GeM ARPTS No. GEM/GARPTS/11012022/JULOJ43TNCYP dated 11-01-2022

Tender No. TENDER/2022-23/004
Date of Publication: 12-04-2022
Date/Time of Closing: 21-04-2022, 1500 hours

Indian Institute of Technology Palakkad Invites Tender under Two-bid system for the:

FABRICATION, SUPPLY, INSTALLATION,TESTING AND COMMISSIONING OFPOWER SYSTEM SIMULATOR

Conforming to the specifications as in BoQ Technical.

Tender Documents may be downloaded from the e-Wizard Portal https://mhrd.euniwizarde.com/. Aspiring Bidders who have not enrolled / registered in e-Wizard should enroll / register before participating through the website https://mhrd.euniwizarde.com/. Bidders are advised to go through instructions provided at **"Procedure for Submission of E-tender".** [Special Instructions to the Contractors/Bidders for the e-submission of the bids online through this e-Wizard Portal"].

Bidders can access tender documents on the website. For searching in the site, kindly go to Live Tenders option, Click "Advance Search" and select Department as 'IIT Palakkad'. Thereafter, Click on "Search" button to view all IIT Palakkad tenders. Select the appropriate tender and fill them with all relevant information and submit the completed tender document online on the website https://mhrd.euniwizarde.com/as per the timeline below.

No manual bids will be accepted. All tender documents including Techno-Commercial, Technical and Financial bids should be submitted in the e-Wizard portal.

S. No.	Events	Date and Time
1	**Publication of the Tender Document**	**12-04-2022**
2	**Last Date/Time for submission of ONLINE Bids**	**21-04-2022, 1500 hours**
3	**Opening of Technical Bids**	**21-04-2022, 1515 hours**

Note:

1. **The bidder should be a Class-I / Class-II Local Supplier meeting the requirement as per the Order No. P-45021/2/2017-PP (BE-II) issued by the Public Procurement Section, DPIIT, Ministry of Commerce and Industry, GOI dated 16-09-2020.**

2. **Bidders other than Class-I / Class-II Local Suppliers, who may participate in this tender, may be doing so at their own risk. Such bids would not be considered and rejected outright**

TERMS AND CONDITIONS

1	**GENERAL**	(a) The responsibility of submission of the bids on or before the last date shall rest with the tenderer. The institute will hold no responsibility for the non-receipt of the bids or the bids received after the date/time specified. Any bid received by IITPKD after the bid submission deadline prescribed by IITPKD, shall be rejected and returned unopened to the Bidder.
		(b) Canvassing or offer of an advantage or any other inducement by any person with a view to influencing acceptance of a bid is an offence under the Laws of India. Such action will result in the rejection of bid, in addition to other punitive measures.
		(c) Each bidder shall submit only one bid, either by himself or as a partner in a joint venture or as a member of the consortium. If a bidder or if any of the partners in a joint venture or any one of the members of the consortium participate in more than one bid, the bids (of both the individual and the partnership/consortium/joint venture) are liable to be rejected.
		(d) The bidder shall bear all costs associated with the preparation and submission of his bid and IITPKD shall in no case be responsible or liable for those costs, regardless of the conduct or outcome of the tender process.
		(e) **IITPKD will respond to any request for clarification or modification of the Tender Document that are received up to TWO DAYS prior to the deadline for submission of bids prescribed by IITPKD. For this purpose, the prospective bidder(s) requiring clarification in the Tender Document shall notify IITPKD through the ONLINE Portal ONLY. Any such clarification, together with all the details on which the clarification had been sought, will be published in the ONLINE Portal ONLY. Deviations, if any, observed by the Institute in the submitted bids, from the Terms and Conditions of the Tender Document will not be accepted by the Institute.**
		(f) Except for any such clarification by the Institute, which is expressly stated to be an addendum to the tender document issued by the Registrar, IIT Palakkad, no written or oral communication, presentation or explanation by any other employee of any of the Sections/Departments of the Institute, shall be taken to bind or fetter the Institute.
		(g) The bidder is expected to examine all instructions, forms, terms and conditions in the Tender Document. In the event of discovery of any missing pages, the bidder shall inform the same to the Section/ Department concerned. Failure to furnish the information required by the Tender Document or submission of a tender not substantially responsive to the Tender Document in every respect will be at the bidder's risk and may result in rejection of the bid.
		(h) The bidder shall not make or cause to be made any alteration, erasure or obliteration to the text of the Tender Document.
		(i) The Supplier shall not, without the prior written consent of the IITPKD, assign to any third party, the Contract or any part thereof.

2	COMPOSITION OF THE TENDER DOCUMENT	(a) The Tender Document comprises of: Instruction to the bidders including terms and conditions 1. Technical Specifications (Annexure-I) 2. Format For Self-Certification Under Preference To Make In India(Annexure-II) 3. Bid Security Declaration Form (Annexure-III) 4. Undertaking by the Bidder (Annexure-IV) 5. Fall Clause Notice Certificate (Annexure-V)
3	DOCUMENTS COMPRISING THE BID	**(a) The Technical, Techno-commercial and Commercial Bids (Cover One) and Commercial Bid (Cover Two) shall be submitted ONLINE through the e-Wizard Portal.** (b) Bids submitted in any mode other than ONLINE will be rejected outright. (c) Documents establishing the conformity of the terms and conditions of the Tender Document shall be provided along with the bid. The offer/bids should be sent only for a system or that is available in the market and supplied to a number of customers. A list of customers in India and abroad with details must accompany the quotations. Quotations for a prototype machine will not be accepted. (d) Original catalogue (not any photocopy) of the quoted model duly signed by the principals must accompany the quotation in the Technical bid. No prices should ever be included in the Technical bid. (e) Compliance or Confirmation report with reference to the specifications and other terms and conditions should also be obtained from the principal. (f) Information related to the agency/bidder such as photocopies of the Registration/PAN/GST/TIN shall be furnished. **(g)** The technical bid should consist of all technical details along with commercial terms and conditions. **No prices should be included in the technical bid. Mentioning of Prices in the Technical Bid shall lead to <u>DISQUALIFICATION.</u>** (h) Bidders who are bidding for this tender shall, 1) Should have implemented at least three orders of **Power System Simulator (2018-19, 2019-20, 2020-2021)** from Centrally Funded Technical Institutes (IITs, NITs, IISc, IISER), DRDO, ISRO, CSIR labs or Government Firms in India. Copies of the most recent purchase orders and user certificates of successful implementation must be included. Copies of financial statements or evidence of turnover must be furnished. 2) Have an **Average Annual Turnover of Rs 20,00,000 (RUPEES TWENTY LAKHS) during each of the last THREE financial years (2018-19, 2019-20, 2020-2021).** The bidder shall enclose the audited statements of the indicated financial years, which should have been certified by a Chartered Accountant or a Competent Authority. 3) Digitally signed Tender Document should be submitted in Cover One.
4	EARNEST MONEY DEPOSIT (EMD)	(a) The bidder shall furnish, as part of the technical bid, **Bid Security Declaration Form** as per the **Annexure-II.** (b) **Bids not accompanied by Bid Security Declaration Form shall be DISQUALIFIED.**

5	**PERFORMANCE SECURITY**	(a) The performance security shall be submitted within **FIFTEEN DAYS** of receipt of the material by the IITPKD. The successful bidder shall furnish the Performance Security equal to **3%** of the order / contract value (excluding the value of annual maintenance charges). The Performance Security shall be valid all along the warranty period and shall extend upto **SIXTYDAYS** after the date of completion of warranty period. It shall be ensured by the successful bidder that the validity of the Performance Security submitted is extended depending on the date of commencement of the Warranty.
		(b) The performance security shall be a bank guarantee (in the format as provided) issued by the Indian Scheduled bank acceptable to the IITPKD or a Demand Draft favoring, INDIAN INSTITUTE OF TECHNOLOGY PALAKKAD payable at PALAKKAD.
		(c) The performance security shall automatically become null and void once all the obligations of the Supplier under the Contract have been fulfilled, including, but not limited to, any obligations during the Warranty Period and any extensions to the period. The performance security shall be returned to the Supplier not later than fifteen (15) days after its expiration.
		(d) Failure of the successful Bidder to comply with the requirements shall constitute enough grounds for the annulment of the award and forfeiture of the EMD, in which event the IITPKD may make the award to the next lowest evaluated bid submitted by a qualified Bidder or call for new bids.
6	**BID PRICES AND CURRENCY**	(a) Prices must be quoted separately for each equipment/item identified.
		(b) Price quoted for equipment/items must include all costs associated with packing, transportation, insurance, delivery of equipment/items, taxes (separately), loading and unloading on DOOR DELIVERY basis to the institute including its installation, commissioning, integration and validation.
		(c) Prices quoted by the bidder shall be fixed during the validity of the bid.
		(d) Prices of the equipment/items shall be quoted in Indian Rupees (INR) only.
7	**PERIOD OF VALIDITY OF BIDS**	(a) Bids shall remain valid for a period of **180 DAYS** after the date of the deadline for submission of bids prescribed by IITPKD.
		(b) If the deadline is extended due to unforeseen circumstances, the bid validity shall be deemed to have extended accordingly.
8	**TIME FOR SUPPLY, INSTALLATION, COMMISSIONING AND VALIDATION OF THE EQUIPMENTS/ITEMS**	(a) The Supplier shall supply the equipment/items within the period specified in the tender document i.e. within **THREEMONTHS** of signing the purchase order or within the period mutually agreed between IITPKD and supplier. All the equipment and accessories should be delivered at **IIT Palakkad (Nila Campus), Kanjikode-Malampuzha Road, Pudusserry West, Kanjikode, Kerala 678623.**
		(b) The Supplier shall thereafter proceed with the installation, commissioning, integration and validation and demonstrate operational acceptance of the equipment/items within the period specified. The equipment/items shall be installed and commissioned by the successful bidder within 20 to 25 days from the date of its receipt.
		(c) The tenderer should indicate clearly the time required for delivery of the item. In case there is any deviation in the delivery schedule, liquidated damages clause will be enforced or penalty for the delayed supply period

			will be levied.
			(d) In the event of failure of supply of the item/equipment/items within the stipulated delivery schedule, IITPKD has all the right to purchase the item/equipment/items from other sources on the total risk of the Supplier under the risk purchase clause.
9	**PRODUCT UPGRADES**		The Supplier shall continue to support and maintain the version/model of the Equipment supplied by upgrading the software and the hardware as and when amendments are carried out in the existing version or the product is upgraded. Whereas upgrades to the software shall be supplied free of cost, the Supplier may charge for upgrade in hardware provided it is of major nature. An upgraded higher version of the instrument and software related with the instrument shall be supplied.
10	**PENALTIES**		If the Supplier fails to complete any of the activities in accordance with the time specified for it, or any extension of time granted by IITPKD, Liquidated Damages Clause shall be invoked.
11	**UP-TIME GUARANTEE/ DOWNTIME PENALTY CLAUSE**		(a) The Supplier should provide up-time guarantee of 95% [24 (hours) X 7 (days) X 365 (days)] basis during the warranty period. (b) The Supplier should provide up-time guarantee of 95% (24 hours/day basis) both during warranty. If downtime exceeds the 5% limit, extension of the warranty period will be twice the excess down time period.
12	**LIQUIDATED DAMAGES**		If a firm accepts an order and fails to execute the order, in full or part, as per the terms and conditions stipulated therein, it will be open to the Institute to recover liquidated damages from the firm at the rate of 1% of the value of the undelivered goods per month or part thereof, subject to a maximum of 5% of the value of the undelivered goods. It will also be open to the Institute alternatively, to arrange procurement of the required stores from any source, at the risk and expense of the firm, accepted and failed to execute the order according to stipulations agreed upon. This will also entail the removal of the defaulters' name from the approved/registered list of Suppliers.
13	**EFFECT OF FORCE MAJEURE**		(a) If the Supplier is prevented, hindered, or delayed from or in performing any of its obligations under the Contract by an event of Force Majeure, then it shall notify the IITPKD in writing of the occurrence of such event and the circumstances of the event of Force Majeure within **FIFTEEN DAYS** after the occurrence of such event. (b) The Supplier, when affected by the event of Force Majeure shall use reasonable efforts to mitigate the effect of the event of Force Majeure upon its performance of the Contract and to fulfill its obligations under the Contract, but without prejudice to IITPKD's right to terminate the Contract. (c) No delay or non-performance by the Supplier caused by the occurrence of any event of Force Majeure shall: i. Constitute a default or breach of the Contract; ii. Give rise to any claim for damages or additional cost or expense occasioned by the delay or non-performance. (d) If the performance of the Contract is substantially prevented, hindered, or delayed for a single period of more than **THIRTYDAYS** or an aggregate period of more than **SIXTY DAYS** on account of one or more events of Force Majeure, the IITPKD shall have the right to terminate the Contract by giving a notice to the Supplier.
14	**EXTENSION OF TIME LIMITS FOR SUPPLY**		(a) The time limit for supply, installation & commissioning, integration & validation shall be extended if the supply is delayed or impeded in the

		performance of any of its obligations under the Contract by reason of any of the following:
	AND MAKING OPERATIONAL, THE EQUIPMENT	i. Any occurrence of Force Majeure; ii. Any other matter specifically mentioned in the Contract; (b) By such period as shall be fair and reasonable in all the circumstances and as shall fairly reflect the delay or impediment sustained by the Supplier.
15	**GOVERNING LAW AND SETTLEMENT OF DISPUTES**	(a) The Contract shall be governed by and interpreted in accordance with the laws of India. (b) Any dispute or claim arising out of/relating to this Contract of the breach, termination or the invalidity thereof, shall be settled by the Hon'ble Courts of Justice at Palakkad. **(c)** The page number should be marked in all pages serially (including all supporting documents enclosed with the tender document) and the declaration for the same shall be submitted by the bidder as in **Annexure-IV.** (d) IITPKD reserves the right to accept or reject any or all the tenders in part or whole or may cancel the tender at its sole discretion without assigning any reason whatsoever. No further correspondence in this regard will be entertained.

AWARD OF CONTRACT

1	**AWARD CRITERIA**	1. IITPKD will award the Contract to the Bidder whose bid has been determined to be substantially responsive and **as per the Order No. P-45021/2/2017-PP(BE-II) dated 16-09-2020 from Department for Promotion of Industry and Internal Trade (Public Procurement Section), Ministry of Commerce and Industry, Govt. of India.** 2. The Institute reserves the right to buy different items/quantities from different bidders considering price of individual/group of equipment/items or any other factors as decided by the Committee. The bidder should be a Class-I / Class-II Local Supplier meeting the requirement of minimum 20% Local Content in line with the Public Procurement (Preference to Make in India) Order 2017 No. **P-45021/2/2017-PP(BE-II) dated 16-09-2020**.
2	**AWARD OF PURCHASE ORDER**	1. Prior to the expiration of the period of bid validity, IITPKD will issue the Letter of Intent / Purchase Order to the successful Bidder in writing. 2. Any amendment(s) in the Purchase Order will be permitted within **SEVEN DAYS** of its issuance. No amendments will be permitted beyond this period. 3. The Purchase Order will constitute the foundation of the Contract.
3	**CONTRACT AGREEMENT**	1. Within **SEVEN DAYS** of receipt of the Purchase Order, the successful Bidder shall sign and date its copy on each page and return it to the Purchaser. 2. Copy of Purchase Order duly signed and dated by the successful Bidder on each page shall constitute the Contract Agreement.
4	**CONTRACT DOCUMENTS / AMENDMENT TO CONTRACT**	1. All documents forming part of the Contract (and all parts of these documents) are intended to be correlative, complementary and mutually explanatory. The Contract shall be read as a whole. 2. The order of precedence of the Contract documents shall be as follows: (i) Contract Agreement/Purchase Order (ii) All Forms/Annexures (iii) equipment/items and their requirement (iv) Supplier's Bid (v) Tender Document 3. No amendment or other variation of the Contract shall be effective unless it is in writing, is dated, expressly refers to the Contract and is signed by a duly authorized representative of each party to the Contract.

REGISTRAR

ANNEXURE–I

Technical Specifications

Validity of the License: PERPETUAL

Power System Simulator	The complete package should be the comprehensive suite of programs for studies of power system transmission & distribution network and generation performance in both steady-state and dynamic conditions. The comprehensive functionalities provided include:
	Steady-state Analysis for power flow and related network functions
	Short Circuit Calculation for both balanced and unbalanced faults
	Power Flow, Contingency Analysis, Voltage Stability (PV/QV) Analysis, Python and IPLAN
	Dynamic Simulations, including extended term simulations for time domain disturbance analysis
	Optimal Power Flow
	Scripting, and Transmission Reliability Assessment
	Line Properties Calculation
	Dynamic Simulation (Transient Stability)
	• Should have Capacity: to handle systems containing o over 30,000 generators, o 300,000 loads, o 300,000 branches, o 60,000 two-winding transformers, o 15,000 three-winding transformers 50 two-terminal dc lines, o 40 voltage source dc lines, o 20 multi-terminal dc lines, o 250 FACTS devices, o 10,000 SVCs o 150,000 buses (unlimited bus)
	• Speed: o Solve load flow with 26,000 buses $\leq$ 1 sec o Contingency case solution on a 26,000 bus case takes $\leq$ 0.1 sec per contingency
	Ability to deal with subsystems – subsystems based on areas, owners, zones , bus kV or a combination.
	• Ability to simulate conventional two and multi-terminal HVDC, SVC, STATCOM, voltage source converter (VSC) based two terminal HVDC systems, synchronous and induction machines, two and three-winding transformers, loads.

	• Comprehensive time tested model library for modeling all types of equipments like generators, exciters, governors, power system stabilizers, over and under-excitation limiters, SVCs, FACTS devices, HVDC lines (both conventional as well as VSC based HVDC etc.), models of emerging technologies such as wind power generation and photovoltaic (PV) systems. Variety of manufacturer-specific and generic models of wind turbines and their controls. Models of load shedding relays (under voltage and under frequency), several different types of line relays.
	• Detailed models of all the IEEE standard AVR and governor models
	• Capability to create user-written models – if you cannot find dynamic models that suit equipment, should be able to create used defined models.
	Software should read in or write out data in UCTE format or IEEE format.
	Power flow solution The main features for power flow solution are: n Newton Raphson and Gauss Seidel iterative methods nNon-divergent solution to retain useful flow data in non-converged cases for Newton Raphson solutions n Flexible control for transformer taps, area interchange, switched shunts, and generator reactive power generation
	Data listing and network condition report To facilitate users' understanding of their network behavior, Software should generate a variety of output reports to provide: n Comprehensive information on the power flow results n Summaries of conditions in network subsystems for load/generation/loss n Checks on system and equipment conditions, such as generator output/bus voltages/branch loading n Interface loading conditions for subsystems and tie lines n Case comparison - both detailed and summary reports on power flow data and network conditions The network reports can also be incorporated into the Diagrams view. Network data checking Software should provides activities to examine network data in topology connection, non-transformer branch data, transformer tap setting, voltage regulation, and generation limits

	Graphical interface and contour plotting The Diagram view can be used to create and modify one-line diagrams and to display a variety of results such as: n Power flow results nShort circuit three-phase and single-line-to-ground faults n Graphical differences between power flow cases n Network impedances n IECS fault calculations results n Probabilistic Reliability Analysis results n Dynamic simulation results Diagrams can be automatically generated based on subsystem selection. In addition, contour plotting can display gradients of changes such as voltage profile, load condition, reliability indices, and short circuit results,
	Contingency analysis Software should have extensive functions to conduct contingency analysis, featuring: n Straightforward setup n Calculation and results presentation for both deterministic and probabilistic contingency analysis n Both linear analysis for a quick screening study, and complete AC calculation to take into account voltages and losses n N-1, N-1-1, N-2 and N-3, with ranking optional, to dramatically reduce execution time n Cascading outage forecast, automatic corrective action n Numerous one-click reports for contingency summary; results can also be exported into Excel® n Results can be presented either in text reports or on diagrams for easy viewing
	Transfer limit analysis Should provide functions to support this vital analysis in the day-to-day operation of interconnected networks. Bulk power transfer is often constrained by the ability of transmission elements to withstand thermal effects during various normal and contingency conditions. Also, this bulk power transfer is often constrained by stability limits. the determination of the ability of the transmission system to support the power transfers.
	Voltage Stability Analysis (PV/QV) analysis The studies of voltage stability could be analyzed as a steady-state problem. Load-flow-based analyses used to assess voltage variations with active and reactive power change. PV/QV analysis is used to determine the system limits imposed by voltage stability under steady-state conditions. Software should provide functions and results presentation for: n Showing the voltage collapse point of the buses in the power system network n Studying the maximum transfer of power between buses before the voltage collapse point n Sizing the reactive power compensation devices required at relevant buses to prevent voltage collapse n Studying the influence of generator, loads and reactive power compensation devices on the network

	Network reduction and equivalence Software should provides Thevenin equivalents for positive sequence and symmetrical representation
	Program Automation Program automation should provide the mechanism to control execution by methods other than by direct user interaction. n As a program extension. In this case the user, in the course of using the program interactively, can decide to select an existing Automation File as the next instruction to the program. n For fully automated execution, commonly called batch execution. In this case the entirety of the user's interaction is the specification of the source of the instructions for the program to execute. The software should offer the following are six automation alternatives within software, to offer the user maximum flexibility: n An embedded Python interpreter n The Batch (or BAT_) Command interpreter n The Line Mode Interpreter (LMI) n The IPLAN simulator n The Simulation Run Assembler (PSAS) macro processor n The Engineering Basic (PSEB) macro processor Users should be free to mix and match different methods to maximize the program flexibility.
	Program Operation Facilitators Software should provides two features helpful for facilitating program automation: Event Studies and Scenario Manager. n Event studies: Event Studies are a user-defined series of events that can be replayed over and over with data values and settings changed interactively. Event Studies can be applied to both steady-state and dynamics analyses, and may consist of one or more event items, such as network equipment connection and disconnection events. n Scenario Manager: Scenarios are groups of files that are used to perform a single study. They can consist of the network files, both Power Flow and Dynamics, in both the raw and binary forms. Users can open one file (rather than many) and load one scenario (rather than many).
	Switching analysis The objective of a switching study is to calculate the conditions that will exist in the power system just after a sudden change such as the opening of a transmission line, switching on of a large load, application of a fault, or tripping of a generator. The software should report the following: n To show the immediate voltage dip caused by switching on of a large motor n To give symmetrical fault duty at a bus n To show the immediate change of flow that will be seen on each tie line into an area (before the inertial swing of rotor angles) when one such tie or a generator within the area is tripped

	Balanced and Unbalanced Fault Analysis
	n Symmetrical and asymmetrical breaking three phase short circuit currents for a given circuit breaker contact parting time that includes machine internal flux decay effects
	n Isolated ungrounded subsystems where one or more of the sequence networks is separated into unconnected subsystems
	n Singular fault constraints which arise by the application of simultaneous faults, especially in combinations involving open phases
	n Two- and one-phase systems

Dynamic Simulation and Model Library

Design and stable operation of an electric power system requires careful study of the interaction of the different components that constitute the power system. Stretching of electric system performance to its operational limits and deployment of special fast-acting controls has not only made dynamic simulation more common and essential to utility planning and operation, but has made the simulation process more complex.

In this context, simulation tools are critical to the effective investigation of system response to a variety of disturbances in a fast and accurate manner.

The dynamic simulation module should have vast library of built-in models for modeling different types of equipment, and gives the user the flexibility to create user-defined models of any complexity.

Key features for dynamic simulation tool are:

n Time-tested and robust algorithm that must be used by utilities all over the world & India.

n Ability to model a wide variety of manufacturer-specific wind models and their controls

n Ability to create user-defined models of any desired complexity

n Ability to use the Graphical Model Builder module to easily construct the user-defined models

n Microsoft® Foundation Class (MFC)-based graphical user interface (GUI) that empowers the user to edit dynamic model data. Model data edits can be performed either via spreadsheet or one-line diagram of the network.

n Any system quantity can be plotted. A new and integrated plotting package that allows for quick and easy plot generation, plot annotations, and with facility to export to several popular graphic formats.

n Ability to record commands in response files and Python automation scripts for future use

n Ability to automate dynamic simulation activities using simple English language commands. Commands use keywords in English and have a structure that results in a readable file that clearly defines the simulation being performed.

n Facility for checking of dynamics data

n Ability to create any disturbance such as faults, generator tripping, motor starting, loss of field, etc.

n Computation of response ratio and open circuit transient response of excitation systems (this and similar tests on turbine governors are used to check or estimate data)

n Ability to interrupt and restart the simulation at any time

n A comprehensive built-in library of dynamic simulation models to model equipment such as:

• Synchronous Generators and their controls such as: excitation

	systems, turbine governors, minimum and maximum excitation system limiters, power system stabilizers, turbine load controllers • Wind generators: the mechanical system, along with mathematical models of the pitch and electrical controls • Loads and load relays • Line relays • HVDC systems • FACTS devices • Static Var Compensators • On-load tap changers and phase shifters
	Optimal Power Flow In addition to being able to perform traditional analysis such as minimizing operating costs, The OPF module should have the following objective functions, including: n Minimize fuel costs n Minimize active power slack generation n Minimize reactive power slack generation n Minimize active power loss n Minimize reactive power loss n Minimize adjustable branch reactance n Minimize adjustable bus shunts n Minimize load adjustments n Minimize or maximize interface flows n Minimize or maximize reactive generation reserve n Minimize or maximize active power transfers
	Transmission Line Constant Calculation (Line Property Calculator) The Transmission Line Constant Calculation (Line Properties Calculator "LineProp") calculates electrical parameters for overhead transmission and distribution lines. It should have a standard database containing commonly used conductor types is included in the calculator. One of the most common configurations is for an overhead line having three phase conductors (i.e., A, B and C) and one or two shield (ground) wires. LineProp requires as input the voltage level of the circuit, the physical dimensions of the line (height, spacing and sag), and the specification of the phase conductor and shield wire types. For per unit (pu) output, The resulting electrical parameters, as calculated by LineProp, can be used in many power system analysis problems (power flow, short circuit). The parameters, or constants, include: n Zero and positive sequence impedances for each circuit in the corridor n Zero and positive sequence admittances for each circuit in the corridor n Self and mutual impedances for each circuit in the corridor n Self and mutual admittances for each circuit in the corridor n Average mutual impedances and admittances for each pair of circuits in the corridor n Phase impedance and admittance matrices in the corridor n Sequence impedance and admittance matrices in the corridor
	Licenses: One User on Network

FORMAT FOR SELF-CERTIFICATION UNDER PREFERENCE TO MAKE IN INDIA
(TO BE SUBMITTED ONLY THROUGH ONLINE MODE IN APPROPRIATE FORMAT)

Format for Affidavit of Self-Certification regarding Minimum Local Content in line with "Make in India" Policy vide GoI Order no. P-45021/2/2017-PP (B.E.-II) dated 15.06.2017 (subsequently revised vide orders dated 28.05.2018, 29.05.2019 and 04.06.2020)

Date: _____
I/We _____ S/o, D/o, W/o, _____
Resident of
_____
Hereby solemnly affirm and declare as under:

That I will agree to abide by the terms and conditions of the Public Procurement (Preference to Make in India) Order, 2017 (hereinafter PPP-MII order) of Government of India issued vide Notification No:P-45021/2/2017 -BE-II dated 15/06/2017, its revision dated 28/05/2018 and any subsequent modifications/Amendments, if any and

That the local content for all inputs which constitute the said goods/services/works has been verified by me and I am responsible for the correctness of the claims made therein.

Tick (✓) and Fill theAppropriate Category	
☐	I/We _____ [name of the manufacturer] hereby confirm in respect of quoted items(s) that Local Content is equal to or more than 50% and come under **"Class-I Local Supplier"** category.
☐	I/We _____ [name of the manufacturer] hereby confirm in respect of quoted items(s) that Local Content is more than 20% but less than 50% and come under **"Class-II Local Supplier"** category.
☐	I/We _____[name of the manufacturer] hereby confirm in respect of quoted items(s) that Local Content is less than or equal to 20% come under "**Non-Local Supplier"** category.

For and on behalf of……………………………………………… (Name of firm/entity)

Authorized signatory (To be duly authorized by the Board of Directors)
<Insert Name, Designation and Contact No.>

[Note: In case of procurement for a value in excess of Rs. 10 Crores, the bidders shall provide this certificate from statutory auditor or cost auditor of the company (in the case of companies) or from a practicing cost accountant or practicing chartered accountant (in respect of suppliers other than companies) giving the percentage of local content.]

ANNEXURE-III

BID SECURITY DECLARATION FORM
(TO BE SUBMITTED ONLY THROUGH ONLINE MODE IN APPROPRIATE FORMAT)

Date:_____   Tender No. _____

To (insert complete name and address of the purchase)

I/We. 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 We may be disqualified from bidding for any contract with you for a period of one year from the date of notification if l am /We are in a breach of any obligation under the bid conditions, because I/We

a) Have withdrawn/modified/amended, impairs or derogates from the tender, my/our Bid 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 reuse 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 he Bid Securing Declaration)

Duly authorized to sign the bid for an 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)

Note:
        This letter should be on the <u>letterhead of the quoting firm</u> and should be signed by a Competent Authority. Non-submission of this will lead to DISQUALIFICATION of bids.

ANNEXURE-IV

UNDERTAKING BY THE BIDDER
(TO BE SUBMITTED ONLY THROUGH ONLINE MODE IN APPROPRIATE FORMAT)

We here by accept all the Terms and Conditions of the Tender Document and strictly adhere to the same in the event of getting Purchase order. We also declare that the Technical and Financial Bids submitted by us has NO DEIVATION from the Tender Terms and Conditions.

We here by accept that the PRICES OF THE EQUIPMENT/ITEMS QUOTED IS IN INDIAN RUPEES ONLY (INR). I am aware that if the price is not in INR, the application shall be summarily rejected.

We hereby undertake that there are _____ pages, serially numbered, in the submitted tender including the supporting documents. (Please serially number all the pages including blank page, if any).

We have submitted our principal's exclusive authorization letter which is specific for this tender No._____ dated _____.

Note:
This letter should be on the <u>letterhead of the quoting firm</u> and should be signed by a Competent Authority.

ANNEXURE-V

FALL CLAUSE NOTICE CERTIFICATE
(TO BE SUBMITTED ONLY THROUGH ONLINE MODE IN APPROPRIATE FORMAT)

This is to certify that we have offered the maximum possible discount to you in our Quotation No. _____ dated _____ **(Please do not reveal the prices here, which will lead to outright rejection of your bid).**

The prices charged for the Stores supplied under tender should under no event be higher than the lowest prices at which the party sells the items of identical description to any other Govt. organization/PSU's/Central Govt, /State Govt. Autonomous bodies/Central/state Universities/Central/State Educational Institutions, failing which the "**FALL CLAUSE**" will be applicable. The institute will look into a reasonable past period to ensure this.

In case, if the price charged by our firm is found to be more, **IIT Palakkad** will have the right to recover the excess charged amount from the subsequent/unpaid bill of the supplier.

Note:
This letter of authority should be on the <u>letterhead of the quoting firm</u> and should be signed by a Competent Authority and having the power of attorney.