



भारतीय प्रौद्योगिकी संस्थान गुवाहाटी  
Indian Institute of Technology Guwahati

Mr. Labanu Kishore Konwar  
Assistant Registrar

गुवाहाटी-781039, भारत  
Guwahati-781039, India  
Phone : +91-361-2582006  
+91-361-2582010  
Email : hosiisi@iitg.ac.in

OFFICE OF THE DEAN OF  
INDUSTRIAL INTERACTIONS AND  
SPECIAL INITIATIVES

NIQ Ref. No: IITG/IISI/23-24/T15..

• To

All interested vendors

• Date : 01.11.2023

• Dispatch No:

SUBJECT: NOTICE INVITING QUOTATION FOR SUPPLY & INSTALLATION OF REAL TIME SIMULATOR FOR THE DEPARTMENT OF ELECTRONICS AND ELECTRICAL ENGINEERING (PROJECT NO.XEEEISPXOIL01006XSHN101), IIT GUWAHATI.

Dear Sir/ Madam,

The Director, Indian Institute of Technology Guwahati, invites quotations for supply and installation of real time simulator as per details mentioned in the **CHECK- LIST** attached herewith. The quotation in **double bid [Details as per Check List]** is to be submitted in sealed envelopes to the undersigned on or **before 16.11.2023**.

Please note -

- Tender document is divided into two parts i.e. (1) Instruction to Bidders and (2) Terms & Conditions;
- There is no Tender fee and Tender document is to be downloaded from our website given below.  
[https://www.iitg.ac.in/iitg\\_tenders\\_all/](https://www.iitg.ac.in/iitg_tenders_all/) / **NIQ for Industrial Interactions and Special Initiatives**
- Duly filled, signed and sealed copy of 'Statement of Compliance to essential Terms & Condition' and Technical Bid must be submitted along with the quotation.
- The bid documents are not transferable and the seal and signature of the authorized official of firms must appear on all the papers and envelopes submitted.

Kindly read both the Instructions and Terms properly and see that instructions and terms are fully understood and complied. No correspondence shall be entertained in case your quotation is rejected on ground of not complying with our instructions, terms and conditions. In case of doubt please contact us at 0361 258 2010 or the Principal Investigator at 0361 258 3463.

Thanking you.

Yours Sincerely,

सहायक कुलसचिव, औद्योगिक सहभागिता एवं विशेष प्रारंभ  
Assistant Registrar, Industrial Interactions & Special Initiatives  
भारतीय प्रौद्योगिकी संस्थान गुवाहाटी  
Indian Institute of Technology Guwahati  
गुवाहाटी, असम 781039  
Guwahati, Assam 781039

## INSTRUCTION TO BIDDERS

**A) Important Date and Time :**

- (i) Last date & Time of receipt of Tender : **16.11.2023, (1700 HRS)**
- (ii) Time of opening Tender : **17.11.2023 (1630 HRS)**
- (iii) **Pre Bid Meeting** : **08.11.2023**
- (iv) Venue of Bid opening : **Department of EEE, IIT Guwahati.**

**B) Quotations will have to be submitted in a DOUBLE Bid [Details as per CHECK - LIST]. The address of the firm submitting the quotation and the Officer to whom the quotation is addressed must appear distinctly on sealed covers. Further, on sealed cover, the following are to be written:**

**QUOTATION FOR SUPPLY & INSTALLATION OF REAL TIME SIMULATOR FOR THE DEPARTMENT OF ELECTRONICS AND ELECTRICAL ENGINEERING (PROJECT NO.XEEEEISPXOIL01006XSHN101), IIT GUWAHATI**

**LAST DATE OF SUBMISSION: 16.11.2023**

**NIQ Ref. No: IITG/IISI/23-24/T15**

To,

**The Assistant Registrar  
Industrial Interactions And Special Initiatives  
Indian Institute of Technology Guwahati  
Guwahati 781 039, Assam, India.**

From: M/s \_\_\_\_\_  
Phone No. : \_\_\_\_\_  
Email ID : \_\_\_\_\_

- C) Submission of Compliance Certificate:** Duly filled and signed Compliance Certificate (as per format at **ANNEXURE II**) must be enclosed.
- D) Bid not transferable:** The bid documents are not transferable and the seal and signature of the authorized official of the firm's must appear on all the papers and envelopes submitted.

### TERMS & CONDITIONS:

*(Please note the term 'both foreign & indigenous' wherever mentioned means the term is applicable to both foreign & indigenous purchase)*

01. **Rates** : Rates quoted for indigenous items should be on **FOR IIT Guwahati, on DOOR DELIVERY basis**, with break-ups as per details below (**For import items please refer 'Additional Terms for imported goods' below**).

	<b>Particulars</b>	<b>Rate</b>
I	Basic Price (Ex work)	
II	GST	
III	Transportation charge up to IITG premises	
IV	Transit Insurance covering All Risk up to 10 days after delivery	
V	Installation & Commissioning Charge, if any	
VI	Grand total on door delivery at IIT Guwahati	
VII	Annual Maintenance Contract rate (after expiry of warranty period)	

*Note: Vague terms like "packing, forwarding, transportation etc. extra" without mentioning the specific amount will not be accepted. Such offers shall be treated as incomplete and rejected. Bidders shall indicate their rates in clear/visible figures as well as in words and shall not alter/overwrite/make cutting in the quotation. In case of a mismatch, the rates written in words will prevail.*

02. **Validity of Quotation:** Quoted rates must be valid for **120 days** from the last date of submission of quotation.

03. **Warranty** : The quoted equipment and components must be warranted for a minimum of one year, refer annexure III

04. **Literature a must** : All the quotations must be supported by the printed technical leaflet/literature and the specifications mentioned in the quotation must be reflected/ supported by such printed technical leaflet/ literature. The model and specifications quoted should **invariably be highlighted** in the leaflet/literature for easy reference.
05. **After Sales Service** : In case of imported goods, vendors should clearly state the available nearest after sales service centre and detail address in India, without which their offers shall be liable for rejection.
06. **Dealership Certificate** : Dealers or Agents quoting on behalf of Manufacturer must enclosed valid dealership certificate.
07. **Quality Certificates** : Valid certificate to prove that the products are genuine and of International standard, as mentioned below, must be enclosed:  
(a) Manufacturer's certificate. ; (b) ISO/ISI certificate.
08. **Performance Bank Guarantee** : In case of quotations having quoted value Rupees five lacs (INR 5,00,000/-) and above, the successful bidder shall furnish an unconditional Performance Bank Guarantee (as per format at **ANNEXURE III**) valid till 60 days after the warranty period from a scheduled Bank of India for 10% of the Purchase Order value within 21 days of placement of order. Where the performance bank guarantee is obtained by a foreign bank, it shall be got confirmed by a Schedule Indian bank and shall be governed by Indian Laws and be subject to the jurisdiction of courts at Guwahati. In exceptional case or on the request of the Indenting Officer competent authority may allow starting of PBG Period from the date of installation, in which case submission of PBG valid till 60 days after the warranty period may be made within 21 days from the date of installation.

The Performance Bank Guarantee (PBG) guarantees that,

- (a) The Vendor guaranteed satisfactory operation of the Equipment & components against poor workmanship, bad quality of materials used, faulty designs and performance.
- (b) The Vendor shall at his own cost rectify the defects/replace the items supplied, for defects identified during the period of guarantee.
- (c) This guarantee shall be operative from the date of installation till 60 days after the warranty period.
09. **Delivery:**
- a) Time Limit:** Maximum within 45 (forty-five) days from the date of issue of purchase order. In case the item is not available in stock and there is significant lead time in manufacturing and delivering the item, the same must be mentioned in the quotation. The product must be delivered before the minimum lead time mentioned in quotation.
- b) Safe Delivery:** All aspects of safe delivery shall be the exclusive responsibility of the vendor. At the destination site, the package will be opened only in the presence of IIT user/representative and vendor's representative. The intact condition of the package and the seal/indicators for not being tampered with shall form the basis for certifying the receipt in good condition.
- c) Insurance:** The supplier is to establish 'All Risk Transit Insurance' coverage till door delivery at IIT Guwahati.
- d) Part Delivery:** Part delivery is not allowed.
- e) Penalty Delay delivery:** The date of delivery should be strictly adhered to otherwise the Director, IITG reserves the right not to accept delivery in part or full.
10. **Genuine Pricing** : Vendor is to ensure that quoted price is not more than the price offered to any other customer in India to whom this particular item has been sold, particularly to IIT/Institutes and other Government Organization. Copy of the latest price list for the quoted item, applicable in India, must be enclosed with the offer.
11. **Conditional tenders not acceptable:** All the terms and conditions mentioned herein must be strictly adhered to by all the vendors. Conditional tenders shall not be accepted on any ground and shall be rejected straightway. Printed conditions mentioned in the tender bids submitted by vendors will not be binding on IITG.
12. **Road Permit:** Road Permits (Waybills) shall be issued as applicable for delivery of materials against receipt of Order Acknowledgement and Proforma Invoice.
13. **Goods and Service Tax (GST):**
- a) Up-to-date Sales Tax clearance certificate, **GST Registration** number of the firm will have to accompany the quotation.
- (b) GST Deduction at source as per Order/ notification of the Govt.
- (c) GST No of IIT Guwahati is 18AAAJI0130P1Z8

(d) HSN/SAC No of the items must be clearly mentioned in the quotation along with GST No.

14. **Late and delayed tender:** Late and delayed tender will not be considered. In case any unscheduled holiday occurs on the prescribed closing/opening date the next working day shall be the prescribed date of closing/opening.

15. **Payment:**

(a) 100% Payment within 45 days from the date of successful delivery, installation and commissioning/ acceptance of goods at IIT Guwahati, generally through A/c payee cheque.

OR

(b) 90% Payment against delivery and 10% payment after successful installation and/ or commissioning of the ordered goods at site.

***Please note as per Institute's norm advance payment is not allowed for indigenous purchase.***

16. **PENALTY FOR DELAYED DELIVERY:**

In case of supply order for the scientific equipments/ apparatus, the date of delivery should be strictly adhered to. In the event of delayed delivery, installation & commissioning i.e. after the expiry of the period as agreed by both the parties, the vendor shall be liable for a penalty deduction at a percentage of the value of the undelivered equipment subject to a maximum of 10% (ten percent) as detailed below:

@1% up to one week;

@2.5% up to two weeks;

@5% up to three weeks;

@10% for four weeks and above

For the purpose of this clause, part of the week is considered as a full week. In case of delayed delivery, the Director, IIT Guwahati reserves the right not to accept the subject consignment.

17. **Enquiry during the course of evaluation not allowed:** No enquiry shall be made by the bidder(s) during the course of evaluation of the tender till final decision is conveyed to the successful bidder(s). However, the Purchase Committee or its authorized representative (IIT Guwahati) can make any enquiry/seek clarification from the bidders. In such a situation, the agency shall extend full co-operation. The bidders may also be asked to arrange demonstration of the offered items, in a short period notice, as such the bidders have to be ready for the same.

18. The acceptance of the quotation will rest solely with the Director, IITG, who in the interest of the Institute is not bound to accept the lowest quotation and reserves the right to himself to reject or partially accept any or all the quotations received without assigning any reasons.

19. **Force Majeure:**

If the performance of the obligation of either party is rendered commercially impossible by any of the events hereafter mentioned that party shall be under no obligation to perform the agreement under order after giving notice of 15 days from the date of such an event in writing to the other party, and the events referred to are as follows:

I) any law, statute or ordinance, order action or regulations of the Government of India,

II) Any kind of natural disaster, and

III) Strikes acts of the Public enemy, war, insurrections, riots, lockouts, sabotage.

20. **Termination for default:** Default is said to have occurred

(a) If the equipment or any of its component is found having poor workmanship, faulty designs, poor performance and bad quality of materials used.

(b) If the supplier fails to deliver any or all of the services within the time period(s) specified in the purchase order or any extension thereof granted by IIT.

(c) If the supplier fails to perform any other obligation(s) under the contract.

- (d) Under the above circumstances IIT may terminate the contract / purchase order in whole or in part and forfeit the PBG as applicable. In addition to above, IIT may at its discretion also take the following actions: IIT may procure, upon such terms and in such manner, as it deems appropriate, goods similar to the undelivered items/products and the defaulting supplier shall be liable to compensate IIT for any extra expenditure involved towards goods and services obtained.

#### 21. Applicable Law:

- (a) The contract shall be governed by the laws and procedures established by Govt. of India and subject to exclusive jurisdiction of Competent Court and Forum in Guwahati or India only.
- (b) Any dispute arising out of this purchase shall be referred to the Director IIT Guwahati, and if either of the parties hereto is dissatisfied with the decision, the dispute shall be referred to the decision of an Arbitrator, who should be acceptable to both the parties, to be appointed by the Director of the Institute. The decision of such Arbitrator shall be final and binding on both the parties.

#### ADDITIONAL TERMS FOR IMPORTED GOODS

Following terms besides the fore mentioned terms will be applicable in case of foreign purchases:

22. **Rates** : Prices quoted must be for destination including freight and insurance charges inclusive of **delivery up to the door of department/centre IIT Guwahati premises**, as per details below.

(a)	Particulars	Rate
I	Basic Price (Ex work)	
II	FCA/FOB dispatch port,	
III	Total CIP/CIF Kolkata	
IV	CIP IIT Guwahati Price (Freight and Insurance charge from Kolkata to IIT Guwahati)	
V	Grand total on door delivery at IIT Guwahati	
(b)		
VI	Installation & commissioning charge if any	
VII	Custom duty (Aproximate)	
VIII	Agency Commission if any	
IX	Annual Maintenance Contract rate (after expiry of warranty period)	

#### Note:

- (i) *Vague terms like "packing, forwarding, transportation etc. extra" without mentioning the specific amount will not be accepted. Such offers shall be treated as incomplete and rejected. Bidders shall indicate their rates in clear/visible figures as well as in words and shall not alter/overwrite/make cutting in the quotation. In case of a mismatch, the rates written in words will prevail.*
- (ii) *Rate of Foreign Exchange shall be the rate prevailing on the date of quotation opening.*

23. **After Sales Service:** In case of imported stores, foreign manufacturing firms should indicate facilities available for after sales service in India without which their offers are liable to be ignored.

#### 24. Delivery :

- (a) Delivery of goods at IIT Guwahati, will have to be maximum within 95(ninety-five) days from the date of issue of the Purchase Order or within the minimum lead time mentioned in the quotation.
- (b) **Delivery at IIT Guwahati only.**
- (b) While transshipment will be allowed, part shipment will not be allowed.

25. **Payment :**

- (a) **Above INR 5 Lacs :** By an irrevocable letter of Credit at CIF/CIP Kolkata value negotiable through any overseas branch of State Bank of India/ AXIS Bank with unrestricted provision.
- (b) **Below INR 5 Lacs by FDD/Wire Transfer as given below:**
- (i) **Advance payment Against Bank Guarantee:** 90% of the price will be paid in advance **against equivalent bank guarantee** from a scheduled bank provided by the supplier/Indian Agent. The remaining 10% shall be released only after receipt and acceptance of materials in good condition or after satisfactory installation and commissioning of the equipment.
- or**
- (ii) **Payment Against Proof of Despatch:** 90% of the price will be paid against receipt of proof of dispatch such as AWB, Invoice, Packing List, Insurance certificate, etc. The remaining 10% shall be released only after receipt and acceptance of materials in good condition or after satisfactory installation and commissioning of the equipment.
- or**
- (iii) **100% Payment Basis:** On request by the supplier/s 100% payment by FDD will be made. In this case on receipt of your Order Acknowledgement an FDD will be established for total ordered value, thereupon, a Xerox copy of the FDD will be sent to you which will enable you to send the materials. On satisfactory receipt and acceptance of the materials or satisfactory installation and commission of the equipment the Original FDD will be sent to you.

Note: Please note FDD/LoC will not be opened unless and until Letter of Acknowledgement in original is received at IIT Guwahati, directly from the principal (Even in case of firms having subsidiary office in India). The Indian agents are therefore advised to submit quotation after consultation with their respective principals).

26. **Customs Duty :** The Institute is generally **exempted** from payment of Customs Duty vide GOI Notification No.51/96-Customs, dated 23.07.96, with Regn. No. TU/V/RG-CDE (351)/2006, dated 14.09.2006. [CUSTOMS DUTY EXEMPTION CERTIFICATE WILL BE MADE AVAILABLE BY THE INSTITUTE IN REGARD TO QUOTES IN FOREIGN CURRENCY ONLY [ **NOT AGAINST QUOTES MADE BY A FIRM IN INDIAN CURRENCY, UNLESS THE CONCERNED FIRM IS A FOREIGN HOLDING COMPANY WITH 'FDI' CERTIFICATE ISSUED BY THE MINISTRY OF FINANCE, GOVT. OF INDIA** ].
27. **Agency Commission:** The percentage of ex-works value to be paid to Indian agent in equivalent Indian currency as agency commission as applicable will have to be clearly stated in the quotation.
28. **After Sales Service :** For equipment to be imported the quotation will have to clearly state the available nearest after sales service centre and contact no. in India.
29. **Country of Origin:** While Country of Origin Certificate will not be insisted, the same however will have to be stated in the Original Invoice for payment through LoC.
30. **LoC Amendment :** LoC/FDD amendment charges due to mistake on the part of the supplier, if any, will have to be borne by the supplier.



**Asstt. Registrar (II&SI)**

**Encl.: CHECK LIST**  
**Encl.: ANNEXURE**

CHECK – LIST

FOR THE DEPARTMENT OF ELECTRONICS AND ELECTRICAL ENGINEERING (**PROJECT NO.XEEEISPXOIL01006XSHN101**):

<u>S.N.</u>	<u>Item Name &amp; NIQ Ref. No: IITG/IISI/23-24/T15.</u>	<u>Bid Type</u>
<u>01</u>	<i>Item: Real time simulator</i> <i>Qty: 01</i> <i>Details: As per description in Annexure III</i>  <i>[For any technical clarification required please contact</i> <i>Ph. No: 0361- 2583463]</i> <i>NIQ Ref. No: IITG/IISI/23-24/T15.. dated 01.11.2023</i>	<b><u>DOUBLE</u></b> <b><u>Bid</u></b>

ANNEXURE -I

COMPLIANCE CERTIFICATE

(A certificate of compliance to NIQ term to be enclosed in the Technical bid)

SI. No.	NIQ Terms and Conditions	Yes/No
01	Rate quoted as per instruction	
02	AMC rate after warranty provided	
03	Validity of quoted rate for 120 days agreed	
04	PBG term agreed	
05	Payment term agreed	
06	Delivery terms agreed	
07	Warranty period agreed	
08	Literature: Printed Literature provided	
09	Dealership / distributorship certificate (in case of dealers/agents) provided	
10	Sales Service :address of after Sales Service centre in India provided	
11	Manufacturer certificate provided	
12	ISO/ ISI certification provided	
13	Applicable law terms agreed	

Sign. :.....

Vendor : M/s.....

Official seal of the vendor



**ANNEXURE - II**

**PERFORMANCE BANK GUARANTEE**

To:

Registrar,  
Indian Institute of Technology,  
Guwahati- 781 039

**WHEREAS** ..... (Name of Supplier) hereinafter called "the Supplier" has undertaken , in pursuance of Contract No: ....., dated: ..... 20... to supply .....  
..... (Description of Goods and Services) hereinafter called "the order".

**AND WHEREAS** it has been stipulated by you in the said order that the Supplier shall furnish you with a Bank Guarantee by a recognized bank for the sum specified therein as security for compliance with the Supplier's performance obligations in accordance with the order.

**AND WHEREAS** we have agreed to give the Supplier a Guarantee:

**THEREFORE WE** hereby affirm that we are Guarantors and responsible to you, on behalf of the Supplier, up to a total of .....  
..... (*Amount of the Guarantee in Words and Figures*) and we undertake to pay you, upon your first written demand declaring the Supplier to be in default under the order and without cavil or argument, any sum or sums within the limit of ..... (*Amount of Guarantee*) as aforesaid, without your needing to prove or to show grounds or reasons for your demand or the sum specified therein.

This guarantee is valid until the ..... day of ..... 20.....

Signature and Seal of Guarantors

.....  
.....  
.....

Date.....20....

Address:.....

.....  
.....

All correspondence with reference to this guarantee shall be made at the following address:

Registrar,  
Indian Institute of Technology,  
Guwahati- 781 039,Assam.

Attention: Asst. Registrar (II&SI)

## ANNEXURE - III

### Detailed specifications of Real time digital simulator

The simulator should be able to:

- simulate upto 72 power electronic switches with switching frequency upto 20 kHz or more
- generate PWM of switching frequency upto 200 kHz or more.
- perform real time simulation of multiple power electronic converters, generators and motors together, multiple wind turbines and solar PV models with power electronic converters and loads, multiple electric drives and controls, and microgrid.
- simulate directly using models of SimPowerSystems library of Matlab and Simulink programming environment
- perform hardware in loop (HIL), rapid control prototyping (RCP), model in loop (MIL), software in loop (SIL), controller in loop (CIL), controller hardware in loop (CHIL), power hardware in loop (PHIL).

### Hardware requirements

- Powerful multiple core processor: minimum quad core
- CPU: Intel Xeon processor 3.7 GHz or better, processor should be X86 compatible
- FPGA: Xilinx FPGA with 400k logic cells or better
- Memory: 16 GB DDR RAM or more
- Storage: 256 GB SSD or more
- Connectors: Should have Various Connectors like– JTAG, Ethernet Connector, Synchronization Connector, DB37 connector, ATX computer connector, VGA Port, USB port, serial port, network port

### Analog input channels

- Minimum no. of inbuilt input channels: 16
- Resolution 16-bit ADC or better
- Conversion time:  $\leq 2.5 \mu\text{s}$
- Input signal range: Upto  $\pm 20 \text{ V}$
- Simultaneous sampling or capturing of all channels.
- Reconfigurable voltage range
- Short circuit protection
- FPGA based control
- Conversion time should be directly controlled by the FPGA

### Analog output channels

- Minimum no of inbuilt output channels: 16
- Resolution 16-bit ADC or better
- update time: upto  $1 \mu\text{s}$  (or less)
- Output voltage range: Upto  $\pm 16 \text{ V}$
- Output current range: Upto 15mA (or more)
- Simultaneous update of all channels.

- Short circuit protected
- Reconfigurable voltage range
- FPGA based control
- Update time should be directly controlled by the FPGA

### Digital Input-Output Channels (DIO Channels)

- Minimum no of DIO channels: 32
- DO: 5-24V, upto 50 mA (or more) per channel.
- DI: 0-30V, upto 3.5 mA (or more) per channel.
- All input/outputs are sampled simultaneously
- Short circuit protected.
- Galvanic isolation.
- Reconfigurable Voltage Range
- FPGA Based Control

Other types of input/output: Ethernet, USB, RS422, Encoder In, Encoder Out.

### Co-simulation and time step

- Simulator should be able to perform CPU + FPGA Co-simulation i.e a single model can be simulated on CPU and FPGA at the same time in different time steps to facilitate complex power electronic converters and power system applications like microgrid etc.
- CPU simulation time step should be any step size between 10  $\mu$ s to 1 ms depending on the complexity of model.
- FPGA simulation time step should be any step size between 100 ns to 500 ns depending on model complexity
- It should be possible to edit parameters of the system during real time execution.
- It should do automatic core allocation in cases of multi-core simulation.
- Simulator should generate PWM pulses independent of simulation clock.

### Software requirements

- Modelling & programming environment needs to be Matlab/Simulink/SimPowerSystems
- The software should work with Matlab and Simulink 2022b versions or lower.
- It should simulate models built in Matlab/Simulink/SimPowerSystems software directly on hardware of real time simulator and allow the Matlab/Simulink/SimPowerSystem models to interact with real world signals/hardware through analog/digital signals.
- Any other proprietary/custom developed modelling environment/ compatibility with Matlab/Simulink/SimPowerSystems models by using DLL files or any other interface is not desired and may not be considered.
- It should have FPGA programming environment interface for faster simulations of power electronic converters and eliminate the need of VHDL coding
- It should provide FPGA based high fidelity motor/generator models.
- Models developed in SimPowerSystems/SimScape Electrical for power converters should run directly on the FPGA without VHDL/Verilog or any other conversion.

- Models in the field of controls, electric drives, power systems & power electronics compatible to SimPowerSystems must be provided.
- It should perform real time simulations for different applications like Power Electronics, Power System, Drives, and Controls.
- It should aid in development of custom logic & algorithms used in advanced control schemes (e.g., C S-function).
- It should have specialized solvers for power systems and power electronics simulations.
- Operating system used should be real time operating system (RTOS) dedicated for real time simulation and it should be COTS based.

### License Requirements:

- Perpetual license of all software need to be given.
- Software licenses: RTOS with Real-Time Kernel , GCC compiler, FPGA driven Digital I/O License, Simulator Host License & Simulator Target License for designing and simulating Plant & Controller Models.
- It should facilitate integrated development environment host software licenses across the lab allowing users to run simulations on a windows target in non-real time mode.

### Embedded Mode operation Feature

- It should run in embedded mode option i.e. once model is flashed on to the simulator it should run same model automatically without the involvement of the host computer even after rebooting the system.
- It should be possible to erase and reprogram the flash for multiple times on the simulator
- If user simulates inverter model in embedded mode, it should behave like an inverter all the time even after rebooting until any other new model is flashed on it

### Other Features:

- Individual user should be able to connect through LAN.
- It should facilitate multi rate simulations.
- It should simulate & validate control algorithms of all types of power electronic converters.
- It should control physical converters for drives/ motors/power conversion applications/ microgrid/renewable energy sources etc
- It should simulate control algorithms for fault scenarios of electrical motor and converters.
- It should simulate various types of faults like open-fault, short circuit, or gate-fault on any IGBT, motor, open line and line-line faults, DC links faults etc.
- It should simulate & test industrial controls for drives such as direct torque control, V/f etc.

## Note to Vendors:

- The bidder must submit the technical compliance sheet/report/ OEM datasheet (highlighting the offered specification with clear indication of Make & Model) as per the technical requirements/ features; stating deviations if any.
  - The vendors participating in tender need to give enough supporting documents which show that above specifications are met by their product. In case of insufficient documents, the purchase committee will scrutinize based on information available readily on the internet. The decision based on their scrutiny will be final in terms of meeting technical specifications.
  - The quotation must include all supporting software needed to perform real time simulation and HIL using Matlab/Simulink/SimPowerSystems environment. **Any additional software required to simulate power electronic converters in FPGA must be included.**
  - All the drivers/software/support for the quoted items should be readily available in the OEM website for download.
  - The Vendor/OEM must have local contact / service centre (Office/Dealers etc.) in India.
  - The vendor must specify the warranty periods of the quoted items. (Warranty period of 3 years or more will be preferable.)
  - Vendor also need to mention the AMC rates after warranty period in their quotation.
- .....