



No CUK/Tender/2018-19/RTSWH/08

Date: 15-03-2019

**TENDER NOTICE FOR SUPPLY AND INSTALLATION OF REAL TIME SIMULATOR WITH
HIL AND RCP THROUGH E-PROCUREMENT MODE**

Online electronic bids are hereby invited for and on behalf of Central University of Karnataka, for supply, and delivery of **Real Time Simulator with Hardware-in-the-Loop (HIL) and Rapid Control Prototyping (RCP)** for Central University of Karnataka (as per Annexure-1) as briefly described hereunder:

| | | |
|----|--|---|
| 1. | Name of the Equipment | Supply and delivery of Real Time Simulator with Hardware-in-the-Loop (<i>HIL</i>) and Rapid Control Prototyping (<i>RCP</i>) (as per Annexure-1). |
| 2. | Bid submission mode | Online through e-procurement mode on Central Public Procurement Portal Two packet system: Packet 1 -Techno-Commercial Bid and Packet 2 –Financial Bid. |
| 3. | i) Earnest Money Deposit Rs.50,000/- | Payable through Demand Draft drawn on any nationalized bank in favor of “ Central University of Karnataka ” payable at Kalaburagi. The DDs should be sent to “The Registrar, Central University of Karnataka, Kadaganchi -585367, Kalaburagi District” in sealed envelope by super scribing as “DDs for Real Time Simulator with HIL and RCP”. The DDs shall reach on or before the date and time of bid opening. OR Online payment Account Number: 5109101000001 Bank: Canara Bank IFSC: CNRB0005109 Bank Address: Canara Bank, Central University of Karnataka, Kadaganchi – 585367 Kalaburagi district, Karnataka, INDIA |
| 4. | Date and time of availability of bid document in the portal. | From 16.00 Hrs. of 15.03.2019 to 16.00 Hrs. of 05.04.2019 |
| 5. | Last date and time for submission of bids through portal. | 16.00 Hrs. of 05.04.2019 |
| 6. | Date and time of opening technical bids. | 16.30 Hrs. of 06.04.2019 |

A. Instructions to Bidders

1. Bids are to be submitted online through e-Procurement portal of the Central Public Procurement Portal (CPP portal).
2. Bids submitted offline will not be considered.
3. Bidders are instructed to read and understand the eligibility criteria and terms and conditions.
4. Tender processing fee and EMD is Payable through Demand Draft drawn on any nationalized bank in favour of “**Central University of Karnataka**” payable at Kalaburagi. The DDs should be sent to “The Registrar, Central University of Karnataka, Kadaganchi -585367, Kalaburagi District” in sealed envelope by super scribing as “DDs for Real Time Simulator with HIL and RCP”. The DDs shall reach on or before the date and time of bid opening.

OR through Online payment

Account Number: 5109101000001

Bank: Canara Bank

IFSC: CNRB0005109 Bank

Address: Canara Bank,

Central University of Karnataka,

Kadaganchi – 585367, Kalaburagi district, Karnataka, INDIA

5. EMD of the unsuccessful bidders will be refunded after opening the financial bids and EMD of the successful bidder will be refunded after successful installation and testing.
6. To avail the concessions available to MSMEs, such bidders are required to upload, the registration certificate issued by NSIC.
7. Bidders are advised to submit the tender strictly based on the terms and conditions and specification contained in the Tender Document. Conditional bids will be summarily rejected.

B. Eligibility of the bidders

1. The bidder shall be registered company/firm (Proprietorship or authorized dealer)
2. Bids can be submitted by original equipment manufacturers or authorized dealers of Real Time Simulator with HIL and RCP.
3. The bidder shall not be black listed by any Govt. /Semi Govt. /Private Institution.
4. The bidder shall be free from the encumbrance and there shall not be any vigilance case / CBI case / Court Case pending against the bidder.
5. The firm should be registered with the Income Tax, GST and other required statutory registrations.
6. The firm should have an experience of at least 3 years in supply of Real Time Simulator with HIL and RCP.
7. Annual turnover during the past three years (2015-16 to 2017-18) should be at least One Crore rupees.
8. The bidder should enclose audited financial statements and income tax returns for the three financial years from 2015-16 to 2017-18.
9. List of clients served highlighting Government organizations along with contact numbers and work order copies to be furnished.

10. The firm should produce the evidence of supplying Brewster angle microscope setup to any of the Government organization during the last two financial year 2016-17 and 2017-18.

C. Each Bidder shall upload the following digitally signed documents Packet I

1. Firm registration certificate, OEM / Authorized Dealership Certificate from principal, Sales Tax Registration Certificate, PAN Card and NSIC certificate if necessary.
2. ITRs for the last three years from the Assessment Year 2016-17 to 2018-19.
3. Audited Profit and Loss for last 3 financial years from 2015-16 to 2017-18.
4. Auditor's certificate indicating the turnover for last 3 financial years starting from 2015-16.
5. Work orders/purchase orders from reputed organizations to meet the eligibility requirements.
6. Brochure/leaflet of the Brewster angle Real Time Simulator with HIL and RCP.
7. Duly filled in Annexures I & II.

Packet II

8. Annexure III – Financial Bid

D. Terms and conditions

1. Bids can be submitted directly from Original Equipment Manufacturer (OEM) or authorized sales agent.
2. Bidder should provide valid registration numbers pertaining to income tax, sales tax, GST, etc.
3. Incomplete bids will be summarily rejected.
4. Technical literature/brochures of the quoted model explaining all specifications must be enclosed with the quotation and should be uploaded. Detailed operational manual (both electronic and printed versions) should be provided with the equipment. All the documents should be in English.
5. The supplier must ensure that all the specifications being offered in the quotation will be met by the equipment supplied. **The supplier must submit a table indicating the compliance of the features of the quoted model with those given in Annexure - I.** If any feature is not matching, it should be justified.
6. Minimum **three years warranty** is required on the main equipment and accessories from the date of installation.
7. Spare parts should be supplied with the instrument.
8. Utility and installation requirements (Electrical power, cooling water, etc.) should be clearly mentioned in quotation.
9. Price quoted should be CIF for delivery at CUK Campus, Kadaganchi, Kalaburagi District, including all taxes, customs duty (if applicable), and transportation.
10. The supplier should provide a list of users from Government institutions in India as well as from abroad. Confirmation of the claim should be supported by at least three users of Brewster angle microscope.
11. Quotation validity should be at least for 120 days.
12. Time required for delivery after confirming order, should be mentioned.

13. EMD of the unsuccessful bidders will be refunded after opening the financial bids.
14. The supplier shall provide security deposit of 10 % of the total value of the contract either in cash or Bank guaranty for the warranty period.
15. The University reserves the right to postpone and/or extend the date of receipt or to withdraw the tender notice or not to place the order or to place order for part or full quantities without assigning any reason thereof at any stage of the tender. In such an event, bidders shall not be entitled to any compensation, in any form whatsoever.
16. Canvassing in connection with the tender is strictly prohibited and the bids submitted by such bidders indulging in such practices are liable to be rejected. CUK reserves the right to debar the firm for minimum one year as per the Company policy.
17. Any legal action taken or proceeding initiated on any of the terms of the agreement shall be only in Kalaburagi jurisdiction.
18. If tender opening day happens to be holiday, the next working day will be treated as tender opening.

E. Payment terms

1. For domestic companies, payment will be made after delivery and installation of item through Cheque or online transfer.
2. For foreign companies, payment will be made through one of the following options:
 - i. Irrevocable letter of credit (L/C) for 90 days. Name and address of company on whose L/C will be opened should be clearly mentioned.
 - ii. Electronic transfer after 30 days from the date of installation of item.

Registrar

Central University of Karnataka

Annexure I

Technical Specifications:

| SL NO | Specification | Vendor Compliance Yes/ NO | Details |
|-------|--|---------------------------|---------|
| 1 | Modelling environment should be based on MATLAB/Simulink/SimPowerSystems. CUK intends to use this offline simulation software which are available in CUK | | |
| 2 | Should aid development of custom logic & algorithms used in advanced control schemes (e.g., C s-function). | | |
| 3 | Integrated Development Environment Host software licenses across the lab allowing users to run simulations on a windows target in non-real time mode | | |
| 4 | Software should be capable of generating PWM pulses independent of simulation clock | | |
| 5 | FPGA programming environment interface, which can be used for faster converter simulation, must be available | | |
| 6 | Should have the capability for FPGA-based simulation environment of power electronics systems using Graphical Circuit Editor like SimPowerSystem, PLECS, PSIM, PSPICE eliminating VHDL coding or XSG programming | | |
| 7 | Models for easy learning of engineers in the field of Drives and Power Electronics must be provided compatible to SimPowerSystems to get started with basic examples | | |
| 8 | Capability of a minimum multiple drives and detailed inverter models at a time step of 20 microseconds on CPU and 500ns on FPGA | | |
| 9 | Ability to simulate PMSM drives in 250 ns (end-to-end) (useful feature for drives applications) | | |
| 10 | Should have specialized solvers for Drives and Power electronics | | |
| 11 | Should have provision for scripting language (e.g. Python). | | |
| 12 | Ability for other third party Simulations software like GT-Power, AMESim, TESIS, etc.. | | |
| 13 | Provision to perform load flow studies | | |
| 14 | Ability to edit parameters of the system during real time execution. | | |
| 15 | Automatic Core Allocation in cases of Multi-core simulation which will help us in minimizing time and effort to allocate cores manually should be available. | | |
| 16 | Should have the capability for FPGA-based simulation environment of power electronics systems using Graphical Circuit Editor like SimPowerSystems, PLECS, PSIM, PSPICE eliminating VHDL coding or XSG programming. | | |
| 17 | Simulation of minimum of 10-15 average converter models (3ph) with detailed control loops with simulation time-step down to 500ns or less | | |
| 18 | HIL real-time simulation minimum of 3 or more switching converter models (3ph) with simulation time-step down to 500ns or less | | |

| | | | |
|----|---|--|--|
| 19 | <p>Models for easy learning of engineers in the field of Drives and Power Electronics must be provided compatible to SimPowerSystems to get started with basic examples</p> <p>Feature to simulate micro-grids with distributed energy resources such as wind, solar PV etc.</p> <p>Provision to simulate distribution system with lesser nodes</p> | | |
| 19 | Feature to study smart grid systems. Supplied software and hardware should support communication protocol like IEC 61850,DNP3, C37.118 | | |
| 20 | <p>Ability to take care of multiple events happening in between time steps.</p> <p>Ability to perform real time simulation of power electronics converters up to a switching frequency of 100 kHz.</p> <p>Ability to simulate at least 3-level converter with a switching frequency of 100 kHz</p> | | |
| 21 | <p>Embedded Mode Operation</p> <p>This wizard should allow users to connect an existing project to an embedded simulation. The project can then be opened to interact with the embedded simulation.</p> <p>Embedded Simulation should always run on the dedicated target. Project should be automatically loaded and executed when the target is powered on, i.e, it does not require the user interface on the host computer to start the simulation</p> | | |

Mandatory Specification of Hardware:

1. Real Time Simulator

| Items Details | Description | Remarks |
|-----------------------------|---|---------|
| Real Time Simulator Chassis | Simulator Chassis should be 19"rack mountable it should have minimum specifications given below | |
| | a. Powerful target computer, with Multi Core Processor, Minimum Quad core | |
| | b. Minimum supported speed 3.1GHz | |
| | c. Supported SSD, Minimum 120GB | |
| | d. Supported DDR RAM, minimum 8GB | |
| | e. Should have the LED indicators for synchronization status, target computer status etc. | |
| | f. Should have 4 socket Small Form-factor pluggable 1-to 5Gbits optical interface | |
| | g. Should 6Ch encoder and 6ch decoder | |
| | | |
| Analog Input | 16 Ch with 16bits, 2.5 us conversion time, all channels simultaneously sampled. ± 16 V Differential Input. Conversion | |

| | | | |
|-----------------------|---|--|--|
| | time should be directly controlled by the FPGA | | |
| | | | |
| Analog Output | 16 Ch with 16bits, 1 us update time, all channels simultaneously. ± 16 V. short circuit protected, update time directly controlled by the FPGA | | |
| | | | |
| Digital Output | 32 channel, Push pull type, 40 ns propagation delay. 5V to 15V, short circuit protected, Galvanic isolation, 8 channels can be configured as encoders or other application requiring the generation of fast differential logic signals. | | |
| | | | |
| Digital Input | 32 channel, Push pull type, 40 ns propagation delay. 5V to 15V, short circuit protected, Galvanic isolation with Opto coupler, 8 channels can be configured as decoders or other application requiring the generation of fast differential logic signals. | | |
| | | | |
| FPGA | Should have Xilinx Kintex7 FPGA to drive the I/O and also should support for computation | | |
| | Should provide FPGA based high fidelity Motor Models for studies | | |
| Power Amplifier | | | |
| General Specification | Frequency Range | DC to 5kHz | |
| | Operation Temperature | Ambient Temperature : 10-45°C (It is designed to work at 50 Deg) | |
| | Humidity | 95% RH or less (no condensation) | |
| | Device | BJT | |
| | Run time at rated load | 30 MIN | |
| | Max Power | 200VA | |
| | Application | Single phase Motor, three phase Motor, DC Motor Drives and Programmable power supply | |
| | Dimension | 450*350*120 mm (Weight < 5kg) | |
| | Input Supply | 230Vac, 50Hz | |
| Input Specification | Channels | 3 Channels | |
| | Signal Type | Sinusoidal, Square, Triangular | |
| | Voltage range | 0v to ± 4.5 v (AC) | |
| | Frequency range | DC to 5kHz | |
| | Input Current | 5mA to 150mA | |
| | | | |
| Output Specification | Channels | 3 Channels | |
| | Signal Type | Sinusoidal, Square, Triangular | |

| | | | |
|--------------------|-------------------|-------------------------------------|--|
| | Voltage range | 0V to 40Vrms | |
| | Max Current | 5A RMS | |
| | Max Power | 200VA | |
| | | | |
| Protection | Input Protection | Over current | |
| | | Over voltage | |
| | | Short circuit | |
| | Output Protection | Over current | |
| | | Over voltage | |
| | | Short circuit | |
| | | | |
| Dyno Motor Kit | | | |
| Brushless DC | Number of Poles | 10 | |
| | Rated Voltage | 42VDC | |
| | Rated Power | 200W | |
| | Rated Speed | 3600rpm | |
| | Rated Torque | 4.7 Lb-In | |
| | Rated Current | 5Arms/phase | |
| | Rated efficiency | 90% | |
| | No Load Speed | 4700 rpm@ 42VDC | |
| | Encoder | 8-Pin Connector should be available | |
| | | | |
| AC Induction Motor | Number of Poles | 4 | |
| | Rated Voltage | 30VAC | |
| | Rated Power | 200W | |
| | Rated Speed | 3621 rpm | |
| | Rated Torque | 4.67 Lb-In | |
| | Rated efficiency | 79.6% | |
| | No Load Speed | 3600 rpm @ 120Hz | |
| | Encoder | 5-Pin Connector should be available | |
| | | | |
| DC Motor | Rated Voltage | 36VDC | |
| | Rated Power | 200W | |
| | Maximum Speed | 4000 rpm | |
| | Rated Torque | 4.67 Lb-In | |
| | Rated Output | 250W | |
| | No Load Speed | 3600 rpm @ 120Hz | |
| | Encoder | No Encoder | |
| | | | |
| DC Motor Generator | Rated Voltage | 36VDC | |
| | Rated Power | 200W | |

| | | | |
|--|---------------|------------------|--|
| | Maximum Speed | 4000 rpm | |
| | Rated Torque | 4.67 Lb-In | |
| | Rated Output | 250W | |
| | No Load Speed | 3600 rpm @ 120Hz | |
| | Encoder | No Encoder | |

Services:

- Installation/Commissioning/Training at CUK

Scalability

1. Supplied system should be scalable for the future requirement. System be able to add IO's by adding chassis
2. Supplied systems should support required communication protocol which are used in drives application
3. Should be able to add software license at point of time to increase the computation power
4. System supplied should be with COTS technology

Annexure II

Tender Application and Declaration Form

1. Name of the Firm:
2. Full Postal Address.....
3. Mobile No.
4. Telephone No.
5. Fax No.....
6. E.mail Id.....
7. Date of Establishment of Firm.....
8. Registration No. of Firm.....
9. Is your firm participating as original equipment manufacturer (OEM) or Authorized dealer?
10. Give details of any Government contracts executed during the last twelve months (attach separate sheet, if necessary).....
11. Details of the tender fee and EMD

| Particulars | Amount | Date | Bank | UTR/DD No. |
|-------------|------------|------|------|------------|
| EMD | Rs. 50,000 | | | |

UNDERTAKING

- a) I the undersigned certify that I have gone through the terms and conditions mentioned in the tender document and undertake to comply with all the terms and conditions mentioned in the tender document.
- b) The rates quoted by me are valid and binding upon me for the entire period of contract.
- c) I hereby undertake to supply the items as per specifications given in the tender document/supply order within stipulated period, if I qualify in the tendering process.
- d) I give the rights to the Central University of Karnataka to forfeit the earnest money paid by me if any delay occurs on my part or if I fail to comply with the terms and conditions mentioned in the tender document.
- e) There is no vigilance/CBI case or court case pending against my firm **nor** is my firm blacklisted by any agency/department.

Date: _____

Name: _____

Place: _____

Designation: _____

Seal:

Note to bidder: To be submitted by the bidder in the letter head and to be signed by the authorized signatory with name and designation. Affix the seal of the firm.

**Annexure III
Financial Bid**

| Sl.no | Description | Price exclusive of taxes | Taxes | Price inclusive of taxes |
|-------|--|--------------------------|-------|--------------------------|
| 1 | Supply and delivery of the Real Time Simulator with HIL and RCP as specified in Annexure I | | | |
| | Price inclusive of taxes in words | | | |

Time required to supply and install the equipment from the date of issue of purchase order or LC whichever is later: _____ days.

Prices quoted in foreign currency will be converted into Indian Rupees at the exchange rate prevailing on the date of opening the financial bid to prepare the comparative statement and to determine the lowest quoted bid (L1).

Date: _____

Name: _____

Place: _____

Designation: _____

Seal:

Note to bidder: To be submitted by the bidder in the letter head and to be signed by the authorized signatory with name and designation. Affix the seal of the firm.