

INDIAN INSTITUTE OF TECHNOLOGY GOA

At Goa Engineering College Campus

Farmagudi, Ponda, Goa 403401

E-mail: purchase@iitgoa.ac.in

GSTIN: 30AABAI1653D1ZF

PAN: AABAI1653D

TAN: BLRI08261B

Enquiry No: IITGOA/2020-21/008

Date: 21/09/2020

IIT Goa invites sealed quotations in two bid form for the supply of below mentioned item.

Sl. No.	Description of Item	Qty
1	Power System Software (Detailed specifications attached)	01 No.

Terms & Conditions

1. Quotation must be valid for at least 90 days.
2. The GSTIN should invariably be mentioned in your offer.
3. Kindly attach a compliance certificate along with the technical quote.
4. Prices: Prices should be quoted in INR – F.O.R., IIT Goa basis only.
5. Payment terms: Within 30 days after the delivery and successful installation of item at IIT Goa.
6. Delivery and installation should be made within 4 weeks of getting a confirmed order.
7. Supplier should provide minimum one-year warranty for the above stated items.
8. The suppliers shall provide the banking details along with their quote on their letterhead duly signed and stamped.
9. The successful bidder has to submit a Performance Guarantee Bond for 5% of the Purchase Order value and valid till one year plus 60 days OR up-to warranty period whichever is later from the date of issue of Purchase Order. Performance Guarantee Bond may be submitted within 15 (Fifteen) days from the date of order acknowledgment as a successful bidder.
10. Quotations shall be submitted in two parts;
Part – I (Technical) should contain all the technical details and specification of the product. It should contain unpriced bid along with terms and conditions, compliance certificates, proprietary certificates (if applicable), any other certificates/details etc. This envelope should be marked as “Technical Bid”

Part -II (Financial) The financial bid of the above item should be in a sealed envelope marked as “Financial Bid” and should contain financial terms and conditions.

11. IIT Goa reserves the right to accept and/or reject any/all bids without assigning any reason in public interest.
12. For any clarification, you may kindly contact Dr. Shakthi Prasad D. (E-mail: shakthi@iitgoa.ac.in and Stores & Purchase Department (email: purchase@iitgoa.ac.in) till 02/10/2020.
13. All sealed quotations must be super scribed with the tender enquiry number and should reach to the Assistant Registrar (Stores & Purchase), IIT Goa, at Goa College of Engineering Campus, Farmagudi, Ponda, Goa, 403 401 by 17.00 Hrs on or before 12/10/2020.

Sd/-

Asst. Registrar (S&P)

Power System Simulation Software Specifications

Simulator Software should be a highly versatile tool with standardized interfaces for easy data import and export, and it should offer the potential for maintaining a variety of data in a single system. It is the perfectly suited and highly efficient tool for anyone who has to plan and analyze electrical network

Advanced algorithms with following analytical modules

- Power Flow
- Load & Generation Profile
- Transient Stability
- Small Signal Stability
- Graphical Model Builder

Simulator Software– General specifications

- Simple and intuitive handling
- Universal user interface for all fields – electricity, gas, water, district heating/cooling
- Customizable to specific needs
- Fully integrated modular structure and licensing
- Client-server architecture, Internet capability
- Support any voltage level
- Support unlimited nodes and limited nodes options
- Standard libraries for Electrical components (line, cable, machines, relays etc.)
- Computation and evaluation of large Electrical networks
- Efficient data management in commercial databases like Microsoft® Access® or Oracle®
- Object-oriented modeling of all equipment
- Macro and scripting functionality for efficient automatization
- Combined analysis of separately modeled networks
- All technical analyses based on one network model that takes *into* account network modeling details corresponding to the chosen analysis method
- Realistic modeling of power system components, including elements for Smart Grids and microgrids.
- Direct viewing and editing of data in masks, tables, diagrams, network plans, reports, etc.
- Advanced handling and analysis of planning scenarios
- Time and cost savings in network planning
- Improvement of network performance and capital expenditure plans
- Interactive visualization of network models in schematic, geographic, or multilayer diagrams
- Single data entry across all applications
- Complete set of advanced algorithms, including economic and strategic planning
- Client-server architecture deployable in commercial databases with multiuser capabilities
- GIS-like UI with Internet Maps, high end Reporting and interactive Diagrams
- Users can automate the application and the GUI via scripting by using any available programming language.
- Ability to integrate with other IT Applications like GIS, SCADA, MDM, ERP etc. by commercial data base and COM-server technology if required.

Detailed specifications of Power System Simulation Software:

It Should support the following network analysis functionality

1.1 Power Flow Calculation

- Software can handle more than one – isolated –network at the same time.
- Networks with more than one slack are possible.
- Voltage levels can be L-L or L-G

- The power flow type of each generator or infeed can be set individually, e.g. swing bus (slack), PV, PQ or type. Controllers with operating points and limits can be modeled. A re-Dispatch according to user defined limits or power frequency characteristics are selectable.
- Transfer capacity planning through different network areas /groups is possible.
- The voltage and power controller can automatically calculate the optimal tap position of transformers or other switched elements like shunts or capacitors based on specified target voltage or power ranges.
- Voltage and power regulation at a remote node is possible.
- Master and slave controller function for networks with parallel transformers is available.
- Different load types can be modeled.
- Temperature- dependency of currents is taken into consideration
- Load flow can handle phase shifting transformers and fully unbalanced transformers like center-tapped models.
- Load flow already supports voltage and power dependent shedding of loads or generators (e.g. DC Elements like Photovoltaic Panels)
- Scenarios allow to arrange work packages along the time scale easily
- Operation Point simulation offers a quick over view about several interesting network states at one glance

1.2 Load and Generation Profile Simulation

- All load flow results are available including the analysis of maximum or minimum values (e.g. for voltages and loading etc.).
- Diagrams with daily, weekly and yearly profiles for nodes and branches are created.
- Voltage band and loading limit violations as well as line utilization during the simulation period are indicated in diagrams.
- Total losses and lost energy are presented in a diagram.
- A specific option for this simulation is an aggregated result across all time steps with the minimum voltages and maximum loading of each element and the time step it belongs to. This enables a quick overview about the worst cases while the amount of stored data can be reduced.

1.3 Power system Stability (RMS)

Software must perform the following stability analysis

- Voltage stability
- Rotor angle stability
- Transient stability
- Rotor angle swing

Software should provide a controller database containing the various predefined controllers:

- IEEE standards
- Excitation systems
- Turbine governors
- Power System Stabilizer (PSS) controller models
- Generic wind models and solar models

1.4 Eigenvalue / Modal Analysis (Small Signal stability)

- Evaluation and optimization of power system small signal stability including inter area oscillations
- Efficient algorithms for very large network models (QR, Subspace Iteration or Dominant Pole method)
- Valuable eigenvalue filter capability in modal analysis
- Differentiation between real and augmented state variables
- Parameter identification to improve modal characteristic from eigenvalue analysis
- Interactive mode overview in s-plane
- Residues / frequency response $Y(s)$ (Bode, Nyquist) and time response
- Tabular reports of modes incl. frequencies, relative damping, omega and sigma values
- Tabular reports of state variables incl. left and right eigenvectors, residues, participation factors, etc.

1.5 Graphical Model Builder (GMB)

- Graphical editor for drawing any kind of block diagram (AVR, GOV, FACTs, Wind, complex model, etc.)
- BOSL language for fully flexible user-defined models usable in different software packages
- Library with more than 100 predefined graphical function blocks and structures
- Block oriented structures can be combined with FORTRAN like terms , such as mathematical functions, logical terms or instructions
- Easy forward initializing of models
- Testing environment of models with built-in signal generators and test points interactive stepping through the time and see each signal in the diagram

1.6 Price sheet

S.No.	Description	Qty	Unit Rate	Total Price -Excluding GST
1	Power System Simulation software for Power Transmission & Distribution network, (with 50 Bus/Nodes) With following modules: -Load Flow/Power Flow - Load & Gen profile -Short Circuit -Multiple Faults -Protection Simulation -Harmonics -Stability -Dynamic model builder -Small Signal Stability	25 Network License		

FORMAT FOR PERFORMANCE GUARANTEE BOND

(To be typed on Non-judicial stamp paper of the value of Indian Rupees of One Hundred) (TO BE ESTABLISHED THROUGH ANY OF THE NATIONAL BANKS (WHETHER SITUATED AT GOA OR OUTSTATION) WITH A CLAUSE TO ENFORCE THE SAME ON THEIR LOCAL BRANCH AT GOA OR ANY SCHEDULED BANK SITUATED AT GOA. BONDS ISSUED BY CO-OPERATIVE BANKS ARE NOT ACCEPTED.

To,
The Registrar,
Indian Institute of Technology, Goa
Farmagudi, Ponda,
Goa – 403401

LETTER OF GUARANTEE

WHEREAS Indian Institute of Technology, Goa (Buyer) have invited Tenders vide Tender No..... Dt. for purchase of

AND

WHEREAS the said tender document requires that any eligible successful tenderer (seller) wishing to supply the equipment / machinery, etc. in response thereto shall establish an irrevocable Performance Guarantee Bond in favour of “**Registrar, Indian Institute of Technology, Goa**” in the form of Bank Guarantee for Rs (**5% (five percent) of the purchase value**) and valid till **one year or upto warranty period whichever is later** from the date of issue of Performance Guarantee Bond may be submitted within 15 (Fifteen) days from the date of Order Acknowledgment as a successful bidder.

NOW THIS BANK HEREBY GUARANTEES that in the event of the said tenderer (seller) failing to abide by any of the conditions referred in tender document / purchase order / performance of the equipment / machinery, etc. this Bank shall pay to Indian Institute of Technology, Goa on demand and without protest or demur Rs..... (Rupees.....).

This Bank further agrees that the decision of Indian Institute of Technology, Goa (Buyer) as to whether the said Tenderer (Seller) has committed a breach of any of the conditions referred in tender document / purchase order shall be final and binding.

We, (name of the Bank & branch) hereby further agree that the Guarantee herein contained shall not be affected by any change in the constitution of the Tenderer (Seller) and/ or Indian Institute of Technology, Goa (Buyer).

Notwithstanding anything contained herein:

1. Our liability under this Bank Guarantee shall not exceed Rs. (Indian Rupees only).
2. This Bank Guarantee shall be valid up to(date) and
3. We are liable to pay the guaranteed amount or any part thereof under this bank guarantee only and only if IIT Goa serve upon us a written claim or demand on or before (date).
4. This Bank further agrees that the claims if any, against this Bank Guarantee shall be enforceable at our branch office at situated at (Address of local branch).

Date:

Yours truly,

Signature and seal of the Guarantor:

Name of Bank:

Instruction to Bank: Bank should note that on expiry of Bond Period, the Original Bond will not be returned to the Bank. Bank is requested to take appropriate necessary action on or after expiry of bond period.