TENDER DOCUMENT FOR
Supply of RTDS comprising with necessary accessories in Department of Electrical Engineering, Indian Institute of Technology (Banaras Hindu University), Varanasi

(NOTICE INVITING TENDER)

On behalf of the Director, IIT (BHU) Varanasi, **online tender from** manufactures (or their 'authorized' dealers by submitting letters/certificates, in original, from the manufacturers that they have been authorized to quote in response to this NIT) of the following items are invited:

Sl. No.	Tender no.	Specifications & quantity of the item	Earnest Money Deposit (EMD)
1.	IIT(BHU)/EE/FY/2018-19/QTN/RTDS/1 Dated 04.12.2018 **Last Date: 04.01.2019, 15.00 Hrs.**	**RTDS comprising with necessary accessories:** **Qty.: 1 complete Unit** **Approx. Cost: Rs. 1.450 Crore** **TECHNICAL BID:** **(MUST be submitted online in .Pdf format)** 1. Scanned Copy of Proof of Tender Fees and EMD. 2. Scanned Copy of Technical supporting documents in support of all claims made at Annexure-1. 3. Scanned Copy of Technical Compliance statement, Bidder information form. 4. Scanned Copy of Organization Declaration Sheet, Compliance sheets for Essential Pre-Bid Criteria. 5. List of organizations/clients where the same products have been supplied. (Annexure-3). 6. Scanned Copy of Tender Acceptance Letter, Checklist given in Section 5, Tender Form etc. 7. Scanned Copy of Brochure of quoted product and other documents, if any. **PRICE BID:** **(MUST be submitted online in given BOQ only and scanned copy should be attached in Pdf format.)** 1. BOQ for RTDS comprising with necessary accessories in Dept. of Electrical Engineering, IIT (BHU), Varanasi in .xls format. 2. Duly filled and signed Tender form (Price Bid). 3. Duly filled and signed BOQ in PDF Format.	**Rs. 7.25 lakh only**

The Tender Documents for the given items will be on Two Bid System consisting of Technical Bid and Price Bid. The Tender Documents will be submitted item-wise in online. Any firm may bid for any number of items but each offer must be item-wise in two bid cover enclosing Technical Bid and Price Bid.

No manual bids will be accepted. All bids, both Technical and Financial should be submitted on the E-procurement portal.

The Tender Document along with detailed specifications, terms and conditions may be downloaded **from the institute website (www.iitbhu.ac.in) under Tenders (https://www.iitbhu.ac.in/tenders) and (https://www.eprocure.gov.in/cppp)by the interested supplier.**

1. **Tender Processing Fee: Rs. 5900 (inclusive of GST and non-Refundable)**
2. **Earnest Money Deposit: Rs. 7.25 Lakh only**

Last date and time for receipt of Tender Processing fee and EMD (if in form of DD): **04.01.2019(up to 15:00 Hrs.)**

The Tender Processing Fee of Rs 5900/-(inclusive of GST and Non-Refundable) and E.M.D. of Rs. 7,25,000/- (Refundable) for this Tender to be paid in the form of Bank Draft in favour of Registrar, IIT (BHU)or by RTGS/NEFT payable at Varanasi before the Bid Opening Date and time. The hard copy of DD for tender processing fee and EMD should be reached on or before the Bid Opening Date and Time at the address: The Head, Department of Electrical Engineering, Indian Institute of Technology (Banaras Hindu University), Varanasi – 221005, UP. GST at concessional rate will be applicable as per GST Notification No. 45/2017- CENTRAL TAX (RATE) & 47/2017- INTEGRATED TAX (RATE) Dated 14-11-2017, @ 5%.Tender fees and EMD can be paid through RTGS/NEFT) as per the following details:

Name of Account - Registrar, IIT (BHU)
Name of the Bank - State Bank of India
Name of Branch - IT, BHU, Varanasi
Account No. - 32778803937
IFSC Code - SBIN0011445

The proof of payment must be enclosed with Technical Bid.

Note: Both the transactions are to be done separately.

The Tender should be addressed to **The Head, Department of Electrical Engineering, Indian Institute of Technology (Banaras Hindu University), Varanasi – 221005, UP.**, and should be submitted on or before the date and time of Bid opening date and time as mentioned in critical date sheet on e-portal.

The Institute shall not be responsible for any delay in submitting Bids by online. The Institute reserves the right to accept or reject any bid, cancel the Tender without assigning any reason thereof. No correspondence in this regard will be entertained. Earnest Money shall be forfeited in case it is found at any stage that information/particulars regarding supply of tendered item (s) are false.

(Head)
Deptt. of Electrical Engineering
IIT (BHU), Varanasi

TENDER DOCUMENT FOR: RTDS comprising with necessary accessories

CRITICAL DATE SHEET

Published Date	**12-12-2018**
Bid Document Download Start Date	**12-12-2018(04:00 PM)**
Clarification Start Date	**12-12-2018(04:00 PM)**
Clarification End Date	**26-12-2018(05:00 PM)**
PRE- BID MEETING	**27.12.2018** **At 12:00 noon at the address given below**
Bid Submission Start Date	**12-12-2018 (04:00 PM)**
Bid Document Download End Date	**05-01-2019 (03:00 PM)**
Bid Submission End Date	**05-01-2019 (03:00 PM)**
Bid Opening Date	**07-01-2019 (03:00 PM)**
Address For Communication	**The Head** **Department of** **Electrical Engineering** **Indian Institute of Technology** **(Banaras Hindu University),** **Varanasi – 221 005, U.P., INDIA** **E-mail: head.phe@itbhu.ac.in**

TENDER DOCUMENT FOR: Pre-Clinical In- vivo Imaging System for Small Animals System

SECTION 1: INSTRUCTION FOR ONLINE BID SUBMISSION

As per the directives of Department of Expenditure, this tender document has been published on the Central Public Procurement Portal (URL:http://eprocure.gov.in/eprocure/app). The bidders are required to submit soft copies of their bids electronically on the CPP Portal, using valid Digital Signature Certificates. The instructions given below are meant to assist the bidders in registering on the CPP Portal, prepare their bids in accordance with the requirements and submitting their bids online on the CPP Portal. More information useful for submitting online bids on the CPP Portal may be obtained at: http://eprocure.gov.in/eprocure/app.

1. Registration

1. Bidders are required to enroll on the e-Procurement module of the Central Public Procurement Portal (URL: http://eprocure.gov.in/eprocure/app) by clicking on the link "Click here to Enroll". Enrolment on the CPP Portal is free of charge.

2. As part of the enrolment process, the bidders will be required to choose a unique username and assign a password for their accounts.

3. Bidders are advised to register their valid email address and mobile numbers as part of the registration process. These would be used for any communication from the CPP Portal.

4. Upon enrolment, the bidders will be required to register their valid Digital Signature Certificate (Class II or Class III Certificates with signing key usage) issued by any Certifying Authority recognized by CCA India (e.g. Sify / TCS / n-Code / e-Mudra etc.), with their profile.

5. Only one valid DSC should be registered by a bidder. Please note that the bidders are responsible to ensure that they do not lend their DSCs to others which may lead to misuse.

6. Bidder then logs in to the site through the secured log-in by entering their user ID / password and the password of the DSC / e-Token.

2. Searching for Tender Documents

1. There are various search options built in the CPP Portal, to facilitate bidders to search active tenders by several parameters. These parameters could include Tender ID, organization name, location, date, value, etc. There is also an option of advanced search for tenders, wherein the bidders may combine a number of search parameters such as organization name, form of contract, location, date, other keywords etc. to search for a tender published on the CPP Portal.

2. Once the bidders have selected the tenders they are interested in, they may download the required documents / tender schedules. These tenders can be moved to the respective „My Tenders" folder. This would enable the CPP Portal to intimate the bidders through SMS / e-mail in case there is any corrigendum issued to the tender document.

3. The bidder should make a note of the unique Tender ID assigned to each tender, in case they want to obtain any clarification / help from the Helpdesk.

Preparation of Bids

1. Bidder should take into account any corrigendum published on the tender document before submitting their bids.

2. Please go through the tender advertisement and the tender document carefully to understand the documents required to be submitted as part of the bid. Please note the number of covers in which the bid documents have to be submitted, the number of documents – including the names and content of each of the document that need to be submitted. Any deviations from these may lead to rejection of the bid.

3. Bidder, in advance, should get ready the bid documents to be submitted as indicated in the tender document / schedule and generally, they can be in PDF / XLS / RAR / DWF formats. Bid documents may be scanned with 100 dpi with black and white option.

4. To avoid the time and effort required in uploading the same set of standard documents which are Required to be submitted as a part of every bid, a provision of uploading such standard documents (e.g. PAN card copy, annual reports, auditor certificates etc.) has been provided to the bidders. Bidders can use "My Space" area available to them to upload such documents. These documents may be directly submitted from the "My Space" area while submitting a bid, and need not be uploaded again and again. This will lead to a reduction in the time required for bid submission process.

4. Submission of Bids

1. Bidder should log into the site well in advance for bid submission so that he/she upload the bid in time i.e. on or before the bid submission time. Bidder will be responsible for any delay due to other issues.

2. The bidder has to digitally sign and upload the required bid documents one by one as indicated in the tender document.

3. Bidder has to select the payment option as "on-line" to pay the tender fee / EMD as applicable and enter details of the instrument. Whenever, EMD / Tender fees are sought, bidders need to pay the tender fee and EMD separately on-line through RTGS.

4. A standard BOQ format has been provided with the tender document to be filled by all the bidders.Bidders are requested to note that they should necessarily submit their financial bids in the format provided and no other format is acceptable. Bidders are required to download the BOQ file, open it and complete the white colored (unprotected) cells with their respective financial quotes and other details (such as name of the bidder). No other cells should be changed. Once the details have been completed, the bidder should save it and submit it online, without changing the filename. If the BOQ file is found to be modified by the bidder, the bid will be rejected.

5. The server time (which is displayed on the bidders" dashboard) will be considered as the standard time for referencing the deadlines for submission of the bids by the bidders, opening of bids etc. The bidders should follow this time during bid submission.

6. All the documents being submitted by the bidders would be encrypted using PKI encryption techniques to ensure the secrecy of the data. The data entered cannot be viewed by unauthorized persons until the time of bid opening. The confidentiality of the bids is maintained using the secured Socket Layer 128 bit encryption technology. Data storage encryption of sensitive fields is done.

7. The uploaded tender documents become readable only after the tender opening by the authorized bid openers.

8. Upon the successful and timely submission of bids, the portal will give a successful bid submission message& a bid summary will be displayed with the bid no. and the date & time of submission of the bid with all other relevant details.

9. Kindly add scanned PDF of all relevant documents in a single PDF file of compliance sheet.

5. Assistance to Bidders

1. Any queries relating to the tender document and the terms and conditions contained therein should be addressed to the Tender Inviting Authority for a tender or the relevant contact person indicated in the tender.

2. Any queries relating to the process of online bid submission or queries relating to CPP Portal in general may be directed to the 24x7 CPP Portal Helpdesk. The contact number for the helpdesk is 0120-4200462, 0120-4001002, 0120-4001005, 0120-6277787

6. General Instructions to the Bidders

1. The tenders will be received online through portal http://eprocure.gov.in/eprocure/app . In the Technical Bids, the bidders are required to upload all the documents in **.Pdf format**.

2. Possession of a Valid Class II/III Digital Signature Certificate (DSC) in the form of smart card/e-token in the company's name is a prerequisite for registration and participating in the bid submission activities through https://eprocure.gov.in/eprocure/app. Digital Signature Certificates can be obtained from the authorized certifying agencies, details of which are available in the web site https://eprocure.gov.in/eprocure/app under the link "Information about DSC".

3. Tenderer are advised to follow the instructions provided in the Instructions to the Tenderer for the e-submission of the bids online through the Central Public Procurement Portal for e Procurement athttps://eprocure.gov.in/eprocure/app.

SECTION 2: INSTRUCTIONS TO BIDDERS

A. Introduction

1. Scope of Work

IIT-BHU invites online bids from the manufacturers/suppliers on behalf of The Director, IIT-BHU for supply of Equipment as per the technical specifications given in Annexure- 1 and as per terms and conditions of this tender document. Supplier should assure complete commissioning of the system including installation and application training for efficient utilization of **Nova Corchasis with necessary accessories**

2. Cost of Bidding

The Bidder shall bear all costs associated with the preparation and submission of its bid, and "the Purchaser", will in no case be responsible or liable for these costs, regardless of the conduct or outcome of the bidding process.

B. The Bidding Documents

3. Cost of Bidding Documents

The cost of bidding documents (Rs. 5900/-) should be submitted in the form of Bank Draft or By NEFT/RTGS as per the details mentioned above. Further, the proof of payment must be uploaded with Technical Bid.

4. Content of Bidding Documents

4.1 The goods required, bidding procedures and contract terms are prescribed in the bidding documents. In addition to Invitation of Bids, the bidding documents include:

(a)Instructions for Online Bid Submission
(b) Instruction to Bidders (ITB);
(c) General Conditions of Contract (GCC);
(d) Special Conditions of Contract (SCC)
(e) Schedule of requirements;
(f) Tender form (technical bid).
(g) Tender form (financial bid).

4.2 The Bidder is expected to examine all instructions, forms, terms, and specifications in the bidding documents. Failure to furnish all information required by the bidding documents or submission of a bid not substantially responsive to the bidding documents in every respect will be at the Bidder's risk and may result in rejection of its bid.

5. Amendment of Bidding Documents

5.1 At any time prior to the deadline for submission of bids, the Purchaser may, for any reason, whether at its own initiative or in response to a clarification requested by a prospective bidder, modify the bidding documents by amendment.

5.2 All prospective bidders who have received the bidding documents will be notified of the amendment in writing, which will be binding on them.

5.3 In order to allow prospective bidders reasonable time within which to take the amendment into account in preparing their bids, the Purchaser, at its discretion, may extend the deadline for the submission of bids.

C. Preparation of Bids

6. Language of Bid

The bid prepared by the Bidder, as well as all correspondence and documents relating to the bid exchanged by the Bidder and the Purchaser shall be written in English language.

7. Documents Comprising the Bid

7.1 Techno commercial un-priced bid and priced Bids:
The bids are to be submitted in two parts i.e. Techno commercial un-priced bid and priced Bids.

(a) Techno commercial un-priced bid along with Earnest Money Deposit (submitted in the form of Bank Draft in favour of **Registrar, IIT (BHU)** payable at **Varanasi**)or By NEFT/RTGS) as shown in invitation to bids shall be submitted through CPP Portal. If the proof of payment of EMD is not received along with the technical bid, such bid will not be considered. The samples (if required) of all the items shown in the schedule of requirements of each tender should also accompany the techno commercial un- priced bid in a separate sealed envelope.

(b) Priced bid.

7.2 Techno commercial un-priced bid: The Techno commercial un-priced bid prepared by the bidder shall be provided in the following Model Response format:

Model Response format

(a) Standing of each Bidder Manufacturer/Dealer and past experience in supply of the material (certificates to be enclosed), proof of manufacturing Unit/Dealership along with all the documents required for proving the credentials regarding the fulfillment of essential pre-bid criteria.

(b) List of other Govt. Departments, Public Sector units and Central Autonomous Bodies for which the bidder is supplying material or having the same type of contracts and a certificate regarding the satisfactory performance of the contract (In the Annexure-3 format).

(c) Copy of the audited balance sheet of the vendor for the previous financial year indicating the turnover in supply of the relevant materials/service.

(d) Details of Permanent Account Number and latest income tax clearance certificate.

(e) Details of GST No. along with a copy of certificate to be attached.

(f) Submission of samples if required, for all items indicated in the schedule of requirements. The make of items proposed to be supplied should be indicated in the format of the schedule of requirements and submitted along with the techno commercial un-priced bid without indicating the pricing components.

(g) Willingness to execute all orders which are placed to meet emergency requirement on priority basis. The Bidder shall note that standards for workmanship, material and equipment, and references to brand names designated by the Purchaser in the schedule of requirements are intended to be descriptive only and not restrictive. The Bidder may substitute alternative standards, brand names and/or catalogue numbers in his bid, provided that it demonstrates to the Purchaser's satisfaction that the substitutions ensure substantial equivalence to those designated in the Technical Specifications.

7.3 Price Bid

a. The price bid shall comprise the techno commercial bid along with the price component indicating the Unit prices for each and every item indicated in the schedule of requirements (Annexure 1).

b. The prices quoted must be net per unit as shown in the Schedule and must include all charges for delivery at the designated stores i.e. FOR IIT (BHU), Varanasi

c. The rate must be stated for each item separately both in words and figures. If there is a discrepancy between the price quoted in word and figures the higher price quoted will be treated as final.

d. The price quoted by the tenderer should be exclusive of Custom Duty (in case of Import) and other taxes as applicable from time to time. The Institute will provide the valid exemption certificate as and when needed.

e. Quoted prices should be firm and inclusive of freight and forwarding charges, handling charges, loading and unloading charges, and insurance charges etc.

f. The prices once accepted by the Institute shall remain valid till the successful execution of the order and till supplies is fully effected and accepted or **12 months** from the date of acceptance of tender whichever is later. The Institute shall not entertain any increase in the rates during the period. However, in the event there is a reduction or increase in Government levy/duties during the period of execution of the order, the rates shall be suitably adjusted with effect from the date notifying the said reduction or increase in the Government levy/excise duty.

8. Bid Prices

8.1 The Bidder shall indicate on the Schedule of requirements (BOQ), the unit prices of the goods it proposes to supply under the Contract and enclose it with the priced bid.

8.2 Prices indicated on the Price Schedule shall be entered separately in the following manner:

i. The prices quoted must be net per unit as shown in the schedule of requirements and must include all charges for delivery at the designated stores.

ii. Any Indian duties, GST and other taxes which will be payable on the goods if this Contract is awarded;

8.3 Prices quoted by the Bidder shall be fixed during the Bidder's performance of the Contract and not subject to variation on any account.

8.4 The price should be quoted without custom duty, since IIT (BHU) is exempted from payment of custom duty being the premier Academic Institution. Necessary certificate will be issued on demand.

9. Bid Currencies

Prices shall be quoted in Indian Rupees and/or in other Currency available in given BOQ (for imports) only. The Institute may, at its discretion, arrive at approximate Rupee equivalent on the basis of exchange rate on the date of opening of price bid. The Institute shall refer the exchange rate as available on RBI reference rate archive on the date of Financial Bid opening for conversion of foreign currency into INR for comparison purpose.

10. Period of Validity of Bids

10.1 Bids shall remain valid for **180** days after the date of bid opening prescribed by the Purchaser. A bid valid for a shorter period shall be rejected by the Purchaser as non-responsive.

10.2 In exceptional circumstances, the Purchaser may solicit the Bidder's consent to an extension of the period of validity. The request and the responses thereto shall be made in writing. A Bidder may refuse the request without forfeiting its EMD. A Bidder granting the request will not be required nor permitted to modify the bid.

10.3 Bid evaluation will be based on the bid prices without taking into consideration the above modifications.

D. Submission of Bids

11. The tender has to be submitted ONLINE before the due date. The offers received after the due date and time will not be considered. **No manual bids will be considered**.

12. Deadline for Submission of Bids

12.1 Bids must be received by the Purchaser ONLINE not later than the time and date specified in the Invitation for Bids.

12.2 The Purchaser may, at his discretion, extend this deadline for submission of bids by amending the bid documents in which case all rights and obligations of the Purchaser and Bidders previously subject to the deadline will thereafter be subject to the deadline as extended.

13. Late/Delayed Bids

The offers received after the due date and time will not be considered.

14. Modifications and Withdrawal of Bids

14.1 The Bidder may modify or withdraw its bid after the ONLINE bid's submission, as per the provision of CPP Portal.

14.2 No bid may be modified subsequent to the deadline for submission of bids. No documents will be accepted in support of essential pre-bid criteria after the last date of submission of bids.

14.3 No bid may be withdrawn in the interval between the deadline for submission of bids and the expiry of the period of bid validity specified by the Bidder on the bid form. Withdrawal of a bid during this interval may result in the Bidder's forfeiture of its EMD.

E. Bid Opening and Evaluation of Bids

15. Opening of Techno commercial un-priced Bids

The purchaser will open all techno commercial un-priced bids in the first instance.

16. Clarification of Bids

16.1 During evaluation of the bids, the purchaser may, at its discretion, ask the Bidder for clarification of its bid. Their quest for clarification and the response shall be in writing and no change in price or substance of the bid shall be sought, offered or permitted.

16.2 No Bidder shall contact the purchaser on any matter relating to its bid from the time of the bid opening to the time the contract is awarded. If the Bidder wishes to bring additional information to the notice of the Institute it should be done in writing.

16.3 Any effort by a Bidder to influence the purchaser in its decisions on bid evaluation, bid comparison or contract award decisions may result in rejection of the Bidder's bid.

17. Evaluation of Techno commercial un-priced Bid

17.1 Prior to the detailed technical evaluation, the purchaser will determine the substantial responsiveness of each bid .A substantially responsive bid is one, which conforms to all the terms and conditions of the Bidding Documents without material deviations and meets all the essential pre-bid criteria. If any bidder does not meet the essential pre-bid criteria as laid down in the Instruction to Bidders, then his bid will be summarily rejected. No documents will be accepted in support of essential pre-bid criteria after the last date of submission of bids.

17.2 The purchaser will reject a bid determined as not substantially responsive.

17.3 The bidders may be called for discussion and may be allowed to modify their technical bids to suit the organization's requirement. The idea is to arrive at a threshold level of acceptability above which all the bidders shall be treated on par. Those whose technical specifications do not reach the threshold level of acceptability shall be rejected as technically unsuitable. The price bids of the bidders who finally emerge as technically acceptable shall be opened, evaluated and the contract awarded to the lowest evaluated bidder.

17.4 The bidders short-listed by the purchaser based on meeting the essential pre-bid criteria and detailed evaluation regarding satisfying the technical criteria laid down in this tender document may be called for detailed discussions with a team selected for the purpose, at a specified date, time and venue, if needed.

18. Opening of Priced Bids

18.1 The Purchaser will open the Priced Bids of only those bidders who meet the essential pre-bid criteria and whose techno commercial un-priced bids have been found to be substantially responsive.

18.2 The priced Bids of the technically qualified bidders shall be opened by the tender committee.

19. Evaluation and Comparison of priced Bids

19.1 Arithmetical errors will be rectified on the following basis: If there is a discrepancy between words and figures, whichever is the higher of the two shall be taken as bid price. If the Vendor does not accept the correction of errors, its bid will be rejected

19.2 Bidders shall state their bid price for the payment schedule outlined in the Clause 14 of General Conditions of Contract. Bids will be evaluated on the basis of this base price**.** Bidders are, however, permitted to state an alternative payment schedule and indicate the reduction in bid price they wish to offer for such alternative payment schedule. The purchaser may consider the alternative payment schedule offered by the selected Bidder but it may not be binding on the purchaser**.**

19.3 The purchaser, at its option may ask some more bidders to match the rates of the lowest bidder for creating parallel suppliers.

19.4 The currency that shall be used for bid evaluation and comparison purposes to convert all bid prices expressed in various currencies into a single currency is: **Indian Rupees**

19.5 The source of exchange rate shall be: **Reserve Bank of India**.

19.6 The date for the exchange rate (if applicable) shall be: **Date of opening of Financial Bids**.

20. Purchasers right to accept any bid and to reject any bid or all bids

The Purchaser reserves the right to accept or reject any bid, and to annul the bidding process and reject all bids at any time prior to award of Contract, without thereby incurring any liability to the affected Bidder or bidders or any obligation to inform the affected Bidder or bidders of the grounds for the Purchaser's action.

21. Award Criteria

Subject to Clause 19, the purchaser will award the Contract to the successful Bidder whose bid has been determined to be substantially responsive and has been determined as the best evaluated bid provided further that the Bidder is determined to be qualified to perform the Contract satisfactorily.

22. Notification of Award

Prior to the expiration of the period validity, the purchaser will notify the successful Bidder in writing by letter or by fax, to be confirmed in writing by speed post or hand delivered letter, that its bid has been accepted.

23. Factors Affecting the Award of Supply

23.1 The bidder should have its own Contract support facilities. The support facilities should be fully owned and managed by the bidder.

23.2 Conformity with the Request for Bid/Tender required and conditions.

23.3 The assessment based on the response to Model Response Outline.

23.4 The assessment of the capability of the bidder to meet the terms and conditions.

23.5 The bidders must have executed same orders, for which the bidder is quoting, as indicated in clause 1 for Govt./Semi-Govt./Autonomous Organizations.

23.6 The cost and the discount offered, if any.

24. Fall clause

24.1 The price quoted by the supplier should not be higher than the maximum retail price, if any, for the stores and the same shall not be higher than the price usually charged by the supplier for stores of the same nature, class or description to any other purchaser.

24.2 The price charged for the stores supplied under the contract by the supplier shall in no event exceed the lowest price at which the supplier sells the stores of identical description to any other person during the period till performance of all supply orders placed during the currency of the contract is completed. If at any time during the period the supplier reduces the sale price of such stores or sells such stores to any other person including his dealers at a price lower than the price chargeable under the contract, he shall forthwith notify such reduction or sale to the purchaser and the price payable under the contract for these items of stores supplied after the date of coming into force of such reduction or sale shall stand correspondingly reduced.

24.3 If it is discovered that the supplier has contravened the above conditions, then without prejudice to anyother action which might be taken against him, it shall be lawful for the purchaser to (a) revise the price at any stage so as to bring it in conformity with sub-clause(i) above, or (b) to terminate the contract and purchase the items of stores at the risk and cost of the supplier and in that event the provisions of Clause 28 of General Conditions of Contract shall, as far as possible, be applicable or recover the loss.

SECTION 3: GENERAL CONDITIONS OF CONTRACT (GCC)

1. Definitions

In this Contract, the following terms shall be interpreted as indicated:

(a) "The order" means the agreement entered into between the Purchaser and the Supplier including all the attachments and appendices and all documents incorporated as per notification of award.

(b) "The Contract Price" means the price payable to the Supplier under the Contract for the full and proper performance of its contractual obligations; "The Goods" means all the items, which the Supplier is required to supply to the Purchaser under the Contract;

(c) "Services" means services ancillary to the supply of the Goods, such as transportation and insurance, and any other incidental services training and other obligations of the Supplier covered under the Contract;

(d) "GCC" mean the General Conditions of Contract contained in this section.

(e) "The Purchaser" means the organization purchasing the Goods i.e. Department of Electrical Engineering, IIT (BHU), VARANASI.

(f) "The Purchaser's country" is India.

(g) "The Supplier" means the individual or firm supplying the Goods and Services under this Contract.

(h) "Day" means calendar day.

2. Application

These General Conditions shall apply to the extent that they are not superseded by provisions in other parts of the Contract.

3. Standards

The Goods supplied under this Contract shall conform to the standards mentioned in the Technical Specifications, and, when no applicable standard is mentioned, to the authoritative standard appropriate to the Goods' country of origin and such standards shall be the latest issued by the concerned Institution.

4. Use of Contract Documents and Information

4.1 The Supplier shall not, without the Purchaser's prior written consent, disclose the Contract, or any provision thereof, or any specification, plan, drawing, pattern, sample or information furnished by or on behalf of the Purchaser in connection therewith, to any person other than a person employed by the Supplier in performance of the Contract. Disclosure to any such employed person shall be made in confidence and shall extend only so far as may be necessary for purposes of such performance.

4.2 The Supplier shall not, without the Purchaser's prior written consent, make use of any document or information except for purposes of performing the Contract.

4.3 Any document, other than the Contract itself, shall remain the property of the Purchaser and shall be returned (in all copies) to the Purchaser on completion of the Supplier's performance under the Contract if so required by the Purchaser.

5. Patent Rights

The Supplier shall indemnify the Purchaser against all third-party claims of infringement of patent, trademark or industrial design rights arising from use of the Goods or any part thereof in India.

6. Submission of the bids.

6.1 All bids complete in all respect must reach the purchaser within the last date and time of receipt of bid. No extension shall be allowed for any reason what so ever. Late tenders/delayed bids and tenders received without earnest money etc. shall be rejected.

6.2 Tender documents are available for sale with the purchaser. Interested bidders may purchase the tender documents on payment of the cost there of. The purchaser shall not be liable for either non-receipt of the tender document or for delay in receipt of tender document.

7. Inspections and Tests

7.1 The Purchaser or its representative shall have the right to inspect and/or to test the Goods to confirm their conformity to the Contract specifications at no extra cost to the Purchaser.

7.2 The inspections and tests may be conducted on the premises of the Supplier or its subcontractor(s), at point of delivery and/or at the Goods final destination. If conducted on the premises of the Supplier or its subcontractor(s), all reasonable facilities and assistance, including access to drawings and production data shall be furnished to the inspectors at no charge to the Purchaser.

7.3 Should any inspected or tested Goods fail to conform to the specifications, the Purchaser may reject the goods and the Supplier shall either replace the rejected Goods or make alterations necessary to meet specification requirements free of cost to the Purchaser.

7.4 The Purchaser's right to inspect, test and, where necessary, reject the Goods after the Goods' arrival at Project Site shall in no way be limited or waived by reason of the Goods having previously been inspected, tested and passed by the Purchaser or its representative prior to the Goods shipment.

7.5 Nothing in GCC Clause 7 shall in any way release the Supplier from any warranty or other obligations under this Contract.

8. Consequences of rejection

If in the event the stores are rejected by the purchaser at the destination and the supplier fails to make satisfactory supplies within the stipulated period of delivery, the purchaser will be at liberty to:

(a) Allow the supplier to resubmit the stores in replacement of those rejected, within a specified time without any extra cost to the purchaser or

(b) Reject the material, which shall be final and binding on the contractor.

(c) Procure the rejected materials of comparable quality from the open market/Govt. stores and the supplier shall be liable to pay the difference in price over the RC prices or get the amount adjusted from the outstanding bills of the supplier, if any or EMD.

9. Packing

9.1 The Supplier shall provide such packing of the Goods as is required to prevent their damage or deterioration during transit to their final destination as indicated in the Contract. The packing shall be sufficient to withstand, without limitation, rough handling during transit and exposure to extreme temperatures, salt and precipitation during transit and open storage. Packing case size and weights shall take into consideration, where appropriate, there moteness of the Goods' final destination and the absence of heavy handling facilities at all points in transit.

9.2 The packing, marking and documentation within and outside the packages shall comply strictly with such special requirements as shall be provided for in the Contract including additional requirements, in any subsequent instructions ordered by the Purchaser.

10. Delivery and Documents

10.1 The Supplier shall make delivery of the Goods within 60 days from the placement of purchase order in pursuance of the notification of award. The purchase order would be placed after assessing the requirements on quarterly basis. However, the supplier shall also arrange to execute all orders on priority basis which would be placed to meet any emergent requirements.

10.2 In case the purchaser decides to conclude parallel rate contracts, then the requirements would be split on different firms on equitable basis as per the discretion of the purchaser.

10.3 The delivery of Stores shall be affected at the premises of the Institute free of all delivery charges and within the stipulated time and as may be elucidated in the confirmed order, accompanied by a delivery challan. No extension of time for delivery of Stores shall normally be accorded.

Time and date of delivery – the essence of the contract: The time for and the date of delivery of the stores stipulated shall be deemed to be of the essence of the contract and delivery must be completed not later than the date(s) specified.

11. Insurance

The Goods supplied under the Contract shall be fully insured in Indian Rupees against loss or damage incidental to manufacture or acquisition, transportation, storage and delivery. The insurance shall be obtained by the suppliers in an amount equal to 110% of the value of the goods from "warehouse to warehouse" (final destinations) on "all risks" basis including war risks and strikes.

12. Transportation

Where the Supplier is required under the Contract to transport the Goods within India defined as Project site, transport to such place of destination in India including insurance, as shall be specified in the Contract, shall be arranged by the Supplier, and the related cost shall be included in the contract Price.

13. Warranty

13.1 The Supplier warrants that the Goods supplied under this Contract are new, unused, of the most recent or current models and that they incorporate all recent improvements in design and materials unless provided otherwise in the Contract. The Supplier further warrants that all Goods supplied under this Contract shall have no defect arising from design, materials or workmanship or from any act or omission of the Supplier that may develop under normal use of the supplied Goods in the conditions prevailing in India.

13.2 This warranty shall remain valid for **at least 36 months(with additional two years of free AMC after warranty period)** after the Goods or any portion thereof as the case may be, have been delivered to and accepted at the final destination indicated in the Contract, unless specified otherwise.

13.3 The Purchaser shall promptly notify the Supplier in writing of any claims arising under this warranty.

13.4 Upon receipt of such notice, the Supplier shall with all reasonable speed, repair or replace the defective Goods or parts thereof, without any extra cost to the Purchaser.

13.5 If the Supplier, having been notified, fails to remedy the defect(s) within a reasonable period, the Purchaser may proceed to take such remedial action as may be necessary, at the Supplier's risk and expense and without prejudice to any other rights which the Purchaser may have against the Supplier under the Contract.

14. Payment

14.1 Payment will be made 90 % by Bill Basis or by letter of credit i.e. 90% payment against shipment and rest 10% on successful installation and submission of PBG after satisfactory installation and submission of PBG@10% of order value valid for period of 60 days beyond all warranty obligations.

14.2 The Supplier's request(s) for payment shall be made to the Purchaser in writing, accompanied by an invoice describing, as appropriate, the Goods delivered and the Services performed, and by documents, submitted pursuant to GCC Clause 10, and upon fulfillment of other obligations stipulated in the contract.

15. Prices

Prices charged by the Supplier for Goods delivered and Services performed under the Contract shall not vary from the prices quoted by the Supplier in his bid.

16. Change Orders

16.1 The Purchaser may at any time, by written order given to the Supplier, make changes within the general scope of the Contract in any one or more of the following:

(a) Drawings, designs, or specifications, where Goods to be furnished under the Contract are to be specifically manufactured for the Purchaser;

(b) The method of shipping or packing;

(c) The place of delivery; and/or

(d) The services to be provided by the Supplier.

16.2 If any such change causes an increase or decrease in the cost of, or the time required for, the Supplier's performance of any provisions under the Contract, an equitable adjustment shall be made in the Contract Price or delivery schedule, or both, and the Contract shall accordingly be amended. Any claims by the Supplier for adjustment under this clause must be asserted within thirty (30) days from the date of the Supplier's receipt of the Purchaser's change order.

17. Contract Amendments

Subject to GCC Clause 16, no variation in or modification of the terms of the Contract shall be made except by written amendment signed by the parties.

18. Assignment

The Supplier shall not assign, in whole or in part, its obligations to perform under the Contract, except with the Purchaser's prior written consent.

19. Subcontracts

The Supplier shall notify the Purchaser in writing of all subcontracts awarded under this Contract if not already specified in the bid. Such notification, in his original bid or later, shall not relieve the Supplier from any liability or obligation under the Contract.

20. Delays in the Supplier's Performance

20.1 Delivery of the Goods and performance of the Services shall be made by the Supplier in accordance with the time schedule specified by the Purchaser as per GCC clause 10.

20.2 If at any time during performance of the Contract, the Supplier or its sub-contractor(s) should encounter conditions impeding timely delivery of the Goods and performance of Services, the Supplier shall promptly notify the Purchaser in writing of the fact of the delay, its likely duration and its cause(s). As soon as practicable after receipt of the Supplier’s notice, the Purchaser shall evaluate the situation and may, at its discretion, extend the Supplier’s time for performance with or without liquidated damages, in which case the extension shall be ratified by the parties by amendment of the Contract.

20.3 Except as provided under GCC Clause 23, a delay by the Supplier in the performance of its delivery obligations shall render the Supplier liable to the imposition of penalty pursuant to GCC Clause 21, unless an extension of time is agreed upon pursuant to GCC Clause 20.2 without the application of liquidated damages.

21. Penalty

Subject to GCC Clause 23, if the Supplier fails to deliver any or all of the Goods or to perform the Services within the period(s) specified in the Contract, the Purchaser shall, without prejudice to its other remedies under the Contract, deduct from the Contract Price, as penalty, a sum equivalent to1% per week and the maximum deduction is 10% of the contract price of the delivered price of the delayed Goods or unperformed Services for each week or part thereof of delay until actual delivery or performance. Once the maximum is reached, the Purchaser may consider termination of the Contract pursuant to GCC Clause 22.

22. Termination for Default

22.1 The Purchaser may, without prejudice to any other remedy for breach of contract, by written notice of default sent to the Supplier, terminate the Contract in whole or part:
(a) If the Supplier fails to deliver any or all of the Goods within the period(s) specified in the purchase order, or within any extension thereof granted by the Purchaser pursuant to GCC Clause 20; or

(b) If the Supplier fails to perform any other obligation(s) under the Contract: or

(c) If the Supplier, in the judgment of the Purchaser has engaged in corrupt or fraudulent practices in competing for or in executing the Contract.

'For the purpose of this Clause:

"Corrupt practice" means the offering, giving, receiving or soliciting of anything of value to influence the action of a public official in the procurement process or in contract execution.

"Fraudulent practice: a misrepresentation of facts in order to influence a procurement process or the execution of a contract to the detriment of the Borrower, and includes collusive practice among Bidders (prior to or after bid submission) designed to establish bid prices at artificial non-competitive levels and to deprive the Borrower of the benefits of free and open competition;"

22.2 In the event the Purchaser terminates the Contract in whole or in part, pursuant to GCC Clause 22.1, the Purchaser may procure, upon such terms and in such manner as it deems appropriate, Goods or Services similar to those undelivered, and the Supplier shall be liable to the Purchaser for any excess costs for such similar Goods or Services. However, the Supplier shall continue the performance of the Contract to the extent not terminated.

23. Force Majeure

23.1 Notwithstanding the provisions of GCC Clauses 20 & 21, the Supplier shall not be liable for imposition of liquidated damages or termination for default, if and to the extent that, its delay in performance or other failure to perform its obligations under the Contract is the result of an event of Force Majeure.

23.2 For purposes of this Clause, "Force Majeure" means an event beyond the control of the Supplier and not involving the Supplier's fault or negligence and not foreseeable. Such events may include, but are not limited to, acts of the Purchaser either in its sovereign or contractual capacity, wars or revolutions, fires, floods, epidemics, quarantine restrictions and freight embargoes.

23.3 If a Force Majeure situation arises, the Supplier shall promptly notify the Purchaser in writing of such conditions and the cause thereof. Unless otherwise directed by the Purchaser in writing, the Supplier shall continue to perform its obligations under the Contract as far as is reasonably practical, and shall seek all reasonable alternative means for performance not prevented by the Force Majeure event.

24. Termination for Insolvency

The Purchaser may at any time terminate the Contract by giving written notice to the Supplier, if the Supplier becomes bankrupt or otherwise insolvent. In this event, termination will be without compensation to the Supplier, provided that such termination will not prejudice or affect any right of action or remedy, which has accrued or will accrue thereafter to the Purchaser.

25. Termination for Convenience

25.1 The Purchaser, by written notice sent to the Supplier, may terminate the Contract, in whole or in part, at any time for its convenience. The notice of termination shall specify that termination is for the Purchaser's convenience, the extent to which performance of the Supplier under the Contract is terminated, and the date upon which such termination becomes effective.

25.2 The Goods that are complete and ready for shipment within 30 days after the Supplier's receipt of notice of termination shall be accepted by the Purchaser at the Contract terms and prices.

26. Resolution of Disputes

26.1 The Purchaser and the supplier shall make every effort to resolve amicably by direct informal negotiation any disagreement or dispute arising between them under or in connection with the Contract.

26.2 If, after thirty (30) days from the commencement of such informal negotiations, the Purchaser and the Supplier have been unable to resolve amicably a Contract dispute, either party may require that the dispute be referred for resolution to the formal mechanisms as specified below. These mechanisms may include, but are not limited to, conciliation mediated by a third party, adjudication in an agreed national or international forum, and national or international arbitration.

26.3 In case of Dispute or difference arising between the Purchaser and a supplier relating to any matter arising out of or connected with this agreement, such disputes or difference shall be settled in accordance with the Arbitration and Conciliation Act, 1996.

27. Governing Language

The contract shall be written in English language. Subject to GCC Clause 28, English language version of the Contract shall govern its interpretation. All correspondence and other documents pertaining to the Contract which are exchanged by the parties shall be written in the same language.

28. Applicable Law

28.1 The contract shall be governed by the Law of Contract for the time being in force.

28.2 Irrespective of the place of delivery, the place of performance or place of payment under the contract, the contract shall be deemed to have been made at the place from which the acceptance of tender has been issued.

28.3 Jurisdiction of Courts: The courts of the place from where the acceptance of tender has been issued shall alone have jurisdiction to decide any dispute arising out of or in respect of this contract.

28.4 One month notice will be given by either party for termination of Contract during the tenure of Contract for breach of Clause or otherwise.

29. Taxes and Duties

Suppliers shall be entirely responsible for all taxes, duties, license fees, octroi, road permits, etc., incurred until delivery of the contracted Goods to the Purchaser.

30. Performance Security:

(i) Successful bidder have to furnish **10%** of the order value as a performance security in the shape of Bank Guarantee/ Fixed Deposit Receipt in favour of the **Registrar, Indian Institute of Technology (BHU)** for a period of 60 days beyond the end of all warranty obligations or as the case may be.

(ii) Earnest Money Deposit will be refunded to the successful bidder on receipt of Performance Security.

31. The Institute Reserves The Right To:

i. Increase or decrease the quantity of the item(s) as per requirement.

ii. Reject the quotation in absence of not furnishing the documentary evidence in respect of GST and Income Tax clearance certificates together with the performance of supplies in various branches/institutions.

iii. Reject the quotation in the event of non-furnishing the authentic documentary evidence in respect of Testing reports / Performance report of the concerned Govt. Organization / Institutions about the products being manufactured and marketed. The performance test of the product can be conducted at Institute level also for which charge will have to be borne by the suppliers.

iv. Reject the supplies already made, if not found up to the mark. Thorough checking may be adopted to test the correctness of the supply. In such an event further action may call to conform or discard the supply.

v. To reject any addition/alteration in respect of local dealerships intimated by the Principals after consideration of the case by the committee appointed by the Institute for the purpose.

vi. The Purchaser may, without prejudice to any other remedy for breach of contract, by written notice of default sent to the Supplier, terminate the Contract in whole or part:

a. If the Supplier fails to deliver any or all of the Goods within the period(s) specified in the purchase order, or within any extension thereof granted by the Purchaser.

b. If the Supplier fails to perform any other obligation(s) under the Contract.

c. If the Supplier, in the judgment of the Purchaser has engaged in corrupt or fraudulent practices in competing for or in executing the Contract.

'For the purpose of this Clause:

"Corrupt practice" means the offering, giving, receiving or soliciting of anything of value to influence the action of a public official in the procurement process or in contract execution.

"Fraudulent practice: a misrepresentation of facts in order to influence a procurement process or the execution of a contract to the detriment of the Borrower, and includes collusive practice among Bidders (prior to or after bid submission) designed to establish bid prices at artificial non-competitive levels and to deprive the Borrower of the benefits of free and open competition;" To reject any or all the offers without assigning any reasons thereof.

All disputes are subject to ***"Varanasi Jurisdiction"*** only.

The decisions of the Institute in all respect shall be final and binding on all. Kindly note that we attach great significance to the list of the organizations of repute where a firm is on rate contract, therefore please enclose certified photocopies of the rate contract.

Please ensure that your offer is complete in all respect as no further clarifications shall be sought from you and reaches us within the last date mentioned above. **The Institute shall not be responsible for any postal delay / loss in transit etc.**

Please mention our reference number and due date on the sealed envelope, otherwise your quotation may not be entertained.

A checklist (list documents to be attached) with proper signature, seal and date should be enclosed with tender document for verification; otherwise the proposal will not be entertained.

SECTION 4: SPECIAL CONDITIONS OF CONTRACT

1. The bidder must have executed same nature of works in the last 3 years in any IITs/NITs/Govt. Office/PSU/University/Autonomous Body with order value of at least Rs. 20 lakhs each.

I. User List: Provide users for last 3 years with contact person name, address, phone, and email IDs.

II. The Tender should be enclosed with proper certifications like **Authorization Certificate andProprietary Certificate in case of Proprietary items.**

III. Pre-installation site preparation/inspection requirements to be indicated and specified along with the bid.

IV. Warranty period to be clearly mentioned and should begin from the date of installation. Annual Maintenance Contract Charges should be clearly mentioned after three years warranty and two years mandatory free AMC period.

NOTE: THE BID OF THOSE BIDDERS WHO FAILS TO COMPLY THE ABOVE ESSENTIALCRITERIA WILL NOT BE CONSIDERED FOR TECHNICAL EVALUATION.

2. Documents Comprising the Bid

The tender/Bid shall be submitted online in two parts, viz., Technical Bid and Commercial Bid.

I. Technical Bid

The following documents are to be scanned and uploaded as part of the Technical Bid as per the tender document:

(a) Scanned copy of Tender Forms (Techno Commercial Un-Priced Bid), Declaration, Bidder's Information Form, and Tender Acceptance Letter;
(b) Scanned copy of proof for submission of Tender Document Fee/ Earnest Money Deposit etc.;
(c) Scanned copy of quoted product brochure
(d) Scanned copy of
  (i) Documentary evidence that the Goods and Related Services to be supplied by the Bidder are of eligible origin and
  (ii) Conform to the Bidding Documents,
  (iii)Any other document required as per the tender;
(e) Scanned copy of Technical Compliance Sheet (Annexure 2)

II. Commercial Bid

The commercial bid comprises of:

(i) Scanned copy of Tender Form (Price Bid)
(ii) Price bid in the form of **BOQ.xls.**
(iii) Scanned copy of signed price bid in Pdf format.

The Price bid format is provided as BOQ.xls along with this Tender Document at http://eprocure.gov.in/eprocure/app. Bidders are advised to download this BOQ.xls and quote their offer/rates in the prescribed column. Bidders can quote Basic Price in INR or other CURRENCY available in given BOQ (for other than INR) but it is mandatory to quote taxes/levies in INR only, in the prescribed column and upload the same in the commercial bid.

In addition to the above requirements, bids submitted by a Joint Venture, shall include a copy of the Joint Venture Agreement entered into by all members. Alternatively, a letter of intent to execute a Joint Venture Agreement in the event of a successful bid shall be signed by all members and submitted with the bid, together with a copy of the proposed Agreement, there to.

The Bidder shall furnish in the Tender Forms information on commissions and gratuities, if any, paid or to be paid to agents or any other party relating to this Bid.

sd/-
(Head)
Deptt. of Electrical Engineering
IIT (BHU), Varanasi

SECTION 5 : CHECKLIST FOR BID/TENDER UPLOADING

(The following check-list must be filled in and uploaded with the bid documents)

Sl. No.	Particulars Techno Commercial Un-priced Bid (Cover 1)	Yes/No
1.	Have you uploaded the techno commercial un-priced bid form duly filled in appropriately?	
2.	Have you uploaded a copy of the last three financial years (starting from the year 2017-18) audited balance sheet and P & L Account of your firm.	
3.	Have you uploaded the details of the PAN, copy of GST registration certificate and OEM authorization letter specifically for this bid?	
4.	Have you executed the same nature of work in last 3 years with order value as mentioned in essential pre-bid criteria and uploaded the copies of relevant work orders and satisfactory installation certificates.	
5.	EMD and Tender Processing Fee: Have you submitted DD/transferred online EMD and Tender Processing Fee asked for separately and uploaded their proof of submission.	
6.	Have you uploaded the schedule of requirement indicating the make offered without indicating the pricing components along with the techno commercial un-priced bid?	
7.	Have you uploaded the bids both techno commercial un-priced and priced bid separately for each tender?	
8.	Have you enclosed the statement of deviations from financial terms and conditions, if any?	
9.	Have you submitted the Technical Compliance Sheet?	
10.	**Have you attached Manufacturer's Authorization certificate for this Tender?**	
11.	Have you attached the Declaration on the letter pad of Bidder?	
12.	Have you attached the signed Tender acceptance letter?	
Price Bid (Cover 2)		
1.	Have you signed and uploaded the priced bid form?	
2.	Have you uploaded the schedule of requirements duly priced i.e. BOQ and its Pdf version?	

SECTION 6

DECLARATION

(To be uploaded on the letter head of the firm submitting the bid)

1. I, ---------- Son /Daughter of Shri---------- ---------- Proprietor/ Partner/ CEO /MD/ Director/ Authorized Signatory of M/s. ---------- am competent to sign this declaration and execute this tender document.

2. I have carefully read and understood all the terms and conditions of the tender and hereby convey my acceptance of the same.

3. The information/ documents furnished along with the above application are true and authentic to the best of my knowledge and belief.

4. I/ we/ am are well aware of the fact that furnishing of any false information/ fabricated document would lead to rejection of my tender at any stage besides liabilities towards prosecution under appropriate law.

5. Each page of the tender document and papers submitted by my Company is authenticated, and I take full responsibility for the entire documents uploaded.

6. This is certified that our organization has been authorized (Copy uploaded) by the OEM to participate in Tender. We further certify that our organization meets all the conditions of essential eligibility criteria and technical specifications laid down in this tender document. Moreover, OEM has agreed to support on regular basis with technology / product updates and extend support for the warranty.

7. The prices quoted in the price bids are subsidized due to academic discount given to IIT (BHU), Varanasi.

8. We, further specifically certify that our organization has not been Black Listed/De Listed or put to any Holiday by any Institutional Agency/Govt. Department/Public Sector Undertaking in the last three years.

Signature of the Authorized Person

Date: ----------

Full Name ----------

Place: ----------

Company Address with Seal

TENDER FORM

(Techno commercial un-priced Bid)

(On the letter head of the firm submitting the bid)

Tender No. …….

To

The Head
Department of Electrical Engineering
Indian Institute of Technology (Banaras Hindu University)
Varanasi – 221005, U.P

Dear Sir,

1. I/We have examined and have no reservations to the Bidding Documents, including Addenda issued in accordance with Instructions to Bidders;

2. I/We meet the eligibility requirements and have no conflict of interest;

3. I/We have not been suspended nor declared ineligible in India;

4. I/We offer to supply in conformity with the Bidding Documents and in accordance with the Delivery Schedules specified in the Schedule of Requirements the following Goods: ***[insert a brief description of the Goods and Related Services]***;

5. I/We offer to supply the items as listed in the schedule to this tender hereto/portion thereof as you may specify in the acceptance of Tender at the price given in the said Schedule and agree to hold this offer open for a period of 90 days from the date of opening of the tender.

6. I/we shall be bound by a communication of acceptance issued by you.

7. I/We have understood the Instruction to bidders and Conditions of Contract in the form as enclosed with the invitation to the tender and have thoroughly examined the specifications quoted in the Schedule hereto and am/are fully aware of the nature of the goods required and my/our offer is to supply the goods strictly in accordance with the specifications and requirements.

8. **A proof of payment of Rs……. (Rupees…….……. only**)
as Earnest Money in the aforementioned account of Registrar, IIT (BHU) has been uploaded.

9. The following have been uploaded to form part of this tender.

(a) Schedule of requirements, quoting the make only duly signed and stamped. (without indicating price)
(b) Scanned copy of PAN Card
(c) Copy of last three financial audited balance sheet and P&L account.
(d) Copy of Valid GST registration certificate.
(e) Copy of same relevant major purchase within last 3 years with order type and value as mentioned in essential pre-bid criteria.
(f) Copy of authorization letter from OEM in Case of authorized dealer only.
(g) Statement of deviations from financial terms & conditions, if any.
(h) Any other enclosure. (Please give details)

10. We undertake to execute all orders which have been placed to meet emergent requirements on priority basis.

11. Certified that the bidder is:

(a) A sole proprietorship firm and the person signing the bid document is the sole proprietor/constituted attorney of the sole proprietor,

Or

(b) A partnership firm, and the person signing the bid document is a partner of the firm and he has authority to refer to arbitration disputes concerning the business of the partnership by virtue of the partnership agreement/by virtue of general power of attorney.

Or

(c) A company and the person signing the document is the constituted attorney.

(NOTE: Delete whatever is not applicable. All corrections/deletions should invariable be duly attested by the person authorized to sign the bid document).

12. We do hereby undertake that, until a formal notification of award, this bid, together with your written acceptance thereof shall constitute a binding contract between us.

13. If our bid is accepted, we commit to obtain a performance security in accordance with the Bidding Documents;

14. We are not participating, as a Bidder or as a subcontractor, in more than one bid in this bidding process, other than alternative bids submitted;

15. We hereby certify that we have taken steps to ensure that no person acting for us or on our behalf will engage in any type of fraud and corruption

Name of the Bidder* **……**

Name of the person duly authorized to sign the Bid on behalf of the Bidder** **……..**

Title of the person signing the Bid **…….**

Signature of the person named above **……..**

Date signed **…….** day of **…….**

* In the case of the Bid submitted by joint venture specify the name of the Joint Venture as Bidder

** Person signing the Bid shall have the power of attorney given by the Bidder to be attached with the Bid Schedules.

Yours faithfully,

(Signature of bidder)

Dated this day of _____

Address: ……

Telephone No. :_____

FAX_____

E-mail_____

Company seal

TENDER FORM

(Priced Bid)

(On the letter head of the firm submitting the bid document)

To,

The Head
Department of Electrical Engineering
Indian Institute of Technology (Banaras Hindu University)
Varanasi – 221005, U.P

Ref: Tender No……Dated: …….……..…….

Sir,

Having examined the bidding documents and having submitted the techno commercial un-priced bid for the same, we, the undersigned, hereby submit the priced bid for supply of goods and services as per the schedule of requirements and in conformity with the said bidding documents.

1. We hereby offer to supply the Goods/Services at the prices and rates mentioned in the enclosed schedule of requirement.

2. We do hereby undertake that, in the event of acceptance of our bid, the supply of Goods/Services shall be made as stipulated in the schedule of requirement and that we shall perform all the incidental services.

3. The prices quoted are inclusive of all charges net F.O.R IIT (BHU) Varanasi. We enclose herewith the complete Price Bid as required by you. This includes:
   a. Price Schedule (Bill of Quantity-BOQ) in .Pdf format and .xls format
   b. Statement of deviations from financial terms and conditions, if any.

4. We agree to abide by our offer for a period of 90 days from the date fixed for opening of the bid documents and that we shall remain bound by a communication of acceptance within that time.

5. We have carefully read and understood the terms and conditions of the bid document and we do hereby undertake to supply as per these terms and conditions. The Financial Deviations are only those mentioned in the statement of deviations from financial terms and conditions.

6. We have paid, or will pay the following commissions, gratuities, or fees with respect to the bidding process or execution of the Contract: **[insert complete name of each Recipient, its full address, thereason for which each commission or gratuity was paid and the amount and currency of each such commission or gratuity]**

Name of Recipient	Address	Reason	Amount

(If none has been paid or is to be paid, indicate "none.")

7. We understand that this bid, together with your written acceptance thereof included in your notification of award, shall constitute a binding contract between us, until a formal contract is prepared and executed; and

8. We understand that you are not bound to accept the lowest evaluated bid or any other bid that you may receive.

Certified that the bidder is:

A sole proprietorship firm and the person signing the bid document is the sole proprietor/ constituted attorney of sole proprietor,

Or

A partnership firm, and the person signing the bid document is a partner of the firm and he has authority to refer to arbitration disputes concerning the business of the partnership by virtue of the partnership agreement/by virtue of general power of attorney,

Or

A company and the person signing the bid document is the constituted attorney.

(NOTE: Delete whatever is not applicable. All corrections/deletions should invariably be duly attested by the person authorized to sign the bid document.)

We do hereby undertake that, until a formal notification of award, this bid, together with your written acceptance thereof, shall constitute a binding contract between us.

Dated this day of _____
Signature of Bidder _____
Details of enclosures _____
Full Address: _____
_____
_____

Telephone No._____
Mobile No. : _____
Fax No. : _____
E-mail: _____

Company Seal

Annexure-A

TENDER ACCEPTANCE LETTER

(To be given on Company Letter Head)

Date:

To

The Head
Department of Electrical Engineering
Indian Institute of Technology (Banaras Hindu University)
Varanasi – 221005, U.P

Sub: Acceptance of Terms & Conditions of Tender.

Tender Reference No._____

Name of Tender/ Work: -

_____

_____

Dear Sir,

1. I/We have downloade**d/ obtained the tender document(s) for the above mentioned 'Tender/Work' from** the web site(s) namely:

   _____
   _____
   as per your advertisement, given in the above mentioned website(s).

2. I/We hereby certify that I/We have read the entire terms and conditions of the tender documents from Page No. _____ to _____ (including all documents like section(s), schedules(s) etc.), which form part of the contract agreement and I/we shall abide hereby by the terms/conditions/ clauses contained therein.

3. The corrigendum(s) issued from time to time by your department/ organizations too have also been taken into consideration, while submitting this acceptance letter.

4. I/We hereby unconditionally accept the tender conditions of above mentioned tender document(s)/ corrigendum(s) in its totality/entirety.

5. In case any provisions of this tender are found violated, then your department/organization shall without prejudice to any other right or remedy be at liberty to reject this tender/bid including the forfeiture of the full said earnest money deposit absolutely.

Yours faithfully,

(Signature of the Bidder, with Official Seal)

FORMAT FOR PERFORMANCE BANK GUARANTEE (PBG)

(To be typed on Non-judicial stamp paper of the value of Indian Rupees of One Hundred)

(TO BE ESTABLISHED THROUGH ANY OF THE NATIONALISED COMMERCIAL BANKS (WHETHER SITUATED AT VARANASI OR OUTSTATION) WITH A CLAUSE TO ENFORCE THE SAME ON THEIR LOCAL BRANCH AT VARANASI)

To,
The Registrar,
Indian Institute of Technology (BHU),
Varanasi-221005

LETTER OF GUARANTEE

WHEREAS Indian Institute of Technology (BHU), Varanasi (Buyer) has invited tender vide Tender No..... dated..... for purchase of ..... AND WHEREAS the said tender document requires that eligible successful bidder (seller)..... wishing to supply the equipment / machinery etc. in response thereto shall establish an irrevocable Performance Bank Guarantee in favour of " The Registrar, Indian Institute of Technology (BHU), Varanasi" in the form of Bank Guarantee for Rs ..... (**10% of the contract value**) and the Performance Bank Guarantee shall remain valid for a period of 60 (sixty) days beyond the date of completion of all contractual obligations of the seller, including warranty obligations from the date of issue of Performance Bank Guarantee and the eligible successful bidder (the seller) shall submit the same within 14 (Fourteen) days from the date of Award of Contract.

NOW THIS BANK HEREBY GUARANTEES that in the event of the said bidder (seller) fails to abide by any of the conditions referred to in tender document / Award of Contract / performance of the equipment / machinery, etc. this Bank shall pay to Indian Institute of Technology (BHU), Varanasi on demand and without protest or demur Rs ..... (Rupees.....).

This Bank further agrees that the decision of Indian Institute of Technology (BHU), Varanasi (Buyer) as to whether the said bidder (Seller) has committed a breach of any of the conditions referred in tender document / Award of Contract shall be final and binding.

We, ... (name of the Bank & branch) hereby further agree that the Guarantee herein contained shall not be affected by any change in the constitution of the bidder (Seller) and/ or Indian Institute of Technology (BHU), Varanasi (Buyer). **Notwithstanding anything contained herein:**

1. Our liability under this Bank Guarantee shall not exceed Rs. ..... .(Indian Rupees ..... only).
2. This Bank Guarantee shall be valid up to .....(date) and
3. We are liable to pay the guaranteed amount or any part thereof under this bank guarantee only and only if IIT (BHU), Varanasi serve upon us a written claim or demand on or before .....(date).

This Bank further agrees that the claims if any, against this Bank Guarantee shall be enforceable at our branch office at ..... situated at ..... (Address of local branch).

Yours truly,
Signature and seal of the guarantor:
Name of Bank:
Address:
Date:_____

DEPARTMENT: Electrical Engineering

ANNEXURE 1

Technical specification for RTDS with necessary accessories

INTRODUCTION

The Power System Simulator must be a digital system able to perform electromagnetic transient simulations continuously in real time (frequency range DC to ~3kHz). Since one of the main purposes of the simulator would be to test physical controllers and protection devices, it must be equipped with sufficient analogue and digital input and output facilities as well as have ability for high level communication capabilities (IEC 61850-9-2, IEEE C37.118 and TCP/UDP). In addition to testing protective relays and control devices, the simulator would also be used for general power system studies and power system training as well as Power Hardware In-the-Loop (PHIL) testing.

1. REAL TIME

For the purpose of this specification, real time simulation shall be interpreted as hard real time simulation as per the following definition –

a) The calculation time for the entire power system model, including the time required for communication and servicing of I/O, is completed with respect to real world time in less than the time step selected for a particular simulation case.

b) Each simulation time step is equidistant from the next with respect to real world time step.

2. SIMULATION ALGORITHM

2.1 Nodal Analysis

The real time simulation must use nodal analysis to solve the main circuit node voltages and branch current as outlined by Dr. Herman Dommel in his famous paper published in the IEEE Transactions on Power Apparatus and Systems (Volume: PAS-88, Issue 4) in 1969 and implemented in EMTP, PSCAD, etc. The nodal approach finds the solution of the node voltages by solving the simple equation $[V]= [Y]^{-1} \times [I]$ where Y represents the admittance matrix of the network. The solution requires the inversion or decomposition of the Y matrix. The superiority of this simulation methodology has been identified particularly when the network solution used is able to decompose the Y matrix in each simulation time step. It facilitates the inclusion of continuously variable admittance elements which is advantageous for embedding component models into the main network solution to avoid the need for numerical interfaces.

2.2 Real Network Solution

The impedance matrix used for the nodal analysis must be reformulated from the admittance otherwise inverted every time step). Furthermore, the size of the admittance matrix which is decomposed each time step must be a minimum of 300 x 300 elements. Therefore 300 single-phase main circuit nodes must be allowed in one tightly coupled subsystem (i.e. no decoupling elements are allowed within the subsystem) and continuously varying admittance elements must be permitted within the nodes.

It shall be possible to include not less than 500 single-phase switches within each subsystem (i.e. network solution).

It would also be possible to simulate radial feeders, such as those typical of distribution networks, with a maximum size of 1200 single-phase circuit nodes within one tightly coupled subsystem. No decoupling elements shall be allowed within the subsystem.

These requirements allow flexibility for the complex network simulations as anticipated.

3. HARDWARE

The simulator must be modular in design to allow future expansion and up gradation of the system.
The basic module of the simulator is expected to perform three functions:

1. Computation (i.e. solution) of the power and control system algorithms
2. Ethernet communication to allow control of the simulator via a standard computer workstation
3. Dedicated, high speed communication to allow expansion of the simulator using additional modules

3.1 Computational Units

The power and control system computation within each module shall be performed by a multicore RISC processor housed on a printed circuit board. The processor cores shall not be dedicated to simulate the specific models and the function of each core shall be completely defined by software.
To prevent adverse effects caused by communication restrictions, it shall be possible to connect high accuracy, at least 12-bit digital to analogue and 16-bit analogue to digital converters, plus digital input and output, directly to the computational units.

3.2 Ethernet Communication

The basic simulator module shall have ability to connect directly to a 100/1000BaseT Ethernet Local Area Network (LAN) so that it can be accessed remotely by a large group of users.
It shall also be possible via the simulator software and the Ethernet communication to control, monitor and interact with simulations during execution. This is a key aspect of the simulator, allowing the user to "operate" the simulated power system in a manner similar to that of a real power system (i.e. the simulator operator must have continuous communication with and control of the simulator during real time simulations).

3.3 Global Time Synchronization

It shall be possible for the simulation time step to be synchronized to a 1 Pulse Per Second (1PPS), IEEE 1588 or IRIG-B time reference signal provided by an external device (i.e. GPS clock). Synchronization of the simulation time step to an external time reference is necessary for Phasor Measurement Unit (PMU) benchmark testing and it is advantageous for IEC 61850-9-2 sampled value output. The simulation of a constant phase angle shall not drift over time with respect to the external GPS reference signal and shall exhibit a jitter not more than 1 microsecond.

3.4 Expandability

It shall be possible to expand the simulator by adding additional modules to the system. Dedicated communication shall be used between simulator modules so that the simulation time step is not affected to a remarkable extend.
Additionally, if multiple modules are used in the simulator, a precision optical communication channel shall be used to ensure absolute synchronization of computation in all modules.
To facilitate future expansion for large scale real time simulations, it shall be possible to extend the simulator capacity to accommodate up to twelve thousand three-phase buses (equivalent to approximately thirty six thousand single-phase nodes).
It is well understood that in order to enable real time simulation of large scale systems that the electrical network is segregated into smaller parts called subsystems. The simulator design shall allow direct communication between all subsystems for maximum flexibility and enhance the efficiency of the hardware usage.

3.5 Input / Output Capabilities

The simulator shall provide the following minimum input/output capabilities:

1. Analogue Output (high resolution / optically isolated) - a minimum of 12, 12-bit analogue output channels shall be available on the simulator to facilitate connection to external devices.
2. Analogue Input (high resolution / optically isolated) - a minimum of 12, 16-bit analogue input channels shall be available on the simulator to facilitate importing analogue signals from external sources. These inputs shall meet the following specifications:
3. usable dynamic range ~ 400:1 (based on 100kHz BW limited signal & 28db SNR)

- input voltage range +/- 10 Volts
- resolution :305 micro Volts

4. Digital Input (optically isolated) - a minimum of 64 optically isolated digital input channels shall be available to allow the connection of multiple external devices to the system. At least 60 of the 64 digital inputs shall be capable of providing a digital input timestamp with an accuracy of 250 nanoseconds or more.

5. Digital Output (optically isolated) - a minimum of 64 optically isolated digital output channels shall be available to allow the connection of multiple external devices to the system.

6. The simulator shall provide capability for the following Ethernet protocol-based communications: IEEE C37.118 PMU output, IEC 61850-9-2/IEC 61869-9 Sampled Values, and TCP/UDP. The minimum capability of each protocol is described elsewhere in the document. Two protocols must be able to be operated simultaneously in a single real time simulation. All other available protocols should be listed as a viable options.

3.5.1 Remote Location of I/O Cards

It shall be possible to locate any and all of the I/O described above up to 75 metres away from the simulator processing elements. The data transfer shall be facilitated via optical fibre connection(s). Remote location of the I/O components is necessary to minimize the remote end electrical signals that are transmitted to equipment under test which in some cases must be physically removed from the simulator processing elements.

4. SIMULATION REQUIREMENTS

4.1 Simulator Capacity and Simulation Time step

The simulator shall be capable of representing, in real time with a digital time step of less than 25 microseconds, the power system defined in Appendix 1. It shall be possible to operate any breaker shown in the diagram, on a phase individual basis, at any point in time (i.e. all breakers must be represented simultaneously). It shall be possible to simultaneously represent all transmission lines as either traveling wave based or PI section models. Saturation and hysteresis must be accurately represented for all transformers modelling simultaneously.

4.2 Numerical Stability

The simulator shall be capable of simulating the systems shown in Appendix 1 continuously in real time for a minimum duration of twelve (12) hours with a maximum simulation time step of 25 microseconds. The operator shall manually apply faults at random interval during the test to ensure the numerical analysis of stability and continuous operation of the system, power electronic simulation.

4.2.1 Line Commutated Power Electronic Converters

The simulator shall be capable of representing line commutated power electronic converter (i.e. HVDC, SVC, TCSC) with an effective firing accuracy of 1 microseconds or more. The accuracy shall be maintained at all times regardless of whether the firing pulses are generated internally by a simulated controller or externally by a physical controller. Furthermore it is required that these converters be solved as embedded parts of the main network solution and not as isolated subsystems. This is important to ensure maximum numerical analysis of stability and the proper representation of harmonics. These models shall also allow the representation of internal faults.

4.2.2 Voltage Source Converter (VSC) Based Power Electronic Schemes

4.2.2.1 VSC Sub-networks:VSC based power electronic schemes typically operate with higher frequency switching, particularly when driven by Pulse Width Modulation (PWM) control. Depending on the power level and application, PWM frequencies typically range from approximately 1 – 10 kHz and the dynamics of these schemes cannot be accurately represented using a time step in the range of 25-50 microseconds. Therefore the simulator shall have the ability to represent the VSC schemes as special sub-networks that operate with time steps in the range of 1.4 - 3.75 microseconds.

It shall be possible to interface the VSC sub-networks to the main simulation so that the interaction of the VSC with a large scale network can be represented and studied. The VSC sub-networks shall be freely configurable through the simulator's standard graphical user interface and able to include a minimum of 45 nodes and 36 switching devices (an IGBT – Back Diode pair shall count only as one device). In addition to the power electronic components, it shall also be possible to include the following elements in the VSC subnetworks; transformers, transmission lines, cables, permanent magnet synchronous machines, double fed induction machines, breakers, filters, etc

It shall also be possible to interconnect multiple VSC sub-networks via traveling wave transmission line or cable models. Travel times as low as the on VSC sub-network timestep (i.e. 1.4 – 3.75 microseconds) shall be allowed. The interconnection of sub-networks via traveling wave models will be exploited to expand the network represented with time steps in the range of 1.4 – 3.75 microseconds.

4.2.2.2 Testing of External Controls for 2- and 3-Level Converters: The sub-networks containing the VSC's are required to accurately represent converter behaviour with switching of PWM frequencies in the order of <10 kHz for 3-level converters and >40 kHz for 2-level converters.

The VSC converter models shall be capable of testing the firing pulse controllers (i.e. averaging models are not acceptable) for 2- and 3-level bridges. Therefore the simulator's analogue output and digital input hardware must be respectively capable to send and read new values of every sub-network time step (i.e. in the range of 1.4 – 3.75 microseconds) and further the further loop of delay must be minimized.

5 SOFTWARE

5.1 Graphical User Interface

All aspects of the simulator operation, from construction of simulation cases, to operation of the simulator, to post analysis of results must be controlled by a single Graphical User Interface (GUI). The GUI shall consist of modules for the following functions:

(b) Circuit Construction - A module to allow the construction of simulation circuits. It shall be possible to use predefined modules from a library of components to assemble new simulation cases. It shall be possible to construct the diagram in either three-phase or one-line diagram format and it shall be possible to toggle between the two different views of the same circuit.

(c) Transmission Line and Cable Constants – A module to calculate the traveling wave and pi-section parameters for transmission lines and cables. It shall be possible to input the physical parameters of transmission lines and cables to calculate the parameters. Alternatively, for overhead transmission lines it shall be possible to constitute the input with positive and zero sequence data for 3 and 6 conductor transmission lines to calculate the parameters.

(d) Simulator Operation – A module for operation of the simulator and the analysis of simulation results. This module shall allow simulation cases to be started and stopped at appropriate time. The operation of the power system (i.e. changing of set-points and breaker operations), fault applications, monitoring of system status (e.g. RMS voltages and currents), and the analysis of details simulation results (similar to afault recorder) must be possible without interrupting the simulation (i.e. while it is running).

(f) Storing of Results - it shall be possible to save simulation results directly from the GUI in ASCII, jpg, emf (vector format), pdf or COMTRADE format.

(g) Post analysis of simulation results shall also be accomplished.

5.2 Batch Mode Operation

Software shall be provided to allow the user to program a series of simulations to run automatically (i.e. batch mode). The batch mode software shall be capable of nested looping (e.g. if, for and while) to allow adaptive algorithms to be used during automatic operation. The batch mode software shall also be capable of recording key results in ASCII format and selectively printing or storing simulation results.

The batch mode software shall have the ability to embed text and simulation results (in jpg or emf format) directly into Microsoft® Word™ documents.

The batch mode software will be used to conduct automated relay testing where many hundreds or thousands of cases may be simulated during a day.

5.3 Power System Models

A minimum of the following power system models shall be available for the simulator:

- Traveling wave and pi-section multi-phase (max. 18 conductors), coupled transmission line and cable models. It shall be possible to embed breakers in each end of the transmission line models with a maximum of 6 conductors. The nodes introduced by the breakers shall be solved by the transmission line model and shall not include the solution as part of those solved by the main network solution.
- A phase domain frequency dependent transmission line model shall be available to represent a minimum of 12 coupled conductors.

- Transformers with 2 or 3 windings and autotransformers with an optional tertiary winding. It shall be possible to include saturation with hysteresis, and online tap changers in the models. It shall also be possible to represent the transformers with internal turn-to-turn and winding to ground faults.
- Synchronous machines (standard and permanent magnet). The synchronous machine models must be solved as part of the main network and are not allowed to be numerically interfaced to the network solution. The synchronous machine model shall optionally allow the unit transformer and/or stator side breaker to be embedded as part of the model so the transformer secondary nodes or breaker nodes do not reduce the number available in the network solution (i.e. if breaker and/or transformer are embedded to the machine model, no extra nodes need be counted as solved by the network solution). Also, the possibility of initialization of the machine based on the load flow results, as well as entering the machine parameters in both "R & X" and "impedance and time constant" formats, and inclusion/exclusion of magnetic saturation and saliency must be provided. A synchronous machine model must be available that will allow an actual stator-ground fault. The machine model must also be solved as part of the main network and is not permitted to be interfaced or decoupled from the network solution. It shall be represented in the network solution as continually varying admittance elements. The model shall also make the field winding available as power system nodes to allow faults to analysis to be carried out in the field winding as well.
- Multi-phase synchronous machines. A multi-phase synchronous machine model with access to the neutral point and both ends of the stator windings must be available. Modelling of the machine with any number of phases (up to 12 phases) including ones that are not a multiple of 3, such as 5, 7 or 11 must be possible. Inclusion of damper windings must also be available, subjected to the requirement. Multi-phase (3-12) control components (e.g. ABC to DQ transformation) must also be available for use.
- Induction machines (squirrel cage and double fed)
- DC machines
- Voltage sources with definable equivalent impedances, source magnitude, frequency and phase
- Passive Resistive, Inductive and Capacitive components (including various filter configurations)
- Circuit breakers & fault switches
- Bus arrestors
- Series capacitors with ZnO arrestors and bypass switches
- Thyristor Controlled Series Capacitors (TCSC) with ZnO arrestors and bypass switches
- HVDC valve groups for transmission and back-to-back schemes. The HVDC valve groups shall include 6-pulse and 12-pulse configurations. The 12-pulse configurations shall be fed from a 3-winding transformer with an option to include a 4th winding for the freely configurable connection of filters and or reactive power compensation. The valve group models shall support internal valve faults and shall be solved as a part of the main network solution. It is not acceptable that the valve groups are numerically decoupled from the network solution or interfaced with the network solution.
- Filter bank model to allow multiple banks of up to 12 switchable filters to be added to simulations without reducing the number of switches or nodes available in the main network solution
- Static VAR Compensators (SVC) including TCR and TSC branches. The TCR and TSC branches shall be embedded in the network solution as continuously variable conductance elements.
- Instrument transformers including current transformers (CT), inductive voltage transformers (PT), and capacitive voltage transformers (CVT) with inclusion of saturation and hysteresis loop in the modelling.
- Voltage Source Converters: STATCOM, UPFC, SSSC, VSC-based HVDC, DFIG wind generation, etc.
- COMTRADE and ASCII Playback. It shall be possible to playback COMTRADE, or ASCII, data files.

The switches representing HVDC, SVC, and TCSC thyristor valves must be embedded in the main network solution and not to be solved as independent subsystems.

5.4 Control System Models

A minimum of the following control system components shall be available for the simulator:

- User-Input - Slider, switch, button, dial, etc.
- Constants – integer, floating point, PI
- Data conversion- deg-rad, rad-deg, int-float, float-int
- Math functions – gain, exp, log, ln, ex, xy, sqrt, inverse, abs, sum, multiply, divide, max, min, etc.

- Complex math functions – multiply, divide, add, subtract, etc.
- Trigonometric functions – sin, arcsin, cos, arcos, tan, arctan, arctan2
- Standard control blocks - deadband, pulse generator, edge detector, time, counter, ramp, ramp limits, limiters, phase-locked loop (PLL), flip-flops, fourier transform, integrator, lead-lag, wash-out, lookup table, non-linear gains, etc.
- Logic functions – and, or, nor, bit shift functions, bit -> word, if-then-else, etc.
- Meters – real and reactive power, RMS (single- and three-phase), angle difference, frequency
- Signal processing – sample & hold, down sampler, moving average, FIR, DFT, ABC-DQ0, DQ0-ABC, ABC-αβ, αβ-ABC, vector rotator, etc.
- Generator controls – exciters (IEEE Type 1 to 5, AC1 to 4, ST1 to 3, X1, X2, 2A, SCRX, DC2, IVO, etc.), governors (IEEE Type 1-3, IVO, European BBGOV1, Gas turbine, steam turbine, hydro turbine, etc.), power system stabilizers (PSS2A, IEEEST, IEE2ST)
- On-Load Tap Changer control
- Relay models – As a minimum the following relay models shall be available
- line distance protection
- differential protection
- generator protection
- overcurrent protection
- Phasor Measurement Unit (PMU) – Model which will operate in a manner similar to commercial PMU devices typically found in power systems and according to the performance and structure defined by IEEE C37.118. Both P and M type devices shall be represented with selectable reporting rates from 1 – 240 frames per second.

5.5 User Defined Models

It shall be possible for the user to create power and control system models for the simulator to run in real time together with standard models provided by the supplier. The facility provided shall allow custom icon graphics and input menus to be created for the new component. Furthermore, the facility shall allow high level programming (for example C code) of the real time simulation algorithm and the facility shall include all necessary compilers.

5.6 Load Flow Initialization

The software shall include a load flow calculation which can be used to initialize the simulation components before the real time electromagnetic transient simulation is begun.

5.7 PSS/E Conversion

It shall be possible for the simulator to import and convert PSS/E data for simulation in real time. Once converted, the PSS/E system must also be available in picture format for further modification.

5.8 PSCAD Conversion

It shall be possible for the simulator to import and convert PSCAD network data for simulation in real time.

5.9 CYME Conversion

It shall be possible for the simulator to import and convert CYME distribution network data for simulation in real time.

5.10 Software Licensing

The software shall be provided with a site license so that it is possible to install all software included with the simulator supply on any number of desktop or laptop computers. If a site license cannot be provided a minimum of twenty independent licenses shall be provided for all software provided with the simulator.

6. COMMUNICATION PROTOCOLS

The simulator can be utilized to model modern Smart Grid and Distributed Generation scenarios and as such must be able to provide high level Ethernet based communication as a minimum via the protocols described below.

6.1 Generic Socket Communications

The simulator shall be able to both send and receive generic UDP/TCP packets via an Ethernet based socket connection to external equipment (e.g. computer or controller).

6.2 IEC 61850-9-2 Sampled Value Messaging

The simulator shall be capable of providing a minimum of two IEC 61850-9-2 sampled value data streams (i.e. two sets of 4 x voltage and 4 x current channels) for protection and control equipment. The sampled values shall be provided at 80 or 256 samples per cycle for a single data stream. It shall be possible to manipulate the quality bits of the sampled value messages to test the response of the external protection and control devices.

It shall also be possible to subscribe to a minimum of one IEC 61850-9-2 sampled values data stream at 80 or 256 sample per cycle as input to a simulation.

6.3 IEC 61869-9 Sampled Value Messaging

The simulator shall be capable of providing a minimum of one IEC 61869-9 sampled value data streams (with up to 24 channels of voltage or current) to protection and control equipment. The sampled values shall be provided at 80 samples per cycle for a single data stream.

6.4 IEEE C37.118 PMU Data Stream Output

The simulator shall be capable of simulating and providing synchrophasor data stream output for a minimum of twenty-four (24) Phasor Measurement Units (PMU's) with individually assignable frame-rates of up to 50/60 frames per second.

7 AVAILABILITY AND MAINTAINABILITY

The real time simulator will be a combination of both hardware and software, but for the purpose of the specification it shall be considered one entity. Furthermore, to ensure fast and comprehensive support, the entire simulator shall be designed and manufactured by one supplier.

The manufacturer shall offer a maintenance program to extend the hardware warranty and provide software updates. The manufacturer must further guarantee to provide maintenance, including replacement components, for the system for a minimum of 10 years.

8 INSTALLATION AND TRAINING

The proposal should include on-site installation and one-week training conducted by experienced engineers and should accommodate up to 10 participants (staff, faculty and students). The training should encompass all hardware and software modules including third party modules supplied as part of the simulator. If this cost is not included with the supply, please itemize the additional cost or clearly state non-availability of the service and the reason for the same.

9 TECHNICAL SUPPORT

The simulator should include unlimited technical support on hardware and software for at least 10 years – the lifetime of the simulator. The technical support should cover all the software and hardware supplied as part of the simulator irrespective of whether the software or hardware is manufactured by the simulator vendor or purchased from third parties. If this cost is not included with the supply, please itemize the additional cost or clearly state the non-availability of the service and the reason for the same. The simulator vendor should demonstrate their expertise for supporting third party software and hardware, now and in the future.

10 SOFTWARE MAINTENANCE AND UPDATES

The simulator should include unrestricted updates (all releases including major and minor releases) and maintenance (patches and fixes) for the lifetime of the simulator (minimum 10 years). The upgrade and maintenance should cover all the software modules supplied as part of the simulator whether the software module was manufactured by the simulator vendor or purchased from third parties. Please identify third party software/modules and provide details (such as transferable contracts from original manufacturer) to support vendor's ability to offer maintenance, upgrade coverage and guarantee compatibility for the requested period. The Institute shall request contact information of existing client sites to verify the history of satisfactory execution of such extended maintenance on vendor developed and third-party products. If this cost is not included with the supply, please state non-availability of the service and the reason for the same.

11 HARDWARE WARRANTY

The proposal should include a "repair or replace hardware warranty" that covers parts and labor for at least one (1) year with zero deductible. The warranty should cover all the hardware supplied as part of the simulator whether the hardware was manufactured by the simulator vendor or purchased from third parties including off-the-shelf processor boards, power supplies, I/O modules, etc. Please identify all third-party hardware boards and provide details (such as transferable contracts from original

manufacturer) to support simulator vendor's ability to offer the warranty coverage for the requested period. The Institute shall request contact information of existing client sites to verify the history of satisfactory execution of such extended maintenance on vendor developed and third-party products. If this cost is not included with the supply, please state non-availability of the service and the reason for the same.

An option shall also be provided to extend the warranty coverage described above for a period of five (5) years.

12 HARDWARE UPGRADES AND COMPATIBILITY

The vendor should provide a clear and demonstrated path for a cost-effective hardware upgrade with full backward compatibility. From upgrade cost point, please describe any hardware exchange program offered by the vendor to offset the cost of hardware upgrade including percentage discount offered on exchange and any annual enrolment fee for the exchange discount program. In the case of third-party components including off-the-shelf processor boards, I/O modules, etc. included with the simulator, please describe in sufficient detail, including any limitation, as to how upgrade with full backward compatibility is assured. This aspect is very important to assess the total cost of operation. The compatibility is also important for effective collaboration with other institutions and sponsors that may have a different version of hardware and/or software. If this cost is not included with the supply, please state non-availability of the service and the reason for the same.

13 QUALIFICATION

In order to qualify as a potential supplier and demonstrate a well-established product, the manufacturer must provide references for at least fifteen simulator installations with the same hardware being proposed, in the field of electrical power systems, delivered to end customers within the last two years. IIT BHU is an academic institute of national importance. Therefore, the vendor shall list at least 3 purchases by at least 3 academic institutes or universities of national importance done in last 2 years where the quoted hardware and software has been purchased.

Sd/-(Head)
Deptt. of Electrical Engineering
IIT (BHU), Varanasi

Annexure- 2

TECHNICAL COMPLIANCE STATEMENT

(To be submitted by bidder duly filled)

Sl. No.	Specifications	Yes/No
1	Real Time	
2	Simulation Algorithm	
3	Hardware	
4	Simulation Requirements	
5	Software	
6	Communication Protocols	
7	Availability and Maintainability	
8	Installation and Training	
9	Technical Support	
10	Software Maintenance and Update	
11	Hardware Warranty	
12	Hardware Update and Compatibility	
13	Qualification	

Signature of the Authorized Official with Seal

Annexure-3

PREVIOUS SAME ORDER EXECUTED

Please quote best minimum prices applicable for a premier Educational and Research Institution. The party must give details of purchase orders identical or same equipment supplied to any IITs/NITs/University/CFTIs as per below Format in last Three years (to be uploaded in Cover 1) along with the final price paid, these details are mandatory.

Name of the Firm _____

Order Placed by(Full address of Purchaser)	Order No. and Date	Description and quantity of ordered equipment	Value of Order	Date of completion as per contract	Has the Equipment being installed satisfactorily (Attach a Certificate from the Purchaser/Consigner)	Contact Person along with Tele-phone No., Fax No. and e-mail address

Details of Technical Expert

Name of application specialist/Service Engineer who have the technical competency to handle and support the quoted product during the warranty period.		
Name of the organization	**Name of Contact Person**	**Contact No.**

Signature and Seal of the Manufacturer /Bidder: _____

Place: _____

Date: _____