quotations shall be kept open for acceptance for a period of ninety days from the date of opening of Tenders/ Technical bid and this shall be deemed to be an express condition of all quotations. The rate shall be quoted in both figures and in words.
7. In the case of Two-part bid, the vendor should furnish technical clarifications, if any, within stipulated time mentioned, failing which, it will be construed that the vendor is not interested in the tender and BHEL shall not consider the offer for further evaluation.
8. **Revision of Pricebid:** In the event of any bidder, after finalizing the technical specifications and scope of supply, opting to revise and submit their latest price bid, then BHEL reserves the right to open their original / previous price bid also while evaluating revised bid.
9. **Pricebid Opening:** Unless specified otherwise in the enquiry, the Price bids of technically qualified vendors shall be opened with prior intimation in the presence of such of those tenderers who may be present.
10. **Conformity to Specifications:** The material should be of the best quality and shall be conforming to our specification given in our enquiry. Unless otherwise agreed upon by BHEL, no payment shall be due by BHEL in respect of any sample. Offers without details of specifications/ applicable catalogues will not be considered and are liable to be rejected.
11. **Terms of Delivery:** All suppliers shall quote the lowest prices on ex-works and FOB/FCA basis. Foreign suppliers will also indicate their Indian agent's name and address with percentage of agency commission out of the quoted price, if any. Name and Address of the supplier's Bankers address should also be given. Indian suppliers for the indigenously manufactured/ imported stock shall quote on Ex-works /Free-on-Rail/Road /FOR-destination basis, indicating packing & forwarding charges, if any, separately.
12. **Taxes and Duties:** Unless specified otherwise in the enquiry, BHEL do not provide "C" or "D" Form as it is engaged in R&D. All Indian suppliers shall clearly mention Sales Tax/ VAT, Excise Duty, and Service Tax etc, if any, payable in addition to the quoted price and indicate applicable rates/ percentage, item-wise. It will be paid

only if Registration Number under State(TIN)/ Central Sales Tax or Service Tax is specifically mentioned in the Bill/Invoice. Vendors without a Sales Tax/VAT registration and applicable Service Tax registration will not be considered.

13. **Insurance:** Insurance will be arranged by BHEL in case of Ex-Works as well as FOB basis supplies.
14. **Terms of Payment:** Full payment will be made within 30 days after receipt, inspection and acceptance of the material (and where involved, Erection and commissioning of the material/ equipment at BHEL/Destination) by Crossed cheque and no Bank commission charges are admissible. The Cheque will be sent by registered post and BHEL is in no way responsible if loss occurs due to delay by postal authorities and cheques falling into improper hands or through forgery or fraud. Suppliers having RBI-SEFT-enabled accounts can seek payment through Electronic Fund transfer. For foreign suppliers, the preferred payment term will be on Sight Draft basis and bank charges inside India will be to BHEL account and outside India will be to supplier's account.
15. Suppliers shall quote competitive price and best delivery for all the items mentioned in the enquiry. BHEL reserves the right to reject partial quotations and to place order on overall landed cost basis. Correct date of effecting supplies in the event of an order should be indicated in the offer. If the supplier's quoted terms are different from BHEL standard payment terms, interest @10.5% per annum (or as indicated in the enquiry) will be loaded to the quoted prices for difference of payment period.
16. **Packing:** The supplier shall be responsible for the goods being properly and adequately packed so as to prevent any loss, damage or deterioration during transit and indicate packing charges, if any, separately.
17. **Part/ Split Ordering:** BHEL reserves right to Order part of the item/ quantity of the enquiry and split the order among qualified vendors.
18. In case the goods enquired are on Rate Contract basis with any other unit of BHEL, such fact should be clearly indicated in the quotation giving full particulars of Rate Contract number, validity and price and also your willingness to comply with order if placed against such Rate Contract. A true copy of Rate contract signed by the supplier should be sent with the quotation.
19. **Inspection:** On receipt, the goods shall be subjected to inspection and also test, if necessary, and our decision regarding the acceptability of the goods shall be final and binding on the suppliers.
20. **Consequences of Failure To Deliver:** The time stipulated for delivery of goods shall be deemed to be the essence of the contract and delivery must be completed within the stipulated date/s. In the event of supplier's failure to supply the goods by the stipulated date/s, BHEL shall be entitled to levy a penalty of ½% per week for the delayed no of weeks or part thereof for the undelivered portion of PO subject to a maximum of 10% total order value.
21. **Withdrawal from the Contract:** In case the supplier withdraws the quotation after its acceptance by BHEL or fails to supply the goods as per the terms and conditions of contract, or at any time repudiated the contract wholly or in part, BHEL shall be at liberty to cancel the Purchase Order and to recover from the supplier the extra cost and other loss incidental to the breach of contract on the part of the supplier.
22. **Guarantee/ Warranty certificate and Manufacturer's Test report:** Invariably in all cases where it is so stipulated, the supplier should furnish Guarantee/ Warranty certificate valid for a period of 18 months from date of supply or 1 year from the date of receipt, acceptance and commissioning(or more, if provide by oem) whichever earlier and manufacturer's Test report along with the goods, failing which, BHEL shall have the right to reject the goods.
23. All ferrous/ non-ferrous items shall be colour coded as per bureau of Indian standards/ or IS standards/ BHEL Standards.
24. **Recovery of Dues:** BHEL shall recover any amount due from the supplier or any amount outstanding to the credit of the supplier with BHEL R&D unit or any other BHEL unit(s) and/or by legal action.
25. **Arbitration & Forum for Legal Proceedings:** All disputes arising in connection with indigenous/ foreign supplies shall be settled through arbitration held at Hyderabad, AP, India and arbitration shall be appointed by Arbitration Tribunal of the Federation of Andhra Pradesh Chambers of Commerce and Industry, Hyderabad, AP, India. The Courts at Secunderabad/ Hyderabad, AP, India shall have jurisdiction in respect of any suit or other legal proceeding arising from or relating to this contract

The rights and remedies of BHEL stated in these General terms and conditions shall be in addition and supplemental to its rights and remedies under law and custom or usage of trade or business and shall in no way be deemed to limit, curtail, supercede or derogate from its said rights and remedies.



**ANNEXURE “AA**  
**BHARAT HEAVY ELECTRICALS LIMITED**  
**CORPORATE RESEARCH & DEVELOPMENT DIVISION**  
**VIKASNAGAR, HYDERABAD – 500 093. INDIA**

**MATERIALS MANAGEMENT DEPARTMENT**  
**(Information for Technical & Commercial bids with general terms)**

**ENCLOSURE TO ENQ No:**

**DATE:**

- a) Please indicate(    / ) for applicable or ( **X** ) for not applicable against each clause of the enquiry
- b) Vendor shall confirm their compliance for applicable clauses (    / ) in their offer without deviation.

**1) Technical offer:-**

- a) Vendors to confirm compliance to all points of specifications, attached if any. Deviations if any should be specified in the offer.
- b) Vendors shall furnish relevant technical Documents / Catalogues. Drawings and Quality plan duly taking care of Purchase Specification and Quality requirements along with their offer in duplicate for Purchaser’s review / Verification.

**2) Two Part Bid:-**

Vendor shall submit their offer in 2 parts.

**2.1 Technical Bid:-** Containing relevant technical data, drawings, catalogues, Quality Plan etc, along with Commercial Terms and Conditions and a copy of the price bid with the price columns left blank (unpriced price bid). If the price bid was found later to be different from the unpriced price bid in any way, the offer will be rejected.

**2.2 Price Bid:-** Containing the Price(s) quoted. Installation and or commissioning charges shall be spelt out in absolutely lucid terms taking into account the total charges rather than quoting vaguely such as charges as per man day or charges per Engineer per day etc.,

Technical bids will be opened on the due date of the enquiry or any other date fixed by BHEL. Further, vendor should furnish clarifications, if any, required within seven days after the same is sought by Purchaser. If no clarifications/reply received within 7 days, it will be construed that vendor is not interested in the tender and Purchaser will finalise tender accordingly. Price bids received on due date along with technical offers will be recorded and opened subsequently with due intimation to vendors after finalising of technical scope of supply.

These bids shall be submitted in separate sealed covers superscribing the nature of the offer (technical bid or price bid). BHEL Enq No. Due date etc.

**Note: In case of non-compliance with the TWO\_-PART-BID ie.. clause number 2 and subclauses 2.1 and 2.2. Purchaser reserves the right to summarily reject all such offers.**

**3) Delivery:-**

**Vendor shall confirm supply of materials as per the delivery schedule indicated in the enquiry.**

**4) Negotiations:-**

**Vendor shall quote competitive price and best delivery to avoid negotiations.**

**5) Commercial Terms & Conditions:-**

**Terms of Delivery:**

- a) **Vendors shall clearly indicate terms of delivery Viz: Ex-Works/FOR Despatching station/FOR Despatching station FOR Destination/FOB port of loading/FAS Port of loading in their offer. If the terms of delivery is Ex-Works, then vendors shall clearly indicate the following:**
  1. **Packing and forwarding charges.**
  2. **Documentation / Handling charges if any**
  3. **FOB FAS charges (Inland Freight & Insurance charges from vendor works to port of Loading).**
- b) **All Indian Vendors shall clearly specify the Excise Duty in percentage applicable for their supplies. Offers containing expressions such as “Extra as applicable” or “As applicable at the time of Delivery” will be summarily rejected.**
- c) **CST/Local Sales Tax in percentage shall be clearly indicated.**

**6) Validity of Quotation:-**

**Validity of offer should be 90 days after the opening of price bid.**

**7) Part or split ordering:-**

**Purchaser reserves the right to order part of item / quantity of the enquiry.**

**8) For clauses not mentioned in this document see the enclosed “GENERAL TERMS AND CONDITIONS OF ENQUIRY AND CONTRACT FOR THE PURCHASE OF GOODS”**

- 9) **In case your terms of payment are different from our standard payment terms, interest at the rate of 10.5% per annum (or BHEL’s standard rate of interest) will be loaded to your prices for the difference of period of payment.**



**BHARAT HEAVY ELECTRICALS LIMITED**  
**CORPORATE R&D Division**  
**Vikasnagar, Hyderabad – 500093, India.**

**Suppliers' compliance statement to basic conditions of enquiry**

**(In case Order to be placed on Indian supplier in Indian currency)**

<b>Condition</b>	<b>BHEL R&amp; D's terms</b>	<b>Supplier's compliance</b> <b>(indicate Yes/No. if 'No', state terms desired)</b>
1) Validity of offer	90 days from the tender opening date	
2) Delivery requirements	Free delivery at our stores or FOR destination (as indicated in the enquiry)	
3)Warranty	Unless specifically mentioned in the enquiry, all supplied items to be provided with warrantee for one year (or more, if provided by the OEM) from the date of acceptance/commissioning. In case of equipment involving erection and commissioning, warrantee shall be for 18 months from the date of dispatch or 12 months from the date of commissioning, whichever is earlier	
4) Terms of payment	Full payment will be made within thirty days after receipt, inspection and acceptance of the material at BHEL R&D (and where involved, erection and commissioning of the material/equipment at BHEL/destination), by Crossed Cheque and no Bank commission charges are admissible.	
5) Taxes & Duties	Unless specifically mentioned in the enquiry, we do not provide 'C' or 'D' form. Supplier to specify rates of taxes and duties element wise and related percentages.	
6) Penalty for late delivery	0.5% per week beyond the delivery date as mentioned in the Purchase order on undelivered portion subject to a maximum of 10% of the total order value	

\* BHEL R&D reserves the right to reject any offer due to non-compliance with the above conditions and/or non-receipt of this form in duly filled condition

\* Any other elements of cost in addition to the above may please be specified in detail

**(Signature and Stamp/Seal of Vendor)**



**BHARAT HEAVY ELECTRICALS LIMITED**  
**CORPORATE R&D Division**  
**Vikasnagar, Hyderabad – 500093.**

**IMPORTED**

**Suppliers' compliance statement to basic conditions of enquiry**

**(In case Order to be placed on the Principal and foreign currency)**

<b>Condition</b>	<b>BHEL R&amp; D's terms</b>	<b>Supplier's compliance (indicate Yes/No. if 'No', state terms desired)</b>
01) Validity of offer	90 days from the tender opening date ( or as per enquiry)	
02) Delivery requirements	FCA – Nearest International Airport (or as indicated in the enquiry)	
03) Warranty	Unless specifically mentioned in the enquiry, all supplied items to be provided with warrantee for one year (or more, if provided by the OEM) from the date of acceptance/ commissioning. In case of equipment involving erection and commissioning, warrantee shall be for 18 months from the date of dispatch or 12 months from the date of commissioning, whichever is earlier	
04) Terms of payment	Sight draft. All bank charges inside India will be to BHEL R&D account and out side India will be to suppliers account. Documents through State Bank of India, HAL Complex, Balanagar, Hyderabad, AP, India-500 042.	
05) Agency commission	PI specify percentage charges, if any. Indian agency/agent commission will be in Indian Currency only.	
06) Erection/ Commission	As per enquiry	
07) Documentation	As per enquiry	
08) Insurance	BHEL will arrange Insurance based on intimation to our Insurance agency, United India Insurance Co., DO-2, Secunderabad, AP, India.	
09) Penalty for late delivery	0.5% per week beyond the delivery date as mentioned in the Purchase order on undelivered portion subject to a maximum of 10% of the total order value	

\* BHEL R&D reserves the right to reject any offer due to non-compliance with the above conditions and/or non-receipt of this form in duly filled condition

\* Any other elements of cost in addition to the above may please be specified in detail

**(Signature and Stamp/ Seal of Vendor)**



BHARAT HEAVY ELECTRICALS LTD.  
Corp. R&D DIVISION  
VIKAS NAGAR,  
HYDERABAD-500 093 (INDIA)

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**VENDOR REGISTRATION FORM**  
[FORM TO BE SUBMITTED\* BY THE BIDDER ALONG WITH TECHNICAL-BID]

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Before filling please refer to instructions on page-4

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1.0 VENDOR PROFILE:

1.1 & 1.2 Name and address of the vender: \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Phone Nos.:

Fax No.:

Email:

1.4 Local representative of the vender in India/ Hyderabad:

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Phone Nos.:

Fax No.:

Email:

Contact person:

Mobile No.:

2.0 & 2.1 Type of Organisation:

PROPRIETORSHIP	COMPANY	SISTER CONCERN	ANY OTHER (Please specify)
PARTNERSHIP	CORPORATION	Small Scale Industry	

3.0 Annual Turn Over:

Name and address of the Banker:

Sr.No.	Bank	Address

4.0 REGISTRATION PARTICULARS

4.1 IT Permanent Account No.(PAN):

4.2 & 4.3 State and central sales tax Registration No.:

4.4 ED/ Service Tax Registration No.:

PF Account No.:

Labour Licence No.:

ESI Account No.:

5.2 Contact person:

Mobile No. :

5.3 Total Number of employees:

Graduates (Engr./Scientists/Mgmt/Fin.)	Consultants	Workers		
		Sup./Skilled	Semiskilled	Unskilled

6.0 Wish to register for supplies/ services other than one bidding for :

<u>Sr.No.</u>	<u>Service/Supplies</u>	<u>Capacity</u>
<u>1</u>		
<u>2</u>		
<u>3</u>		
<u>4</u>		
<u>5</u>		
<u>6</u>		
<u>7</u>		

6.1 Reference list :

(Only recognized public and private sector companies, attach if printed copy available)

<u>Sr.No.</u>	<u>Customer</u>	<u>Volume / Year</u>
<u>1</u>		
<u>2</u>		
<u>3</u>		
<u>4</u>		
<u>5</u>		
<u>6</u>		
<u>7</u>		

7.0 & 8.0 Infrastructure / facilities :

<u>Sr.No.</u>	<u>Facility (with specifications)</u>	<u>Age/ Year procured</u>
<u>1</u>		
<u>2</u>		
<u>3</u>		
<u>4</u>		
<u>5</u>		
<u>6</u>		
<u>7</u>		
<u>8</u>		
<u>9</u>		
<u>10</u>		

9.0 Registration with other BHEL Unit/Units:

<u>Sr.No.</u>	<u>9.1.1 Unit</u>	<u>9.1.2 Registration No.</u>
<u>1</u>		
<u>2</u>		
<u>3</u>		
<u>4</u>		

Any Other information :

Declaration:

The information furnished above is true and authentic.

**(CEO / Proprietor)**

**SEAL:**

**Date:**

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The competent authority reserves the right to accept or reject the registration. Registered vendors will be informed by mail / email, as convenient. Contact Sr.DGM (MM) for clarification/ additional information on registration.  
A separate communication will be sent to you in case of non-registration, citing reasons thereof.

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### **Instructions**

1. Answer all items, use NA for items not applicable.
2. BHEL units do not require this registration.
3. Submit the form in duplicate.
4. Use additional sheets for want of space if required.
5. Attach copies of latest documents in respect of items 4.0 (Registration no.s)
6. Photographs of registered office and the chief executive/proprietor shall be furnished.
7. Use A4 sheets for this document and the enclosures.

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\* REGISTERED BIDDERS, HAVING BHEL (R&D) REGISTRATION NO./ HAVE SUBMITTED THIS FORMAT EARLIER, NEED NOT FURNISH THIS INFORMATION SECOND TIME (UNLESS DESIRE TO UPDATE IT).



**BHEL CORPORATE R & D**  
**VIKAS NAGAR- HYDERABAD - 500 093**  
**ANDHRA PRADESH – INDIA**  
**SUPPLIER REGISTRATION FORM**

(FOREIGN SUPPLIER)

ALL COLUMNS SHOULD BE PROPERLY FILLED IN THE SPACE PROVIDED FOR. WHEREVER IT IS NOT APPLICABLE PLEASE WRITE “NOT APPLICABLE”. INCOMPLETE OR INCORRECT FORMS MAY NOT BE CONSIDERED.

**1.0 GENERAL INFORMATION:**

1.1....NAME OF COMPANY

1.2....DETAILS OF HEAD OFFICE:

ADDRESS :  
TELEPHONE :  
FAX :  
.EMAIL :  
.WEB SITE :

1.3....DETAILS OF FACTORY/WORKS:

ADDRESS :  
TELEPHONE :  
FAX :  
.EMAIL :  
.WEB SITE :

1.4....DETAILS OF MARKETING AGENT

ADDRESS :  
TELEPHONE :  
.FAX :  
.EMAIL :  
.WEB SITE :

1.5 CHIEF EXECUTIVE

NOTE: PLEASE ATTACH SEPARATE SHEETS, IF SPACE FOUND IS INADEQUATE

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AUTHORISED SIGNATORY

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**BHEL CORPORATE R & D**  
**VIKAS NAGAR – HYDERABAD – 500 093**  
**ANDHRA PRADESH – INDIA**

**SUPPLIER REGISTRATION FORM**

(FOREIGN SUPPLIER)

- 1.6 CONTACT PERSON(S)  
FOR PRODUCT OFFERED  
NAME(S)  
OFFICIAL CAPACITY  
ADDRESS:  
TELEPHONE  
FAX  
E-MAIL
- 1.7 YEAR OF ESTABLISHMENT
- 1.8 PRODUCTION CAPACITY PER ANNUM
- 1.9 PARTICULARS OF PRODUCT INCLUDING  
SPECIFICATION AND RANGE OFFERED  
FOR REGISTRATION  
( ATTACH BROCHERS AND CATALOGUE)
- 1.10 NAME(S) OF BANKERS
- 1.11 BANKER'S CERTIFICATE
- 1.12 PORT OF LOADING
- 1.13 NEAREST AIRPORT
- 1.14 NAME OF THE INDIAN AGENT, IF ANY  
WITH AUTHORISATION LETTER
- 1.15 ANY OTHER INFORMATION:

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AUTHORISED SIGNATORY

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**BHEL CORPORATE R & D**  
**VIKAS NAGAR – HYDERABAD – 500 093**  
**ANDHRA PRADESH – INDIA**

**SUPPLIER REGISTRATION FORM**

(FOREIGN SUPPLIER)

**2.0 FINANCIAL INFORMATION**

2.1...TOTAL CAPACITY

2.2...ANNUAL TURN OVER FOR LAST 3 YEARS

2.3...WHEHER CREDIT LICENSE ACCEPTABLE      YES/NO

**3.0 QUALITY MANAGEMENT SYSTEMS**  
ENCLOSED FORMAT PART-B

3.1 EXPERIENCE LIST FOR SAME/SIMILAR ITEMS  
TO BE ENCLOSED

**4.0.....FUTURE EXPANSION PLANS:**  
(GIVE DETAILS)

**5.0 LIST OF ENCLOSURES:**  
INCLUDING BROUCHERS, CATALOGUES, TECHNICAL  
LITERATURE etc...

**6.0 ANY OTHER INFORMATION**

SIGNATURE OF SUPPIER

NAME

DESIGNATION

DATE

.....OFFICIAL SEAL

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AUTHORISED SIGNATORY

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