

<p style="text-align: center;">NTPC LTD</p> <p style="text-align: center;">USSC, VDC-RAIPUR</p> <p style="text-align: center;">VENDOR ENLISTMENT FOR O&M WORKS PACKAGE ON PAN NTPC BASIS</p>		
1	CEG No.	TMD-23
2	CEG DESCRIPTION	Residual life assessment (RLA) study of steam turbine of 200 MW Units & Above
3	RESPONSIBILITY CENTRE	CPG1 / VEC
4	AREA OF EXECUTION OF WORK	1) HP Turbine Rotor and IP Turbine Rotor 2) HP & IP Turbine Casing, Stationary Blades of Turbine, 3) HP/IP Stop & Control Valves. 4) LP Rotor and Casing.

		<p>5) High Temperature Bolts & Studs.</p> <p>6) HP/IP Stop Valves, HP/IP Control Valves</p> <p>7) High Temperature Bends of Steam Admission Pipe.</p> <p>Different components of Casings, Rotors, Turbine blades, Bearings, Guide blades, Turbine valves, extraction pipes, HP/LP bypass valves & other components are required to be comprehensively evaluated for remaining life of Steam Turbine.</p>
5	BRIEF SCOPE OF WORK for CONTRACTOR	<p>HP Turbine Rotor and IP Turbine Rotor:</p> <p>The HP and IP rotor surfaces shall be cleaned and following examination shall be carried out on the rotors.</p> <p>a) Visual examination for thermal cracks on the surface of the rotors.</p> <p>b) Magnetic particle examination and dye penetration test for the complete rotor to be carried out.</p> <p>c) Visual and dimensional examination of blades with shrouds is to be carried out and DP test is to be performed.</p> <p>d) Checking of rotor grooves and sealing visually and MPI for cracks in high temperature zone. All blades of HP/IP rotors to be checked for absence of crack by fluorescent particle inspection (FPI).</p> <p>e) Eddy current / Ultrasonic test on disc near the root portion of blades is to be carried out. This shall be carried out at different locations of rotor to know the material properties. Special attention is to be given to inlet zone of the rotor.</p> <p>f) The Agency shall carry out four samples for blade and diaphragm deposit analysis.</p> <p>g) The Agency shall carry out FMPI (Fluorescent Magnetic Particle Inspection) of blades/shroud of rotor in the in-situ condition to confirm integrity of blades.</p> <p>h) Erosion and foreign object damage (FOD) quantification is to be done.</p> <p>i) Replica of HP/ IP rotor is to be taken at different locations. Detailed matrix of carrying out replica & another test is to be given.</p>

j) Wherever FMPI is conducted, DP test shall also be done.

HP & IP TURBINE CASING, STATIONARY BLADES OF TURBINE, HP/IP STOP & CONTROL VALVES.

The stationary blades of HP/IP turbine shall be tested on the same pattern as specified for moving blades of HP/IP rotor above.

- a) Visual inspection of upper and lower halves of casings for cracks etc.
- b) Magnetic particle inspection and Dye Penetration test on transition zones and welded joints.
- c) Visual examination and macro-etching test of weld elements of the casing.
- d) Ultrasonic examination at transitions of IP Casing, Chests of HP/IP Stop/Control Valves for internal defects.
- e) Steam admission pipe weld connections.
- f) Extraction pipes weld connections with casing in high temperature zones.
- g) In-situ microstructure examination and hardness test.
- h) Replica, hardness on replica spot, MPI & UT on all accessible weld joints of mainstream pipe weld connection up-stream of MS, HPSV, HRH line weld connection upstream of IPSV & IPCV, steam admission pipe weld connection from IV to CV.
- i) Ovality, thickness measurement, replica, hardness on replica spot, MPI & UT in all accessible weld joints of bends of steam admission pipes is also to be done.

LP ROTOR AND CASING

- a) Visual examination of the shrouds, blades is to be carried out and if needed, DP test to be performed.
- b) In-situ microstructure and hardness test to ascertain material properties.
- c) The inspection and testing in the in-situ condition of LP Rotor shall be done.
- d) MPI to be carried out on LP turbine moving blades to detect defects on the profile as well as in the root portion.
- e) The metallographic examination/ testing is to be carried out on

LP turbine rotor blades.

f) Visual examination and die penetration testing of casing (including condenser).

HIGH TEMPERATURE BOLTS / STUDS

- a) Dimensional elongation.
- b) Mechanical properties.
- c) Impact properties are to be ascertained.
- d) Microstructure examination
- e) MPI & UT is to be done.

NOTE: The test at Sl. No. (b), (c) & (d) are to be carried out on one of the studs of each HP and IP Turbine only. The tests at (b), (c) & (d) are destructive tests. For destructive test, NTPC will issue damaged stud to the agency on free of cost and on non-returnable basis.

HP/IP STOP VALVES, HP/IP CONTROL VALVES

- a) Visual examination for small thermal cracks on the chest internal and external surfaces, Steam chest covers, stem & cone, fasteners of all the stop and Control valves
- b) Dye Penetration Test (DPT) shall be carried out on the internal surface of all stop and control valve chests, cones and spindles of all the valves
- c) Magnetic Particle Inspection shall be carried out on the external surfaces of the valve chests and covers, stem/spindles and cone and fasteners of all the valves.
- d) Hardness Test shall be carried out at various locations on the valve components for all the valves.
- e) Metallographic examination shall be carried out at various locations on the valve components for all the valves.

HIGH TEMP. BENDS OF STEAM ADMISSION PIPES:

High temperature bends at inlet to Turbine are to be checked for: -

- a) Creep deformations and out of roundness.
- b) Checks are to be made visually first and then by magnetic

		<p>particle inspection and dye penetration test to look for thermal cracks.</p> <p>c) Check for reduction in wall thickness.</p> <p>d) Ovality, thickness measurement, replica, hardness on replica, spot, MPI & UT on all accessible weld joints of bends of steam admission pipes.</p> <p>The list of the tests is indicative only , therefore any other tests required to complete the RLA studies on any of the component as per requirement shall be indicated & executed by the bidder.</p> <p>The work shall be performed in accordance with latest edition of following applicable Codes and Standards. The Selected vendor shall also be responsible for obtaining all necessary approval / clearance required under applicable Codes/ Acts.</p> <p>For assessment, supervision works, deployment of Level 2 certified expert by ISNT / ASNT or equivalent in individual NDT method is under applicant/vendor's scope.</p> <p>All the equipment to be deployed should have valid calibration from approved NABL lab.</p> <p>Detailed SOW & terms & conditions shall be provided with tender document.</p>
6	QUALIFYING REQUIREMENT	<p>1.0 Qualifying Requirements:</p> <p>The applicant who wishes to participate in the enlistment shall meet the Qualifying Requirements stipulated here under:</p> <p>Technical Criteria:</p> <p>The applicant should have executed the work (s) of the Residual Life Assessment (RLA) of at least one number of steam Turbine with Minimum Unit Size of 200 MW within preceding 05 (five) years reckoned as on the Last Date of submission of application.</p>
7	DOCUMENT TO BE SUBMITTED BY VENDOR IN SUPPORT OF MEETING QR	<p>Documents to be submitted as proof of meeting the stipulated Qualifying Requirements as stated above.</p> <p>Relevant and legible PO copies with detailed scope of work, terms and conditions, BOQ POs (issued within last Five (5) years reckoned as on the Last Date of submission of application in support of award and copy of Client's Completion certificate/RA Bill/ final deviation statement from the concerned client /copies of invoice to establish successful execution as per QR.</p> <p>NTPC can ask more documents if felt necessary.</p>

8	ADDITIONAL DOCUMENTS TO BE SUBMITTED	<p>In addition to the documents required in support of meeting technical requirements as stated above, following documents are required to be submitted by the applicants applying for enlistment: -</p> <ol style="list-style-type: none"> 1. Three POs with BOQ of the highest executed values of similar work during previous five years from the Last Date of application and Copy of Completion Certificate /RA Bill/Final Deviation Statement from the concerned client in support of successful execution of jobs against each of the POs to be submitted. 2. Audited balance sheet including Profit & Loss statement for the previous three completed financial years reckoned from the Last Date of application. In case the audited documents are not ready / available, then certified copy by a registered practicing Chartered accountant may be submitted. 3. NSIC / SSI / MSME registration certificate if applicable. 4. PF and GST registration certificate. 5. List of all required Tools & Plants with populations available with the applicant. 6. Any other documents in addition to the above which the applicant wants to submit. <p>NTPC can ask more documents if felt necessary. Also, all documents/ facilities can be verified/ assessed if required.</p>
9	NOTES	<ol style="list-style-type: none"> 1) The word "Executed" mentioned in technical qualifying requirement means that the bidder should have achieved the criteria specified above, even if the total contract is started earlier and/or is not completed/closed. 2) In case of orders under execution, the value of work executed prior to the Last Date of application duly certified by the applicant's client shall be considered acceptable.

		<p>Reference work executed by the applicant as a sub-contractor may also be considered provided the certificate issued by main contractor is duly certified by owner specifying the scope of work executed by the applicant in support of qualifying requirements.</p> <p>3) Value means basic value of the PO. Where PO value is composite (i.e. including Service taxes etc.), the applicant has to give break-up of composite PO value mentioning basic value, taxes etc. Any separate re-imbursement / escalation will not be considered.</p> <p>4) “Similar work” means works as mentioned in the QR technical criteria.</p> <p>5) All other terms & conditions of enlistment are as per the Special terms & conditions (STC) available at VEC portal vdc.ntpc.co.in"</p> <p>https://vdc.ntpc.co.in/UploadedFiles/Documents/STC.pdf</p>
10	QUALITY PLAN	Not applicable
11	CATEGORY OF ENLISTMENT	CATEGORY-1