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Section 1: Bid Schedule

1	Tender no.	
2	Tender date	2 nd August 2021
3	Item description	Bidirectional Grid Simulator
4	Tender type	(i) Technical bid (part A) (ii) Commercial bid (part B)
5	Place of tender submission	Office of the Chairman Attn: Dr. Vishnu Mahadeva Iyer Department of Electrical Engineering Indian Institute of Science Bangalore – 560012 India
6	Last date and time for submission of tender	23 rd August 2021
7	For further clarification	Dr. Vishnu Mahadeva Iyer Room 319, Department of Electrical Engineering, Bangalore – 560012, India Email: vishnumi@iisc.ac.in Ph: +91-9739931102

Section 2: Eligibility criteria

This is a Request for quote (RFQ) from **domestic (India-based) manufacturers, Indian OEM or its authorized Indian distributor** only for procurement of **Bidirectional Grid Simulator** at the **department of Electrical Engineering (EE), Indian Institute of Science, Bangalore**.

With respect to this tender, the rules laid out by the Government of India in order No. **P-45021/2/2017-pp-BE-II** issued by the Public Procurement Section, Department or Promotion of Industry and Internal Trade, Ministry of Commerce and Industry, dated 16th September 2020 will be followed. As per this order, the government has defined a 'Class-I local supplier' as "a supplier or service provider whose goods, services or work offered for procurement, has local content equal to or more than 50%". A 'Class-II local supplier' is "a supplier or service provider, whose goods, services or works offered for procurement, has local content more than 20% but less than 50%". **Only Class-I and Class-II local suppliers are eligible to participate in this open domestic tender.** Any "Non-local supplier" i.e., "a supplier or service provider, whose goods, services or works offered for procurement, has local content less than 20%" is ineligible to participate in this tender.

The deadline for submission of proposals is **23rd August 2021 by 5:00 PM**. Proposals should arrive at the Office of the Chairman, Department of Electrical Engineering, Indian Institute of Science, Bangalore, Karnataka 560012, India.

Prequalification criteria:

1. Quote should come only from Indian Original Equipment Manufacturer (OEM) or their Indian authorized distributor. The quotations should be on FOR-IISc Bangalore basis in INR only.
2. The OEM should have existence for a minimum of 10 years. (Enclose Company Registration Certificate)
3. The OEM should have a full-fledged service center in India.
4. The Bidder should have qualified technical service personnel for the instrument(s) based in India.
5. If the Bidder is a local distributor/dealer/agent, it is mandatory to attach authorization certificate along with the technical bid from the original equipment manufacturer.
6. The bidder should sign and submit the declaration for Acceptance of Terms and Conditions as per -Annexure 4.
7. The Bidder must not have been blacklisted/banned/suspended or have a record of any service-related dispute with any organization in India or elsewhere. A declaration to this effect has to be given as per Annexure 3.

Section 3: Terms and conditions

A) Submission of Tender:

1. All documentations in the tender should be in English.
2. Tender should be submitted in two envelopes (two bid system).
 - a. Technical Bid (Part-A) – Technical bid consisting of all technical details and check list for conformance to technical specifications. The proposal should contain a compliance table with 4

columns in addition to the ones in the technical requirements table that has been included with this RFQ below. The compliance table should include all the items in the same order and format. The first column should describe your compliance in a “Yes” or “No” response. If “No” the second column should state the extent of deviation. The “third” column should state the reasons for the deviation if any. The fourth column can be used to compare your tool with that of your competitors or provide details as requested in the technical requirements table below. (suppliers who include any indication of prices in the technical bid will be automatically disqualified).

b. Commercial Bid (Part-B) – Commercial bid indicating item wise price breakdown for the items mentioned in the technical bid, as per the format provided in tender, and other commercial terms and conditions.

3. The technical bid and price bid should each be placed in separate sealed covers, superscripting on both the envelopes the tender no. and the due date. Both these sealed covers are to be placed in a bigger cover which should also be sealed and duly superscripted with the Tender No, Tender Description & Due Date.

4. The SEALED COVER superscripting tender number / due date & should reach the Office of the Chairman, Department of Electrical Engineering, Indian Institute of Science, Bangalore – 560012, India on or before due date mentioned in the tender notice. In case due date happens to be holiday the tender will be accepted and opened on the next working day. If the quotation cover is not sealed, it will be rejected.

5. All queries are to be addressed to the person identified in “Section 1 – Bid Schedule” of the tender notice.

6. GST/other taxes, levies etc., are to be indicated separately. The BIDDER should mention GST Registration and PAN in the tender document (Indian Bidders only).

7. If price is not quoted in Commercial Bid as per the format provided in tender document the bid is liable to be rejected.

8. The Institute reserves the right to accept or reject any bid and to annul the bidding process and reject all bids at any time prior to the award of contract, without there by incurring any liability to the affected bidder or bidders or any obligation to inform the affected bidder or bidders.

9. Incomplete bids will be summarily rejected.

B) Cancellation of Tender: Notwithstanding anything specified in this tender document, IISc Bangalore, in its sole discretion, unconditionally and without having to assign any reason, reserves the rights:

a. To accept OR reject lowest tender or any other tender or all the tenders.

b. To accept any tender in full or in part.

c. To reject the tender, offer not confirming to the tender terms.

C) Validity of the Offer: The offer shall be valid 21 Days from the date of opening of the commercial bid.

D) Evaluation of Offer:

1. The technical bid (Part A) will be opened first and evaluated.
2. Bidders meeting the required eligibility criteria as stated in Section 2 of this document shall only be considered for Commercial Bid (Part B) opening. Further, agencies not furnishing the documentary evidence as required will not be considered.
3. Pre-qualification of the bidders shall not imply final acceptance of the Commercial Bid. The agency may be rejected at any point during technical evaluation or during commercial evaluation. The decision regarding acceptance and / or rejection of any offer in part or full shall be the sole discretion of IISc Bangalore, and decision in this regard shall be binding on the bidders.
4. The award of contract will be subject to acceptance of the terms and conditions stated in this tender.
5. Any offer which deviates from the vital conditions (as illustrated below) of the tender is liable to be rejected:
 - a. Non-submission of complete offers.
 - b. Receipt of bids after due date and time and or by email / fax (unless specified otherwise).
 - c. Receipt of bids in open conditions.
6. In case any BIDDER is silent on any clauses mentioned in these tender documents, IISc Bangalore shall construe that the BIDDER had accepted the clauses as of the tender and no further claim will be entertained.
7. No revision in the terms and conditions quoted in the offer will be entertained after the last date and time fixed for receipt of tenders.
8. Lowest bid will be calculated based on the total price of all items tendered for Basic equipment along with accessories selected for installation, operation, preprocessing and post processing, optional items, recommended spares, warranty, annual maintenance contract.

E) Pre-requisites:

The bidder will provide the prerequisite installation requirement of the equipment along with the technical bid.

F) Warranty:

The complete system is to be under warranty period of minimum 3 years (year wise breakup value should be shown in the commercial bid) including free supply of consumables, spare parts, and data analysis software from the date of functional installation. If the instrument is found to be defective, it has to be replaced or rectified at the cost of the bidder within 30 days from the date of receipt of written communications from IISc, Bangalore. If there is any delay in replacement or rectification, the warranty period should be correspondingly extended.

G) Annual Maintenance Contract:

The bidder will provide an annual maintenance contract for a period of 2 years on completion of the warranty period.

H) Purchase Order:

1. The order will be placed on the bidder whose bid is accepted by IISc based on the terms & conditions mentioned in the tender document.
2. The quantity of the items in tender is only indicative. IISc, Bangalore reserves the right to increase /decrease the quantity of the items depending on the requirement.
3. If the quality of the product and service provided is not found satisfactory, IISc, Bangalore reserves the right to cancel or amend the contract.

I) Delivery and Installation:

The bidder shall provide the lead time to delivery, installation and made functional at IISc, Bangalore from the date of receipt of purchase order. The system should be delivered, installed, and made functional within 90 days from the date of receipt of purchase order. The supply of the items will be considered as effected only on satisfactory installation and inspection of the system and inspection of all the items and features/capabilities tested by the IISc, Bangalore. After successful installation and inspection, the date of taking over of entire system by the IISc, Bangalore shall be taken as the start of the warranty period. No partial shipment is allowed.

J) Payment Terms: The payment will be through FOR-IISc Bangalore in INR only.

K) Statutory Variation: Any statutory increase in the taxes and duties subsequent to bidder's offer, if it takes place within the original contractual delivery date, will be borne by IISc, Bangalore subject to the claim being supported by documentary evidence. However, if any decrease takes place the advantage will have to be passed on to IISc, Bangalore.

L) Disputes and Jurisdiction: Any legal disputes arising out of any breach of contract pertaining to this tender shall be settled in the court of competent jurisdiction located within the city of Bangalore, India.

M) General:

1. All amendments, time extension, clarifications etc., within the period of submission of the tender will be communicated electronically. No extension in the bid due date/time shall be considered on account of delay in receipt of any document(s) by mail.
2. The bidder may furnish any additional information, which is necessary to establish capabilities to successfully complete the envisaged work. It is however, advised not to furnish superfluous information.
3. The bidder may visit the installation site before submission of tender, with prior intimation.
4. All imported equipment should be quoted in the currency of the country of origin, and all locally sourced items should be quoted in Indian Rupees.
5. Any information furnished by the bidder found to be incorrect, either immediately or at a later date, would render the bidder liable to be debarred from tendering/taking up of work in IISc, Bangalore.

Section 4: Technical details

S. No	Parameter	Specifications
1	Place where equipment /service to be supplied	Department of Electrical Engineering, Indian Institute of Science, Bangalore - 560012
2	Scope	Supply and Demonstration.
3	Rated Power	<p>≥ 15 kVA AC. System should be regenerative and should have the capability to feedback power to the grid. Should have overload capability. Required overload ratings are given below.</p> <ul style="list-style-type: none"> • 125% overload for 5 mins or more • 150% for 1 min • 200% for 2 sec for loads with high inrush current.
4	Input AC voltage	3 x 400 Vrms L-L ± 10% VL-L + Neutral + Earth, 48-62Hz.
5	THD and PF	≤ 3% THD at rated power, ≥ 0.95 power factor
6	Efficiency	≥ 90% under all operating modes
7	Operating Modes	<ul style="list-style-type: none"> • Generation of worldwide electrical grids: 3-phase (≤ 480 Vrms L-L) / 1-phase (≤ 270 Vrms L-N) / split-phase (≤ 240 Vrms L-L). • 3ϕ mode output (0 to 270Vrms L-N, 0 to 480Vrms L-L, 20 A per phase, ±15 kVA AC). Operation under any output power factor (-1 to 1) condition is required. • 1ϕ mode output where all three phases operate in parallel (0 to 270Vrms L-N, 60 A, ±15 kVA AC). Operation under any output power factor (-1 to 1) condition is required. • Split-phase mode output (0 – 240 Vrms L-L, 20 A per phase) • Programmable output voltage (CV) in all operating modes. Capability to independently control the phase angle and amplitude of individual output channels. Capability to generate voltage dips, frequency variation, flicker and LVRT.
8	Output Side – AC	
	Voltage and Current Range	0 to 270Vrms L-N (both 1 ϕ & 3 ϕ mode output), 0 to 480Vrms L-L (3 ϕ mode output), 0 to 240Vrms L-L (split-phase mode) 20A per phase (3 ϕ mode output) 60A in parallel mode (1 ϕ mode output)
	Load	The equipment should support both linear and non-linear loads.
	THD of output Voltage waveform	≤ 0.5% at 230Vrms, 50/60 Hz (for linear load) ≤ 3% at 230Vrms, 50/60 Hz (for non-linear load)
	Set point Accuracy	≤ 100 mVrms
	Transient Time	≤ 2ms (10% to 90% at a step change) Harmonics: ≤ 2ms
	Harmonics	<ul style="list-style-type: none"> • 50 independent harmonics per phase. • At least 10 free programmable frequencies (and phase) from 0.1f₀ to 50f₀ • Capability to generate sub-harmonics, harmonics, and inter-harmonics.
	Bandwidth	<ul style="list-style-type: none"> • 10 Hz to 400 Hz operation (or wider range) is required. • The small-signal bandwidth should be at least 5 kHz.

	Phase Angle Range	0 - 360°, Resolution: $\leq 0.1^\circ$
9	User Interface	<ul style="list-style-type: none"> • Touch screen front panel for local control is preferred. • Analog and Digital interfaces • ON/OFF knob should be provided, Emergency stop switch is preferred. • LAN Interface for remote control
10	Software	<ul style="list-style-type: none"> • Graphical User Interface for PC connectivity. • Compatibility with Windows 10 operating system. • Preferable to have control drivers for LabView software. • Sequence generation for IEC 61000 -4-11, 4-13, 4-14, 4-28.
11	Protections	<ul style="list-style-type: none"> • Overvoltage, overcurrent, overload, short-circuit. • Preferable to have protection against input voltage unbalance. • Should have user-configurable protection limits.
12	Measurements	<ul style="list-style-type: none"> • Grid voltage, grid current, input power and input frequency, output voltage, output current, output power, output frequency, intermediate DC link voltage. • Preferable to have data-logging option to monitor the measured quantities.
13	Safety and Compliance	<ul style="list-style-type: none"> • Safety: IEC/EN-62040-1 or equivalent, Other relevant safety standards for electronic equipment. • EMC: IEC/EN-62040-2 or equivalent. <p>Certificate of Compliance for EMC Standards and Safety Standards should be submitted along with offer.</p>
14	Standard product	<ul style="list-style-type: none"> • Quoted product should be a standard catalogue product from reputed OEMs. • It is preferable if the supplier has previously supplied similar products to other government-accredited institutes in India and can provide an end-user certificate.
15	Future upgradability	Provision to increase the power level of the system (45 kW required, ≥ 100 kW preferable) by connecting more units in parallel (master/slave operation).
16	Warranty	3 Years warranty is required. Clearly indicate your Annual Maintenance Contract (AMC) terms post warranty period along with the bid.
17	OEM/Bidder capability	<ul style="list-style-type: none"> • The OEM should have existence for a minimum of 10 years. • The OEM should have a full-fledged service center in India to cater to the needs of the bidirectional grid simulator. • OEM to provide technical support in terms of repairs, post warranty period up till 5 years from the date of discontinuation of the product model.

Section 5: Technical bid

The technical bid should furnish all requirements of the tender along with all annexures in this section and submitted to:

Office of the Chairman,
Attn: Dr. Vishnu Mahadeva Iyer
Department of Electrical Engineering
Indian Institute of Science
Bangalore – 560012, India

Annexure 1

Details of the Bidder

The bidder must provide the following mandatory information & attach supporting documents wherever mentioned:

Details of the Bidder:

Sr. no	Items	Details
1.	Name of the Bidder	
2.	Nature of Bidder (Attach attested copy of Certificate of Incorporation/ Partnership Deed)	
3.	Registration No/ Trade License, (attach attested copy)	
4.	Registered Office Address	
5.	Address for communication	
6.	Contact person- Name and Designation	
7.	Telephone No	
8.	Email ID	
9.	Website	
10.	PAN No. (attach copy)	
11.	GST No. (attach copy)	

Signature of the Bidder

Name:

Designation, Seal

Date:

Annexure 2

Declaration regarding experience

To,
The Chairman,
Department of Electrical Engineering
Indian Institute of Science
Bangalore – 560012
India

Ref: Tender No:

Dated:

Supply and installation of _____

Sir,

I have carefully gone through the Terms & Conditions contained in the above referred tender. I hereby declare that my company / firm has ___ years of experience in supplying and installing _____

(Signature of the Bidder)

Printed Name Designation, Seal Date:

Annexure 3

Declaration regarding track record

To,
The Chairman,
Department of Electrical Engineering
Indian Institute of Science
Bangalore – 560012
India

Ref: Tender No:

Dated:

Supply and installation of _____

Sir,

I have carefully gone through the Terms & Conditions contained in the above referred tender. I hereby declare that my company/ firm is not currently debarred / blacklisted by any Government / Semi Government organizations / institutions in India or abroad. I further certify that I am competent officer in my company / firm to make this declaration.

OR

I declare the following:

Sr. no	Country in which the company is Debarred /blacklisted / case is Pending	Blacklisted / debarred by Government / Semi Government/Organizations /Institutions	Reason	Since when and for how long
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(NOTE: In case the company / firm was blacklisted previously, please provide the details regarding period for which the company / firm was blacklisted and the reason/s for the same).

Yours faithfully
(Signature of the Bidder)
Name Designation, Seal:

Date:

Annexure 4

Declaration for acceptance of terms and conditions

To,
The Chairman,
Department of Electrical Engineering
Indian Institute of Science
Bangalore – 560012
India

Ref: Tender No:

Dated:

Supply and installation of _____

Sir,

I have carefully gone through the Terms & Conditions as mentioned in the above referred tender document. I declare that all the provisions of this tender document are acceptable to my company. I further certify that I am an authorized signatory of my company and am, therefore, competent to make this declaration.

Yours faithfully
(Signature of the Bidder)

Name Designation, Seal:

Date:

Annexure 5

Details of items quoted:

- a. Company Name
- b. Product Name
- c. Part / Catalogue number
- d. Product description / main features
- e. Detailed technical specifications.
- f. Remarks

Instructions to bidders:

1. Bidder should provide technical specifications of the quoted product/s in detail.
2. Bidder should attach product brochures along with technical bid.
3. Bidders should clearly indicate compliance or non-compliance of the technical specifications provided in the tender document.

Section 6: Commercial Bid

S no.	Description	Cat. number	Quantity	Unit price	Subtotal
1.	Essential items noted in the technical specification				
1a.	... (details of essential items)				
1b.	...				
2.	Optional items noted in the technical specification				
2a.	... (details of optional items)				
2b.	...				
3.	Accessories for operation and installation				
4.	All Consumables, spares, and software to be supplied locally				
5.	Warranty (3 years)				
6.	AMC 2 years beyond warranty				

Any additional items

S No.	Description	Cat. number	Quantity	Unit price	Subtotal
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Addressed to:

Office of the Chairman,
Attn: Dr. Vishnu Mahadeva Iyer
Department of Electrical Engineering
Indian Institute of Science
Bangalore – 560012
India

Section 7: Checklist

(This should be enclosed with technical bid- Part A)

The following items must be checked before the Bid is submitted:

1. Sealed Envelope "A": Technical Bid

1. Section 5- Technical Bid (each page signed by the authorized signatory and sealed) with the below annexures:

- a. Annexure 1: Bidders details
- b. Annexure 2: Declaration regarding experience
- c. Annexure 3: Declaration regarding clean track record
- d. Annexure 4: Declaration for acceptance of terms and conditions
- e. Annexure 5: Details of items quoted.

2. Copy of this tender document duly signed by the authorized signatory on every page and sealed.

2. Sealed Envelope "B": Commercial Bid

Section 6: Commercial Bid

Your quotation must be submitted in two envelopes: Technical Bid (Envelope A) and Commercial Bid (Envelope B) superscribing on both the envelopes with Tender No. and due date and both in sealed covers and put in a bigger cover which should also be sealed and duly super scribed with Tender No., Tender description & Due Date.