NATIONAL INSTITUTE OF TECHNOLOGY ROURKELA – 769 008, ODISHA

Single Tender Enquiry

Department: Electrical Engineering

Tender Notice No: NITR/PW/EE/2021/229 **Date: 27/01/2021**

Important Dates

Event	Date	Time
Pre-bid Conference	**NA**	**NA**
Last Date of submission of Bid	**17/02/2021**	**03:00 PM**
Date of opening of Techno-commercial & Financial Bid	**18/02/2021**	**03:00 PM**

To,

M/s Opal-RT Technologies India Pvt Limited

AT: 648/A,Ohm Chambers,2nd Floor ,100ft Road, Binnamangala, Indiranagar, Bangalore-560038
Login ID: abdul.zahir@opal-rt.com

Through
e- Procurement module of
CPP Portal
https://eprocure.gov.in/eprocure/app

Dear Sir,

We intend to purchase the commodities specified below and invite quotations in accordance with the terms and conditions detailed in the bid document. If you are interested, kindly send your offer with prices and complete terms within the time mentioned above.

For any clarification:

Attention:
Prof. Monalisa Pattnaik
Department of Electrical Engineering,
National Institute of Technology
Rourkela-769008, Odisha
Email: pattnaikm@nitrkl.ac.in
Phone: 0661 2462423

Yours sincerely,

Prof.Monalisa Pattnaik
Department of Electrical Engineering
NIT Rourkela-769008

Encl:

1) **Schedule of requirement, specification, dates etc.**
2) **Bid document containing detail terms and conditions**

1. Schedule of requirements

Sl. No.	Description of Goods/Service	Quantity
1	**Opal-RT Real Time Simulator**	**1**(**One**)

2. Specifications and allied Technical Details

For detailed specification see Annexure II

3. Format of Quotation

√	It is a single bid; please give all technical specifications and price bid in one envelope.

4. The Bid should be submitted through online via https://eprocure.gov.in/eprocure/app

5. Quotations should be valid for a period of **90 days** from the date of opening of bids

6. Some important dates:

i.	Pre-bid Conference:	Date: **NA**	Time: **NA**
ii.	Last date for submission of bid :	Date: **17/02/2021**	Time: **03:00 PM**
iii.	Opening date of Techno-commercial & Financial bid:	Date: **18/02/2021**	Time: **03:00 PM**

7. Warranty: Warranty must be **1 year** onsite which should be clearly mentioned along with the quotation.

8. GST: GST should be charge according to applicable rates.

9. Tender Cost: Tender cost (Non-refundable) in the form of DD for **INR 500 /- (Rupees Five Hundred Only)** in favour of "**Director, NIT Rourkela**" **payable at Rourkela** from any Scheduled Commercial Bank except Co-operative and Gramin Bank. Tender cost should reach physically through speed post/ registrar post / courier, containing in an envelope & superscripted with subject, tender reference number addressing to **Registrar, NIT Rourkela -769008, Odisha**; **on or before 18/02/2021 at 03:00 PM.**

10. Bid Security : - It is mandatory to submit the "**Bid Security declaration**" form as mentioned in **Annexure I**, failing which the bid will be summarily rejected.

11. Performance Security: 3 % of the Contract Value should be deposited to the Institute within 15 days from the date of issue of Purchase Order, in shape of Demand Draft (DD)/Bank Guarantee in favor of "Director, NIT Rourkela and payable at Rourkela" from any Scheduled Commercial Bank except Co-operative and Gramin bank. And Performance security should remain valid for a period of 60 days beyond the date of completion of all contractual obligations of the suppliers including warranty obligation.

12. Please go through the enclosed "bid document" carefully for other bidding instructions.

13. Please send you quotation through https://eprocure.gov.in/eprocure/app

14. A. Technical Evaluation Criteria:

i. If the supplier is Original Equipment Manufacturer (OEM) should have own service center in India. The bidders must enclose details of their infrastructure with reference to locations and technical manpower, availability of inventory spares etc. A valid GST registration certificate of OEM should be submitted along with bid.

ii. Scan copy of the minimum 3 purchase orders of above equipment and accessories **(Annexure-II)** must be enclosed along with the technical bid.

iii. Scanned copies of the technical brochure of the above equipment and accessories (**Annexure-II**) given in the quotation must be included in the technical bid.

iv. Design and schematic diagram of the equipment should be provided for better understanding.

v. Web references must be provided along with the technical bid.

vi. Point wise technical compliance along with any deviation of the mentioned specifications (**Annexure-II**) must be indicated along with technical documents.

vii. Make and model no. should be mentioned in the technical bid.

B. <u>Financial Bid Evaluation Criteria</u>:

Final Price comparison for the award of contract to decide Lowest price (L1) will be made based on the prices quoted for item no. 1.01 in BOQ.

15. For technical details, you may contact

Prof. Monalisa Pattnaik
Department of Electrical Engineering
National Institute of Technology
Rourkela-769008, Odisha
Email: <u>pattnaikm@nitrkl.ac.in</u>
Phone: 0661 2462423

NB: Please furnish your Dealership Certificate (must) and Proprietary Nature Certificate (If applicable)

ANNEXURE-I

BID SECURITY DECLARATION

Tender Ref. No.: _____Dated_____

Tender ID: _____

To

The Registrar,
National Institute of Technology, Rourkela
Sundargarh, Odisha-769008

The undersigned, declare that I/We understand that, according to your conditions, bids must be supported by a Bid Securing Declaration. I/We accept that I/We may be disqualified/ suspended from bidding for any tender /contract in your Institute (NIT Rourkela) for a period of **Five Years** from the date of notification of present tender, if I am /We are in a breach of any obligation under the bid conditions as under, if I/We

a) Withdraw/modify/amend, impair or derogate the tender/bids, during the period of bid validity specified in the form of Bid; or

b) having been notified of the acceptance of our Bid by the purchaser during the period of bid validity

(i) fail or refuse to execute the contract, if required, or

(ii) fail or refuse to furnish the Performance Security, in accordance with the Instructions to Bidders.

I/We understand this Bid Securing Declaration shall cease to be valid if I am/we are not the successful Bidder, upon the earlier of (i) the receipt of your notification of the name of the successful Bidder; or (ii) thirty days after the expiration of the validity of my/our Bid.

Signed: (insert signature of person whose name and capacity are shown) in the capacity of (insert legal capacity of person signing the Bid Securing Declaration)

Name: (insert complete name of person signing the Bid Securing Declaration) Duly authorized to sign the bid for and on behalf of (insert complete name of Bidder)

Dated on _____ day of _____ (insert date of signing) Corporate Seal (where appropriate)

(Note: In case of a Joint Venture, the Bid Securing Declaration must be in the name of all partners to the Joint Venture that submits the bid)

NATIONAL INSTITUTE OF TECHNOLOGY ROURKELA – 769 008, ODISHA

BID DOCUMENT

1. Instructions to the bidders

1.1 Bid is invited on behalf of the Director, National Institute of Technology (NIT), Rourkela–769008, Odisha, from the intending bidder for supply of the goods/stores/equipment for the Institute as detailed in the enquiry letter.

1.2 The bidders should quote their offer/rates in **BOQ** in clear terms without ambiguity.

1.3 In Case of any discrepancy between the rate in figures and that in words, the rate in words will be accepted as correct.

1.4 The last date for receipt of the bid is marked in the tender document.

1.5 The bids should be uploaded in https://eprocure.gov.in/eprocure/app. Please follow the guidelines of the site.

1.6 If a prospective bidder requires any clarification in regard to the bidding documents, s/he may make a request the concerned officer or faculty member at least 15 days before the deadline for receipt of bids.

1.7 Bid received after deadline of receipt indicated in para 1.4 above, shall not be taken in to consideration.

1.8 Each bidder shall submit only one bid. A bidder, who submits more than one bid, shall be disqualified and considered non-responsive.

1.9 **(**In respect of high value plant, machinery etc. of a complex and technical nature). The bids may be submitted in one cover, viz., techno-commercial bid and financial bid.

1.10 The bidder has to sign in full at all pages of the scanned part of the bidding document. No **over**- writing in those pages is acceptable.

1.11 If any bidder does not fulfil technical specification, his/her eligibility will be cancelled even if his/her price got L1 status.

1.12 Bidders registered with any of the following agencies/ bodies as per Public procurement policy for Micro & Small Enterprises (MSE) order 2012 are exempted categories from payment of EMD provided that the registration Certificate issued by any one of these below mentioned agencies must be valid as on close date of tender. Micro small or medium enterprises who have applied for registration or renewal of registration with any of these agencies/bodies but have not obtained the valid Certificate as on close date of tender are not eligible for exemption.

i) Khadi and Village Industries Commission (KVIC)

ii) National Small Industries Corporation (NSIC)

iii) Any other body specified by Ministry of MSME/GOI

2. Conditions of the bid

2.1 The rates quoted should preferably be net, inclusive of packing, forwarding, freight, Insurance and all other incidental charges including taxes. In case these charges are quoted extra in addition to the quoted rates, the amount thereof or ad-valorem rate must be specified. Packing, forwarding, freight, etc., when quotes separately are reimbursable at actuals. If external agencies are employed, their receipts must be enclosed with the invoice.

2.2 Duties and Taxes are to be quoted separately. Ad-valorem rates thereof should be clearly indicated with reference to the relevant Acts and Rules.

It may be noted that the Institute is availing custom duty exemption in terms of Notification No. 51/96 – Customs dt. 23.07.1996, Notification No. - 47/2017- Integrated Tax (Rate) dt. 14.11.2017 and Notification No- 45/2017 – Integrated tax (Rate) dt. 14/11/2017 & Notification No. - 45/2017- Central tax (Rate) dt. 14.11.2017, Notification No. - 45/2017- Union Territory Tax (Rate) dt. 14/11/2017 [Vide DSIR, Ministry of Science and Technology, Government of India, Registration No.: TU/V/RG- CDE (227)/2016, dated: 13.11.2018]

2.3 The goods are required to be delivered at the indenting Department of NIT, Rourkela, and must be reached within **90 days** from the date of placement of the supply of order under the risk and arrangement of the bidder and offers with delivery beyond the above period shall be treated as unresponsive. In case the delivery time is higher, the same must be mentioned clearly in the quotation.

2.4 The bid should remain valid for a period of **90 days** from the date of opening. In case your offer has a different validity period that should be clearly mentioned in the quotation.

2.5 Conditional discount, if any, offered by the bidder shall not be considered at the time of evaluation.

2.6 The goods offered should strictly conform to the specification and technical details as mentioned in schedule of requirements in the tender documents.

2.7 The Institute may like to conduct pre-dispatch inspection of goods, where applicable.

2.8 Period of guarantee/warranty, where applicable, should be specified in the bid.

2.9 If the successful bidder, on receipt of the supply order, fails to execute the order within the stipulated period, in full or part, it will be open to the Director, NIT, Rourkela to recover liquidated damage from the firm at the rate of 1 percent of the value of undelivered goods per month or part thereof, subject to a maximum of 5 percent of the value of undelivered goods. Alternatively, it will also be opened to the Director, to arrange procurement of the required goods from any other source at the risk and expenses of the bidder.

2.10 The successful bidder may be required to execute a contract, where applicable.

2.11 The bidder has to furnish up to date GST and Income Tax Clearance Certificate along with the bid.

2.12 Purchase order / Work order shall be placed on the bidding firm(s). In case of deviation to this, if any, the bidding firm should produce any such sufficient documents/credentials i.e, Agreements, MOUs, Arrangements etc. with the third party/ OEM to satisfy the buyer. A consent letter from the third party/ OEM to that effect must be enclosed along with the bidding documents.

2.13 Payment (*100 percent*) will be made by Account Payee Cheque/Bank Draft, within 30 days from the date of receipt of the goods in good condition or receipt of the bill, commissioning of the equipment, where applicable, whichever is later/latest.

2.14 State Bank of India is the sole Banking partner for NIT Rourkela for operation of LC (Letter of Credit).

2.15 In the event of any dispute arising out of the bid or from the resultant contract, the decision of the Director, NIT, and Rourkela shall be final.

2.16 The bid document/resultant contract will be interpreted under Indian Laws.

ANNEXURE II

Detailed Technical Specification and Requirement

Technical Specifications- Opal RT Real Time Digital Simulator

Category	Technical Specifications
Processor, FPGA	Intel Xeon E3 CPU (4 core, 8MB cache, with 3.5GHz), 16G B RAM, 128 GB SSD Or Better FPGA: Kintex-7 FPGA, 325T, 326,000 logic cells, 840 DSP slice (Multiplier- adder) Or Better
Analog Input Channels	• 16-input channels • Resolution 16-bit ADC • 2.5 µs conversion time • ±20 V • All channels simultaneously captured/sampled • Reconfigurable Voltage Range • Short Circuit Protected • FPGA Based Control
Analog Output Channels	• 16-output channels • Resolution 16-bit ADC • 1µs conversion time • ±16 V • 10mA • All channels simultaneously captured/sampled • Short circuit protected • Reconfigurable Voltage Range • FPGA Based Control
Digital Input Channels	• 32 channels • Push pull type • 110 ns propagation delay • All inputs are sampled simultaneously • 4.5 V to 30 V, same module can be used up to 50 V • 3.5mA • Short circuit protected, Galvanic isolation with Opto coupler transition delay of 50 ns
Digital Output Channels	• 32 channels • Push pull type • 65ns propagation delay • 5 V to 30 V • Short circuit protected • Galvanic isolation • All outputs are simultaneously generated with a maximum transition delay of 65 ns • Same module should be used for PWM generation, software configurable
Connectivity	• Ethernet, USB,CAN, RS422
CAN Communication	• Number Channel : 4 • Interface : PCIe • Connectors : 26-Pin HD- Sub • Supports : high--speed CAN (ISO 11898-2) • Compatible : J1939, CAN open ,NMEA 2000 and Device Net • CAN- High and CAN Low : Should support • CAN FD : Should support • Isolation : Galvanically isolated CAN bus drivers
Embedded Mode operation	• Real Time Simulator should run in embedded mode option. ie. 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, real time simulator should behave like an inverter. all the time even after rebooting until any other new model is flashed on real time simulator
Other required	• Dedicated PWM generation with switching frequency up to 120 KHZ

features	• Hardware in Loop (HIL), Rapid Control Prototyping (RCP) and Model in Loop Simulation Techniques/feature • Individual user should be able to connect through LAN • Should be capable of performing different applications like Power Electronics, Power System, Drives, and Controls etc. • Should facilitate Multi rate simulations • Should perform CPU + FPGA Co-simulation .ie a single model being simulated on CPU & FPGA at a same time in different time steps to facilitate complex power electronics and power system applications like Microgrid etc. • Should simulate Models on CPU with any step size between 1 Mili Seconds to 10 Microseconds and should simulate Models on FPGA with any Step size between 500 ns to 100 ns • Simulate Models Built in Matlab/Simulink/SimPowerSystems directly on Simulator Hardware and allow the Matlab/Simulink/SimPowerSystem models to interact with real world signals /hardware through Analog /Digital voltages and currents. • Real Time Operating System should be used dedicatedly for the real time simulation and RTOS should be COTS based.
Features & Capability of Software Modelling & Programing Environment	• Modelling & Programing environment should be MATLAB/Simulink/SimPowerSystems. • Any Other Proprietary/ Custom Developed Modelling Environment using DLL/ C /C++ code of MATLAB/Simulink/SimPowerSystems models is not accepted. • 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. • It should be capable of generating PWM pulses independent of simulation clock. • FPGA programming environment interface, for faster converter simulation & PE Simulations must be available. hence eliminating VHDL Coding or XSG Programing • It should support and be compatible with other Graphical Circuit Editor software like PLECS, PSIM, PSPICE, Multisim, etc. • Should have capability to interface with FEA tools like ANSYS/JMAG/Infolytica and simulate Motor models on FPGA and interface with the internal /external/simulated/physical controller • Models developed in SimPowerSystems/Sim Electrical for Power converter should be possible to run directly on the FPGA without VHDL/Verilog conversion • Models for easy learning of engineers in the field of Controls, Drives, and Power Systems & Power Electronics must be provided compatible to SimPowerSystems to get started with basic examples. • Should have provision for scripting language (e.g. Python). • It should be compatible with other Simulation software like LabVIEW, GT-Power, AMESim, TESIS • Modelling & programing environment should aid development of custom logic & algorithms used in advanced control schemes (e.g., C s-function). • Should support communication protocol like serial RS485 • It should have ability to edit parameters of the system during real time execution. • Automatic Core Allocation in cases of Multi-core simulation should be possible since this helps in minimizing time and effort spent to allocate cores manually • Simulate Power System Network like IEEE 14 Bus System, IEEE 39 bus System. • Simulate detailed Wind power plant using DFIG or PMSG • Simulate detailed model of multiple solar PV panels-based PV farm • Simulate various FACTS devices like SVC, TCSC, STATCOM, UPFC • Simulate CIGRE benchmark Multi-terminal LCC-HVDC • Send up to 16 CT/PT/CVT signals to actual protection relays, PMUs and other Intelligent Electronic Devices (IEDs) • Receive up to 32 status/command signals in the form of digital inputs from external controllers • Perform closed loop testing of low voltage protection relays for different contingencies in the power network • Simulate control algorithms for laboratory scale converters used in renewable energy Integration Studies. • Simulate control of wind energy systems using DFIG or PMSG • Control a wind turbine emulator system using DC motor setup • Control Physical converters for drives/ motors/power conversion applications/Microgrid/ Renewable Sources etc. • Simulate different control schemes associated with Solar PV inverters • Simulate & Validate control algorithms of Switched Mode Power Supply (SMPS) and UPS • Simulate control algorithms for under fault scenarios of electrical motor and converters

	• 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. • Simulate industrial controls for drives such as Direct Torque Control, V/f etc.
Licensing Software	• Perpetual license of the software should be provided
Warranty	• One year of comprehensive warranty for system along with its interface cards and accessories • Warranty should cover/include parts, labor and transportation cost.
Training	3 days onsite training of the equipment. The training should cover the following applications: 1. Pre-certification of smart inverter controllers. 2. Grid connected converter applications. 3. Renewable energy applications. 4. Microgrid applications. 5. Parallel converter topologies. 6. EV based applications.