

**BHARAT HEAVY ELECTRICALS LIMITED**

CORPORATE RESEARCH & DEVELOPMENT DIVISION

VIKASNAGAR, HYDERABAD - 500 093, INDIA

PHONES: 23774494 (EXCHANGE)

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23778474/23776772

FAX : 91 40 23770698

RD:DP:MPX:F-04

ENQUIRY

To

Enquiry No:	Enq Date:	Due Date:	Delivery By:
330700871	29-MAY-07	26-JUN-07	15-SEP-07

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	IGBT STACK-50 KVA SPECIFICATION: AS ENCLOSED	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

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 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

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)

BHARAT HEAVY ELECTRICALS LTD

N Narsimha Rao

Dy Manager

Email: nnrao@bhelrnd.co.in

Specifications for IGBT Stack – 50 kVA

Dt .11-May-07

1. **Application** : 3-Level IGBT Inverter and transformer fed Induction motor drive with VVVF Control / Vector Control.
2. **Sub-Systems** : The **deliverables** in the IGBT-Stack system shall be:
 - 2.1 Diode Bridges of 2 Nos. connected in series at their output.
 - 2.2 DC-Link Capacitor Filter.
 - 2.3 Braking Chopper (IGBT based) WITH Braking Resistor.
 - 2.4 A 3-Level PWM Voltage Source Inverter (IGBT based)
(This should be supplied along with suitable Gate Drivers having Fibre Optic (FO) Transmitter / Receivers for interface to the control circuit.)
 - 2.5 Voltage / Current / Temperature Sensors ... **Price to be Quoted Separately.**
 - 2.6 Pre-charging circuit
 - 2.7 Cooling arrangement for the Power devices wherever required

The block schematic and the inter-connections of the above sub-systems is shown in the Fig.1.

NOTE : In the above list of deliverables, if the Offer submitted Does NOT INCLUDE ANY Item Please Clearly Mention it in the Offer.

3. **Scope of Supply** : **Quantity : 1 No.**

3.1 Design & Supply of Assembled IGBT-Stack (**1 No.**) with suitable components to match the input / output ratings as specified by BHEL (R&D) for each of the sub-systems specified above.

4. **Detailed specifications** :

4.1 **Diode Bridges** : (2 Nos.)

EACH Bridge shall be rated as follows :

- 4.1.1 Input Voltage : 220 VAC (L-L)
- 4.1.2. Output Voltage : 300 VDC
- 4.1.3 Output Power (Continuous rating) : 22 kW
- 4.1.4 Output overload rating : 150 % for 1 minute (33 kW for 1minute)
- 4.1.5 Input voltage variation : +10% and -15% Vrms ac

4.2 **DC-Link Filter** : 1 set (as a filter bank)

4.2.1 Filter Type : Capacitor filters (with neutral point) as shown in Fig.1.

4.2.2 Voltage rating : 600 VDC

4.2.3 Ripple voltage : 5 % Peak to peak at the rated voltage and rated DC load current.

4.2.4 Type of capacitors : Explosion proof Poly-Propylene (PP) type.

4.3 **Braking Chopper (IGBT based)**

4.3.1 Type : Braking chopper with a series connected resistor for dynamic braking.

The braking chopper inter-connections and functions are as shown in block schematic in Fig.1

4.3.2 Input voltage : 600 VDC (Maximum to 800 VDC, Occasionally)

4.3.3 Output power : **35 kW** (Continuous)

4.3.4 Breaking Resistor WITH Cooling arrangement : To be suitably designed & supplied.

Price to be Quoted Separately for this item.

4.4 **3-Level PWM Voltage Source Inverter (IGBT based)**

4.4.1 Input voltage : 600 VDC

4.4.2 Output voltage : 415 VAC RMS (L-L), 3 phase, 50Hz

4.4.3 Output power : 50 kVA at 0.85 pf

4.4.4 Output overload : 150 % for 1 minute.

4.4.5 Output voltage / frequency operating values :

The above inverter should be suitably designed to operate with full load for a VVVF operation with variation from 0 to 50 Hz and 0 to 415 VAC RMS (L-L), in constant torque mode upto 50 Hz.

4.4.6 Inverter efficiency :

The output / input energy efficiency of the above inverter should be 95 % or more.

4.4.7 Snubber circuit : The inverter is **REQUIRED** with a snubber less circuit type.

4.4.8 Gate Drivers:

Suitable gate drivers for the IGBTs used along with Fibre Optic Transmitter / Receivers for interface to the control circuit should also be supplied with the inverter. All the inputs to the gate drivers should be conveniently mounted for easy interconnection with the control circuit.

4.4.8 Inverter switching frequency : 1 kHz **to 3 kHz.**

4.5 Voltage / Current / Temperature Sensors : **Price to be Quoted Separately.**

4.5.1 Voltage / Current sensors :

These should be “Hall Effect” sensors with suitable galvanic isolation between input / output. These should be from reputed international manufactures, like LEM, Switzerland. These should have a range of 0 to +/- 10 VDC output for 0 to +/- 200 % input of the corresponding parameter being measured. The fidelity of the accuracy and output wave form should be very high.

4.5.2 Temperature Sensors :**Thermal trips (Semi-conductor type)**

These should be semiconductor type with base electrically isolated for mounting on a heat sink. These should be ON/OFF potential free contact type for easy integration in the control circuit.

4.5.3 Sensors & Parameters to be measured:

The list of Sensors & Parameters to be measured and their details are enclosed.

A suitable sensor should be provided for measuring EACH of these parameters. The outputs of these sensors should be conveniently mounted on a single board for easy interconnection with the control circuit.

NOTE: The supplier can measure and use more parameters than the parameters given in the enclosed list, if it is required. The parameters given in the list are essential for the user. These can also be used by the supplier with suitable buffers.

4.6 Pre-charging circuit :

The pre-charging circuit is given in Fig 1. Its output is connected in parallel to the DC-link for charging the capacitor filter at cold start. This should be suitably designed to charge the chosen filter capacitors in about 1 minute time, with the capacitor bank voltage starting at 0 volts. The basic circuit is as shown in the block schematic in Fig.1. This configuration can be modified, if required, with the written approval of BHEL.

4.7 Cooling arrangement :

The cooling arrangement for the Diode Bridges / Braking Chopper / Inverter is **Forced Air Cooled.**

The cooling system should be adequately designed to meet the operation at switching frequency of between 1 kHz to 3 kHz. The supplier should mention the maximum limit of the switching frequency, that is allowed as per his design.

The cooling arrangement should be designed such that the air is drawn from the Top / REAR of the IGBT panel in which the IGBT stack is mounted through louvers / mesh and passes through the heat sinks to the Bottom / REAR of the panels. Suitable no. of blowers are to be designed and mounted on the stack in a proper and convenient way for easy removal and assembly.

The supplier shall provide the details of the cooling arrangement / blower(s) ratings, inlet / outlet flow directional details. The offer shall clearly give the dimensional and mounting details of all sub-assemblies. The weight of the power stack may also be provided along with the offer.

5.0 References To Various Applicable Standards:

All applicable latest standards as per IEC for Semiconductor based IGBT-Stacks, including the below mentioned standards.

- 5.1 IEC-60146-1-1: Semiconductor converters: General requirements and line commuted converters. Specifications of Basic requirements.
- 5.2 IEC-60146-1-2: Semiconductor converters: General requirements and line commuted converters. Application Guide.
- 5.3 IEC-61800-4: Adjustable speed electrical power drive systems-General requirements – Rating specifications for a.c. power drive systems
- 5.4 IEC- 61800-3: Adjustable speed electrical power drive systems- EMC requirements and specific test methods.

6.0 General Technical Requirements:

6.1 Technical Literature Data :

Complete technical literature such as printed catalogs / data sheets of all components like semiconductor devices, filter capacitors, sensors, other important components used in the quoted supply items shall be provided along with this offer.

6.2 Efficiency

High Efficiency of equipment is desired. Guaranteed values of efficiency of devices shall be submitted in the event of Order. The components and technology used shall ensure a very high efficiency.

6.3 Construction & Maintenance features:

Modular construction shall be adopted wherever considered possible for achieving the above requirements. Easy access for inspection and maintenance requiring minimum attention will be given special consideration in the design. The design & supply should be such that, IGBT

modules on insulated heat sinks can be disconnected using quick connectors for quick maintenance operation.

6.4 System Topology : As per block schematic shown in Fig.1.

6.5 Ambient Temperature: The system operating ambient temp is 50 deg. Centigrade.

6.6 Recommended Spares for next 2 years: **Price to be Quoted Separately.**

The supplier may separately offer spares, for all major components like semiconductor devices (IGBTs / Diodes), filter capacitors, thermal switches used in the quoted power stack.

6.7 Information required to be submitted along with the offer :

6.7.1 Weight, Size and Drawing indicating the overall dimensions and mounting details.

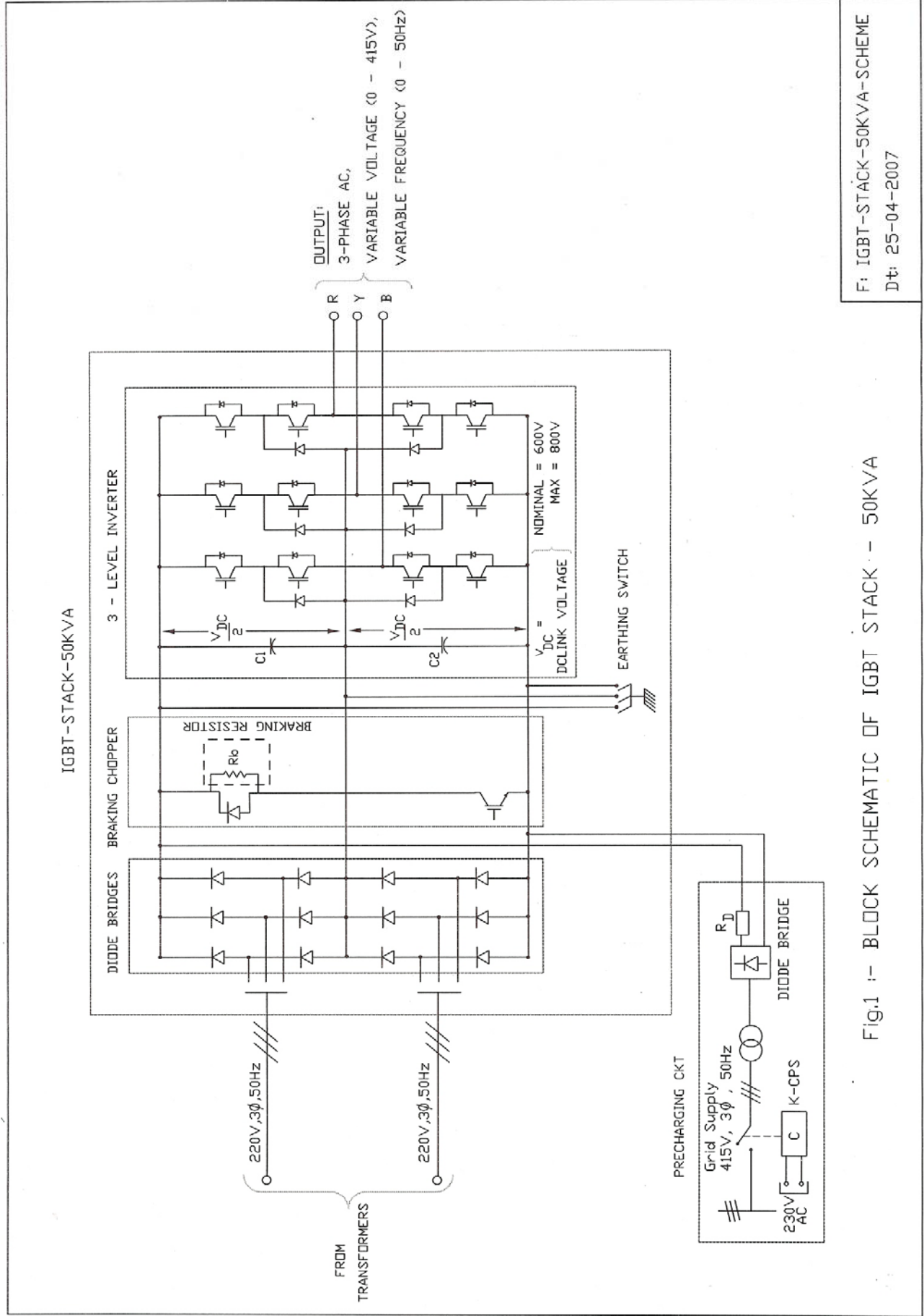
6.7.2 If any additional technical information is required from BHEL (R&D), the supplier may get clarifications before submitting the offer.

6.7.3 Clause wise comments with reference to BHEL Specifications should be given. The supplier should clearly indicate Compliance / Deviation / Non-Supply against EACH Clause of BHEL Specs.

6.7.4 Full technical details along with PRINTED Catalogs (2 sets) / Data sheets of all major components used, like Power Semiconductor devices (IGBTs, Diodes), Gate Drivers, Fibre Optic Transmitter / Receivers, DC-Link Filter Capacitors, Heat Sinks and other items.

Enclosed : Total Pages = 3

1. Fig.1- Block schematic of IGBT-Stack-50kVA (1 Page)
2. IGBT-Stack--50kVA-- List of Sensors (2 Pages)



F: IGBT-STACK-50KVA-SCHEME
Dt: 25-04-2007

Fig.1 :- BLOCK SCHEMATIC OF IGBT STACK - 50KVA

IGBT Stack--50 kVA---List of Sensors

Dt.11-May-07

	1. Analog Inputs--(AIP)--Total	47	(= 22+25)	
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The above AIPs consist of the following Voltage and Current inputs

1.1. Analog Inputs -- Voltage

Sl.No	Description	Nos.	Sensor-IDs	Remarks
1	Input Voltage (Diode Rectifier - 1)	2	VS-DB-1-RY / VS-DB-1-YB	
2	Input Voltage (Diode Rectifier - 2)	2	VS-DB-2-RY / VS-DB-2-YB	
3	DC Link Voltage (+ve capacitor)	1	VS-DCL-Cap-P	
4	DC Link Voltage (-ve capacitor)	1	VS-DCL-Cap-N	
5	DC Link Voltage -- Total	1	VS-DCL-Total	
6	Inverter O/P Voltage	2	VS-INV-RY / VS-INV-YB	
7	Voltage (VCE) across EACH--IGBTs-- Inverter	12	VS-INV-T1 / VS-INV-T2 / VS-INV-T12	ONE Sensor across EACH IGBT in the Inverter
8	Voltage (VCE) across IGBT--Braking Chopper	1	VS--Brk-Chop	
	Total -- AIPs--Voltage	22		

1.2 Analog Inputs -- Current

Sl.No	Description	Nos.	Sensor-IDs	Remarks
1	Input Current (Diode Rectifier - 1)	3	CS-DB-1-R / CS-DB-1-Y / CS-DB-1-B	
2	Input Current (Diode Rectifier -2)	3	CS-DB-2-R / CS-DB-2-Y / CS-DB-2-B	
3	DC Link + Capacitor Current	1	CS-DCL-Cap-P	
4	DC Link - Capacitor Current	1	CS-DCL-Cap-N	
5	DC Link Current -- Total	1	CS-DCL-Total	
6	Inverter O/P Current	3	CS-INV-R / CS-INV-Y / CS-INV-B	
7	Current (Ic) in EACH--IGBT -- Inverter-Phase-Section	6	CS-INV-R-Top/ CS-INV-R--Bot/ CS-INV-B-Bot	ONE Sensor in EACH Top & Bottom Section of EACH Phase of the Inverter
8	Current (Ic) in EACH--IGBT -- Braking Chopper	1	CS-Brk-Chop	

9	Current (Ic) in EACH--Diode-- NP Clamping	6	CS-NPC-D-T-R / CS-NPC-D-B-R / CS-NPC-D-B-B	ONE Sensor in EACH Top & Bottom NPC Section of EACH Phase of the Inverter
	Total -- AIPs--Current	25		

Cont'd---Page-2

	2. Digital Inputs--(DIP)--Total	22		
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The above DIPs consist of the following inputs

Sl.No	Description	Nos.	Sensor-IDs	Remarks
1	Thermal sensors -- Thermal Trips -- INV	3	TS-HS-INV-R / TS-HS-INV-Y / TS-HS-INV-B	ONE sensor on EACH Heat Sink for R / Y/ B Phase Legs of the Inverter
2	Thermal sensors -- Thermal Trips -- Brake- Chopper	1	TS-HS-Brk-Chop	
3	Blower Output Air Flow Sensor (ON/OFF)	4	AFS-1/ AFS-2/ AFS-3 / AFS-4	3 Nos for Inverter + 1 No. for Braking Chopper
4	Gate Drive Errors (High / Low)	13	GD-Error-1/ GD-Error-2/ GD-Error-13	13 Nos for Inverter + 1 Nos. for Braking Chopper
5	Control-PS-Contactor-Status (ON/OFF)	1	K-CPS-AX	Aux. Contacts of CPS-Contactor.
	Total -- DIPs	22		



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)

Condition	BHEL R& D's terms	Supplier's compliance (indicate Yes/No. if 'No', state terms desired)
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)

Condition	BHEL R& D's terms	Supplier's compliance (indicate Yes/No. if 'No', state terms desired)
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	Pl 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)

VENDOR REGISTRATION FORM

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

Before filling please refer to instructions on page-4

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:

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.

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.

* 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

AUTHORISED SIGNATORY



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:

AUTHORISED SIGNATORY



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 SUPPLIER
NAME
DESIGNATION
DATE
.....OFFICIAL SEAL

AUTHORISED SIGNATORY
