

GOVERNMENT OF NATIONAL CAPITAL TERRITORY OF DELHI  
DELHI TECHNOLOGICAL UNIVERSITY  
SHAHBAD DAULATPUR: BAWANA ROAD: DELHI-110042  
Ph. 27871018; Email: sp@dtu.ac.in

F. No. DTU/EED/Realtime/EV&ITSLAB/474/2023

Dated: 13.06.2025

**NOTICE INVITING TENDER**

E-Tenders, along with illustrated literature/leaflets/brochure for the supply/execution of item(s)/stores/work detailed below, are invited from the Manufacturers (OEM) or their Authorized Distributors/dealers/Chanel Partners only in a two-bid system through 'e' procurement solution only as per the guidelines and terms & conditions given in tender document - details of the NIT along with terms & conditions, specifications, etc. can be seen/downloaded at/from the website.

The interested tenderers/bidders should upload duly signed tender form and their bids along with scanned copies of all the relevant certificates, documents, etc., in support of their technical & price bids – all duly signed - on the <https://govtprocurement.delhi.gov.in> latest by **04/07/2025 to 2.30 P.M.** **An index prepared after pagination of all documents may also be uploaded** The technical bids will be opened online on **04/07/2025 at 3.00 P.M.** in the office of Officer Incharge (PURCHASE) in the presence of only those bidders or their authorized persons, whose original instrument of EMD or request letter along with a copy of eligibility document for seeking exemption from EMD submission, have been dropped in the tender box placed in the office of OIC (PURCHASE) before the bid-submission-closing time, which will also be displayed on the website. To participate in the tender through an e-procurement solution, the tenderers are required to have a digital certificate and be registered with the application Service Provider NIC.

The tender document is also available for viewing on the website of Delhi Technological University, Delhi, at [www.dtu.ac.in](http://www.dtu.ac.in)

Yours faithfully,

**EMD: ₹ 78,814.00**

Officer In-charge (PURCHASE)

S. NO.	DESCRIPTION	QTY. (No.)
01.	Supply of Real Time Hardware in Loop Simulator (Complete set, as per detailed specification)	01

Detailed Specifications on the next page

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# Technical Specifications

## A. REAL-TIME SIMULATOR (HARDWARE)-

### 1. Processors:

- o Main Processor: 4-Core FPGA for enabling short compilation time and low latency for small time-step, simulation.
- o Co-processors: 2x ARM, for simulation in signal domain.

### 2. System Capability:

- o Controller HIL and real-time simulation of maximum 4 switching converter models (3ph, 3 levels) with minimal simulation time-step down to 200ns.
- o Controller HIL and real-time simulation of maximum 30 averaged converter models (3ph) with minimal simulation time-step down to 200ns.
- o Real-time simulation of 80+ (3-phase) nodes/busses with full complexity at starting from 3 $\mu$ s to 1s simulation time-step.
- o Real time simulation of power electronic converters with switching frequency of up to 200 KHz.

### 3. Option for External Interface: *In-built I/O*

- o 16 Analog outputs fully selectable with  $\pm 10V$  range, 1 MSPS update rate, 16-bit resolution and 1% accuracy,  $\pm 24V$  Tolerant ESD protection.
- o 16 Analog inputs fully selectable with  $\pm 10V$  range, 1 MSPS update rate, 16-bit resolution, 1% accuracy,  $\pm 24V$  Tolerant ESD protection.
- o 32 Digital outputs with at least 12 channels capable for PWM modulation with 7ns resolution,  $\pm 24V$  Tolerant ESD protection.
- o 32 Digital inputs, 50MHz sample rate with 20ns sampling resolution on all channels,  $\pm 24V$  Tolerant ESD protection.

### 4. Academic Package Added Capabilities:

- o The simulator supports multiple configurations without making any physical changes into hardware.
- o Free Firmware update is made available for all supported configurations by Simulator during support.
- o Connectivity: Ports for communication over standard communication protocols, including USB, Ethernet/IP, CAN, Modbus, RS232, GPIO, HSSL, JTAG.
- o Input Power supply is 230 Volts, 50Hz.

## B. Simulation Software with Real-Time Interface: Simulator is not dependent on any third-party simulation Software. It has its own simulation software with below-mentioned specifications:

- o Permanent software license for modelling as well as for Real-time Interface with free firmware updates and an unlimited number of software users.
- o Academic premium toolbox package with Graphical User Interface (GUI/SCADA).
- o Modeling environment for plant as well as Signal Processing with embedded library of components and toolboxes like, *i) Converter toolbox, ii) Microgrid toolbox, iii) Power System toolbox, iv) Signal processing toolbox, v) Test Suite and vi) Communication toolbox having IEC61850, UL 1741, CAN Bus protocol, Ethernet, DNP3, MOD Bus protocol etc.*
- o All the switching components in library have Internal (for simulation and real-time simulation) or external (HIL simulation) both control option during modeling.
- o Ability to run Plant simulation without controller if required for feasibility testing of plant.
- o High resolution built-in real time signal monitoring oscilloscope with 16 channels.
- o Dedicated solvers for switching devices, machines, signal generators, LUTs, etc. are available with

simulation software.

- Simulation of numerical signals with multiple execution rates
- Test environment for testing models and generating Test-Reports.
- Scripting Environment based on python. In-built API for automation as well as for communicating with othersimulation software.
- Option for importing code generated for controller from simulation software like MATLAB, Simulink, LabView, PSIM etc.
- Option for importing .dll files generated from PSCAD, EMTP, PSSE-DigSilent etc.

**C. The laboratory resources listed above is suitable for the following applications:**

1. Grid connected converter applications.
2. Power System and its applications
3. Renewable energy applications.
4. Microgrid and Smart Grid applications.
5. Parallel and Multilevel converter topologies.
6. Electrical and industrial drives applications.
7. Electric Vehicle Application
8. Pre-certification of smart inverter controllers.

(TO BE SUBMITTED ALONG WITH TECHNICAL BID)

**TENDER NOTIFICATION NO: -----**

Email: sp@dtu.ac.in

Phone No: - 27871018

**UNDERTAKING**

The Registrar,  
Delhi Technological University,  
Shahbad Daulatpur, Bawana Road,  
Delhi-110042

We, the undersigned (hereinafter called Bidder/Contractor/Vendor/Supplier), hereby offer to execute the supply of items as per specification against which we have quoted over rates and for which this tender may be accepted at the rates stated therein and subject to the terms & conditions set forth for such items as may be ordered by the Registrar, Delhi Technological University or officer acting on his behalf.

Date this \_\_\_\_\_ Day of \_\_\_\_\_

Signature of Contractor \_\_\_\_\_

Address \_\_\_\_\_

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

## **Guidelines/Procedure to be followed in the introduction of the 'e'-procurement solution:**

1. **Payment of cost of Tender documents:** The collection of cost of Tender documents is dispensed away with, as there is no physical supply of the tender documents and also to have absolute anonymity of bidder participating in the e-procurement solution. Bidders can view/download the tender documents at <https://govtprocurement.delhi.gov.in>
2. **Submission of bids:** The bidders desirous of participating in 'e'- procurement shall submit their price bids in the standard formats prescribed in the Tender documents, displayed at <https://govtprocurement.delhi.gov.in>. The bidder should upload the scanned copies of all the relevant certificates, documents, etc., to <https://govtprocurement.delhi.gov.in>. in support of their price bids. **The bidder shall sign on all the statements, documents, and certificates uploaded by him, owning responsibility for their correctness/authenticity.** The original EMD or request letter with supporting documents of eligibility, if seeking exemption from EMD submission, must be dropped in the tender box placed in the office of **OIC (PURCHASE)** before the specified date & time. If the specified date for physical submission of EMD, etc., is declared a holiday, the same will be received up to the appointed time on the very next working day. However, documents of the bidders downloaded online or requisitioned subsequently will only form the basis for deciding the tender.
3. **Payment of Bid Security (Earnest Money Deposit):** The EMD shall be in the form of the **BG/Fixed Deposit Receipt only** of a scheduled bank issued in favor of “**Registrar, Delhi Technological University, Delhi**” and its scanned copy to be uploaded along with the bid, and the original shall be sent to DTU so as to reach before the date & time of closing of the bids; failing which bid will be rejected. The Bid Security (EMD) of unsuccessful bidders will be discharged immediately after finalization of the order/contract without any interest. However, firms registered with NSIC etc., are exempted from submitting EMD provided such registration includes the item(s) they are offering are manufactured by them and not for selling products manufactured by other companies.
4. **Price Bid Opening:** The Price Bids of only technically qualified bidders (whose bids satisfy the prescribed technical specifications/parameters and have also submitted all requisitioned documents & EMD) will be opened online at the specified date & time and will subsequently be evaluated to determine the lowest bidder. The result will be displayed on <https://govtprocurement.delhi.gov.in>, which can be seen by all the bidders who participated in the tender. There shall not be any negotiation usually. However, negotiations can only be held with the lowest evaluated responsive bidder in exceptional cases. Counter offers tantamount to negotiations and shall be treated at par with negotiations.
5. **Processing of Tenders:** The concerned officer/officers will evaluate and process the tenders as done in the conventional tenders and will communicate the decision to the bidder online.

6. **Payment of Performance Security**: The successful tenderer shall furnish a Bank Guarantee/FDR of the value of **05% (Five Percent) of the basic cost** of the item for a period of 60 days beyond the warranty period in form of BG/FDR from a nationalized bank to ensure the satisfactory performance of item supplied. The performance guarantee is to be submitted at the time of installation/demonstration of equipment. In case the performance of the item is not found satisfactory, the amount of Performance Security will be forfeited & credited to the university account.
  
7. **Participation of Bidders at the time of opening of bids**: Bidders have two options to participate in the tendering process at the time of opening of Bids:
  - i. Bidders can come at the place of opening of bids (electronically) as done in the conventional tender process.
  - ii. Bidders can view the process online.
  
8. **Participation Financial Rules for e-procurement**: The e-procurement system would be applicable for the purchase of goods, outsourcing of services, and execution of work as prescribed in GFR

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## **TERMS AND CONDITIONS**

**Procedure for submission of bids:** The bidders who are desirous of participating in 'e'- procurement shall submit their technical and price bids in the standard formats (only Online) prescribed in the Tender documents, displayed at <https://govtprocurement.delhi.gov.in>. The bidder should upload the scanned copies of all the relevant certificates, documents, etc. (after page-numbering all documents) and prepare an index thereof at <https://govtprocurement.delhi.gov.in>. in support of their price bids.

The bidder shall sign on all the statements, documents, and certificates uploaded by him, who is responsible for their correctness/authenticity. The original EMD/ request letter with supporting documents, if seeking exemption from EMD submission, must also be submitted to the office of the Officer In-charge (PURCHASE), DTU. However, documents of the bidders downloaded online or requisitioned subsequently will only form the basis for deciding the tender.

Original Equipment Manufacturers (OEMs)/OEM Authorized Distributors/dealers/Channel Partners should submit their bids only. In case an OEM participates only through its authorized distributors/dealer/Channel Partners, the OEM has to explicitly certify that it does not sell products directly and participates in the tendering process through its authorized distributor/channel partner/dealer.

1. **ALTERATION IN THE SPECIFICATION:** The specifications mentioned/issued with this form of tender must not be altered by the Suppliers under any circumstances.
2. **INCOMPLETE TENDERS:** The Bidder is expected to examine all instructions, forms, terms, and specifications in the bidding documents. Failure to furnish all information/documents, as asked for in the NIT, or submission of a bid not substantially responsive to the NIT in every respect, will be at the Bidder's risk and may result in rejection of its bid.
3. **CANCELLATION OF TENDER/ CONTRACT/ IN PART OR IN FULL IN CASE OF DEFAULT IN CONTRACT/SUPPLY:** If the Supplier, in the opinion of the Institute, fails or neglects to comply with any of the terms & conditions forming, part of the order issued, the head of institute shall without prejudice to any other right or remedies under the contract, has the right to cancel the contract /order by giving **15 days notice** in writing to the Suppliers/firms without being liable to pay compensation for such cancellation.
4. Tender shall be uploaded as per guidelines indicated for e-procurement solution.
5. Demonstration of equipment has to be arranged by the suppliers if desired by the institute. The technical committee may visit the production facility or any user institution/establishment if so desired for sample verification.
6. **The quotation should be valid for a period of 180 days from the date of opening of the tender.**
7. Rates are to be quoted in INR (Rupee terms) only, and any revision thereof is not allowed after the tenders have been opened.
8. The delivery period should be clearly mentioned against each item; in case the items are not readily available, an ex-stock offer will be preferred.

9. Rates should be quoted F.O.R Institution. Taxes and Duties, namely GST/Custom Duty (against Custom Duty Exemption Certificate)/Excise Duty, should be mentioned clearly.
10. Consignment will not be insured at the Institute/University Cost.
11. **The Bidder, if not the Original Equipment Manufacturer (OEM), must submit OEM's or their Distributor's Authorization to quote/sell the product(s).** Preference will be given to quotation pertaining to indigenous products. However, where suitable substitutes are not available and item need to be imported the following clarification/information should be given.
  - i. Whether the item will be imported by the intended tenderers against its own import license or university will have to provide Custom Duty Exemption Certificate (CDEC).
  - ii. Name and address of the foreign supplier, make & model of the offered product, and authorization to sell from OEM or their Authorized Distributors/dealers/Chanel Partners.
  - iii. Delivery period including information about mode of dispatch and possible duration (after dispatch) for receipt of item at the port.
  - iv. Whether the item required any special preparation for installation. In case yes, full details should be given regarding operation maintenance of the items.
  - v. In case of costly/sophisticated items whether the tenderers will arrange any special training regarding operation/maintenance of the items.
  - vi. Nature of assurance for the supply of spares after the warranty period.
12. The payment will be made within 30 days after the successful demonstration/installation of the equipment and fulfilling of other obligations (like training, etc., if any) as per the purchase/work order against a Bill/Invoice containing therein details of goods delivered/services performed. Rejected items/goods should also be removed within 30 days at the cost of the bidder/supplier, after which no responsibility will be accepted by the University.
13. In the event of the item(s) being imported product(s), a Custom Duty Exemption Certificate (CDEC) will be issued by the University on the written request of the supplier, who, in turn, will furnish copies of relevant Customs Related Documents namely Airways Bill, Packing List, TR-6 challan, etc. along with Bill/Invoice.
14. Conditional bid shall be considered as non-responsive and shall be liable for rejection. Also, incomplete bids/quotations will be rejected summarily.
15. Bidder may note that the Bid shall be submitted based on "ZERO DEVIATION" and shall be in full compliance with the requirements of the Bidding Document, failing which the bid shall be considered as non-responsive and may be liable for rejection.
16. The Firm is required to link the University specifications with catalogs & leaflets/literature and also **mention the make and model for each item**. Detailed features for compliance with specification should be provided on the specification sheet & appropriate reference, i.e., page no. & para of literature, leaflet wherefrom the relevant information has been checked, should be indicated.

17. **EARNEST MONEY**:- EMD should be attached with the technical bid. The EMD shall be in the form of the **BG/Fixed Deposit Receipt** of a scheduled bank issued in favor of the **“Registrar, Delhi Technological University, Delhi.”** Such instrument is to be scanned and uploaded along with the bid, and the original instruments shall be sent to DTU so as to reach before the date of closing of the bids. Failure to furnish the original instrument before the closing of the bid, will entail rejection of bid and blacklisting. **If the tenderer, after acceptance of the tender, refuses to take up the purchase order, his Earnest Money will be forfeited.** Any tender received without / less Earnest Money deposit shall be summarily rejected.
18. The Purchase Order/Contract will be awarded to the successful Bidder whose bid has been determined to be responsive and has been determined to be the lowest evaluated bid, provided further the Bidder is determined to be qualified to execute the Order/Contract satisfactorily.
19. There shall not be any negotiation normally. However, in exceptional cases, negotiations can be held with the lowest evaluated responsive bidder only. Counter offers tantamount to negotiations and shall be treated at par with negotiations.
20. The Competent Authority reserves the right to reject any or all the tenders and annul the bidding process at any time prior to the award of the Contract, without assigning any reason, without thereby incurring any liability to the affected Bidder or Bidders, and his decision will be final.
21. The supplies shall have to be made within the period specified in the purchase order, failing which the order shall be canceled, and the Earnest Money will be forfeited. However, in exceptional circumstances and at the written request of the supplier/tenderer, an extension of the date for the supply of the material may be considered. It may be further noted that the extension in the supply period is at the sole discretion of the competent authority.
22. The University reserves the right at the time of award of PO/Contract to increase or decrease the quantity of goods and services originally specified in the Schedule of Requirements without any change in unit price or other terms and conditions. Further, the quantities in the PO/Contract may be enhanced by 30% within the delivery period.
23. In the case of the purchase of many items against one tender, which is not interdependent or where compatibility is not a consideration, the comparison would be made on the basis of prices quoted by the firms to identify the lowest quoting for each item.
24. **WARRANTY: All products must have a minimum of One Year Warranty.** A Warranty Certificate should invariably be supplied along with the item at the time of delivery. If after delivery, acceptance, and installation and within the guarantee and warranty period, the operation or use of the goods proves to be unsatisfactory, the supplier shall rectify the defects, errors, or omissions by repair or by partial or complete replacement on a free-of-cost basis.
25. MSE bidder shall submit the Udyam Registration Certificate for exemption of submission of Bid Security. Irrespective of the product category, exemption from payment of EMD shall be given to all eligible MSEs, except for Traders and in Works contracts. However, MSE price preference shall not be given to trader Tendering authority may verify the authenticity of service providers or manufacturers of the item to be procured by seeking additional documentation as mentioned in their Terms & Conditions while considering purchase preference. If the MSE bidder does not provide a Udyam Registration Certificate to substantiate their MSE status, it

will be presumed that the bidder does not qualify for any preference admissible in the Public Procurement Policy, 2012.

26. The Competent Authority reserves the right to levy liquidated damages up to 02% of the value of the order for delayed supply. If the supply is delayed beyond the extended period, the University reserves the right even to cancel the order and forfeit the EMD of the firm/ tenderer.
27. **PERFORMANCE SECURITY DEPOSIT:-** The successful tenderer shall furnish a Performance Security Deposit of the value of **05% of the basic cost of the item in the shape of Bank Guarantee/FDR, etc., from a nationalized bank pledged to Registrar, DTU, for a period of 60 days beyond the warranty period** to ensure the satisfactory performance of item supplied. The performance guarantee is to be submitted at the time of installation/demonstration of equipment. In case the performance of the item is not found satisfactory and/or the Supplier fails to complete its obligation under the contract/purchase order, the amount of Performance Security will be credited to the University account.
28. **DEFAULT:** In the event of default and unsatisfactory service of the contractor/Supplier firm, the DTU will be at its liberty to repair/get the item serviced from the other party at the cost of the supplier/ contractor/ tenderer.
29. In the case of software items, the suppliers should ensure that: -
  - i. Legal software is supplied in original sealed pouches /Packets.
  - ii. A license agreement is enclosed.
  - iii. A registration card is available for software.
30. **FAILURE AND TERMINATION:** - If the Contractor / Supplier fails to deliver the stores or any installment thereof within the period fixed for such delivery or at any time repudiates the contract before the expiry of such period, DTU may, without prejudice to the right of the purchaser recover damages for breach of the contract.
31. The technical & financial bids of only those bidders will be opened who fulfill the eligibility criteria and whose documents are found in order. If any of the dates earmarked for the opening of technical or financial bids happens to be a holiday, the bids will be opened on the very next working day.
32. Notwithstanding the provisions relating to the extension of time, penalty, and cancellation of tender/contract for default, the vendor shall not be liable for forfeiture of its performance security/ liquidated damages or termination for default if and to the extent that its delay in performance or other failures to perform its obligations under the contract is the result of an event of Force Majeure (i.e. an event or situation beyond the control of the vendor that is not foreseeable, is unavoidable, and its origin is not due to negligence or lack of care on the part of the vendor; such as wars or revolutions, fires, floods, epidemics, quarantine restrictions and freight embargoes etc.). If the performance in whole or in part or any obligation under the contract is prevented or delayed by any reason of force-majeure for a period exceeding 60 days, either party may, at its option, terminate the contract by sending a written notice without any financial repercussions on either side.
33. For any detailed query/clarification in r/o technical aspect of the enquiry/bid/tender, **Department of Electrical Engg.**, may be contacted.

34. Proof of GST Registration No and GST Return copy of the fourth quarter for the last three financial years from the date of opening of the tender bid is to be submitted.
35. PAN No (Copy of the PAN card to be attached)
36. The Bidder / OEM {themselves or through a reseller(s)}, should have executed project(s) for supply and installation/commissioning of the same or similar Category Products during the preceding 03 financial years (i.e., current year and three previous financial years) as on the opening date of bid, as per following criteria: (i) Single order of at least 40% of estimated bid value; or (ii) Two orders of at least 20% each of estimated bid value; or (iii) Three orders of at least 15% each of estimated bid value. A satisfactory Performance certificate issued by the respective Buyer Organization for the above Orders should be uploaded with the bid.
37. Authorization certificate from Original Equipment Manufacturer (OEM)/ Distributor/dealer or their Channel Partner to quote/sell the product, in case the bidder is not the OEM.
38. Bidder should not be under liquidation, court receivership, or similar proceedings. In case the bidder affirms that present litigation/arbitration has an impact on their obligation to perform a contract or doesn't provide affirmations as above, their bids shall be rejected
39. Disputes, if any, arising out of this tender shall be subject to the exclusive jurisdiction of Courts of Delhi/New Delhi only.

OFFICER-IN-CHARGE (PURCHASE)  
DELHI TECHNOLOGICAL UNIVERSITY, SHAHBAD  
DAULATPUR, BAWANA ROAD, DELHI – 110042  
Ph. 27871018; Email: sp@dtu.ac.in

**CHECK-LIST OF DOCUMENTS TO BE UPLOADED WITH TECHNICAL BID**

<b>S.No.</b>	<b>PARTICULARS OF DOCUMENTS</b>	<b>PAGE NO.</b>	<b>NO. OF PAGES</b>
1.	Proof of EMD /Supporting Document of eligibility if seeking submission of EMD		
2.	The minimum average annual financial turnover of the bidder during the last three years, ending on 31 <sup>st</sup> March of the previous financial year, should be 40% of the basic value of the item. Documentary evidence in the form of certified Audited Balance Sheets of the relevant period or a certificate from the Chartered Accountant/cost accountant indicating the turnover details for the relevant period shall be uploaded		
3.	Proof of GST Registration No. and GST Return copy of fourth quarter (January to March) for the <b>last three financial years</b> from the date of opening of the tender bid.		
4.	Brochure/Leaflets/Technical Information, including Make and Model, Imported/Indian of the item(s)		
5.	UNDERTAKING as per page no. 04 of the Tender Document, duly signed.		
6.	Technical specifications, Compliance sheet, terms and conditions and, delivery period, etc. to be submitted on the firm's letterhead		
7.	Warranty Certificate from the OEM/distributor		
8.	The Bidder /OEM {themselves or through reseller(s)}, should have executed project(s) for supply and installation/commissioning of the same or similar Category Products during the preceding 03 financial years (i.e., current year and three previous financial years) as on opening date of bid, as per following criteria: (i) Single order of at least 40% of the estimated bid value; or  (ii) Two orders of at least 20% each of the estimated bid value; or  (iii) Three orders of at least 15% each of the estimated bid value. A satisfactory Performance certificate issued by the respective Buyer Organization for the above Orders should be uploaded with the bid		
9.	Authorization Certificate from Original Equipment Manufacturer (OEM) or their authorized Distributors		
10.	The bidder should not be under liquidation, court receivership, or similar proceedings, and should not be bankrupt. Bidder to upload undertaking to this effect with bid		

11.	The bidder shall have after-sales service support facilities in India, from where service support shall be available at DTU, Delhi. The bidder shall provide the details and contact address of such support facility on the bidder's letterhead with the technical offer.		
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Note: All copies of the above documents should be duly signed and stamped by the tenderer before uploading.

Signature of tenderer: .....  
Name:.....  
Name of firm:.....  
Telephone No.....

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<b>S.No.</b>	<b>Particulars Of Documents</b>	<b>No. of Pages</b>

**Pagination must be carried out/completed properly.**