

**NATIONAL INSTITUTE OF TECHNOLOGY  
GOA -403401**

(Form to be used for purchases above Rs.2.50 lakhs and below Rs. 25 lakhs)

**Tender Enquiry**

**Enquiry No:** NITGOA/LT/EEE/PROJ/MNRE/2018/OW/ 151

**Date:** 28-02-2018

**Important Dates**

To
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Event	Date	Time
Pre-bid Conference	-	-
Last Date of submission of quotation	<b>22-03-2018</b>	<b>03:00PM</b>
Technical Bid Opening date	<b>22-03-2018</b>	<b>03:30PM</b>
Financial Bid Opening date	<b>23-03-2018</b>	<b>10:00AM</b>

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.

Please send your quotation to:

Director NATIONAL INSTITUTE OF TECHNOLOGY GOA-403401
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Yours sincerely,



**Registrar I/C**

National Institute of Technology  
Goa

Encl:

- (1) Schedule of requirement, specifications, dates etc.
- (2) Bid document containing detail terms and conditions.

1. **Schedule of requirements**

Sl. No.	Name of Equipment	No's Required
1.	<b>Hybrid Grid Connected Wind Emulator System</b>	01

2. **Specifications and allied Technical Details**

**Enclosed at Annexure – I,II**

3. **Format of Quotation** (tick appropriate box)

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

OR

It is a two-part bid with separate techno-commercial and price bids. Please see item 1.12 of instructions for method of bidding.

4. The bid envelope should be super-scribed with

**Bid for Hybrid Grid Connected Wind Emulator System Enquiry No.  
NITGOA/LT/EEE/PROJ/MNRE/2018/OW/\_\_\_\_\_**

5. Quotations should be valid for a period of 90 days from the closing date of the bid.

6. **Some important dates:**

i.	Pre-bid Conference:	Date: _____ - _____	Time: _____ - _____
ii.	Last date for receipt of quotation:	Date: 22-03-2018	Time: 03.00 P.M.
iii.	Opening of techno-commercial bid:	Date: 22-03-2018	Time: 03.30 P.M.
iv.	Opening of Financial bid:	Date: 23-03-2018	Time: 10.00 A.M.

7. **Warranty** as applicable must be provided.

8(a) **GST:** The Institute is not authorized to give C or D form. GST should be charge according to applicable rates.

8(b) **Entry Tax:** The State of Goa charges entry tax on all goods entering the State. Please include it in your quotation.

- 8 (c) Custom and Excise Duty:** The Institute is authorized to give Custom and Excise Duty Exemption Certificate. **Custom and Excise Duty** should be charge accordingly.
- 9. Bid Security** (See Item 2.8 of instructions): **Rs. 25,000/-**.
- 10. Performance Security** (See Item 2.10 of instructions): **05%** of gross order value.
- 11.** Please go through the enclosed “bid document” carefully for other bidding instructions.
- 12(a)** Please send your quotations by Registered/Speed Post to:

Director  
National Institute of Technology Goa -403401

OR

(b) drop the quotation in the office of the normal working hours of the Institute.

- 13.** For clarifications if any, please mail to [dean.rc@nitgoa.ac.in](mailto:dean.rc@nitgoa.ac.in)

National Institute of Technology Goa  
Farmagudi, Ponda-Goa 403 401

**(Contd.)**

**NATIONAL INSTITUTE OF TECHNOLOGY  
GOA-403401**

**BID DOCUMENT**

**1. Instructions to the bidders**

- 1.1 Sealed bids are invited on behalf of the Director, National Institute of Technology (NIT), Goa – 403401, from the intending bidders for supply of the goods/stores/ equipments/ services for the Institute as detailed in the enquiry letter.
- 1.2 The bidders should quote the technical and financial bid separately in two separate envelopes duly superscripted on the envelope as **Technical bid/ financial bid for Hybrid Grid Connected Wind Emulator System** and their offer/rates in clear terms without ambiguity and EMD should be enclosed in Technical Bid envelope.
- 1.3 The rates should be quoted both in figures and words and legibly written without any over-writings. In case of any correction, the same must be attested by the bidder with full signature. However, no over-writing is permissible. Manufacturer's price-list, where applicable, should be submitted along with the bid.
- 1.4 In case of any discrepancy between the rates in figures and that in words, the rate in words will be accepted as correct.
- 1.5 The last date for receipt of the bid is marked in the enquiry. In case the above date is declared a holiday for NIT Goa, and the bids will be received up to the appointed time on the next working day.
- 1.6 There may be a pre-bid conference in the office of the Department as per schedule given under at the top of the document. NIT Goa for clarifying issues and clearing doubts, if any, about the specification and other allied technical details of the plant, equipment and machinery projected in the bidding document. The prospecting bidders may attend this pre-bid conference at the appointed date, time and place. In case the said date is declared a holiday for the NIT Goa, the pre-bid conference shall be held at the appointed time and place on the next working day.
- 1.7 The bids may be sent by registered or speed post, so as to reach the office NIT Goa before the last date of receipt, or alternatively, be dropped in the office of the normal working hours of the Institute.
- 1.8 If a prospective bidder requires any clarification in regard to the bidding documents, he may mail to [dean.rc@nitgoa.ac.in](mailto:dean.rc@nitgoa.ac.in) at least 21 days before the deadline for receipt of bids.
- 1.9 Bids received after the deadline of receipt indicated in para 1.5 above, shall not be taken in to consideration.

- 1.10 Each bidder shall submit only one bid. A bidder, who submits more than one bid, shall be disqualified and considered non-responsive.
- 1.11 The cover containing the bid must be sealed and super-scribed "Bid **Hybrid Grid Connected Wind Emulator System** vide Enquiry No. . . . NITGOA/LT/EEE/PROJ/MNRE/2018/OW/ \_\_\_\_\_ dated \_\_\_\_\_ as given under item of the enquiry.
- 1.12 The bids shall be opened in the office at the date and time given on the top of the document. The bidders may send their authorized representatives to attend the bid opening, if they so desire. In the event of the above bid opening date being declared holiday for the NIT Goa, and then the bids will be opened at the appointed time and place on the next working day.
- 1.13 The bidder has to put seal and sign in full at all pages of the bidding document including all annexures and price bid failing which the bidder will be disqualified.
- 1.14 The Director NIT GOA and its successors reserves the right to reject any or all tenders, wholly or partly or close the tender at any stage prior to award of contract without assigning any reason whatsoever.

## 2. **Conditions of the bid**

- 2.1 The rates quoted should preferably be net, inclusive of all taxes and duties, packing, forwarding, freight, Insurance and all other incidental charges mentioned separately.
- 2.2 The goods are required to be delivered at the indenting Department of NIT Goa, and must be dispatched within 21 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.
- 2.3 If insisted, samples shall be provided by the supplier at the entire cost and risk of the supplier. The installation of the equipments and training cum demo should be provided.
- 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 mentioned in Para below.
- 2.7 The Institute may like to conduct pre-dispatch inspection of goods, where applicable.
- 2.8 The bid is to be accompanied with "Bid Security" (*Earnest Money*) for an amount stated in the enquiry, in the form of Account Payee Demand Draft, in favour of Director, NIT Goa from any Commercial Bank with validity period of 30 days beyond the final bid validity period. The bid security shall be forfeited, if the bidder withdraws during the bid validity period.
- 2.9 Any Liability regarding GST will be of supplier of products.
- 2.10 Period of guarantee/warranty, where applicable, should be specified in the bid.
- 2.11 The successful bidder must furnish "Performance Security" for an amount specified in the enquiry, in the form of Account Payee Demand Draft, and/or unconditional Bank guarantee en-cashable on demand from the Director, NIT Goa, from a Commercial Bank

with validity period of sixty days beyond the date of completion of all contractual obligations of supplier including guarantee/ warranty obligations. The Performance Security is to be furnished in favour of the Director, National Institute of Technology ,Goa, within ten days of intimation, failing which his bid security will be forfeited. Alternatively, fixed percentage of the cost of the stores as stated in the enquiry may be retained by the Institute in its Maintenance Fund towards performance security, which will be released One month after the completion of warranty period.

- 2.12 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 Goa 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.
- 2.13 The successful bidder may be required to execute a contract, where applicable.
- 2.14 Payment (*100 percent*) will be made by Account Payee Cheque/Bank Draft, within 30 days from the installation or receipt of the goods in good condition or receipt of the bill, commissioning of the equipment, where applicable, whichever is later/latest.
- 2.15 In the event of any dispute arising out of the bid or from the resultant contract, the decision of the Director, NIT Goa shall be final.
- 2.16 The Director NIT GOA and its successors reserves the right to reject any or all tenders, wholly or partly or close the tender at any stage prior to award of contract without assigning any reason whatsoever.
- 2.17 The bid document/resultant contract will be interpreted under Indian Laws.
- 2.18 Any disputes arising out of this enquiry shall be dealt in the Goa jurisdiction.
- 2.19 Criteria for Evaluation in Technical Bid
- a) Proof of establishment of Firms/shop/business/ manufacturing unit etc.
  - b) Valid EMD
  - c) PAN No: ..... (With photo copy) of firms/proprietor.
  - d) Photocopy of GST Registration Certificate duly renewed by corresponding commercial tax office.
  - e) Technical Specification
  - f) Signed and stamped copy of Tender document
- 2.20 Criteria for Evaluation in Financial Bid
- The financial bid(s) shall be evaluated on the basis of the total lowest rates quoted for all the equipments mentioned in schedule of requirements.
- The words in price bid such as extra will entitle for disqualification of bidders.
- Conditional bids will not be accepted and will be liable for disqualification.
- The price bid should include the entire price applicable for the product to reach NIT GOA including installation and commissioning



**Registrar I/C**  
NIT-Goa

# Annexure-I

## Technical Specification of Hybrid Grid Connected Wind Emulator System

### 1. Wind Turbine Emulator (1 KW)

Sl.No	Component	Specification/ Remarks	Vendor	
			Technical specification (YES / NO)	Remark
1.	<b>DC Motor</b> <ul style="list-style-type: none"> <li>• Output Power</li> <li>• Nominal Field Voltage</li> <li>• Nominal Armature Speed at rated voltages</li> </ul>	(A DC motor should acts as a Wind turbine)  5 HP 220V DC 220V DC 1500		
2.	<b>DC Drive</b> <ul style="list-style-type: none"> <li>• Input voltage</li> <li>• Control</li> <li>• Rating</li> <li>• Switching Frequency</li> </ul>	(Variable speed DC motor is needed and it needs to be controlled by control unit) Single Phase AC Fixed Field, Variable Armature 10-15A, 250V DC 50-60 kHz		
3.	<b>Induction Generator</b> <ul style="list-style-type: none"> <li>• Type</li> <li>• Output Power</li> <li>• Line to Line Voltage</li> </ul>	(SEIG should generate the AC power according to the speed of DC motor) Squirrel Cage Type (Self Excited) 1 kW 415V AC		
4.	<b>Buck Converter</b> <ul style="list-style-type: none"> <li>• Power Rating</li> <li>• Output DC Voltage</li> </ul> Switching Frequency	(To match the DC link voltage of 150 V)  1 KW  120 V – 150 V  50 - 60 kHz		
5.	<b>Other requirements</b> <ul style="list-style-type: none"> <li>• Three phase and Single phase Bridge Rectifiers</li> <li>• Capacitor Bank</li> <li>• Gear Box</li> <li>• Voltage &amp; Current sensors</li> <li>• LC Filter</li> </ul>	To convert AC to DC  To improve the power factor To increase the speed To measure the generated power To filter out the harmonics		

Note: The above format should be on letter head of the firm with the signature of Authorized Signatory.

2. DC - DC Converter for PV Solar System of 1 kW

SL.N o	Component	Specification/ Remarks	Vendor	
			Technical specificati on (YES / NO)	Remark
1.	<b>Buck Converter</b> <ul style="list-style-type: none"> <li>• Power Rating</li> <li>• Input DC Voltage</li> <li>• Output DC Voltage</li> <li>• Switching Frequency</li> <li>• MPPT technique</li> </ul>	(For a PV Solar System of 1 KW, a DC-DC Converter is required for an MPPT control and to match the DC link voltage) 1 KW Upto 200 V 120 V- 150 V 50 - 60 kHz Any standard one		

3. Battery Energy Storage System

SL.N o	Component	Specification/ Remarks	Vendor	
			Technical specificati on (YES / NO)	Remark
1.	Battery Bank	( To meet the load demand for at least an hour during low power generation mode and/or grid failure period) 96V, 24 Ah		
2.	<b>Bi - directional Charge controller</b> <ul style="list-style-type: none"> <li>• Input voltage</li> <li>• Input Current</li> </ul> Maximum Switching Frequency	( A bi-directional charge controller is required to charge or discharge the battery during grid connected or islanded mode) 0-200 V 0-35 A 50 - 60Khz		

Note: The above format should be on letter head of the firm with the signature of Authorized Signatory.



4. DC Bus

Sl.No	Component	Specification/ Remarks	Vendor	
			Technical specification (YES / NO)	Remark
1.	DC Link voltage	( A battery bank, Inverter and the generated power are connected at this bus and provides the feasibility to connect to DC loads) 150V DC		

5. Bi-Directional Converter

Sl.No	Component	Specification/ Remarks	Vendor	
			Technical specification (YES / NO)	Remark
1.	<b>Three Phase Inverter</b> <ul style="list-style-type: none"> <li>• Maximum DC Input Voltage</li> <li>• AC Output Voltage</li> <li>• Output Rating</li> <li>• Switching Frequency</li> </ul>	(A pure sinusoidal AC output is to be generate and fed to the grid by proper synchronization and it needs to be Bi-directional during Grid connected mode)  150V 100 - 120 V 5 KVA 5 - 15 kHz		

Note: The above format should be on letter head of the firm with the signature of Authorized Signatory.

6. Other requirements

Sl.No	Component	Specification/ Remarks	Vendor	
			Technical specification (YES / NO)	Remark
1.	<b>Measurement</b> <ul style="list-style-type: none"> <li>• Ammeter</li> <li>• Voltmeter</li> <li>• Three Phase Power Analyser</li> <li>• Tacho-Meter</li> </ul>	A current, voltage, power, speed and other electrical parameters needs to measure and fed to a control unit for controlling and monitoring		
2.	<b>Protective Devices</b> <ul style="list-style-type: none"> <li>• AC and DC MCBs</li> <li>• Fuses</li> </ul>	A proper protection is needed		
3.	<b>Auto transformer</b>	For proper grid synchronization and to adjust the grid voltage		
4.	<b>Step up transformer</b>	For proper isolation and to match the voltage ranges		
5.	<b>Control card</b> <ul style="list-style-type: none"> <li>• FPGA/DSP Controller</li> <li>• ADC Inputs</li> <li>• PWM Inputs</li> </ul>	An advanced micro controller needs to be used to control the entire operation of Hybrid grid connected system		
6.	<b>Control Unit</b>	For controlling and monitoring on Personal Computer using a compatible software		
7.	<b>System should facilitate for carrying out the following:</b> <ul style="list-style-type: none"> <li>• Change in wind speed &amp; pitch angle</li> <li>• Charging and Dis-charging of a battery</li> <li>• Different Grid integration techniques</li> <li>• System performance analysis by adding different renewable energy sources</li> <li>• Power flow analysis for multiple sources, Battery Energy Storage Systems and different types of loads</li> <li>• Analyzing Power quality issues</li> </ul>			

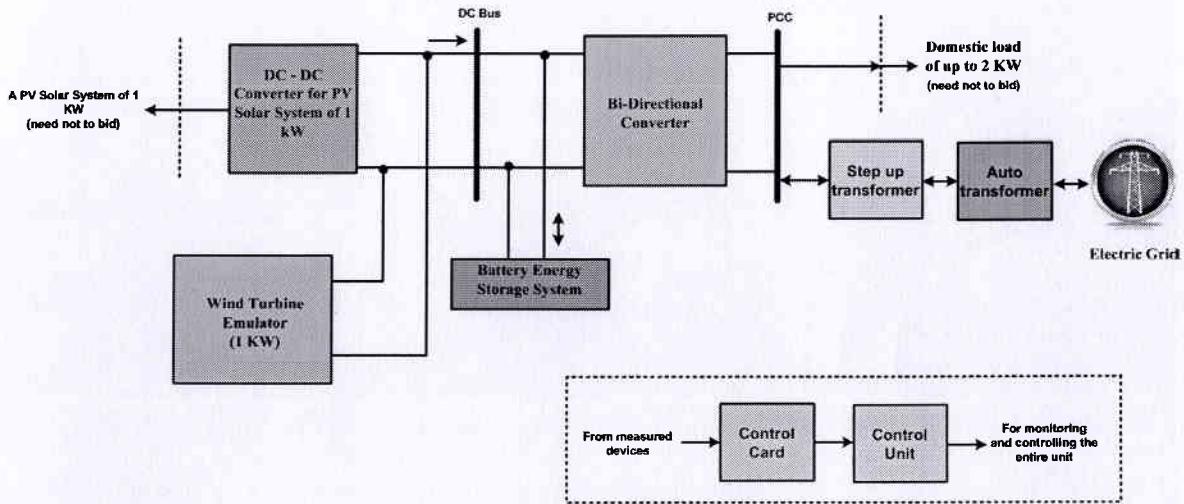
	<ul style="list-style-type: none"><li>• Addition of AC &amp; DC loads</li></ul> Analyzing different MPPT techniques for Solar PV System		
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Note: The above format should be on letter head of the firm with the signature of Authorized Signatory.

# Annexure-II

## Block Diagram

### (Hybrid Grid Connected Wind Emulator System)



## Price Bid

S.No	Name of item with Description	Rate/Unit	Quantity	Total in Rs.
<u>1</u>	Hybrid Grid Connected Wind Emulator System (with reference to Annexure-I and Annexure-II of the bid)		01	
Total				
Taxes				
Installation charges, Training charges/Demo charges (if any)				
Others charges if any, please specify				
<b>Grand Total Amount in Rs.</b>				

Note: The above format should be on letter head of the firm with the signature of Authorized Signatory