

INVITATION FOR QUOTATION

TEQIP-III/2018/geca/Shopping/5

28-Mar-2018

To,

Sub: Invitation for Quotations for supply of Goods

Dear Sir,

1. You are invited to submit your most competitive quotation for the following goods with item wise detailed specifications given at Annexure I,

Sr. No	Brief Description	Quantity	Delivery Period(In days)	Place of Delivery	Installation Requirement (if any)
1	Determine capacitance and dielectric loss of an insulating material using Schering bridge.	1	45	GECA, Ajmer	On site training and installation required(price must be included in quotation)
2	Determine dielectric strength of transformer oil	1	45	GECA, Ajmer	On site training and installation required(price must be included in quotation)
3	High Vacuum Oil Filter Machine	1	45	GECA, Ajmer	On site training and installation required(price must be included in quotation)
4	Study high voltage testing of electrical equipment: line insulator, cable, bushing, power capacitor,	1	45	GECA, Ajmer	On site training and installation required(price must be included in quotation)

5	Study solid dielectrics used in power apparatus & Study applications of insulating materials.	1	45	GECA, Ajmer	On site training and installation required(price must be included in quotation)
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2. Government of India has received a credit from the International Development Association (IDA) towards the cost of the **Technical Education Quality Improvement Programme[TEQIP]-Phase III** Project and intends to apply part of the proceeds of this credit to eligible payments under the contract for which this invitation for quotations is issued.
3. Quotation,
 - 3.1 The contract shall be for the full quantity as described above.
 - 3.2 Corrections, if any, shall be made by crossing out, initialing, dating and re writing.
 - 3.3 All duties and other levies payable by the supplier under the contract shall be included in the unit price.
 - 3.4 Applicable taxes shall be quoted separately for all items.
 - 3.5 The prices quoted by the bidder shall be fixed for the duration of the contract and shall not be subject to adjustment on any account.
 - 3.6 The Prices should be quoted in Indian Rupees only.
4. Each bidder shall submit only one quotation.
5. Quotation shall remain valid for a period not less than **45** days after the last date of quotation submission.
6. Evaluation of Quotations,

The Purchaser will evaluate and compare the quotations determined to be substantially responsive i.e. which

 - 6.1 are properly signed ; and
 - 6.2 confirm to the terms and conditions, and specifications.
7. The Quotations would be evaluated for all items together.
8. Award of contract:

The Purchaser will award the contract to the bidder whose quotation has been determined to be substantially responsive and who has offered the lowest evaluated quotation price.

8.1 Notwithstanding the above, the Purchaser reserves the right to accept or reject any quotations and to cancel the bidding process and reject all quotations at any time prior to the award of contract.

8.2 The bidder whose bid is accepted will be notified of the award of contract by the Purchaser prior to expiration of the quotation validity period. The terms of the accepted offer shall be incorporated in the purchase order.

9. Payment shall be made in Indian Rupees as follows:

Delivery and Installation - 90% of total cost

Satisfactory Acceptance - 10% of total cost

10. All supplied items are under warranty of **12** months from the date of successful acceptance of items.

11. You are requested to provide your offer latest by **10:00** hours on **13-Apr-2018** .

12. Detailed specifications of the items are at Annexure I.

13. Training Clause (if any)

14. Testing/Installation Clause (if any) **On site training and installation required(price must be included in quotation)**

15. Information brochures/ Product catalogue, if any must be accompanied with the quotation clearly indicating the model quoted for.

16. Sealed quotation to be submitted/ delivered at the address mentioned below,

N.H.8 , BARLIYA CIRCLE, NEAR NARELI TEMPLE, AJMER

17. We look forward to receiving your quotation and thank you for your interest in this project.

(Authorized Signatory)

Name & Designation

Annexure I

Sr. No	Item Name	Specifications
1	Determine capacitance and dielectric loss of an insulating material using Schering bridge.	<p>Electrical properties of insulating systems change due to age and continuous electrical stress. By measuring electrical properties such as capacitance and Tan – Delta regularly it should possible to ensure the operational reliability of H.V. insulating system and to avoid costly breakdowns. This is particularly important for HV bushings, Power Transformers, Generator, Power Capacitors, H.T. cables etc. Interference Suppression The Capacitance & Dissipation Factor Test System has been specially shielded with configured layouts of mu-metal sheets to avoid the effect of external interferences. This makes the measurement accurate in outdoor applications particularly in very high magnetic induction Switch yards. Phase reversal switch provided in the H.V. Power Supply effectively cancels interference/pick up by the object under test in energized environment. There is a separate 3-level interference Suppression unit that is also provided for situation where the induction is too excessive, and cannot be cancelled even by phase reversal switch. Operation schering bridge for Tan delta tester 10kv includes have Power Source, Standard Capacitor (SF6 Gas Filled), and set of cables. The compact design of the system uses the principle of three winding differential transformer on a high permeability mu-metal core. The set is contained in a sturdy metallic housing with mu-metal lining which shields it from external electromagnetic & electrostatic influences. Built-in battery powered Null indicator makes the system suitable for operation in workshop, factories, High Voltage Switch Yards etc. It is suitable for both grounded as well as ungrounded objects. Protection The system should be provided with High Voltage Protection Devices which protect the system and operator against failure of test object or standard capacitor. The other safety features are –</p> <ul style="list-style-type: none"> • Zero start control • Open Ground Indication Lamp • HT Cut Off on overload • HT ON/OFF

		<p>Indication Lamp • All operating controls are at earth potential The set consists of heavy shielded HV transformer with required tapings and current ranges with necessary controls and protective circuits, feeding transformer and its guard circuit and iliary bridge, all this to eliminate any bit of stray capacitance Technical Parameters Input power required 230 VAC/ 50 Hz ± 10% (110V, 60Hz available on special request) Voltage Range 0-12kV Leakage Current 100mA Continuous Voltage Indication 3½ digit Digital Panel Meter (DPM) Resolution 10 Volt Accuracy ± 1% of the reading ± 2 digit Standard Capacitor SF6 Gas filled, 100pf / 12kV ± 1% , Tan d = 1 X 10⁻⁴ Modes for testing UST (Ungrounded Specimen Test) GST (Grounded Specimen Test) GST g (Grounded Specimen Test with Guard) Capacitance Range – 1pF to 0.1 µfd in 3 ranges [0.01, 0.1, & 1] Cx factor Range Resolution Accuracy 0.01 0.1pF ± 0.2 % of reading ± 2 digits 0.1 1pF 0.1 1pF 1 10pF Tan-Delta Range – 0 to 1000 % in three ranges (0.1 , 1 & 10) Standard Accessories Test equipment – 1 no (HV source & Std Capacitor in one unit, Bridge and Control in other unit) Connecting AC mains cable – 1 no (3 meters) Interconnection cable – 1 set Cable Test Set - Specially shielded connecting cables to for the object testing. 10 mtr of 12kV, Double screened cable with insulated crocodile clip for HV. 10 mtr Single screened cable with insulated crocodile clip for LV. 10 mtr 1.0 sq. mm cable for GROUND User manual – 1 no Calibrator Decade Box – 3kV AC, 3 tan-delta tapings for periodic calibration check Test certificate – 1 no Warranty Certificate – 1 no (Standard warranty 2 yrs against manufacturing defects)</p>
2	Determine dielectric strength of transformer oil	<p>It should be self contained compact and portable sets giving smooth variable output voltage from 0 to 60 KV. These testers should be designed for testing the die-electric breakdown strength of insulating liquids. Technical specifications: Input:0-230V Output:0-60kv Capacity: 20Ma. Component specification: Main On/Off switch and one main ON indicator (1 Nos) Increase Decrease switch (1 Nos) H.T. ON Off push</p>

		<p>button switch (1 Pair) H.T. ON indicator (1 Nos) H.T. OFF indicator (1 Nos) K.V. Voltmeter 60Kv (1 Nos) Motorized Variac (Dimmer) (1 Nos) Center earthed High voltage molded transformer (1 Nos) Operation/Working should be Automatically synchronous motor driven and manual operation provided with knob .Circuit will trip as per the dielectric strength of the oil. Transformer HV step up transformer encapsulated in epoxy resin. Capacity of transformer 2 KVA intermittent. Centre tap of HT Winding earthed.Distortion free magnetic design for output voltage. Control Voltage controller interlocked at its minimum position so that HV switched ON only when the voltage controller is zero and transperate hood is shut. HT ON, HT OFF, Main knob, Main Motor and Motor Direction Switch. Indicating Lamp of different colour for Mains On, HT ON, HT OFF on front panel of instruments. Oil Cups Made of Methyl Methacrylate and removable electrodes. Electrodes Brass Polished spherical electrodes mounted on horizontal axis, can be set to gap of 2.5 mm Accessories Oil Test Kit is supplied along with plastic hood, 1 Oil cups without electrodes, Srew Driver, Oil Stirrer, 1 No. GO/NO GO Guage, Spanner, Instruction and operational manual, different type of Insulating Oil Brake down capacity, details chart as per ISS, resin dust cover & wiping cloth.</p>
3	High Vacuum Oil Filter Machine	<p>The plant will be suitable for carrying out following operations:-</p> <ol style="list-style-type: none"> 1. Degassing, Dehydration and Filtering Transformer oil under high vacuum 2. Filling of treated oil in to transformer tank. 3. Filtration and Dehydration of Transformer 4. The plant will be capable of attaining the following oil parameters in 3/5 passes. <ol style="list-style-type: none"> a. Breakdowns voltage with 2.5mm electrode gap - 50-70kV b. Moisture content - upto <5ppm c. Neutralization value - < 0.05mg of KOH/gm of oil d. Particle size (filtration level) - < 1 micron e. Gas content - up to 0.1% by volume <p>Strainer: <ol style="list-style-type: none"> a. Rating - 1mm b. Flow – 250GPH (1200 Lph) Inlet Pump Details: Positive Displacement type Rotary Gear Pump with following specification: <ol style="list-style-type: none"> a. Flow Rate – 250GPH (1200Lph) b. Suction – 5Meters c. Provided with - Automatic Pressure By pass, flow control valve. d. Gear pump coupled with Electric motor of rating 1HP, 3Phase, and 415volts. e. The electric motor should </p>

		<p>be ABB/CG/Siemens and any other ISI marked. Heating Chamber: a. Indirect type heating elements made out of Nichrome wire elements fixed in refractory formers b. Full load heater rating in kW – 18kW c. No. of groups in which heaters are divided – 2 BANK d. Rating of each heater and total nos – 2kw, total numbers -6Nos (3phase system) e. or switch provided – yes f. Maximum temperature of oil- 60°C g. Temperature Indication – Dial stem type thermometer.</p> <p>Filtration System: It will be suitable for removing suspended particles such as colloidal carbon, oxidation sludge, dirt, dust rust scales etc up to <1 micron. It will have following types of filters: 1. Fine filtration system: a. Rated output of filters – 250GPH (1200 Lph) b. Type of filtering medium - Non hygroscopic cartridge resin type c. Rating – 1 micron</p> <p>Degassing column (single stage): It will be fabricated out of MS sheets plates and structural. It will function as degasser and dehumidifier and should remove large portion of dissolved moisture and impurities. It will be provided with. a. Shower arrangement and rasching ring trays for formation of thin oil film to get more exposure of oil to vacuum. b. Sight glasses, illuminating lamps and float switch to control oil level. c. Maximum vacuum pressure which the chamber is subjected during the process –0.5 torr. d. degassing chamber & SCV after outlet pump will be provided to avoid flooding of degassing chamber in case of power failure. e. Two float switch (Sensor) on the degassing chamber shall be provided for preventing excess rise of oil/foam level. It shall be electrically interlocked with Inlet pump.</p> <p>Vacuum Pumping system (For degassing column) A high efficiency rotary oil sealed vacuum pump shall be provided for evacuation of degassing chamber. a. Free air displacement – 100 LPM b. Working vacuum - - c. Ultimate vacuum - 0.005 torr d. Preferable make: M/s H.H.V or similar make.</p> <p>Transformer Evacuation by Pass system A high efficiency vacuum pump shall be provided for evacuation of the transformer. The vacuum pumping system shall have Vacuum Gauge ball valve, Airing Valve. Discharge Pump . The discharge head of the Outlet pump shall be 15Mtrs. N.R.V (Non-Return valve)inlet and Outlet. One number NRV at outlet shall be</p>
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		<p>provided. Valve at the inlet & outlet shall open manually . Circulation valve of mixing processed oil with unprocessed oil. Oil sampling valve This valve shall be provided to collect the sample of oil for testing during operation. Airing valve: One airing valve for airing the degassing chamber shall be provided. Gauges and Instruments: A dial type thermometer Pressure Gauge: Independent drives: Independent drives for oil discharge pump, oil inlet pump and vacuum pumps shall be provided. Control Panel: .The plant shall be suitable for operation on 415volts 3phase, 4wire, 50 Hz AC supply. OIL HOSES -2 Nos. Two Numbers of Nitrile rubber hoses each 05 Meters long with end connection on both sides shall be provided.. Pipes and Valves: The valves in oil line and vacuum line shall be of ball type. All pipes shall be of ERW and all joints in oil and vacuum line shall be flanged and shall have `O` ring sealing. `O` rings shall be of Nitrile rubber and shall be of round shape. The entire plant along with all components mounted shall be tested for a total vacuum leak rate of less than 1 Torr/Ltrs/Sec. Inspection and Testing The machine will be inspected and tested at the manufacturer site by the Department representative before dispatch of the machine</p>
4	<p>Study high voltage testing of electrical equipment: line insulator, cable, bushing, power capacitor,</p>	<p>Module construction kits should be able to design the generation of 100 KV nating current (AC), 140 KV direct current (DC) and impulse high voltage (HV) by construction kit element, available of indoor design. It must be an ideal test system to use when training students in college programs and for application in research and development. The following components should be within the system : Console, including switch, on-off switch, regulator output voltage indicator, charging current indicator, over-current protection, and also equipped with low-voltage AC/DC Capacitance Divider. Testing transformer 10kVA/100kV Impulse capacitor 100kV/0.1μF, 200kV/0.1μF Rectifier, resistor, protective resistor, front and tail resistor, etc. Sphere gap, impulse voltage generator isolating sphere gap, triggering ball Impulse weakly damped capacitive divider, DC resistive divider Voltage and current indicate by pointer meters. • Basic requirement and design instruction of the system should be as its given below:- o The</p>

		<p>system should generate different waveforms on the same device body(AC 50Hz/60Hz sine waveform, DC with 3 % impulse voltage waveform, lightening stroke voltage full waveform, standard switching voltage full waveform, standard lightening chopping waveform) o The system should have a unified appearance and remark color o Testing transformer shell and top lid should be made of metal. o Convenient switch from AC to DC, from AC to impulse voltage, only to move several sockets. o The whole system should be of small volume, which could be placed in a small laboratory. o Each system must uses 2 voltage dividers, one of which is DC resistive divider for measuring DC output voltage of the DC generator and the impulse DC charging voltage; the other should be weakly damped capacitive divider for measuring waveform and amplitude of the impulse voltage as well as measuring the waveform of the DC output voltage. o Height above sea level =1000 o Ambient temperature: -5?~+45? o Relative humidity: =90% (at 20?) o Waveform of the supply voltage should be the actual sine wave, waveform deviation factor <3% With a reliable grounding point, earth resistance <0.5</p> <p>•Testing transformer shall have following features :</p> <ul style="list-style-type: none"> o Structure pattern: Insulated cylinder, ONAN o Phase parameter: Single phase o Frequency: 50Hz o Rated voltage: Low-voltage winding 0.38kV o High-voltage winding 100kV o Rated capacity: Low-voltage winding 10kVA o High-voltage winding 10kVA o Rated current: Low-voltage winding 26.3A o High-voltage winding 0.1A o Short circuit impedance: =10% o PD : at rated voltage =5PC o Testing voltage: 1.1 times of rated voltage withstanding 1min o Running time: 30min with rated capacity and voltage <p>•Testing transformer protective resistor (also silicon stack protective resistor) shall have following features</p> <ul style="list-style-type: none"> o Rated voltage: 100kV o Rated current: 0.1A o Rated resistance: 5kO o PD : Under rated voltage =5PC o Structure: Enameled nichrome wire won on epoxy resin board, <p>•DC resistive divider and rectifier shall have following features</p> <ul style="list-style-type: none"> o Rated voltage: 200 kV o Rated resistance: 200M? o Nominal divider ratio: 1000:1 o Measure uncertainty: including low-voltage arm, measuring cable, electrostatic voltmeter =5% Structure: composed of high-voltage resistor,
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		<p>which should be installed in the oil-immersed insulating tube. The resistor consists of top enclosure, resistor body, low-voltage arm etc. o High quality HV diodes are used for rectification. o High quality HV capacitor and resistors are used for HV filtration. o High quality HV resistors are used for resistor divider process to measure the HV DC. These elements are incorporated with in FRP tube where these are made</p>
5	<p>Study solid dielectrics used in power apparatus & Study applications of insulating materials.</p>	<p>This kit is used for the purpose of determining the HV breakdown voltage of the insulation materials used in manufacturing of the transformers. SPECIFICATION: Input voltage: 220V, 1ϕ, 50Hz AC supply. Input current: 4 Amps. Output voltage: 30,000 volts AC. Output current: 30mA SPECIAL FEATURES: Enclosures are made from CR sheet with duly galvanized and powder coated. Necessary push button and indicators with identification are provided for the easy operation. Built in fuse protection ,built in over current protection. Start / stop / reset switch. Trip status indicator METERS: •30KV AC meter for measuring the HV breakdown voltage. •30mA AC meter for measuring the breakdown current. Digital Timer is provided for withstand test which i.e for 60sec. Testing of Insulators, Bushings, Cables and Transformers: The over voltage tests are classified into two categories: 1> Power frequency voltage tests and 2> Impulse voltage tests. These tests ensure the overvoltage withstand capability of the electrical apparatus. Testing of insulators: The tests that are normally conducted are subdivided into two categories as follows. 1> Type tests 2> Routine tests Type tests are intended to check and prove the design features and the quality. The routine tests are conducted to ensure the quality of an individual test piece. Type tests are done when new designs or design changes are introduced, whereas the routine tests are done to ensure the reliability of the individual test object, and the quality and consistency of the materials used to manufacture them. Note:- Transformer test meet the requirement of IS:2071-Part-1-1974</p>

FORMAT FOR QUOTATION SUBMISSION

(In letterhead of the supplier with seal)

Date: _____

To:

Sl. No.	Description of goods (with full Specifications)	Qty.	Unit	Quoted Unit rate in Rs. (Including Ex Factory price, excise duty, packing and forwarding, transportation, insurance, other local costs incidental to delivery and warranty/ guaranty commitments)	Total Price (A)	Sales tax and other taxes payable	
						In %	In figures (B)
Total Cost							

Gross Total Cost (A+B): Rs. _____

We agree to supply the above goods in accordance with the technical specifications for a total contract price of Rs. _____ (Amount in figures) (Rupees _____ amount in words) within the period specified in the Invitation for Quotations.

We confirm that the normal commercial warranty/ guarantee of ————— months shall apply to the offered items and we also confirm to agree with terms and conditions as mentioned in the Invitation Letter.

We hereby certify that we have taken steps to ensure that no person acting for us or on our behalf will engage in bribery.

Signature of Supplier

Name: _____

Address: _____

Contact No: _____