

Pre-Qualification Requirements (PQR).

1. The firm of Bidder should have in existence in past 3 years as on date of bid opening. Following documents proving the firm is active in past 3 years to be provided.
Last 3 years "Profit & Loss account/Balance Sheet/ GST returns/Any other acceptable document certified by CA".
2. The Bidder should have supplied "**Gas Chromatograph**" in last 05 years as on date of bid opening. The self-attested copies of Purchase Orders placed on them by customers & proof of supply should be attached.
3. Offered item should have at least one year's satisfactory operation prior to date of techno commercial bid opening in "Thermal Power Station". Commissioning report, proven-ness certificate issued by end user should be submitted for the same.
4. In case of Agent/Reseller/Traders, offering equipment from OEM, Tender specific authorization letter required from the manufacturer, clearly indicating contact details like Name, E-mail & address of manufacturer.

SPECIFICATION	
GAS CHROMATOGRAPH (FOR DISSOLVED GAS ANALYSIS OF TRANSFORMER OIL)	
1	Description:
1.1	Complete Gas chromatography (GC) system for measuring dissolved gases in transformer oil as per ASTM D-3612-C method. Gas chromatography (GC) shall consist of Oven, FID, TCD detectors, columns, gas extraction system, methanizer and other accessories required for dissolved gas analysis.
1.2	The system must be advanced, microprocessor based automatic system for gas extraction, sampling, injection and detection of gases dissolved in transformer oil in line with ASTM D 3612-C method.
1.3	TOGA system should be equipped with automatic Head Space gas extraction and sample injection system with minimum 25 vials sampling and injection system as per ASTM D 3612- C.
1.4	It should have a manual injection port for manual sample introduction and also connection for introduction of calibration gas standard.
1.5	It should have automatic gas extraction – Head space auto sampler, suitable for low level detection of (H ₂ ,O ₂ , N ₂ , CO, CO ₂ , CH ₄ , C ₂ H ₆ , C ₂ H ₄ , C ₂ H ₂ & C ₃ hydrocarbons) for dissolved gases in transformer oil.
1.6	It should also have provision for injection of gas from other sources for analysis.
1.7	Should include functional key board with alpha numeric print out & signal analog output, should have provision for column compensation, power fail memory protection, control of heated zones (injector, oven, detectors) & built in diagnostics & comprehensive self testing.
1.8	All component gases present in transformer oil must be detected in a single sample injection, in a single run and in single chromatogram and conform to chromatograms as per ASTM D 3612-C.
1.9	Both Gas Chromatograph and Head Space sampler will be considered as a single unit and both must be of same make.
2	Technical Specifications:
2.1	Sample Range: Auto Dual column injection system with provision for introducing sample range from 1 to 5 ml sample volume and must be reproducible such that successive run agree with 1 mm or 1 % of (whichever is larger) on each component peak height.
2.2	Injection temperature: should be 50 °C to 400 °C with minimum 1 °C increments with microprocessor temperature programmer.
2.3	Drier should be provided ahead of sample inlet to remove complete moisture without removing components.
2.4	The system should be automatic computer controlled multi-channel Gas chromatograph capable of operating with capillary column and 530 micron mega bore columns or other suitable columns, posses minimum two injector ports or equivalent injector system, provision for mounting minimum two column system & at least two detectors.
2.5	Column Oven : High performance and sufficiently large capacity oven which can accommodate both, capillary columns (up to 100 meter length) and 530 micron mega bore columns with their respective mounting supports. The temperature range should cover upto at least 400 °C. It should be with temperature sensor and overheat protector. It should provide an accuracy of + 1°C for the entire temperature range, and a temperature stability of 0.1°C for 1 °C ambient change. It should have provision for multi-linear programming (at least 4 ramps and 5 plateaus), with a rate of at least 0.1 to 45 °C per minute and at least 650 minutes run time. Should have provision of set point entry of upto 1 °C for temperatures and upto 0.1°C for program rates. Re-calibration of the oven should be possible up to + 0.01 °C. The cooling and restablization of the oven temperature should be in automatic sequence and fast through a microprocessor controlled vent at the rear of the column oven. Oven should also be capable of adopting at least two detectors (similar or different).
2.6	Flow System: It should be dual flow, dual column system. Inlet pressure and flow rate of the carrier gas should be controlled by electro pneumatic control as well as through data processor with digital and screen display of the pressure and the flow rates.

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2.7 Detectors :	<ul style="list-style-type: none"> (i) TCD and FID with high capacity methanizer should be configured to produce simultaneous output/real time chromatogram from both detectors. (ii) Sensitivity of detectors for hydrocarbons and atmospheric gases should conform ASTM D 3612. (iii) FID should have max temperature 450 °C or better, auto – ignition, flame out detection, flame re-entry etc facility. TCD should have maximum temperature 350 °C or better. (iv) Methaniser must be provided for converting of minimum concentration of CO and CO₂ to Methane with required auxiliary valves and piping. (v) Detection Limit of the detectors should be the following or better: <ul style="list-style-type: none"> (a) FID should have detection limit of less than 5 picogram carbon/sec equivalent or better. The detection limit for hydrocarbons (CH₄, C₂H₆, C₂H₄ & C₂H₂) should be 1PPM. (b) TCD 400 pg tridecane per ml with He or Ar carrier or 10 µV/ppm nonane at 160 mA at the bridge with a detector temperature of 100 °C or better.
2.8 Software:	<p>The instrument should be supplied with suitable software to control and monitor all functions of GC and Auto sampler with facility to carry out complete setting of parameters through software itself, monitor all the system components in real time and give visual indication. It should be possible to programme run-time events like, temperature programming, carrier gas/fuel gas flow setting, time programming, valve operating, data acquisition etc. It shall have facility to configure, store, recall and run analytical methods, which shall hold comprehensive information like event programming, detectors configuration, integrator programming, calibration tables etc, to carry out complete analysis automatically. The software shall be common MS-Windows -XP/2000/NT based user friendly, menu driven GUI type. It should have data acquisition, analysis and storage and the software shall be capable of acquiring the run data from all the detectors and storing it in raw form on the hard disk. It shall have following features:</p>
2.8.1	Automatic and manual integration with various integration functions.
2.8.2	Customer reports generations with chromatograms, spectrum, analysis data printouts etc.
2.8.3	Calibration Curves : Software shall have facility to accept, store and apply multipoint calibration curves for concentrations with various curve -fitting techniques for standard gas connections.
2.8.4	Built in / additional software : for diagnostic report generation and interpretation of results as per ANSI/IEEE C57.104 and IEC 60599 guidelines.
2.8.5	The software shall have facility to carry out validation and calibrate the instrument against certified standards and apply appropriate correction factor .
2.8.6	Other Features: It is desirable that the software has additional features like setting test methods, early maintenance feed back, database for organizing, storing and retrieving chromatographic data etc.
3	<p>Computer and Printer : (Make : HP / Lenovo / HCL or DELL)</p> <p>Controlling computer shall have following minimum specifications: i5 or better processor, 4 GB RAM (min), 500 GB SSD (min) and latest authorised window software compatible with main Equipment. However, if the GC with Head space system software being offered requires higher than above specifications, it shall be ensured that the computer offered is of sufficient specification required to the offered software.</p> <p>Desktop: Make: HP/Lenovo/HCL or DELL</p> <p>Printer: Make : HP Laserjet -1200 or equivalent.</p>

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4	Accessories:
4.1	It is the responsibility of the vendor to ensure integration of entire system. They shall offer all the essential components to carry out analysis, compatible parts /products and mention clearly the mandatory parts required to match specifications /carry out testing as per ASTM -D-3612/2017, Method C. Following are some of the mandatory accessories to be supplied with the main system.
4.2	Head space gas sampling system : It should be of same make of which GC main unit is being supplied. It should have suitable interface / interconnection so that measured volume of gas can be injected directly in GC system using direct oil samples as per ASTM 3612 C. It must have programmable oven with multiple temperature settings, heated transfer line, mechanical shaking for vials, built in flow control, necessary interface with connection with GC software controls. It shall be operated with single phase 50 Hz 230 V supply.
4.3	Gas Purification / Drier: to be provided before sample injection if required.
4.4	UPS: Min. 5 KVA Capacity, 90% or better efficiency online UPS for smooth running of GC with battery back up of 1 hr.
4.5	Required Gas Tubing / Connection: for required Hydrogen gas, Zero Air and Argon Gas, Gas purification system with appropriate regulators will be in bidders scope.
4.6	Gas and Gas Cylinders details : <ol style="list-style-type: none"> Hydrogen Gas Cylinders , 47 Ltr w Cap . - 1 No with gas Argon Gas Cylinder , 47 Ltr w cap. - 1 No with gas Zero Air Gas Cylinder , 47 Ltr w cap . - 1 No with gas All cylinders should have proper hydrotest certificate & filling permission from Explosive depts. If more numbers of cylinder are required for the functioning of the equipment, the vendor should supply the same and same to be mentioned in offer.
4.7	Regulators : <ol style="list-style-type: none"> S.S. Double stage regulator for Hydrogen - 1 No S.S. Double stage regulator for Argon - 1 No S.S. Double stage regulator for Zero air - 1 No
4.8	Calibration and Testing: The TOGA system shall be calibrated as required in the international standard ASTM D 3612 / 2017, Method "C". Calibration Gas standard is required in atleast two composition / concentration preferably (one high and one low) and is to be supplied with the main instrument. The shelf life of the calibration standard should be minimum of one year. The standards should have a certificate traceable to NIST/NPL standard.
4.9	20 ml headspace vials and TFE-fluorocarbon Faced Butyl Septa for headspace vials. : 500 no.
4.10	Suitable Electronic Crimping System and decapper with battery including crimp head: 01 No.
4.11	Glass Syringes, 30-mL equipped with three-way plastic stopcock with Needles, 18G1 and 26G1/2: 03 Nos
5	General Terms & Conditions
5.1	Document: O&M Manual in English language giving complete technical information for operation and maintenance of the equipment shall be supplied.
5.2	Installation and Commissioning: The supplier shall install & commission the equipment at site. Supplier should demonstrate the performance of the Equipment and all its accessories to ensure compliance with complete specifications & parameters quoted by them to the satisfaction of BHEL/end user. Failing to comply to the Installation and Commissioning clause, the offer will be rejected straightaway.
5.3	Comprehensive training shall be given for at least 02 days at the end of installation and commissioning. The training shall cover system familiarization, operation on all possible applications of the instrument and basic maintenance & troubleshooting of the equipment.
5.4	Warranty: The equipment shall be warranted for satisfactory performance for a period of 18 months from the date of installation or 24 months from date of dispatch, whichever is later. Failing to comply to the warranty clause, the offer will be rejected straightaway
5.5	Packing & Dispatch: The equipment / accessories shall be packed in a suitable water proof/vibration proof packing boxes capable of bearing air and road transit hazards. Packing box shall be properly identified and marked with BHEL's (India) Purchase Order Number. Also, "PCRI HWR" & "Name of the Equipment" should be written in bold letters on all four sides of the packing box.

Certificate

In line with Government Public Procurement Order No. P-45021/2/2017-BE-II dt. 15.06.2017 & P-45021/2/2017-PP (BE-II) dated 28.05.2018, we hereby certify that we M/s _____(supplier name) are local supplier meeting the requirement of minimum local content (50%) as defined in above orders for the material against Enquiry No. _____

Details of location at which local value addition will be made is as follows:

We also understand, false declarations will be in breach of the Code of Integrity under Rule 175(1)(i)(h) of the General Financial Rules for which a bidder or its successors can be debarred for up to two years as per Rule 151 (iii) of the General Financial Rules along with such other actions as may be permissible under law.

Seal and Signature of Supplier

Buyer Specific ATC document for Gas Chromatograph (TOGA) with Head Space Auto Sampler of Patratu project site

1.	<p>MDCC (Material dispatch clearance certificate) Clause:</p> <p>Please note that material shall be dispatched only after issue of Material dispatch clearance certificate (MDCC) by BHEL. For issue of MDCC, you are required to submit the set of documents (i.e. Packing list, Warrantee certificate, Cylinder manufacturer TC & CCOE certificate for Cylinders, complete inspection reports including calibration of detector, carrier gas flow controller & column oven temperature etc) at least 15 days prior to scheduled delivery.</p> <p>BHEL will release MDCC within 07 days from the date of receipt of complete documents as detailed above.</p> <p>The delivery period of 120 days is inclusive of 07 days taken by BHEL to issue MDCC.</p>
2.	<p>Pre-Qualification Requirement (PQR):</p> <p>The Pre-Qualification Requirements (PQR) have been made part of bid. All the bidders should ensure submission of complete details and documents as called for in the same. The offers submitted by the bidders would be scrutinized with respect to Pre-Qualification Requirements first.</p> <p>Techno-Commercial offer of only those bidders shall be evaluated who meet the Pre-Qualification Requirements.</p>
3.	<p>Technical Specification Requirement:</p> <p>1. Please quote your valuable offer as per BHEL Specification enclosed with bid documents.</p> <p>2. Bidders are requested to upload point-wise compliance of BHEL Specification along with the offer as a token of acceptance.</p>
4.	<p>Payment Terms:</p> <ul style="list-style-type: none">90% payment after receipt of material at site against submission of PBG @ 10% of Order value valid till entire Warranty period. The PBG will be in BHEL format and from one of the BHEL consortium banks. For name of BHEL consortium bank, please visit our website hwr.bhel.com.Balance 10% payment after installation and commissioning at site.Payment will be released by BHEL within:<ul style="list-style-type: none">- 45 days for Micro and Small enterprises- 60 days for Medium enterprises- 90 days for Non MSME enterprises
5.	<p>Validity:</p> <p>Offer will be valid for 150 days from bid end date and extensions thereof.</p> <p>BHEL will reserve the right to reject any or all quotations, quoting validity less than 150 days.</p>

6.	<p>Price Basis:</p> <p>Please confirm that prices have been quoted on F.O.R. Patratu site basis.</p>
7.	<p>Delivery Period:</p> <p>The delivery shall be 120 days from the date of PO placement. This period is inclusive of 7 days for BHEL to arrange dispatch clearance (provided MDCC related documents are complete in all respect).</p>
8.	<p>Installation and Commissioning Clause:</p> <p>The supplier shall install & commission the equipment at site. Supplier should demonstrate the performance of the Equipment and all its accessories to ensure compliance with complete specifications & parameters quoted by them to the satisfaction of BHEL/end user.</p> <p><i>Cost of Installation and Commissioning should be inclusive in the quoted prices.</i></p> <p>Installation and Commissioning will be done at following address:</p> <p>GENERAL MANAGER (PROJ.), PATRATU STPP (3X800 MW), PATRATU VIDYUT UTPADAN NIGAM LTD. P.O.-PTPS, DIST- RAMGARH, JHARKHAND - 829119</p> <p><i>Failing to comply to the Installation and Commissioning clause, the offer will be rejected straightaway.</i></p>
9.	<p>Evaluation criteria:</p> <p>Evaluation will be done on the basis of Total Landed cost up to Patratu project site (Total value wise evaluation).</p>
10.	<p>Document:</p> <p>O&M Manual in English language giving complete technical information for operation and maintenance of the equipment shall be supplied.</p>
11.	<p>Packing & Dispatch:</p> <p>The equipment / accessories shall be packed in a suitable water proof/vibration proof packing box capable of bearing air and road transit hazards. Packing box shall be properly identified and marked with BHEL's (India) Purchase Order Number. Also, "PCRI HWR" should be written in bold letters on all four sides of the packing box.</p>
12.	<p>Warranty:</p> <p>The equipment shall be warranted for satisfactory performance for a period of 18 months from the date of installation or 24 months from date of dispatch, whichever is later.</p> <p>Failing to comply to the Warranty clause, the offer will be rejected straightaway.</p>

13.	<p>Arbitration Clause:</p> <p>In case of any dispute arising out of as in connection with this contract, the same shall be referred to arbitration under Arbitration & Conciliation Act 1996 of a sole arbitrator who shall be appointed by mutual consent of the parties. The seat & venue of arbitration shall be Haridwar.</p> <p>The proceedings shall be conducted in English. The Governing law of contract shall be the substantive law of India</p>
14.	<p>Risk Purchase:</p> <p>In case of abnormal delays (beyond the maximum late delivery period as per LD clause) in supplies / defective supplies or non-fulfillment of any other terms and conditions given in Purchase Order, BHEL may cancel the Purchase Order in full or part thereof, and may also make the purchase of such material from elsewhere / alternative source at the risk and cost of the supplier. BHEL will take all reasonable steps to get the material from alternate source at optimum cost. If bidder does not agree to the above Risk Purchase Clause, BHEL reserves the right to reject the offer. In case for compelling reasons BHEL accepts the offer without acceptance of this clause by the bidder and in the eventuality of Risk Purchase, appropriate action will be taken as per BHEL extant rules. This will be without prejudice to any other right of BHEL under the contract or under General Law.</p> <p>Action against Bidders / vendor / supplier / contractor in case of default:</p> <p>In order to protect the commercial interests of BHEL, BHEL shall take action against supplies / contractors by way of suspension of business dealings, who either fail to perform or are in default without any reasonable cause, cause loss of business/ money/ reputation, indulge in malpractices, cheating, bribery, fraud or any other misconduct or formation of cartels so as to influence the bidding process or influence the price etc.</p> <p>Suspension of Business Dealings could be in the form of “Hold” or “Banning” a supplier/ contractor or a bidder and shall be as per “Guidelines for Suspension of Business Dealings with Suppliers/ Contractors” available at BHEL’s website “https://www.bhel.com/guidelines-suspension-business-dealings-supplierscontractors”.</p>
15.	<p>E-invoicing:</p> <p>E-invoicing under GST has been implemented w.e.f. 01.10.2022 for all the taxable persons having turnover more than Rs. 10 cr. it has been specified by the govt that it is mandatory to mention a valid unique invoice reference no. (IRN) and QR code as generated from govt. portal on a tax invoice. Based on such information, GST ITC as claimed by BHEL in GST returns shall be matched with the corresponding details uploaded by supplier in E-invoicing system.</p> <p>In case the vendor / contractor delays or fails to provide all the documents as per the purchase order / work order at the time of submitting tax invoice to BHEL, any subsequent financial loss to BHEL on account of vendor/contractor shall be to vendor's / contractor's account. BHEL has further right to take necessary steps to protect its interest at the time of release of payment. this further requires inclusion of IRN and QR code on tax invoice as announced by govt. of india w.e.f. 01.10.2022.</p>

16.	<p>General Clause:</p> <p>All other commercial terms and conditions will be governed by General Terms and Conditions (GTC) GeM GTC 4.0 v1.14_31Jan24.</p>
17.	<p>Conflict of Interest among Bidders/ Agents:</p> <p>"A bidder shall not have conflict of interest with other bidders. Such conflict of interest can lead to anti-competitive practices to the detriment of Procuring Entity's interests. The bidder, found to have a conflict of interest shall be disqualified. A bidder may be considered to have a conflict of interest with one or more parties in this bidding process, if:</p> <ul style="list-style-type: none"> a) they have controlling partner (s) in common; or b) they receive or have received any direct or indirect subsidy/ financial stake from any of them; or c) they have the same legal representative/agent for purposes of this bid; or d) they have relationship with each other, directly or through common third parties, that puts them in a position to have access to information about or influence on the bid of another Bidder; or e) Bidder participates in more than one bid in this bidding process. Participation by a Bidder in more than one Bid will result in the disqualification of all bids in which the parties are involved. However, this does not limit the inclusion of the components/ sub-assembly/Assemblies from. one bidding manufacturer in more than one bid; or f) In cases of agents quoting in offshore procurements, on behalf of their principal manufacturers, one agent cannot represent two manufacturers or quote on their behalf in a particular tender enquiry. One manufacturer can also authorize only one agent/dealer. There can be only one bid from the following: <ul style="list-style-type: none"> 1. The principal manufacturer directly or through one Indian agent on his behalf; and 2. Indian/foreign agent on behalf of only one principal, or g) A Bidder or any of its affiliates participated as a consultant in the preparation of the design or technical specifications of the contract that is the subject of the Bid; or h) In case of a holding company having more than one independently manufacturing units, or more than one unit having common business ownership/management, only one unit should quote. Similar restrictions would apply to closely related sister companies. Bidders must proactively declare such sister/ common business/ management units in same/ similar line of business. "
18.	<p>Acceptance of offers from country Sharing Land Border with India:</p> <p>I. Any bidder from a country which shares a land border with India will be eligible to bid in any procurement whether of goods, services (including consultancy services and non-consultancy services) or works (including turkey projects) only if the bidder is registered with the Competent Authority. Further, any bidder (including bidder from India) having specified Transfer of Technology (ToT) arrangement with an entity from a country which shares a land border with India, shall also require to be registered with the same competent authority.</p> <p>II. "Bidder" means any person or firm or company, including any member of a consortium or joint venture (that is an association of several persons, or firms or companies), every artificial juridical person not falling in any of the descriptions of bidders stated hereinbefore, including any agency</p>

branch or office controlled by such person, participating in a procurement process.

III. "Bidder (or entity) from a country which shares a land border with India" for the purpose of this Order means: -

- a. An entity incorporated, established or registered in such a country; or
- b. A subsidiary of an entity incorporated, established or registered in such a country; or
- c. An entity substantially controlled through entities incorporated, established or registered in such a country; or
- d. An entity whose beneficial owner is situated in such a country; or
- e. An Indian (or other) agent of such an entity; or
- f. A natural person who is a citizen of such a country; or
- g. A consortium or joint venture where any member of the consortium or joint venture falls under any of the above

IV. The beneficial owner for the purpose of (iii) above will be as under:

1. In case of a company or Limited Liability Partnership, the beneficial owner is the natural person(s), who, whether acting alone or together, or through one or more juridical person, has a controlling ownership interest or who exercises control through other means.

Explanation:

- a. "Controlling ownership interest" means ownership of or entitlement to more than twenty-five per cent. of shares or capital or profits of the company;
- b. "Control" shall include the right to appoint majority of the directors or to control the management or policy decisions including by virtue of their shareholding or management rights or shareholders agreements or voting agreements;

2. In case of a partnership firm, the beneficial owner is the natural person(s) who, whether acting alone or together, or through one or more juridical person, has ownership of entitlement to more than fifteen percent of capital or profits of the partnership;

3. In case of an unincorporated association or body of individuals, the beneficial owner is the natural person(s), who, whether acting alone or together, or through one or more juridical person, has ownership of or entitlement to more than fifteen percent of the property or capital or profits of such association or body of individuals;

4. Where no natural person is identified under (1) or (2) or (3) above, the beneficial owner is the relevant natural person who holds the position of senior managing official;

5. In case of a trust, the identification of beneficial owners) shall include identification of the author of the trust, the trustee, the beneficiaries with fifteen percent or more interest in the trust and any other natural person exercising ultimate effective control over the trust through a chain of control or ownership.

V. An Agent is a person employed to do any act for another, or to represent another in dealings with third person.

VI. The successful bidder shall not be allowed to sub-contract works to any contractor from a country which shares a land border with India unless such contractor is registered with the Competent Authority.

VII. The registration shall be valid at the time of submission of bid and at the time of acceptance of bid.

VIII. If the bidder was validly registered at the time of acceptance / placement of order, registration shall not be a relevant consideration during contract execution.

Note: Following declarations would be required from bidders (if applicable):

(A) "I have read the clause regarding restrictions on procurement from a bidder of a country which shares a land border with India; I certify that this bidder is not from such a country or, if from such a

country, has been registered with the Competent Authority. I hereby certify that this bidder fulfills all requirements in this regard and is eligible to be considered. [Where applicable, evidence of valid registration by the Competent Authority shall be attached.]"

(B) "I have read the clause regarding restrictions on procurement from a bidder having Transfer of Technology (ToT) arrangement. I certify that this bidder does not have any ToT arrangement requiring registration with the competent authority.

OR

* have read the clause regarding restrictions on procurement from a bidder having Transfer of Technology (ToT) arrangement. I certify that this bidder has valid registration to participate in this procurement."