

Malaviya National Institute of Technology Jaipur

Jawahar Lal Nehru Marg, JAIPUR-302017 (Rajasthan)

**Ministry of Education
(Government of India)**



Single Tender Enquiry

For

Procurement of FPGA based RCP System with Integrated Sensors and Software

NIT Number: F5(1890)ST/MNIT/EE/2022

Date:19.01.2022

**MALAVIYA NATIONAL INSTITUTE OF TECHNOLOGY
JLN MARG, JAIPUR-302017**

To,

**M/s Entuple Technologies Pvt. Ltd.,
No. 2730, 80 Feet Road, HAL 3rd Stage,
Indiranagar, Bangalore- 560038**

Email id:

Sub: Invitation for Quote for the Purchase FPGA based RCP System with Integrated Sensors and Software

Registrar, Malaviya National Institute of Technology Jaipur invites Quote from M/s Entuple Technologies Pvt. Ltd., Bangalore. The hard copy of your offer addressed to the Office of Deputy Registrar (Stores & Purchase) MNIT, JLN Marg, Jaipur- 302017 is required to be submitted on or before Dated 10.02.2023. The important information related to tender are as follows:

Sr. No.	Name of Item	Specifications
01	FPGA based RCP System with Integrated Sensors and Software	As per Annexure - E

1. The bids should contain the following document:

- i. Detailed technical product catalogue.
- ii. Bidder should be the manufacturer / authorized dealer. In case bidder submitted the bid on behalf of OEM than Letter of Authorization from original equipment manufacturer (OEM) specific to the tender enquiry should be enclosed (as per Annexure A).
- iii. A certificate from OEM to the affect that the said good/software is a proprietary item
- iv. A certificate to the affect that the price quoted by you is the lowest and not more than the price quoted to other Educational Institutes in India.
- v. A certificate to the affect that your firm has not been Black Listed/De Listed or put to any Holiday by any Institutional Agency/ Govt. Department/ Public Sector Undertaking in the last three years.
- vi. List of industrial and educational establishments where the items enquired have been supplied must be provided.
- vii. Previous Purchase Order's.

2. Validity: The validity of the offer shall remain valid for 90 days from the date of submission of the offer.

3. Award of Contract MNIT, Jaipur shall award the contract to the bidder whose bid has been accepted and determined as responsive.

4. Installation: The supplier is required to do the installation and demonstration of the equipment / software within two weeks of the arrival of materials at the MNIT Jaipur, site of installation.

5. Payment Terms: For Indigenou supplies, 100% payment shall be made by the Purchaser against delivery, inspection, successful installation, commissioning and acceptance of the equipment at MNIT Jaipur in good condition and to the entire satisfaction of the Purchaser.

- i. GST Deduction at source as per Order/ notification of the Govt.
 - ii. GST No of MNIT Jaipur is **08AAAJM0351L1Z6**
 - iii. HSN/SAC No of the items must be clearly mentioned in the quotation along with GST No.
 - iv. MNIT Jaipur is exempted from paying custom duty under notification No.51/96 (partially or full) and necessary "Custom Duty Exemption Certificate" can be issued after providing following information and Custom Duty Exemption Certificate will be issued to the shipment in the name of the Institute, no certificate will be issued to third party:
- 6. Defective Equipment:** If any of the equipment supplied by the Supplier is found to be substandard, refurbished, un-merchantable or not in accordance with the description/specification or otherwise faulty, the committee will have the right to reject the equipment or its part. The prices of such equipment shall be refunded by the Supplier with 18% interest if such payments for such equipment have already been made. All damaged or unapproved goods shall be returned at suppliers cost and risk and the incidental expenses incurred thereon shall be recovered from the supplier. Defective part in equipment, if found before installation and/or during warranty period, shall be replaced within 7 days on receipt of the intimation from this office at the cost and risk of supplier including all other charges. In case supplier fails to replace above item as per above terms & conditions, MNIT Jaipur may consider "Banning" the supplier.
- 7. Liquidated Damages (L.D):** If a supplier fails to execute the order in time as per the terms and conditions stipulated therein, it will be open to the purchaser to recover liquidated damages for delay in delivery and installation from the supplier at the rate 0.5% of the value of the order per week subject to a maximum of 10% of the total order value. The L.D charges can be increased in case of gross violation of the Purchase Order terms as decided by the Director of the Institute.
- 8. Cancellation:** MNIT Jaipur reserves the right to accept or reject or cancel any or all enquiries or quotations at any stage without assigning any reason thereof.
- 10.** All disputes are subject to Jaipur jurisdiction.
- 11.** Must ensure to submit Declaration of Local Content. (Annexure-B)
- 12.** Must ensure the price bid/financial bid be furnished as per the price bid format (Annexure-C)
- 13.** Must ensure to submit duly signed checklist (as per Annexure- D)

Deputy Registrar (S&P)

MANUFACTURERS' AUTHORIZATION FORM

[The Tenderer shall require the Manufacturer to fill in this Form in accordance with the Instructions indicated. This letter of authorization should be on the letterhead of the Manufacturer and should be signed by a person with the proper authority to sign documents that are binding on the Manufacturer].

Date: [insert date (as day, month and year) of Bid Submission]

Tender No.: [insert number from Invitation for Bids]

To: [insert complete name and address of Purchaser] WHEREAS

We [insert complete name of Manufacturer], who are official manufacturers of [insert type of goods manufactured], having factories at [insert full address of Manufacturer's factories], do hereby authorize [insert complete name of Tenderer] to submit a bid the purpose of which is to provide the following Goods, manufactured by us [insert name and or brief description of the Goods], and to subsequently negotiate and sign the Contract.

We hereby extend our full guarantee and warranty in accordance with the Terms and Conditions, with respect to the Goods offered by the above firm.

Signed: [insert signature(s) of authorized representative(s) of the Manufacturer]

Name: [insert complete name(s) of authorized representative(s) of the Manufacturer] Title: [insert title]

Duly authorized to sign this Authorization on behalf of: [insert complete name of Tenderer] Dated on day of,

[insert date of signing]

DECLARATION OF LOCAL CONTENT

[For Local Content of Products, Services or Works]

(To be given on Company Letter Head – For tender value below Rs.10 Crores)

(To be given by Statutory Auditor/Cost Auditor/Cost Accountant/CA for tender value above Rs.10 Crores)

To,
The Registrar
MNIT Jaipur

Subject: Declaration of Local Content

Tender reference No. _____

1. Country of Origin of Goods being offered: _____
2. With reference to Order No. P- 45021/2/2017-PP(BE-II) dated 16-09-2020 of DPIIT, Ministry of Commerce and Industry, Govt. of India, we fall under the following category of supplier (please tick the correct category) for the items for which this tender has been floated and being bided.
 - Class I local supplier – has local content equal to more than 50%. Local contents added at _____ (name of location).
 - Class II local supplier – has local content more than 20% but less than 50%. Local contents added at _____ (name of location).
 - Non-local supplier – has local content less than or equal to 20%. Local contents added at _____ (name of location).
3. We are solely responsible for the above mentioned declaration in respect of category of supplier. False declarations will be in breach of the Code of Integrity under Rule 175(1)(i)(h) of the General Financial Rules for which we may be debarred for up to 2 years as per Rule 151(iii) of the General Financial Rules along with such other actions as may be permissible under law.

Signature of Bidder/ Agent

Name: _____

Designation: _____

Organization Name: _____

FORMAT FOR PRICE BID SUBMISSION

(In letterhead of the supplier with seal)

1	2	3		4	5 Price per unit (Rs.)			6	7 Delivery Charges (Rs.)				8
Sl. No.	Name of Goods	Part Item Sl. No.	Name of Part-Item	Accounting unit & quantity	Ex-factory/ ex-warehouse/ ex-show room off-the shelf	GST payable	Overall Basic unit price (Col. a+b)	Total Item price	Packing and forwarding	Transit Insurance, Other duties and taxes, if any (other than sales tax) and incidental costs	Any other charges (please specify)	Total Inland Transportation	Total Bid Price (Rs.)
1	2	3		4	5(a)	5(b)	5(c) = 5(a)+5(b)	6 = 4x 5(c)	7(a)	7(b)	7(c)	7= 7(a)+7(b)+7(c)	(6)+(7)
1.	FPGA based RCP System with Integrated Sensors and Software			Unlimited User									
GRAND TOTAL													

Total bid price (for Indian components) in Indian Currency*: (in figures) :

(in words):

Signature of Bidder/ Agent

Name: _____

Designation: _____

Organization Name: _____

MALAVIYA NATIONAL INSTITUTE OF TECHNOLOGY JAIPUR

The bidders submitting quotations for the supply of items must ensure to fill the checklist as mentioned below:

S.No.	Document/Details sought for	Page No.	Yes	No
1	Detailed technical product catalogue.			
2	Bidder must be manufacturer/authorized distributor/dealers and they have to enclose a certificate of authorization of manufacturer in format at Annexure –A, (Authorization certificate in any other format will not be valid) OEM itself or any one authorized dealer on behalf of OEM a may participate in bid. OEM and its dealers both may not participate at the same time.			
3	A certificate from OEM to the effect that the said good /software is a proprietary item			
4	A certificate to the affect that the price quoted by you is the lowest and not more than the price quoted to other Educational Institutes in India.			
5	A certificate to the affect that your firm has not been Black Listed/De Listed or put to any Holiday by any Institutional Agency / Govt. Department / Public Sector Undertaking in the last three years.			
6	List of industrial and educational establishments where the items enquired have been supplied must be provided.			
7	Previous Purchase Order's.			
8	Declaration of Local Content			

Any other important point requested in the bid invitation letter

S. No	Product Name	Product Specification	
	FPGA based RCP System with Integrated Sensors and Software		
	Parameter	Specifications	
1.	Controller	<ul style="list-style-type: none"> • Xilinx ZYNQ-7000 SoC • Dual ARM Cortex-A9 MP Core • NEON Processing/FPU Engines • Artix-7 Programmable FPGA • 512 MB DDR3 • 256 MB Quad-SPI Flash 	
	PWM Outputs	No of channels	16 Channels
		Output Voltage	5 /15 V
		Propagation Delay	14 ns/ less than 20
		Protection	Short Circuit
		Isolation	Galvanic
	Analog Input	No of channels	8 Channels
		Input Range	± 10 V
		Sample Rate	Up to 1MSPS per channel
		ADC Architecture	Delta-Sigma
		Filter	Configurable Digital Filter (Order, Cutoff frequency, Bandwidth, Response time)
		Connectors	BNC type
		Resolution	16 bits Typical
		Protection	Over Voltage
		Bandwidth	DC to < 262kHz
		Isolation	Galvanic Isolation
		Protection	Over Voltage
	Analog Output	No of channels	8 Channels
		Output Range	± 10 V
		Resolution	16 bits
		Connectors	BNC type
		Sampling Rate	200ksps per channel
		Settling time	< 15us
		Isolation	Digital Interface
		Protection	Over current
	Voltage Sensor	Type	Isolated voltage sensing
		Mounting	Integrated
		No of sensors	8 Channels
		Input Range	± 1000 V
		Digitization	Delta-Sigma ADC
		Filter	Configurable Digital Filter (Order, Cutoff frequency, Bandwidth, Response time)
		Resolution	16 bits Typical
		Bandwidth	DC to < 262kHz
		Sample Rate	Up to 1MSPS per channel
		Isolation	Galvanic Isolation
	Current Sensor	Type	Closed loop Hall Effect Sensor
		Mounting	Integrated

		No of sensors	8 Channels
		Input Range	± 25 A RMS, ± 80 A Measuring Range
		Resolution	16 bits Typical
		Digitization	Delta-Sigma ADC
		Filter	Configurable Digital Filter (Order, Cutoff frequency, Bandwidth, Response time)
		Sample Rate	Up to 1MSPS per channel
		Bandwidth	Dc to <200kHz
		Isolation	Galvanic Isolation
	Encoder (Hall)	No of channels	2 Channels
		Input Voltage	3.3/5 V
		Isolation	Galvanic
		Data rate	< 40Mbps
	Relay Outputs	Contact Configuration	SPDT
		Switching Voltage	250V
		Switching Current	6A
		Operate Time	6 ms
		No. of channels	8 Channels

Suite Software Features

Input Registers

- Up to 32 input registers
- Used for run time control commands
- Online tuning of user selected control parameters.

Output Registers

- Up to 128 ORegs or 1024 total OReg bits whichever is lower
- For display, plot and recording of user selected slow signals
- 10ksps sampling rate
- Can have 1 hour of buffer data

Real-time waveform/Signal Probe

- Up to 128 Probes or 1024 total Probe bits whichever is lower
- For display, plot, measurement and recording of user selected real-time fast signals
- 50-200ksps sampling rate
- buffering option from 1-30 sec
- FFT analysis of the Voltage and current waveform in both Scope mode and programmed mode.
- Scope mode with voltage and current measuring.
- Dashboard arrangement for experiment setups.
- MATLAB support for captured data analysis.

TCLScripting

- TCL command support for GUI Configuration.
- Automate Controller tasks such as Creating various plots, panels, and dashboards.

Real-time Storage

- Storage of real-time data for post analysis
- Data exporting provision to .png/.csv file format.

Hardware Management functions

- Device discovery, Device Status Check and Binary compatibility check
- Remote Programming, Remote Firmware Upgrade and Sensor Calibration.

- Auto load binary on power up
- Auto sync to binary
- Flash, Read and Write Firmware, IP Address, Config file and Application Binary.

Protections

- Over voltage with User configurable threshold limits (Definitive & Instantaneous)
- Under Voltage with User configurable threshold limits (Definitive & Instantaneous)
- Over Current with User configurable threshold limits (Definitive & Instantaneous)
- Under current with User configurable threshold limits (Definitive & Instantaneous)
- Over threshold with User configurable threshold limits (Definitive & Instantaneous)
- Under threshold and sensor error
- User configurable actions.
- Dedicated Indicators
- Option to pause Live update on Fault

Configurable PWM generator

- Carrier wave type: Ramp Positive, Ramp Negative, Triangular Wave, Inverse Triangular Wave
- Configurable high and low threshold
- Switching frequencies up to 2 MHz with minimum 100 steps
- PWM Short circuit protection with Master Trip and Error Flag Indication.

Other Functions

- Expression Panel: User defined measurements, Widgets, Plots etc, Create, Edit and Save Expressions.
- 8 User Configurable dashboards
- 64 Probe panels

Connectivity

- 1 Gigabit Ethernet connectivity is provided for communication with PC

FPGA - RCP Library Blocks

Block set

library in Simulink environment

Configurable Hardware Interface blocks for

- Voltage sensors
- Current sensors
- PWM outputs
- Encoder Inputs
- Digital input
- Digital Output
- Analog Input
- Digital Output
- Relay outputs

Application Block set

Should consists of required Building blocks (like PI controller, Carrier wave, Sinusoidal wave, PLL, Digital filter, Measurement blocks, transformation blocks, PWM generator etc.) for basic algorithm development of power electronics, power system and renewable energy system.