Notice for Inviting Expression of Interest (EOI) to undertake Design, engineering, supply, erection, commissioning & testing including Civil, structural & architectural works of all BOP Packages for 1X800 MW Expansion Unit of Deen Bandhu Chhotu Ram TPP at Yamuna Nagar, Harayana.

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BHARAT HEAVY ELECTRICALS LIMITED

(A Government of India Undertaking)

Notice for Inviting Expression of Interest

For

Identifying Agencies

For

Design, engineering, supply, erection, commissioning & Testing including Civil, structural & architectural works of all BOP Packages for 1X800 MW Expansion Unit of Deen Bandhu Chhotu Ram TPP at Yamuna Nagar, Haryana.

Issued by:
BHEL PSNR
Power Sector – Northern Region
Sec 16A, Noida,UP -201301

(hereinafter referred to as 'BHEL')

Registered Office at
Bharat Heavy Electricals Limited
BHEL House, Siri Fort New Delhi-110049

INDIA

EOI Ref. No.:	**BHEL/NR/SCT/EOI/YAMUNA NAGAR-BOP/1289 DATED: 15-02-2023**
Issue of EOI	EOI documents will be available for downloading from BHEL eProcurement portal (***https://eprocurebhel.co.in)*** till due date of submission: *Start : 16 /02/2023 , Time : 10:00 Hrs* *Closes: 27/02/2023 , Time : 10:00 Hrs* Brief information of the tenders shall also be available at BHEL website (**www.bhel.com**
Date of Issue:	**15-02-2023**
Last date for submission of EOI response	**27-02-2023**
Mode of EOI Document Submission	**This is an E-tender floated online through our E-Procurement Site (*https://eprocurebhel.co.in*). The bidder should respond by submitting their offer online only in our e-Procurement platform at (*https://eprocurebhel.co.in*). Offers are invited in single-part only.**

Notice for Inviting Expression of Interest (EOI) to undertake Design, engineering, supply, erection, commissioning & testing including Civil, structural & architectural works of all BOP Packages for 1X800 MW Expansion Unit of Deen Bandhu Chhotu Ram TPP at Yamuna Nagar, Harayana.

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DISCLAIMER

All information contained in this Expression of Interest (EOI) are in good interest and faith. The information contained in this EOI document and the information/clarification subsequently provided to Applicant(s), whether verbally or in documentary or any other form, by or on behalf of BHEL does not alter the terms and conditions set out in this EOI.

The purpose of this EOI is to identify prospective Agencies for Notice for Inviting Expression of Interest (EOI) to undertake Design, Engineering, Supply, Erection, Commissioning & Testing Including Civil, Structural & Architectural works of all BOP Packages for 1X800 MW Expansion Unit of Deen Bandhu Chhotu Ram TPP at Yamuna Nagar, Harayana. This EOI is not an offer by BHEL to the prospective Applicant(s) or any other person. This EOI is neither intended nor shall it be construed as creating or requiring any ongoing or continuing relationship or commitment with any party or person. This is not an offer or invitation to enter into an agreement of any kind with any party.

Though adequate care has been taken in the preparation of this EOI document, the interested firms shall satisfy itself that the document is complete in all respects. The information is not intended to be exhaustive. Interested Agencies are required to make their own enquiries and assumptions wherever required. Intimation of discrepancy, if any, should be given to the specified office immediately. If no intimation is received by this office by the date mentioned in the document, it shall be deemed that the EOI document is complete in all respects and firms submitting their interest are satisfied with the EOI Document in all respects.

The issue of this EOI does not imply that BHEL is bound to select and shortlist Applicant(s) or to enter into any agreement(s) with any Applicant(s). BHEL reserves all right to reject any application submitted in response to this EOI document at any stage without assigning any reasons thereof. BHEL also reserves the right to withhold or withdraw the process at any stage. Neither BHEL, nor its employees and associates will have any liability on any loss, expense or damage, which may arise from or be incurred or suffered in connection with this EOI. BHEL accepts no liability of any nature whether resulting from negligence or otherwise howsoever caused arising from reliance/use of any statements/information contained in this EOI by the Applicant. BHEL is not making any representation or warranty, express or implied, as to the accuracy or completeness of any information/statements made in this EOI.

The Applicant shall bear all its costs associated with or relating to the preparation and submission of its Application including but not limited to preparation, copying, postage, delivery, fees, expenses associated with site visit or any demonstrations or presentations which may be required by BHEL or any other costs incurred in connection with or relating to its Application. All such costs and expenses will remain with the Applicant and BHEL shall not be liable in any manner whatsoever for the same or for any other costs or other expenses incurred by an Applicant in preparation or submission of the Application, regardless of the conduct or outcome of the EOI.

Notice for Inviting Expression of Interest (EOI) to undertake Design, engineering, supply, erection, commissioning & testing including Civil, structural & architectural works of all BOP Packages for 1X800 MW Expansion Unit of Deen Bandhu Chhotu Ram TPP at Yamuna Nagar, Harayana.

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Table of Content:

Notice for Inviting Expression of Interest (EOI) to undertake Design, engineering, supply, erection, commissioning & testing including Civil, structural & architectural works of all BOP Packages for 1X800 MW Expansion Unit of Deen Bandhu Chhotu Ram TPP at Yamuna Nagar, Harayana.

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1.0 About Bharat Heavy Electricals Limited

Established in 1964, Bharat Heavy Electricals Limited (BHEL) is the largest engineering and manufacturing enterprise in India in the energy and infrastructure sector with the capability to manufacture the entire range of power plant equipment.

BHEL caters to core sectors like Power Generation, Transmission, Industry, Transportation, Renewable Energy, Oil & Gas, Water, Defence & Aerospace, and e- Mobility & Energy Storage Solutions, and has references in 82 countries across the globe. BHEL's mammoth size of operations is evident from its widespread network of 17 Manufacturing Units, 2 Repair Units, 4 Regional Offices, 8 Service Centres, 1 Subsidiary, 3 Overseas Offices, 5 Joint Ventures, 15 Regional Marketing Centres and more than 150 project sites across India and abroad.

More details about the entire range of BHEL's products and operations can be obtained by visiting our web site **www.bhel.com**.

2.0 EOI process:

Through this EOI, BHEL intends to identify interested and capable agencies from India for Notice for Inviting Expression of Interest (EOI) to undertake Design, Engineering, Supply, Erection, Commissioning & Testing including Civil, Structural & Architectural works of all BOP Packages for 1X800 MW Expansion Unit of Deen Bandhu Chhotu Ram TPP at Yamuna Nagar, Harayana. Interested and capable agencies having proven technology and experience, are requested to submit their response along with documents latest by **27.02.2023**.

3.0 Project Information:

S. No.	Description	Details
1	Project Title	1X800 MW Expansion Unit of Deen Bandhu Chhotu Ram Thermal Power Plant, Yamuna Nagar.
2	Customer	Haryana Power Generation Corporation Limited, Panchkula, Haryana
3	Location	The proposed site is at Kalanaur and the nearest town Yamuna Nagar is about 8 km from site in Haryana state, India.
4	Nearest Railway Station	Nearest Railway station is Kalanaur at about 2 Km from site.

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5	Nearest Airport	Chandigarh (110Km by road)
6	Access By Road/Major Cities	The area is accessible by NH-344.
7	Temperature	Maximum temperature = 48°C
8	Seismic Zone	The project site lies in zone IV as defined in IS: 1893.

4.0 Broad scope of work/Job:

4.1 The scope of the proposal comprises of the design, engineering, manufacture, assembly, testing at manufacturer's works, packaging into properly sized units and shipping & custom clearance, port clearance & handling, satisfactory reconciliation with the custom authorities, inland transport, delivery to site, receipt, unloading, handling and storage at site, watch & ward, fabrication at site, erection, testing, supervision, pre- commissioning, and commissioning, performance & guarantee performance testing, putting into successful operation to the satisfaction of the Owner and Operation and Maintenance till Final Taking over consisting the following below listed system but not limited to the system and equipment and associated works as detailed in the accompanied Specification including supply of special tools & tackles, mandatory spares for three (3) years operation and maintenance & recommended spares on the basis of single point responsibility, completely covering the following activities and services in respect of Balance of Plant (BOP) systems and FGD system, associated Electrical and control & instrumentation systems and complete Civil, structural and Architectural works specified including Railways Siding/Tracks) as covered under the specifications.

I. Basic Engineering of the package including preparation of Plant Definition Manuals.

II. Detailed design of all the equipment and system(s) including civil, structural & architectural works included in bidder's scope.

III. Providing design basis reports, engineering drawings, equipment sizing & performance data, QAPs/FQPs, instruction manuals, As-Built drawings and other information.

IV. Comply with statutory requirements and obtaining clearances from statutory authorities, wherever and whenever required.

V. Complete manufacturing and supply including shop testing / type testing of , FGD system, Coal Handling System including railway siding & railway tracks including track electrification, signaling etc., as per requirements of the Indian Railways, Ash Handling System, Raw Water System, Pre Treatment plant, service water system, potable water system, water storage and other auxiliaries systems, DM Water System, Cooling water & ACW system inclusive of Natural Draught Cooling Tower, Miscellaneous pumps etc., Chlorination Plant, Waste Water Treatment System, Fire detection and protection system, Ventilation and Air conditioning system for BOP, Compressed air system, Cranes &Hoists

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and Elevators in BOP area ,Hydrogen generation plant along with nitrogen, carbon di-oxide and hydrogen storage, handling and distribution system, limestone handling and storage system, gypsum handling and storage system, Clarified water System, Hot-well make Up System, Sewage Treatment Plant, Chemical lab equipment, Electronic weigh bridges, LDO system, LP Piping and other auxiliaries piping, Instrumentation and Control systems, interconnecting transformers and 11/6.6 kV switchgears, 11/6.6 kV segregated bus ducts, 415 Power supply system unit transformers switchgears, PCCs, MCCs, ACDBS, Non segregated bus ducts, Illumination/Lighting for complete BOP area and Plant Roads, Grounding resistors, Earthing and lightning protection, General metering for Station Auxiliaries, Medium & low Voltage Switch gears, MCC, Station service switchgear etc., Other electrical items like Motors, Actuators, DC Starter panel, Local Panels, Control panels, Electrical lab, testing equipment and other electrical auxiliaries including but not limited to HV cables, LV cables, control cables, battery and battery chargers, Emergency Diesel Generator, Instrumentation and Control systems for the system supplied under this scope, communication system, energy management system etc.

VI. Complete Civil, structural and architectural works include, construction water for plant area, labour colony, water supply, and sanitation, infrastructure works including roads & drainage for BOP area, sewage treatment plant, raw water reservoir modification, (or Optional New Raw Water Reservoir with applicable modifications in existing intake channel), FGD tanks and buildings, compressor house and air washer building, coal handling plant and Ash handling plant, CHIMNEY, pipe/cable galleries and pipe/cable trenches, duct banks, pedestals, CW system structures and foundations including pump houses, CW ducts and natural draught cooling tower, make up water system, balance of plant buildings including PT,DM and ETP building and structures, offsite structures and buildings, fuel oil handling system, fire protection system structures and foundations, railway siding and railway tracks, bridges and culverts for crossing of railways track inside plant area, Green belt development , Horticulture and Landscaping and other miscellaneous buildings and structures.

VII. Packing and transportation from the manufacturers works to the site including logistic studies, customs clearance & port clearances, port Charges, local clearances if any.

VIII. Receipt, storage, preservation, handling and conservation of equipment at site.

IX. Fabrication, preassembly, erection testing commissioning and completion of facilities including putting into satisfactory operation all the equipment including successful completion of initial operation.

X. Performance and guarantee tests after successful completion of initial operation.

XI. Furnishing of spares on FOR site basis.

XII. Reconciliation with customs authorities, as and when required.

XIII. Satisfactory conclusion of the contract.

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4.2 This enquiry concerns the following but not limited to:

I. Flue Gas Desulphurization System

a) Wet limestone based FGD system

b) Limestone handling system

c) Gypsum handling system

II. Chimney

III. Raw Water System

a) Raw water intake pumps (supply and erection)

b) Raw Water pump house at reservoir

c) Existing Raw Water Reservoir modification or Optional New Raw Water Reservoir with applicable modifications in existing intake channel.

IV. Water Treatment Plant

a) DM plant

b) CW chemical treatment.

c) Pretreatment plant including filtration system

d) CHP Runoff water treatment system

e) Hotwell make up system

f) Laboratory equipment

g) Chlorination Plant

h) Service water system

i) Potable water system

j) Reverse Osmosis plant for waste water system

V. Effluent Treatment Plant

VI. Sewage Treatment Plant

VII. Equipment cooling water system

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VIII. Hydrogen generation Plant

IX. Centralized Nitrogen System

X. Rain water harvesting system

XI. Cooling Water System

a) CW & ACW pumps with associated piping
b) Natural Draught Cooling Tower

XII. Plant Utilities

a) Compressed air system
b) Air conditioning and ventilation system for BOP area
c) Fire detection and protection system for whole plant.

XIII. Material Handling System

a) Fuel Oil Handling System
b) Coal Handling System,
c) Ash Handling system
d) Hydrogen handling systems
e) Weigh Bridge

XIV. Elevators, Cranes and Hoisting equipment of BOP Area.

XV. Electrical Equipment for BOP Area

a) All Transformers.
b) Bus ducts.
c) High, Medium and low-voltage switchgear, motor control centers.
d) Motors & Cables etc.
e) Illumination, Earthing, Lightning protection, DG sets, Batteries, Battery chargers

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f) Overhead lines etc.

g) Electrical systems as required.

h) AC/DC Battery/Battery charger and UPS systems as required

i) All HT/LT/Control cabling and Tray works

XVI. Control and Instrumentation packages for the individual/ Coordinated systems for BOP Area along with accessories & cables, UPS, Charger, Battery system, surveillance system and complete Simulator system.

XVII. Civil, Structural and Architectural Works for the BOP Area.

XVIII. Solar PV plant

5.0 Packaging:

EOI's are invited for design, engineering, manufacture, assembly, testing at manufacturer's works, packaging into properly sized units and shipping & custom clearance, port clearance & handling, satisfactory reconciliation with the custom authorities, inland transport, delivery to site, receipt, unloading, handling and storage at site, watch & ward, fabrication at site, erection, testing, supervision, pre- commissioning, and commissioning, performance & guarantee performance testing, putting into successful operation to the satisfaction of the Owner and Operation and Maintenance till Final Taking over consisting the following below listed system but not limited to the system and equipment, including associated Civil, structural and architectural works and including supply of special tools & tackles, mandatory spares for three (3) years operation and maintenance & recommended spares on the basis of single point responsibility containing the packages with the several options as under:

I. Package-A (Entire BOP Package): Packages mentioned under clause s.no. 4.2(I to XVIII) including railway siding railway tracks, bridges and culverts for crossing of railways track inside plant area, Green belt development, Horticulture and Landscaping and other miscellaneous buildings and structures.

II. Package-B (AHP, CHP and Water Packages) : Packages consisting of AHP,CHP and entire Water Packages like Raw Water System, Pre Treatment plant, service water system, Potable water system, Water storage and other auxiliaries systems, DM Water System, Cooling water & ACW system, Miscellaneous pumps etc., Chlorination Plant, Waste Water Treatment System, Sewage Treatment plant etc.

III. Package-C (Only AHP and CHP Packages): Packages consisting of only AHP & CHP systems.

IV. Package-D (Only Water Packages) : Packages consisting of only Water packages like Raw Water System, Pre Treatment plant, service water system, potable water system, water storage and other auxiliaries systems, DM Water System, Cooling water & ACW system, Miscellaneous pumps etc., Chlorination Plant, Waste Water Treatment System, Sewage Treatment Plant etc.

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V. Package-E (Cooling Tower): Package consisting of only Natural Draft Cooling Tower.

VI. Package-F (Chimney Package): Package consisting of only Chimney.

Note: Bidder has to submit the declaration for which packages he is interested as per the Annexure- 1

6.0 Quality Assurance:

I. "Quality Assurance' is defined as the entire program adopted by the Contractor during engineering, procurement and construction to assure conformity with the contract specifications of BHEL/HPGCL. Quality Assurance/Quality Control procedures proposed by the Contractor should address the QA/QC requirements under the following phases of the project:

(a) Engineering
(b) Procurement
(c) Construction including commissioning and testing

II. Contractor shall prepare the quality assurance plans for all the offered equipment to cover the overall quality assurance requirements.

III. Trial assembly procedure at shop shall be submitted for BHEL/HPGCL review and approval. Submission of all relevant quality check documents, such as MQP, FQP etc. for approval from BHEL/HPGCL, shall be in the scope of agency.

7.0 Tools and Plants:

All T&Ps required for this package is to be arranged by agency. Numbers of T&Ps to be deployed at site shall be decided with respect to monthly plan and review formats based on site requirement. BHEL shall not provide any T&Ps for this scope of work.

8.0 Schedule for Completion of work:

I. Package-A -Fifty-Two (52) Months from the date of issuance of Letter of Intent.

II. Package-B - Forty Six (46) Months from the date of issuance of Letter of Intent.

III. Package-C - Forty Six (46) Months from the date of issuance of Letter of Intent.

IV. Package-D - Forty Two (42) Months from the date of issuance of Letter of Intent.

V. Package-E - Forty (40) Months from the date of issuance of Letter of Intent.

VI. Package-F - Forty (40) Months from the date of issuance of Letter of Intent.

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9.0 Specific Exclusion:

I. Geotechnical investigation, Topographical survey and Levelling /Grading of complete plant shall be done by BHEL.
II. Complete Civil Works of BTG Package are in BHEL SCOPE.
III. Elevators(BTG area), Cranes and Hoists (BTG area), EOT crane (TG building) are excluded from vendor scope.
IV. LP Dosing system, Chemical Dosing and Oxygen Dosing (with supply of chemicals) shall be excluded from vendor scope.
V. BTG contractor shall provide Construction Power supply to BOP vendor on chargeable basis at 2 points (one each inside and outside Plant boundary).
VI. For any other BOP area load requiring emergency DG supply, BOP contractor may inform the emergency load to be considered in main plant DG sizing. Cable for feeding these loads shall be in BOP scope.
VII. BOP packages for which DCS based control is envisaged, DCS panels shall be in Scope of BTG contractor. Corresponding details shall be shared with BOP vendor for accommodation in their layout.

Notes:

a) Pipe cum cable rack within BTG area shall be provided by BTG contractor. Pipe BOQ (size and number) to be laid by BOP vendor (in BTG area) on pipe cum cable rack shall be informed by BOP vendor for pipe rack design.

b) Pipe cum cable rack within BOP area shall be provided by BOP vendor. Pipe BOQ (size and number) to be laid by BTG contractor on pipe cum cable rack in BOP area shall be informed by BTG contractor for pipe rack design.

c) BOP packages for which DCS based control is envisaged, DCS panels shall be in Scope of BTG contractor. Corresponding details shall be shared with BOP vendor for accommodation in their layout.

d) VMS for BOP area for which DCS control is envisaged shall be supplied by BTG contractor. For PLC based system by BOP vendor, VMS of the system is in vendor scope as well as soft connectivity with DCS has to be done by the vendor. BOP vendor shall provide the necessary details for accommodation in DCS.

e) 3D modelling for BOP area shall be under BOP vendor scope. BOP vendor shall prepare the model of all the facilities located within Balance of plant (BOP) area in an integrated & intelligent 3D software solution. BOP area shall include all facilities pertaining to AHP, CHP, LHP, GHP, DM PT plant, pipe & cable racks and any other facility located within plant boundary. All piping layouts, equipment layouts, floor plans, ducting layout (Air/flue gas, A/C, Ventilation etc.), General Arrangement drawings and RCC layout of major buildings and structural arrangement drawings shall necessarily be extracted from the aforesaid 3D model. BOP vendor shall prepare and provide 3D design review model (network ready, which shall include visual interference check, walk-through animation, video simulation for major equipment placement and removal, visual effect, photo realism etc.), which is extracted from aforesaid intelligent 3D model and shall make a presentation of the same to enable OWNER to review the progress of engineering as & when required by the Owner.

Acceptable file formats for 3D review model shall be as below:
a).dgn ,b).vue, c).rvm, d).sat

f) Terminal point with respect to interface with DDCMIS / PLC / Microprocessor System of BOP Scope is the terminal boxes of DDCMIS panel(s) supplied under BTG is the terminal boxes of DDCMIS panel(s) supplied under BTG scope and placed in Central Control Room.

g) For soft-link communication and Hardwired interfacing between BOP's PLC/DCS/ Microprocessor based control system etc., and BTG's DDCMIS all the interfacing hardware such as converters / modem /power supply unit, software etc. shall be supplied by BOP EPC supplier scope, wherever both ends or single end are in BOP EPC supplier's scope.

h) Complete Communication armored FO cables, signal cables and control cables between BOP's PLC/Microprocessor based control system etc to BTG's DDCMIS shall be in BOP EPC Vendor's scope.

i) All the cables shall be routed through cable trays or GI conduit pipes/HDPE protection pipes in BOP vendor scope.

j) In case of redundant communication cables, each cable shall be laid in two separate trays /conduit.

k) Supply, engineering, design, Erection, Laying and termination for all cables shall be in BOP EPC vendor scope including preparation of cable schedule, wherever single/one end are in BTG EPC supplier scope.

l) For Time Synchronization Signals from BTG's master clock system to BOP's PLC/DCS/ Microprocessor based control system etc., all the interfacing hardware such as signal conditioner cards /converters / modem / power supply unit, software etc. shall be supplied by BOP EPC supplier, wherever both ends or single end are in BOP EPC supplier's scope.

m) When equipment's at both ends are in BTG Contractor's scope, supply & installation of HV & LV power, control and instrumentation cables including special cable along with cable carrier system and cable termination & accessories will be in BTG Contractor's scope.

n) If only one end equipment is in BTG Contractor scope, HV & LV power, control and instrumentation cables (including special cables) along with cable carrier system and cable termination & accessories for BOP package will be in BOP Contractor's scope.

o) All special cables for BTG Package will be in BTG Contractor's scope.

p) All cable trays (along with supporting arrangement) required for all the two packages (BTG and BOP) within package boundary battery limits of BTG Package, shall be supplied & erected by the BTG package vendor.

q) Similarly, within package boundary Battery Limits of BOP Package, shall be supplied & erected by the BOP package vendor. BOP contractor shall inform details of cable trays (no. & type) for cable in BOP vendor scope in BTG area and vice-versa.

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10.0 Terms of Payment:

Progressive Payment/ Final Payment: The payments for works under the scope of this contract shall be progressively upon submission of Running bill complete in all respects and confirmation towards statutory payments etc. However, payment terms shall be on back to back basis as with HPGCL and detailed payment terms shall be informed later.

11.0 Taxes: As applicable as per Indian law.

12.0 Interested agency to Submit Qualification and pre-Qualification criteria:

Interested Agencies who are qualifying PQR criteria as mentioned in Annexure-2(Proven-ness) are requested to submit their Expression of Interest as per annexure A, along with technical and financial credentials and other relevant information in the form of documents listed below.

I. Detailed Company Profile and background as per Annexure- I
II. Detailed Specification/ Technical features/data sheet in its own Format.
III. Broad activity wise work schedule, as per Annexure VI.
IV. Interested agency should submit audited/certified (by Charted Accountant) balance sheet of last 3 (Three) Financial Years. Financial details as per Annexure V.
V. Details of similar packages Designed and/or Supplied and/or Constructed by them. Experience details as per Annexure II.
VI. Copy of Work order/purchase order along with completion certificate for S. No. V above.
VII. Details of Tools & Plants (T&Ps) as per Annexure IV format.
VIII. Comment or suggestion (if any).

The details submitted by the Applicant(s) shall be complete in all respects and BHEL may seek clarifications / additional information as considered necessary. Based on the responses received and further discussions with respondents, BHEL shall take appropriate decision.

13.0 General Information

I. Responses to EOI are to be submitted in English only.
II. Notwithstanding anything contained in this EOI, BHEL reserves the right to accept or reject any Application and to annul the EOI Process in whole or part, at any time without any liability or any obligation for such acceptance, rejection or annulment without assigning any reasons thereof.
III. BHEL reserves the right to verify all statements, information and documents submitted by the Applicant in response to the EOI. Any such verification or lack of such verification by BHEL shall not relieve the Applicant of his obligations or liabilities hereunder nor will it affect any rights of BHEL.
IV. The EOI process shall be governed by, and construed in accordance with, the laws of India and the Courts at Delhi shall have exclusive jurisdiction over all disputes arising under, pursuant to and/ or in connection with the EOI process.
V. All costs incurred for participation in the EOI shall be borne by the Applicant(s).

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14.0 **Contact Details:** The respondent shall submit their response with all supporting documents duly signed to the following official by email/ speed-post/ courier:

Name: Anuranjan Kumar- SCT Bharat Heavy Electricals Limited Power Sector – Northern Region Sec 16A, Noida, UP 201301 Mobile: 7408408839 Email: anuranjan@bhel.in	Name: I. C. Kumar- SCT Bharat Heavy Electricals Limited Power Sector – Northern Region Sec 16A, Noida, UP 201301 Mobile: 9783968885 Email: ick@bhel.in

Last date for submission of EOI response: **27.02.2023**.

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15.0 Forms and Procedure

Format of Expression of Interest: **Annexure A**

S. No.	Particulars	Details
1.	Name of Organization	
2.	Address	
	Mobile No.	
	Telephone No.	
	Fax No.	
	E-mail ID	
3.	Organization Details/ Detailed Company Profile and background.	To be filled as per Annexure-I
4.	Experience Details of similar Designed and/or Supplied and/or Constructed by them. Experience	To be filled as per Annexure-II
5.	Financial Status	To be filled as per Annexure-III
6.	List of equipment available with the agency	To be filled as per Annexure-IV
7.	Price analysis Breakup	To be filled as per Annexure-V
8.	Broad activity wise work schedule, as per annexure.	To be filled as per Annexure-VI
9.	Proposed Detailed Specification/ Technical features/ data sheet for all packages.	In your own format

Signature of the applicant

Name & Designation

Place

Date:

Notice for Inviting Expression of Interest (EOI) to undertake Design, engineering, supply, erection, commissioning & testing including Civil, structural & architectural works of all BOP Packages for 1X800 MW Expansion Unit of Deen Bandhu Chhotu Ram TPP at Yamuna Nagar, Harayana.

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Annexure- I

Organizational Details:

Sl. No.	Parameter	Details
1.	Organizational Set-up: - Year of Establishment - Status of Firm (Proprietorship/ Partnership/ Any other) - Name of Directors/Partners/Proprietors (Along with MOA/AOA/Partnership deed etc.)	
2.	Total Staff Strength	

Signature of the applicant

Name & Designation

Place

Date:

Notice for Inviting Expression of Interest (EOI) to undertake Design, engineering, supply, erection, commissioning & testing including Civil, structural & architectural works of all BOP Packages for 1X800 MW Expansion Unit of Deen Bandhu Chhotu Ram TPP at Yamuna Nagar, Harayana.

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Annexure-II

List of Experience in Last 7 Years:

Sl. No	Name of Work / Project with address	Short Description of Work	Name and address of Owner / Client	Value of Work/ Project	Date of Start of Work/ Project		Date of Completion of Work/ Project		Agreement details with copy attached.
					Stipulated	Actual	Stipulated	Actual	

Note: The list of Works/Project mentioned should be substantiated with documentary evidence such as work orders and completion certificates in the absence of which the application is liable to be rejected.

Signature of the applicant

Notice for Inviting Expression of Interest (EOI) to undertake Design, engineering, supply, erection, commissioning & testing including Civil, structural & architectural works of all BOP Packages for 1X800 MW Expansion Unit of Deen Bandhu Chhotu Ram TPP at Yamuna Nagar, Harayana.

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Annexure-III

Financial Status:

S.No.	Financial year	Turnover (in Rs. Lacs)	Profit (in Rs. Lacs)
1.	2019-2020		
2.	2020-2021		
3.	2021-2022		

Note: Certified copies of Chartered Accountants Certificates to be enclosed.

Place:

Date:

Signature of the applicant

Notice for Inviting Expression of Interest (EOI) to undertake Design, engineering, supply, erection, commissioning & testing including Civil, structural & architectural works of all BOP Packages for 1X800 MW Expansion Unit of Deen Bandhu Chhotu Ram TPP at Yamuna Nagar, Harayana.

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Annexure-IV

List of Equipments available With the Firm:

S.No.	Name of Equipment	Type	Nos.
1.	Equipment		
i.			
ii.			
iii.			
2.	Software's		
i.			
ii.			
3.	Office Space (in Sqm)		

Place:

Date:

Signature of the applicant
Name & Designation

Notice for Inviting Expression of Interest (EOI) to undertake Design, engineering, supply, erection, commissioning & testing including Civil, structural & architectural works of all BOP Packages for 1X800 MW Expansion Unit of Deen Bandhu Chhotu Ram TPP at Yamuna Nagar, Harayana.

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Price Percentage Breakup : **Annexure V**

S. No.	**Description**	**Percentage breakup**
1.	Design & Engineering	
2.	Material procurement	
3.	Fabrication & Manufacturing	
4.	Transportation/Freight	
5.	Pre-assembly & Erection	
6.	Painting, Inspection & Testing	
7.	Establishment, Administrative Expenses & other expenses.	
8.	Profit	
	TOTAL	**100%**

Signature of the applicant
Name & Designation

Place:

Date:

Notice for Inviting Expression of Interest (EOI) to undertake Design, engineering, supply, erection, commissioning & testing including Civil, structural & architectural works of all BOP Packages for 1X800 MW Expansion Unit of Deen Bandhu Chhotu Ram TPP at Yamuna Nagar, Harayana.

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Broad activity wise work schedule (Bar Chart) **Annexure VI**

S. No.	**Description**	M1	M2	M3	→			M50	M51	M52
1.	Design & Engineering completion									
2.	Material procurement completion									
3.	Fabrication Cost & Manufacturing									
4.	Pre-assembly & Erection									
5.	Painting, Inspection & Testing									

Signature of the applicant

Name & Designation

Place:

Date :

Notice for Inviting Expression of Interest (EOI) to undertake Design, engineering, supply, erection, commissioning & testing including Civil, structural & architectural works of all BOP Packages for 1X800 MW Expansion Unit of Deen Bandhu Chhotu Ram TPP at Yamuna Nagar, Harayana.

ANNEXURE-1

Declaration for interested packages

Indicate the interested packages with yes

Package-A	Package-B	Package-C	Package-D	Package-E	Package-F
Yes/No	Yes/No	Yes/No	Yes/No	Yes/No	Yes/No

ANNEXURE- 2

PROVENNESS

1. Package-A (Entire BOP Package):

   General Criteria - The Bidder participating in the tender should have executed on EPC(Engineering, Procurement and Construction) basis, a Contract for the BOP Package comprising at least Coal Handling Plant, Ash Handling Plant, Cooling Towers, Chimney, Water Treatment Plant including associated civil works for the above equipments and systems in their scope of work, either as a standalone EPC package or as a part of EPC package covering (SG and/ or STG)and BOP, for a Coal fired power plant with unit size of 250 MW or higher capacity, which is in successful operation for a period of not less than one (1) year prior to the date of EOI.

   Civil Works Criteria - Refer Clause no. A-1

   Equipment Proven-ness - Refer Clause no. B.

2. For Package-B (AHP, CHP and Water Packages) :

   General Criteria - The Bidder participating in the tender should have executed on EPC(Engineering, Procurement and Construction) basis, a Contract for the BOP Package consisting of AHP,CHP and entire Water Packages like Raw Water System, Pre Treatment plant, service water system, Potable water system, Water storage and other auxiliaries systems, DM Water System, Cooling water & ACW system, Miscellaneous pumps etc., Chlorination Plant, Waste Water Treatment System etc. for a Coal fired power plant with unit size of 250 MW or higher capacity, which is in successful operation for a period of not less than one (1) year prior to the date of EOI.

   Civil Works Criteria - Refer Clause no. A-1

   Equipment Proven-ness - Refer Clause no. B for the applicable systems under the package.

3. Package-C (Only AHP and CHP Packages):

   General Criteria - The Bidder participating in the tender should have executed on EPC (Engineering, Procurement and Construction) basis, a Contract for the BOP Package consisting of AHP & CHP for a Coal fired power plant with unit size of 250 MW or higher capacity, which is in successful operation for a period of not less than one (1) year prior to the date of EOI.

   Civil Works Criteria - Refer Clause no. A-1

   Equipment Proven-ness - Refer Clause no. B for the applicable systems under the package.

4. Package-D (Only Water Packages) :

   General Criteria - The Bidder participating in the tender should have executed on EPC(Engineering, Procurement and Construction) basis, a Contract for the BOP Package consisting of only Water packages like Raw Water System, Pre Treatment plant, service water system, potable water system, water storage and other auxiliaries systems, DM Water System, Cooling water & ACW system, Miscellaneous pumps etc., Chlorination Plant, Waste Water Treatment System etc. for a Coal fired power plant with unit size of 250 MW or higher capacity, which is in successful operation for a period of not less than one (1) year prior to the date of EOI.

Civil Works Criteria - Refer Clause no. A-1

Equipment Provenness - Refer Clause no. B for the applicable systems under the package.

5. Package-E (Natural Draft Cooling Tower):

General Criteria - The Bidder participating in the tender should have executed on EPC(Engineering, Procurement and Construction) basis, a Contract for the BOP Package consisting of only Natural Draft Cooling Tower for a Coal fired power plant with unit size of 250 MW or higher capacity, which is in successful operation for a period of not less than one (1) year prior to the date of EOI.

Equipment/ Civil Provenness - Refer Clause no. B for the applicable systems under the package.

6. Package-F (Chimney Package):

General Criteria - The Bidder participating in the tender should have executed on EPC(Engineering, Procurement and Construction) basis, a Contract for the BOP Package consisting of only Chimney for a Coal fired power plant with unit size of 250 MW or higher capacity, which is in successful operation for a period of not less than one (1) year prior to the date of EOI.

7. In case, the Bidder does not meet the criteria for a particular BOP portion of work, then such a Bidder shall associate with an Indian Company who has executed the works for BOP, stipulated above as a standalone EPC package.

8. Such Bidder shall furnish undertaking jointly executed by it and such BOP Firm in which all the executants of DJU shall be jointly and severally liable to the Purchaser to perform successfully the BOP portion of the Contract included in its scope as per format enclosed in the bidding documents. The Deed of joint Undertaking shall be submitted along with the bid, failing which the Bidder shall be disqualified and its bid shall be rejected. In case of award, such Firm will be required to furnish a financial back up bank guarantee for 0.18 % of total contract price of the EPC package, in addition to the Contract Performance Guarantee to be furnished by the Bidder.

9. Notwithstanding anything stated above, the Owner reserves the right to assess the bidder's or his agencies capabilities and capacity to perform the contract, should the circumstances warrant such assessment in the overall interest of the Owner.

A. Civil & Structural Works

1. The Civil & Structural sub - Contractor s shall have the following qualifying requirements.

a) Civil works(except construction of Chimney & Natural Draught Cooling Tower) :

(i) Bidder/Sub - Contractor shall have experience in carrying out civil engineering works for Industrial buildings/ equipment foundations / high - rise buildings (three storied and more) etc.

(ii) The work in S.No. (i) should have been completed within the past seven (7) years, as on date of LOA.

(iii) Bidder to furnish necessary fool proof crystal clear documentary evidence without any ambiguity and interpretation to prove the above requirements and get approval from the Owner, prior to engaging them

for civil works.

b) Structural steel works (for buildings and structures under the scope of civil) :

For structural steel fabrication works:

(i) Bidder/ Sub - Contractor shall have experience in carrying out structural fabrication works for Industrial buildings/ Power plant structures / high - rise buildings (three storied and more) etc.

(ii) The work in S.No .(i) should have been completed within the past seven (7) years, as on date of LOA.

(iii) Bidder to furnish necessary fool proofcrystal clear documentary evidence without any ambiguity and interpretation to prove the above requirements and get approval from the Owner, prior to engaging them for structural fabrication works.

For Structural steel Erection Works:

(i) Bidder/ Sub - Contractor shall have experience in carrying out structural steel erection works for Industrial buildings / Power plant structures / high - rise buildings etc.

(ii) The work in S No.(i) should have been completed within the past seven (7) years, as on date of LOA.

(iii) Bidder to furnish necessary fool proof crystal clear documentary evidence without any ambiguity and interpretation to prove the above requirements and get approval from the Owner, prior to engaging them for structural erection works

B. Balance of Plant Equipment/ Systems

1. Natural Draught Cooling Tower

1.1 The Bidder/ its sub – vendor should have designed,constructed and commissioned at least one (1) number of Natural Draft Cooling tower in RCC construction with splash type fill, of capacity not less than 60,000 M3 / hr or 80% of offered capacity whichever is lower and which should have been in successful operation for at least one (1) year prior to the date of Techno Commercial bid opening. The reference cooling tower should be of the same type, as is being offered by the Bidder/ sub vendor.

1.2 Bidder/ its sub- vendor who do not fulfil the requirement in clause 1.1 above can also participate provided the Bidder/ sub - vendor has designed, constructed and commissioned at least one (1) number Natural Draught Cooling Tower having film/ splash/grid type fill, of capacity not less than 8 0,000 M3 / hr or 80% of offered capacity whichever is lower and associates with a party fully meeting the requirements of clause 1.1 above. The Associate will be responsible for design, erection, commissioning and satisfactory performance of the equipment/system. The EPC contractor shall arrange a letter of undertaking to this effect from such Associate to the Owner prior to placement of order for the said equipment/ system.

1.3 In case the reference cooling tower was designed by a party other than the Bidder himself /its sub vendor, the Bidder/ its sub vendor shall employ a cooling tower designer/ supplier who has independently designed an natural Draft Cooling Tower of same type as being offered of capacity not less than 80,000 M3 / hr or 80% of offered capacity whichever is lower

in RCC construction with film/ splash/ grid type fill which should have been in successful operation for at least one (1) year prior to the date of Techno - Commercial bid opening.

2. CW Pumps

The Bidder/its Sub - vendor should meet the qualifying requirements of any one of the qualifying routes stipulated under clause 2.1 or 2.2 or 2.3 for the type of CW pump.

2.1 The Bidder/ its sub - vendor should have designed either by itself or through its Collaborator/ Associate, manufactured/ got manufactured, supplied, erected/ supervised erection, and commissioned/ supervised commissioning of at least two (2) nos. of vertical wet pit pumps, each of capacity 36,000 M3/ hr or offered capacity whichever is lower, having specific speed in the range of 4000 - 7000 (*) (US units) which should have been in successful operation for at least two (2) years prior to the date of Techno - Commercial bid opening.

2.2 Bidder/ its sub – vendor who has designedby itself, manufactured/got manufactured, supplied, erected/ supervised erection, and commissioned/ supervised commissioning of at least two (2) nos. of vertical wet pit pumps, each of capacity 36,000 M3 / hr or more, having a specific speed in the range of 4000 - 7000 (*) (US units) which should have been in successful operation for at least two (2) years prior to the date of Techno - Commercial bid opening can also participate, provided it associates/ collaborates with a firm who in turn meets the requirements of 2.1 above.

In such a case, the Bidder shall be required to furnish a Deed of Joint Undertaking(s) (DJU) jointly executed by the Bidder, its sub- vendor (if applicable) and the Collaborator(s)/ Associate(s) and each executant of DJU shall be jointly and severally liable to the Owner for successful performance of CW pumps, as per the format enclosed with the bidding documents. The Deed of Joint Undertaking(s) (DJU) should be submitted at the time of placement of order on approved sub - vendor. In such a case, the Collaborator(s)/ Associate(s) shall be required to furnish an on demand bank guarantee for INR 10 Million (Rupees Ten Million).

2.3 The Bidder/ its sub - vendor should be a wholly or partially (with minimum 51% holding) held Indian subsidiary of a firm who in turn meets the requirements of clause 2.1. Further, the Bidder/ its sub- vendor should have executed/ be executing at least one (1) Contract involving design, manufacture/ got manufactured, supply, erection/ supervision of erection, and commissioning/ supervision of commissioning of at least two (2) nos. vertical wet pit pumps, each of capacity 36 ,000 cum/ hr or more.

In such a case, the Bidder shall be required to furnish a Deed of Joint Undertaking (s) (DJU) jointly executed by the Bidder, its sub - vendor and the Holding company and each executant of DJU shall be jointly and severally liable to the Owner for successful performance of CW pumps. The Deed of Joint Undertaking(s) (DJU) should be submitted at the time of placement of order on approved sub - vendor. In such a case, the Holding company shall be required to furnish an on demand bank guarantee for INR 15 Million (Rupees Fifteen Million).

Note

(i) For qualification under clause 2.1, a firm can meet the requirements stipulated under clause 2.1 above either singularly or collectively along with its subsidiaries.

In such a case the Bidder shall be required to furnish a Deed of Joint Undertaking(s) (DJU) jointly executed by the Bidder, its sub - vendor, Associate or collaborator, the Holding company along with all its subsidiaries extending support to the holding company/ Associate or collaborator for complying requirements of clause 2.1 and each executant of DJU shall be jointly an d severally liable to the Owner for successful performance of CW pumps, as per the format enclosed with the bidding documents. The Deed of Joint Undertaking(s) (DJU) should be submitted at the time of placement of

order on approved sub- vendor. In such a ca se, the Holding company/ Associate or collaborator along with all its subsidiaries extending support to the holding company/ Associate or collaborator for complying requirements of clause 2.1 shall be required to furnish an on demand bank guarantee for INR 10 Million (Rupees Ten Million) equally divided amongst them.

(ii) (*) Specific speed as stipulated above is the specific speed calculated at the best efficiency point of the pumps as defined in Hydraulic Institute Standards (HIS).

3. Chemical Treatment (system) Programme for CW System

The Bidder/ its sub - vendor should have executed contracts for cooling water treatment program of at least two (2) different cooling water systems each having a flow rate not less than 36,000 M3 / hr operating in alkaline pH range and both the treatment programs should have been in successful operation for at least one (1) year prior to the date of Techno-Commercial bid opening. These contracts should include supply of chemicals, operation and maintenance of the sy stem. The Chemicals used in these programme should have been organic polymers/ organic phosphorous compounds/ organic phosphates based chemicals.

4. Fire Detection and Protection System:

The bidder/ its sub - vendor should have designed, supplied, erected and commissioned at least two (2) numbers of Fire Protection Systems, each of contract value not less than INR 50 million or equivalent in foreign currency (exchange rate applicable as on date of Techno - commercial bid opening), in thermal power plant installations. Each of the above fire protection systems should have comprised of:

a) Fire hydrant system.

b) High velocity water (HVW) spray or medium velocity water (MVW) spray or sprinkler system.

c) Firewater pumping and pressurizing arrangement.

The systems mentioned above should have been designed to the recommendations of Tariff Advisory Committee of India or Oil industry safety directorate (OISD) or any other International reputed authority (like LPC- UK or NFPA, USA) and these systems should have been in successful operation for at least two (2) years prior to the date of techno- commercial bid opening.

In addition, the analogue addressable type fire alarm system proposed to be supplied shall be sourced from a firm who has supplied at least two (2) similar systems which have been approved or listed by UL- USA/ FM - USA/ LPC - UK/ Similar agency and should have been in successful operation for at least two (2) years prior to the date of techno- commercial bid opening. Further, the Inert gas fire extinguishing system shall be sourced from an agency who has designed and supplied at least two (2) inert gas total flooding fire extinguishing system each having a total risk volume of at least 1000 cum. These systems must have been designed to the recommendation of Tariff advisory committee of India or any other International reputed authority (like LPC- UK or NFPA, USA) and should have been in successful operation for at least two (2) years prior to the date of techno - commercial bid opening.

5. Air Conditioning System

The bidder/its sub - vendor should have designed, supplied, erected and commissioned at least two (2) numbers of Air conditioning systems each having a total installed capacity of

300 TR or more, which should have included at least one chilling unit with a minimum capacity of 60 TR at each reference system in Industrial/ Commercial installations. The systems should have been in successful operation for at least two (2) years prior to the date of techno- commercial bid opening.

In addition, the chiller unit(s) proposed to be supplied for this package shall be sourced from the manufacturer(s) who have manufactured and supplied at least two (2) nos. of similar type of chiller units each having a capacity of not less than 150 TR, which should have been in successful operation for at least two (2) years prior to the date of techno- commercial bid opening.

6. Ventilation System

The bidder/ its sub - vendor should have designed, supplied, erected, and commissioned at least two (2) numbers ventilation systems including air washer units having individual fan capacity of 1,25,000 Cum./ Hr. or more at each ventilation system, in Industrial/ Commercial installations. The systems should have been in successful operation for at least two (2) years prior to the date of tech no- commercial bid opening.

7. Compressed Air System

a) The bidder/ its sub - vendor should have designed, manufactured, supplied, erected/ supervised erection and commissioned/ supervised commissioning of at least two (2) numbers non- lubricated oil free screw type air compressor of minimum capacity 40 NM3 / min each or at least two(2) numbers centrifugal air compressors of minimum capacity 50 NM3 / min each and at rated discharge pressure of 8 kg/ cm2 (g) which should have been in successful operation for at least two (2) years prior to the date of techno - commercial bid opening. Bidder/ its sub- vendor shall offer only the type of compressors for which he is qualified.

b) The Air Drying Plant (A.D.P) shall be supplied from such manufacturers who have manufactured and supplied at least two (2) numbers Air Drying Plant each of capacity 40 NM3/ min or more and the type same as offered, which should have been in successful operation prior to the date of techno - commercial bid opening.

8. Water Pre - treatment Plant & Liquid Effluent Treatment Plant

The Bidder/ its sub - vendor should have designed, supplied, erected and commissioned at least two (2) numbers water/ waste water treatment plants, each with a capacity of not less than 1500 M3 / hr, comprising of clarifiers/ tube settlers/ thickeners or a combination thereof including civil works. The plants should have been in successful operation for at least two (2) years prior to the date of Techno - Commercial bid opening.

9. Ion Exchange Demineralization Plant

The Bidder / its sub - vendor should have designed, supplied, erected and commissioned at least one (1) number of ion exchange based demineralising plant, consisting of at least two (2) streams each of minimum 40 M3 / hr capacity, capable of producing outlet water quality of silica and conductivity not more than 0.01 ppm as SiO2 and 0.1 micromho/cm respectively, which should have been in successful operation for at least two (2) years prior to the date of Techno - Commercial bid opening.

10. Ash Handling System

Ash Slurry Disposal Pumps: -

The ash slurry pumps to be supplied shall be from such manufacturers who have in the past supplied and installed as h slurry pumps for similar duty applications and have at least two (2) nos. pumps of same models that are being offered having capacity not less than1000 cubic meters per hour at each of the two (2) different stations which are in successful operation for at least two (2) years.

10.1 The Bidder/ its Sub - vendor should be a manufacturer of ash handling systems and should have executed ash handling system involving design, engineering, manufacture, supply, erection and commissioning of

a) Bottom Ash hand ling system comprising a jet pump system in conjunction with water impounded Bottom Ash Hop per designed for the following conveying capacities for pulverized coal fired boilers:

Jet Pump : 3 x 65 TPH (dry ash basis)

The reference Bottom Ash Handling systems should be of the same type i.e. jet pump system, as is being offered by the Bidder/ its Sub- vendor.

b) Pneumatic fly ash handling system for conveying fly ash from ESPs of a single pulverized coal fired boiler unit by Vacuum conveying system designed for 45 TPH or more conveying capacity per vacuum extractor.

The reference fly ash handling systems should be of vacuum system and pressure system, as is being offered by the Bidder/ its Sub- vendor.

c) Pneumatic pressure conveying Fly Ash Transportation System for transporting fly ash through conveying air blowers from pulverized coal fired boiler having capacity of not less than 80 TPH for a conveying distance of not less than 200M.

d) Complete ash slurry disposal system for handling not less than 150 tonnes of ash per hour for pulverised coal fired power stations which includes, among others, ash slurry pumps & piping system with associated controls.
The systems mentioned at 10.1(a), (b) & (c) above should have been in successful operation in at least two (2) plants for at least two (2) years prior to date of Techno - Commercial bid opening. For the purpose of qualification, the experience as at (a), (b) & (c) above in separate plants also is permissible.

An individual boiler unit having its own independent bottom ash handling system of either the jet pump system type can be considered as a plant for meeting the requirement of 10.1 (a) above.

An individual boiler unit having its own independent fly ash handling system up to wet ting units/ dry dust collection buffer hoppers which includes, among others, independent fly ash handling equipment below ESP hoppers, independent ash conveying piping up to wetting units/ dry dust collection buffer hoppers can be considered as a plant for meeting the requirement of 10.1(b) above. Further, a transportation system provided for an individual boiler unit having dedicated ash vessels below buffer hoppers and dedicated piping from buffer hoppers to storage silos can be considered as a plant for meeting the requirement of 10.1(c) above.

For reference fly ash handling systems, the design capacity of conveying from ESPs to buffer hoppers and of transportation from buffer hoppers to storage silos will be the capacity which the client (of the reference plant against which the Bidder / its Sub - vendor is seeking qualification) must have specified in its contract

documents.

10.2 The Bidder/ its Sub - vendor who is a supplier of ash handling systems but does not meet the requirements under clause 10.1 in part or in full can also participate provided it has executed at least the following systems of ash handling plant involving design, engineering, manufacture, supply, erection and commissioning:

a) Bottom ash handling system comprising jet pump system in conjunction with water impounded Bottom Ash Hopper.

b) Fly Ash Handling System for conveying fly ash from ESPs in dry form (involving pneumatic conveying systems of vacuum & pressure type) and in wet (slurry) form

The systems mentioned at 10.2 (a) and (b) above in India should have been in successful operation in at least two (2) plants for two (2) years prior to the date of Techno - Commercial bid opening and should have been installed for pulverized coal fired boiler units generating not less than 150 TPH of ash per boiler.
And collaborates/ associates with party(ies) who meet(s) either the total requirement or the balance part under 10.1 (a),(b),(c) above which the Bidder/ its Sub - vendor itself is not able to meet.

In such a case, the Bidder shall be required to furnish a Deed of Joint Undertaking (DJU) jointly executed by the Bidder, its sub- vendor (if applicable) and the Collaborator(s)/ Associate(s) and each executant of DJU shall be jointly and severally liable to the Owner for successful performance of the relevant system, as per the format enclosed with the bidding documents. The Deed of Joint Undertaking (DJU) should be submitted at the time of placement of order on approved sub- vendor. In such a case, each Collaborator/Associate shall be required to furnish an on demand bank guarantee as follows:

i) INR 2 Million (Rupees Two Million) for Collaborator/ Associate for Bottom Ash Handling System

ii) INR 2 Million (Rupees Two Million) for Collaborator/ Associate for Vacuum Conveying System

iii) INR 4 Million (Rupees Four Million) for Collaborator/ Associate for Vacuum Conveying System

iv) INR 6 Million (Rupees Six Million) for Collaborator/ Associate for Pressure Conveying System.

In case bidder/ sub - vendor collaborates/ associates for more than one system with a party, then the Collaborator/ Associate shall be required to furnish an on demand bank guarantee for an amount arrived at by adding up the amounts for the relevant systems as above.

10.3 The activity of design and engineering under 10.1 (a), (b) & (c) should have been carried out by the Bidder/ its Sub- vendor and not through any external design agency/ agencies. The activity of design and engineering under 10.1 (d) should have been carried out by either the Bidder/ its Sub - vendor or through design agency/ design agencies having experience for high concentration ash slurry disposal system.

For design and engineering activity referred under paras 10.2 the activity should have been carried out by either the Bidder/ its Sub - vendor or through design agency/ agencies having experience for reference systems. In case of Collaborator(s)/ associate(s) (meeting the balance part of total requirement under clause 10.1), the activity of design and engineering for the reference systems should have been carried out by them

11. Coal Handling Plant

11.1 The Bidder/ its Sub - vendor should have designed, manufactured/ got manufactured, erected and commissioned at least two (2) integrated bulk material handling plants (essentially comprising of conveying and crushing) including all associated structural steel works and electrical works of minimum 1000 TPH rated capacity or above for coal of equivalent volumetric capacity which should have been in success ful operation in India for at least two (2) years prior to the date of Techno - Commercial bid opening. At least one (1) Wagon tippler and one (1) stacker cum reclaimer with 1000 TPH or more capacity should have been supplied and commissioned in the above bulk material handling plants.

And

11.2 The Bidder/ its Sub - vendor should have designed, manufactured, supplied, erected and commissioned including all associated structural steel works and electrical works at least two (2) number cantilever boom type, slewable and luffable, bucket wheel type travelling Stacker - cum - Reclaimer suitable for stacking and reclaiming at a rated continuous capacity of 1000 TPH (or above) for coal or other mineral of equivalent volumetric capacity which should have been in successful operation for at least two (2) years prior to the date of Techno - Commercial bid opening.

And

11.3 The Bidder/ its Sub - vendor who meets the requirements of only para 11.1 above can also participate provided it collaborates / associates with a firm which fully meets the requirements specified at para 11.2 above.

In such a case, the Bidder shall be required to furnish a Deed of Joint Undertaking (DJU) jointly executed by the Bidder, its sub- vendor (if applicable) and the Collaborator/ Associate and each executant of DJU shall be jointly and severally liable to the Owner for successful performance of the system, as per the format enclosed with the bidding documents. The Deed of Joint Undertaking (DJU) should be submitted at the time of placement of order on approved sub - vendor. In such a case, the Collaborator/ Associate shall be required to furnish an on demand bank guarantee for INR 5 Million (Rupees Five Million only).

12. Coal Sampling System

The Bidder/ its Sub - vendor shall source coal sampling system from a manufacturer/ supplier who has engineered and supplied minimum two (2) numbers of coal sampling systems for sampling coal / other bulk mineral from conveyor of 1000 MTPH or above and which should have been in successful operation for at least two (2) years prior to the date of Techno- Commercial bid opening.

13. Fuel Oil System

The Bidder/ its Sub - vendor, should have designed, supplied, erected and commissioned at least one (1) fuel oil handling installation consisting of:

a) Unloading facilities
b) One (1) Storage tank of capacity not less than 500 M3.

The above system should have been in successful operation prior to the date of Techno - Commercial bid opening.

14. Hydrogen Generation Plant

The bidder/ its sub - vendor should have designed and supplied at least one (1) hydrogen generation plant of the type specified, comprising of electrolyser(s) and gas compressor(s)

to generate Hydrogen at 5 NM3 / hr (minimum) of 99.7% purity (minimum) at the main electrolyser outlet which should have been in successful operation for at least two (2) years prior to the date of Techno - Commercial bid opening. Bidder/ its Sub- vendor shall offer only the type of hydrogen generation plant for which he is qualified

15. Provenness criteria for critical equipment, auxiliaries, systems and bought out items for Flue Gas Desulphurisation System :

15.1 The Bidder / Bidder's sub - vendor(s) is required to meet the provenness criteria and/ or qualification requirement for critical equipment, auxiliaries, system and bought out items as per criteria stipulated below:

Slurry Recirculation Pumps, Oxidation Blowers, Wet Limestone Grinding Mills, Slurry Pumps, Agitators & Vacuum Belt Filters for the Wet Limestone based Flue Gas Desulphurisation (FGD) System offered by the Bidder shall be only from such manufacturer(s) who has previously designed (either by itself or under collaboration / licensing agreement), manufactured / got manufactured the respective equipment(s) of the type, application and minimum equipment rating as stipulated below such that the respective equipment(s) should have been in successful operation in at least one (1) plant for a period not less than one (1) year prior to techno commercial bid opening:

S No	Name of Equipment	Type of equipment	Application	Equipment rating
a.	Slurry Recirculation Pumps	Centrifugal type	Wet Limestone based FGD application inCoal fired power plant	80% of the flow & 100% of the head of the offered Slurry Recirculation Pump
b.	Oxidation Blowers	Centrifugal/ positive displacement type blower	Wet Limestone based FGD application in Coal fired power plant	80% of the flow & 100% of the head of the offered Oxidation Blower
c.	Wet limestone Grinding mills	Horizontal Wet Ball mill	Wet Limestone based FGD application in Coal fired power plant	80% of offered ball mill capacity With pulverizing finesse not less than90% thru325 mess.
d.	Slurry Pumps	Centrifugal type	Wet Limestone based FGD application or similar process/ duty application	Flow 50 m^3/ hr(minimum) with Head 30 Meters of Liquid Column (minimum)
e.	Agitators	Vertical / Horizontal	Wet Limestone based FGD application in Coal fired power plant	Agitator rating not less than that supplied for 500 MW or higher size unit for similar application
f.	Vacuum Belt filters	Belt type	Wet Limestone based FGD application in Coal fired power plant	80% of the offered Vacuum Belt filter capacity

Bidder shall offer and supply only the type of the above equipment(s) for which he himself or the manufacturer proposed by the bidder for the above equipment(s) is qualified.

15.2 A JV/ Subsidiary Company formed for manufacturing and supply of equipment(s) as listed at clause no 15.1 above in India can also manufacture such equipment, provided that it has a valid collaboration or licensing agreement for design, engineering, manufacturing of such equipment(s) in India with a qualified equipment manufacturer who meets the requirements stipulated at clause 15.1 above (or the technology provider of the qualified equipment manufacturer) for the respective equipment(s). However, in this case, the proposed JV/ Subsidiary Company before resorting to design, engineering, manufacturing of such proven equipment(s) listed at clause no. 15.1 above by himself should have sourced / shall source such proven equipment(s) for at least one first 660 MW unit completely from such qualified manufacturer. For subsequent units before taking up the manufacturing of such equipment(s), the bidder/his sub - vendor(s) must create/ have created manufacturing facilities at his works as per collaborators/licensers design, manufacturing and quality control system for such equipment(s).

Further, in such a case, such qualified equipment manufacturers should have, directly or indirectly through its holding company/ subsidiary company, at least 26% equity participation in the Indian Joint Venture Company/ Subsidiary Company, which shall be maintained for a lock- in period of seven (7) years from the date of incorporation of such Joint Venture/ Subsidiary or up to the end of defect liability period of the contract, whichever is later. In addition, the Bidder along with the Indian Joint Venture Company/ Subsidiary Company, qualified equipment manufacturers and its holding/ subsidiary Company, as applicable, shall furnish DJU in which executant of the DJU shall be jointly and severally liable for the successful performance of the equipment as per the format enclosed in the bidding document. The DJU shall be submitted prior to the placement of order on the approved sub - vendor for a particular equipment.

In case of award, each executant of the DJU except the Bidder shall be required to furnish an on demand bank guarantee for INR 2.5 Million (Indian Rupees Two and Half Million only) for each equipment.

15.3 In case the Bidder or the proposed sub - vendor is not manufacturer of proven Oxidation Blowers as per clause 15.1 (b) above but is a manufacturer of Blowers/ compressors for minimum 90 NM 3 / min capacity, the Bidder or the proposed sub - vendor can also manufacture Oxidation Blowers, provided it has collaboration or valid licensing agreement for design, engineering, manufacturing, supply of such Oxidation Blowers in India with such manufacturer who meet the requirements stipulated at clause 15.1 (b) above for the Oxidation Blowers. However, in this case, Bidder or the proposed sub- vendor before resorting to design, engineering, manufacturing of such proven equipment by himself should have sourced/shall source such proven equipment for at least the first 660 MW unit completely from such qualified manufacturer. For subsequent units before taking up the manufacturing of such equipment, the bidder/ his sub- vendor must create/ have created manufacturing facilities at his works as per collaborators/licensers design, manufacturing and quality control system for such equipment.

In addition, the Bidder along with the qualified equipment manufacturer shall furnish DJU in which executant of the DJU shall be jointly and severally liable for the successful performance of the equipment as per the format enclosed in the bidding document. The DJU shall be submitted prior to the placement of order on the approved sub - vendor for Oxidation Blowers. In case of award, each executant of the DJU except the Bidder shall be required to furnish an on demand bank guarantee for INR 2.5 Million (Indian Rupees Two and Half Million only).

15.4 In case the Bidder or the proposed sub - vendor is not manufacturer of proven Wet limestone Grinding mills as per clause 15.1 (c) above but is a manufacturer of dry Grinding

mills for power or cement industry of minimum 20 T/ PH capacity, the Bidder or the proposed sub- vendor can also manufacture Wet limestone Grinding mills, provided it has collaboration or valid licensing agreement for design, engineering, manufacturing, supply of such Wet limestone Grinding mills in India with such manufacturer who meet the requirements stipulated at clause 15.1 (c) above for the Wet limestone Grinding mills. However, in this case, Bidder or the proposed sub-vendor before resorting to design, engineering, manufacturing of such proven equipment by himself should have sourced / shall source such proven equipment for at least the first 660 MW unit completely from such qualified manufacturer. For subsequent units before taking up the manufacturing of such equipment, the bidder/ his sub - vendor must create / have created manufacturing facilities at his works as per collaborators/licensers design, manufacturing and quality control system for such equipment.

In addition, the Bidder along with the qualified equipment manufacturer shall furnish DJU in which executant of the DJU shall be jointly and severally liable for the successful performance of the equipment as per the format enclosed in the bidding document. The DJU shall be submitted prior to the placement of order on the approved sub - vendor for Wet Limestone Grinding mills. In case of award, each executant of the DJU except the Bidder shall be required to furnish an on demand bank guarantee for INR 2.5 Million (Indian Rupees Two and Half Million only).

15.5 In case the Bidder or the proposed sub - vendor is not manufacturer of proven Agitators as per clause 15.1 (e) above but is a manufacturer of Agitators for similar process/ duty application in petrochemical or metals and mining industry, the Bidder or the proposed sub - vendor can also manufacture Agitators, provided it has collaboration or valid licensing agreement for design, engineering, manufacturing, supply of such Agitators in India with such manufacturer who meet the requirements stipulated at clause 15.1 (e) above for the Agitators. However, in this case, Bidder or the proposed sub- vendor before resorting to design, engineering, manufacturing of such proven equipment by himself should have sourced / shall source such proven equipment for at least the first 660 MW unit completely from such qualified manufacturer. For subsequent units before taking up the manufacturing of such equipment, the bidder/ his sub - vendor must create / have created manufacturing facilities at his works as per collaborators licenser's design, manufacturing and quality control system for such equipment.

In addition, the Bidder along with the qualified equipment manufacturer shall furnish DJU in which executant of the DJU shall be jointly and severally liable for the successful performance of the equipment as per the format enclosed in the bidding document. The DJU shall be submitted prior to the placement of order on the approved sub - vendor for Agitators. In case of award, each executant of the DJU except the Bidder shall be required to furnish an on demand bank guarantee for INR 1.5 Million (Indian Rupees One and Half Million only).

15.6 In case the Bidder or the proposed sub - vendor is a manufacturer of Slurry Pumps who meets the requirements stipulated at clause 15.1 (d) above, the Bidder or the proposed sub - vendor can also manufacture Slurry Recirculation Pumps, provided it has collaboration or valid licensing agreement for design, engineering, manufacturing, supply of such equipment in India with such manufacturer who meet the requirements stipulated at clause 15.1 (a) above for the Slurry Recirculation Pumps. However, in this case, Bidder or the proposed sub – vendor before resorting to design, engineering, manufacturing of such proven equipment by himself should have sourced / shall source such proven equipment for at least the first 660 MW unit completely from such qualified manufacturer. For subsequent units before taking up the manufacturing of such equipment, the bidder/his sub- vendor must create / have created manufacturing facilities at his works as per collaborators licenser's design, manufacturing and quality control system for such equipment.

In addition, the Bidder along with the qualified equipment manufacturer shall furnish DJU in which executant of the DJU shall be jointly and severally liable for the successful

performance of the equipment as per the format enclosed in the bidding document. The DJU shall be submitted prior to the placement of order on the approved sub - vendor for Slurry Recirculation Pumps. In case of award, each executant of the DJU except the Bidder shall be required to furnish an on demand bank guarantee for INR 4 Million (Indian Rupees Four Million only).

15.7 Before taking up the manufacturing of such equipment(s) as per clause 15.2, 15.3, 15.4, 15.5 & 15.6 above, the Bidder/ its sub vendor(s) must create (or should have created) manufacturing and testing facilities at its works as per Collaborator/licensor design, manufacturing and quality control system for such equipment duly certified by the Collaborator/ licensor. Further, the Collaborator / Licenser shall provide (or should have provided) all design, design calculation, manufacturing drawings and must provide (or should have provided) technical and quality surveillance assistance and supervision during manufacturing, erection, testing, commissioning of equipment.

15.8 Bidder shall offer and supply only the type of the above equipment(s) for which it, itself or the manufacturer/ Collaborator(s)/ Licenser(s) proposed by the Bidder for the above equipment(s) is qualified.

15.9 The Employer reserves the right to fully satisfy himself regarding capability and capacity of Bidder/ its sub - vendor(s) and the proposed arrangement and may prescribe additional requirement before allowing manufacture of the equipment listed above for this contract.

16. Sewage Treatment Plant

The Bidder / Sub - Contractor should have supplied, erected and commissioned a Sewage Treatment Plant based on FAB/ M BBR technology during the last ten years with a minimum capacity of 1 cum/ hour and the plant should have been in successful operation for at least one year as on date of LOA.

17. Effluent Treatment Plant

The Bidder /Sub - Contractor should have designed, supplied, erected and commissioned during the last ten years at least one number sea water reverse osmosis plant with a permeate water capacity of minimum 30 m3 / hour. which should have been in successful operation for a period of not less than one year as on date of LOA.

18. Hydrogen Generation Plant

The Bidder / Sub - Contractor should have supplied, erected / supervised erection and commissioned/supervised commissioning a Hydrogen Generation Plant based on Proton Exchange Membrane (PEM) technology during the last ten years with a minimum capacity of 8 Nm3 / hour and the plant should have been in successful operation for at least one year as on date of LOA.

PROVENNESS CRITERIA FOR ELECTRICAL EQUI PMENTS

19. ISOLATED PHASE BUSDUCT

19.1 Bidder/ Sub Vendor should have designed, manufactured, type tested, supplied, erected/ supervised erection and commissioned/supervised commissioning of Isolated Phase Bus duct for a turbo - generator of at least 500MW, which should have been in successful operation for a period of not less than two (2) years prior to the date of Techno- Commercial

bid opening.

OR

19.2(i) Bidder/ Sub Vendor should have designed, manufactured, type tested, supplied, erected/ supervised erection and commissioned/ supervised commissioning of Isolated Phase Busduct for a turbo - generator of at least 200MW, which should have been in successful operation for a period of not less than two (2) years prior to the date of Techno- Commercial bid opening.

(ii) Bidder/ Sub Vendor has an on - going technical collaboration agreement with a party who in turn meets the requirements of 19.1 above. Further in such an event the Bidder should furnish an undertaking jointly executed by it and its Associate or Collaborator, as per format, enclosed in the bidding document for the successful performance of the equipment. This Deed of Joint Undertaking should be submitted prior to the placement of order on approved Sub Vendor. In case of award, the Associate or Collaborator of the Bidder /Sub Vendor (as applicable) will be required to furnish an on demand Bank Guarantee for INR 1.5 Million(Indian Rupees One and a half Million only) .

20. POWER TRANSFORMERS

20.1 Bidder/ Sub Vendor should have designed, manufactured, installed/ supervised installation and commissioned/ supervised commissioning of at least two (2) nos. (one each at two different installations) of 400 KV or above class Generator transformers of at least 200 MVA capacity (single phase transformer) which should be in successful operation for at least two(2) years prior to the date of Techno - Commercial bid opening.

OR

20.2 Bidder/ Sub Vendor who have designed, manufactured, installed/supervised installation and commissioned/ supervised commissioning of at least two (2) no. 220 KV or above class transformer which are in successful operation for two (2) years prior to the date of Techno - Commercial bid opening and have established manufacturing facilities for 400 KV class transformers based on technological support of its Associate or Collaborator, can also be considered Qualified provided its Associate or Collaborator meets the qualifying requirement stipulated at 20.1 above and Bidder furnishes an undertaking jointly executed by it and its Associate or Collaborator, as per the format, enclosed in the bidding document for the successful performance of the equipment. This De ed of Joint Undertaking should be submitted prior to the placement of order on approved Sub Vendor. In case of award, the Associate or Collaborator of the Bidder / Sub Vendor (as applicable) will be required to furnish an on - demand Bank Guarantee for INR 22 Million (Indian Rupees Twenty Two Million only).

Transformer shall be of Collaborators/Associates/Technology providers/licensors design. Transformer shall be manufactured in line with manufacturing & assembly drawings of Collaborator/Associate/Technology provider/ Licensor.

Core coil assembly and final testing of the transformer shall be under the supervision of Collaborator/ Associate/ Technology provider/ Licensor.

21. AUXILIARY OIL FILLED/ DRY TYPE TRANSFORMERS

21.1 Bidder/ Sub Vendor should have manufactured & supplied at least two numbers (one each

at two different installations) of at least highest offered rating oil filled / dry type transformers which should have been in successful operation for a period of at least two (2) years prior to the date of Techno - Commercial bid opening.

21.2 Bidder/ Sub Vendor should have his own facilities for conducting all routine and type tests as per IS: 2026 (except short circuit test).

21.3 The transformer considered for the above (21.1) should have been successfully short circuit tested.

Note (applicable for clauses 20 & 21):

Two different installations means two different projects or two different contracts.

22. LT SWITCHGEAR

Route 1

22.1 Bidder/ Sub – vendor should have manufactured and supplied at least a total of four hundred & fifty (450) Nos. draw out type Air Circuit Breaker Panels and / or draw out Motor Control Centre Panels complete in all respects with fault rating of at least 50kA for 1 sec. and 105kA (peak) under a single order and these panels should have been in successful operation for a period of not less than two (2) years prior to the date of Techno- Commercial bid opening.

22.2 Bidder/ Sub - vendor should have manufactured and supplied at least one hundred & fifty (150) Nos. draw out Circuit Breaker Panels with Air Circuit Breakers having fault rating of at least 50kA for 1 second, 105kA MAKING and 50kA BREAKING, which should have been in successful operation for a period of not less than two (2) years prior to the date of Techno - Commercial bid opening.

Note: Each Single Front Panel shall be counted as one (1) Panel, Double Front Panel as one (1) Panel and Air Circuit Breaker Panel as one (1) Vertical Panel.

Route 2

Bidder/ Sub Vendor based on technological support of its Associate or Collaborator, can also participate provided

22.3 Bidder/ Sub Vendor should have manufactured and supplied at least a total of two hundred & twenty - five (225) numbers of draw out type Air Circuit Breaker Panels and / or draw out type Motor Control Centre Panels with fault rating of at least 45kA for one (1) second and 105kA peak under a single order and these panels should have been in successful operation for at least two (2) years.

And

Bidder/ Sub Vendor should have manufactured and suppl ied at least seventy - five (75) numbers of draw out type Air Circuit Breaker panels having fault rating of at least 45kA for one (1) second and 105kA peak, which should have been in successful operation for at least two (2) years.

And

Bidder/ Sub Vendor shall be considered qualified provided its Associate or Collaborator or Technology Provider or Licensor meets the requirement stipulated in Route - 1 for sourcing of Air Circuit Breakers. The Associate or Collaborator or Technology Provider or Licensor shall provide a letter of technical support for successful performance of the Air Circuit Breakers. This letter of technical support should be submitted at the time of placement of order on the Sub Vendor.

And

Bidder/ Sub Vendor should have established manufacturing facility for draw out type Air Circuit Breaker Panels and draw out type Motor Control Centre Panels in India. Further, all the panels for this project shall be manufactured and supplied from the Indian manufacturing facility.

22.4 Bidder/ Sub Vendor shall furnish a Deed of Joint Undertaking jointly executed by it and its Associate/ Collaborator as per format enclosed in the bidding document in which the Bidder/ Sub Vendor and its Associate/ Collaborator are jointly and severally liable to the Owner for successful performance of the LT Switchgears. This Deed of Joint Undertaking should be submitted prior to the placement of order on approved Sub Vendor. In case of award, the Associate or Collaborator of the Bidder / Sub Vendor (as applicable) will be required to furnish an on - demand Bank Guarantee for INR 6 Million (Indian Rupees Six Million only).

23. 11 KV/ 6.6 KV SWITCHGEARS

Route 1

23.1 The Bidder/ Sub Vendor should have designed, manufactured and supplied at least one hundred (100) 11kV and /or 6.6kV Switchgear panels complete in all respects with fault rating of at least 40 kA for one (1) second and 100kA (peak), which should have been in successful operation for a period of at least two (2) years prior to the date of Techno - Commercial bid opening.

23.2 The Bidder/ Sub Vendor should have manufactured and supplied at least one hundred (100) Vacuum Circuit Breakers for 11kV and / or 6.6kV panels with a rating of 40 kA rms BREAKING, 100kA peak MAKING and 40kA withstand for one (1) second, which should have been in successful operation i n 6.6kV or higher voltage application for a period of at least two years prior to the date of Techno - Commercial bid opening.

Route 2

Bidder/ Sub Vendor based on technological support of its Associate or Collaborator, can also participate provided

23.3 The Bidder/ Sub Vendor should have manufactured and supplied on an average one hundred (100) 11kV and / or 6.6kV Switchgear panels per annum during the last three years prior to the date of Techno - Commercial bid opening.

23.4 The Bidder/ Sub Vendor should have manufactured and supplied at least one hundred (100) 11kV and /or 6.6kV Switchgear panels complete in all respects with fault rating of at least 40kA for one (1) second and 100kA (peak which should have been in successful operation for a period of at least two (2) years prior to the date of Techno - Commercial bid opening . The Bidder/ Sub Vendor should have type tested the offered type of panels as specified.

23.5 The Bidder/ Sub Vendor should have manufactured and supplied at least one hundred (100) Vacuum Circuit Breakers for 11kV and / or 6.6kV panels with a rating of 40kA rms BREAKING, 100kA peak MAKING and 40kA withstand for one (1) second which should have been in successful operation in 6.6kV or higher voltage application for a period of at least two years prior to the date of Techno - Commercial bid opening.

23.6 Bidder's/Sub vendors associate or collaborator meets the qualifying requirement stipulated at 23.2 & 23.3 stipulated under Route 1.

23.7 Bidder/ Sub Vendor furnishes a Deed of Joint Undertaking jointly executed by it and its

Associate/ Collaborator as per format enclosed in the bidding document in which the Bidder/ Sub Vendor and its Associate/Collaborator are jointly and severally liable to the Owner for successful performance of the MV Switchgears. This Deed of Joint Undertaking should be submitted prior to the placement of order on approved Sub Vendor. In case of award, the Associate or Collaborator of the Bidder / Sub Vendor (as applicable) will be required to furnish an on - demand Bank Guarantee for INR 6 Million (Indian Rupees Six Million only).

24. NUMERICAL RELAYS & NETWORKING

24.1 Numerical Relays shall be offered from a Manufacturer who has manufactured and supplied and successfully configured at least 100 Nos. of Numerical Relays with IEC 61850 used for application in Feeder Protections / Transformer Protections/ Motor Protections for 500MW unit or above/at least for 220kV substation. These relays should have been in successful operation for at least two (2) years prior to the date of Techno - Commercial bid opening.

24.2 The Numerical Relay Network system shall be offered from an Integrator/ Manufacturer who has designed and successfully done SAT for a network on IEC 61850 with least 100 Communicable Numerical Relays prior to the date of Techno - Commercial bid opening.

25. HT MOTORS

The HT pump drive motors should be sourced from a Manufacturer who have supplied at least two nos. of 6.6KV or above, vertical, DOL started squirrel cage induction motors of cooling type specified having rating 2000 KW or more and motor speed not exceeding 500 rpm synchronous, which should have been in successful operation for at least two (2) years prior to the date of Techno - Commercial bid opening.

26. CONTROL CABLES

The Bidder/ Sub Vendor should have manufactured and supplied prior to the date of Te chno - Commercial bid opening the following:

(a) At least 300 km of PVC insulated, PVC sheathed stranded copper conductor 1.1kV grade cables in one single contract
(b) At least one (1) km of Flame retardant low smoke cables.

27. 1.1 KV POWER CABLES

The Bidder/ Sub Vendor should have manufactured and supplied prior to the date of Techno - Commercial bid opening the following:

(a) At least 100 km of aluminium conductor, XLPE insulated, PVC sheathed power cables of 1.1kV or higher grade in one single contract
(b) At least 100 km of aluminium conductor, PVC insulated, PVC sheathed power cables of 1.1kV or higher grade in one single contract
(c) At least one (1) km of flame retardant low smoke cables.
(d) 1.1kV or higher grade power cable of minimum 630sq.mm conductor size.

28. HT POWER CABLES

The Bidder/ Sub Vendor should have manufactured and supplied following cables, prior to the date of Techno - Commercial bid opening

(a) At least 50kms of XLPE insulated power cables of 6.35/ 11 KV or higher voltage grade, executed in one or more orders.

(b) At least one (1) km of flame retardant low smoke cables of any voltage level.

29. DG SETS

The Bidder/ Sub Vendor should have supplied at least two (2) numbers of DG sets of rating not less than 1500 kVA, at least one (1) each at two (2) different installations, which is in successful operation for at least two (2) years prior to the date of Techno - Commercial bid opening. The offered make of the DG sets (Alternator and Engine) shall be same as that of reference plant DG sets.

Note: Two different installations mean two different project sites.

30. DC BATTERIES

The Bidder / Sub Vendor should have manufactured and supplied at least two (2) numbers of highest offered rating or above of High Discharge type Plante type (in case bidder offers Lead Acid Plante type battery) or High Discharge type Nickel Cadmium battery (in case bidder offers Nickel Cadmium battery), at least one (1) each at two (2) different industrial installations, which should have been in successful operation f or at least two (2) years prior to the date of Techno - Commercial bid opening.

Note: Two different installations mean two different project sites or two different contracts

31. BATTERY CHARGER

The Bidder/ Sub Vendor should have manufactured and supplied at least two (2) numbers of Static Automatic Voltage Regulator type Battery Chargers of highest offered rating or above, at least one (1) each at two (2) different industrial installations, which should have been in successful operation for at least two (2) years prior to the date of Techno - Commercial bid opening.

Note: Two different installations mean two different project sites or two different contracts

32. 220 KV SYSTEM

32.1 220 k V CIRCUIT BREAKERS

220kV Circuit Breakers being offered should be from Manufacturer who have manufactured and supplied at least five (5) three phase circuit breakers suitable for Gas Insulated Substation/ Switchyard of 220 kV or above class which should have been in successful operation for minimum two (2) years prior to the date of Techno - Commercial bid opening.

32.2 220 k V I NSTRUMENT TRANSFORMERS

(Current Transformer/ Capacitor Voltage Transformer as applicable)

220 kV Instrument Transformers being offered should be from Manufacturer who have manufactured and supplied at least fifteen (15) single phase Instrument Transformers suitable for gas Insulated Substation/ Switchyard of 220 kV or above class which should have been in successful operation for minimum two (2) years prior to the date of Techno-Commercial bid opening.

32.3 220 K V DISCONNECTORS

220kV Disconnectors being offered should be from Manufacturer who have manufactured and supplied at least five (5) three phase Disconnectors suitable for gas Insulated Substation/ Switchyard of 220kV or above class which should have been in successful operation for minimum two (2) years prior to the date of Techno - Commercial bid opening.

32.4 220 k V SURGE ARRESTORS

220kV Surge Arrestors being offered should be from Manufacturer who have manufactured and supplied at least fifteen (15) single phase Surge Arrestors suitable for gas Insulated Substation/ Switchyard of 220kV or above class which should have been in successful operation for minimum two (2) years prior to the date of Techno - Commercial bid opening.

33. Substation Automation System & Protective Relays

The Substation Automation System offered with distributed architecture should have been in successful operation in at least one (1) Substation/Switchyard of not less than 220 kV class for minimum two (2) years prior to the date of Techno - Commercial bid opening.

The Generator Protection Relays, Transformer protection, Line Protection, the Bay Protection Units including the Bus bar protection and the energy metering System offered should be from manufacturer(s) who have manufactured and supplied the offered type of devices for respective equipment, which should have been in successful operation in a 500 MW or above unit/ 220 kV class or above Substation/ Switchyard for minimum two (2) years prior to the date of Techno - Commercial bid opening.

34. Provenness criteria for Solar PV rooftop on plant buildings:

Solar PV rooftop EPC contractor: The Bidder or its Sub- vendor should have designed, supplied, erected/ supervised erection and commissioned/ supervised commissioning of SPV based grid - connected power plant of at least one plant of 40 kWp or above. The reference plant of 40 kWp or above capacity must have been in successful operation for at least six months.

Solar PV module The bidder/ sub - contractor shall meet the requirements as stipulated in para (a) and (b) below for supply of solar PV modules:

(a) The Bidder / sub - contractor should have manufactured and supplied the solar PV modules of cumulative installed capacity of 1MWp or above using any rating of modules and any source of indigenous or imported PV cells in any one financial year.

(b) The Bidder / sub - contractor should have manufactured and supplied solar PV modules built up using indigenous and/ or imported PV cells of power rating 300Wp or above which must have been in successful operation for at least six months.

35. Provenness of I & C Equipment / Systems

35.1 The Distributed Digital Control, Monitoring and Information System (DDCMIS) supplier(s) of BOP C&I, should have engineered, supplied, and commissioned their respective sub-systems in at least one (1) unit of a power station having unit rating 250 MW or above.

35.2 The respective DDCMIS offered for BOP C&I, application(s) shall be same or of same series which

(a) is operating successfully with control system (s) for any of the above application for a period of not less than one (1) year prior to the date of Techno - Commercial Bid opening in at least one (1) unit of a power station having rating of 250 MW or above

and

(b) has been commissioned in at least one (1) unit of a power station having unit rating 250 MW or above for respective application(s).

35.3 The 24 V DC modular charger offered for this package shall have at least one-year satisfactory operation prior to the date of Techno - Commercial bid opening in any industry or telecommunication application with a rating of 500A or above.

35.4 The UPS system offered for this project shall have at least one-year satisfactory operation prior to the date of Techno - Commercial bid opening, in one (1) power station for a rating of 105 KVA or above.

35.5 All other C&I equipment/ C&I system/ Control systems/Sub systems and accessories etc . offered for this project shall have at least one-year satisfactory operation prior to the date of Techno - Commercial bid opening in one power station having unit rating of 250 MW or shall meet the provenness criteria/ qualifying requirements indicated elsewhere in the specification.

35.6 The Plant Security and Surveillance System offered by the Bidder shall be from reputed manufacturer, who should have designed, manufactured, tested and commissioned a distributed type Plant Security and Surveillance systems having minimum installation of total forty (40) nos. cameras in single thermal power plant or single large industrial installation and which is in successful operation for a minimum period of one (1) year prior to the date of Techno - commercial bid opening.

35.7 The offered combination of camera types and video management software, for CCTV system, shall have at least one year's satisfactory operation prior to the date of Techno - Commercial bid opening in a large industrial setup viz power plant, cement plant, petroleum refinery, steel plants or coal mine, having minimum installation of total forty (40) nos. cameras.

35.8 The Bidder should have carried out Engineering of Control and Instrumentation System of the complete plant including offsite plants of at least one (1) unit of a coal fired power station having unit rating 660 MW or above which is in successful operation f or a period of not less than one (1) year prior to the date of Techno - Commercial Bid opening. In case the Bidder does not have the engineering experience of the complete plant as described above, then the Bidder shall get the Control and Instrumentation engineering of the remaining plant area (s) done through any of its sub vendor(s) / supplier(s) or through Engineering firm(s) who meets the above requirement for the respective plant area(s).

35.9 Bidder shall furnish the required information / details / PTR to fully satisfy the owner regarding successful operation and high reliability of products/ systems offered / furnished.

35.10 The bidder shall obtain & furnish the certification from his tie- up partners (as consortium or otherwise) that their design, engineering, procurement, manufacturing, erection, commissioning and shop test facility are adequate to meet the specified technical & performance/ quality requirements for execution & commissioning of the package offered to the satisfaction of owner.

Notes:

A. BOP C&I referred in Para 35.1 and 35.2 means the following sub -

systems of a coal fired units: -

(i) Modulating control for Steam Generator (SG)

(ii) Modulating control for feed water / Condensate Cycle

(iii) Binary Control of the auxiliaries for Steam Generator (SG)

(iv) Binary Control of the auxiliaries for Turbine generator (TG)

B. Engineering referred in Para 35.10 above shall include the followings as a minimum.

a) Preparation of basic logic/loop diagrams (not just the implementations), I/ O List, Drive list, Instrument list etc for each of the plant areas of the complete plant including offsite systems based upon Flow schemes / Write ups by the OEM(s)

b) Engineering of power supply system for DDCMIS, Process connection and piping, Control Valves.

c) Instrumentation, cable engineering including preparation of Interconnection Cable Diagram, Cable schedule etc.

d) Documents in support of the above shall be submitted along with the Bid.

36. Definitions

36.1 Wherever “Indian Manufacturing Company” is indicated, the same shall mean a Subsidiary Company or a Joint Venture Company or an Indian Steam Generator Manufacturing Company or an Indian Steam Turbine Generator Manufacturing Company registered in India under the Companies Act of India or as per the prevailing laws of India.

36.2 Wherever the term 'coal fired' is appearing above, "coal" shall be deemed to also include bituminous coal/ sub - bituminous coal/ brown coal/ lignite

36.3 “Associate” means a company or organization who is either a SG, STG manufacturer or an EPC contractor meeting Qualification Requirements indicated above with whom bidder associates to fully meet with the Qualification Requirement and along with his bid furnish an undertaking i.e Joint Deed of Undertaking, jointly executed by the Bidder and each of the Associate (s) for the successful performance of the relevant plant/ equipments , and who, along with the bidder will have liability to discharge the entire work of the project.

36.4 “Bidder” shall mean a single company, a consortium of companies, a joint venture or any other appropriate firm, who qualifies to participate in the process of bidding.

36.5 " Consortium" shall mean a group of firms/ companies who have agreed to work as partners in co - operation with each other and party to the contract for successful execution of the specific project