BHARAT ALUMINIUM COMPANY LIMITED

BIDDING DOCUMENT AND TECHNICAL SPECIFICATIONS

For

SUPPLY AND SERVICES OF FINAL SUPERHEATER PANELS, FINAL REHEATER PANELS AND ECONOMIZER COILS IN 4x135 MW POWER PLANT

BHARAT ALUMINIUM COMPANY LIMITED (OWNER)
540MW (4x135 MW) POWER PLANT
BALCO DISTT. KORBA
CHHATTISGARH, INDIA

*This is a bidding document, subject to amendments (if required)

Balco is looking for reputed vendor who can supply and provide services regarding Final Superheater panels, Final Reheater Panels and Economizer Coils for Boiler at CPP2.
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MAIN BOILER:-
General Specification

Manufacturer : HARBIN BOILER COMPANY LTD., CHINA

Type : Single drum, Natural Circulation, Super high pressure, PF fired, dry bottom, single reheat, balance draft, tangentially corner fired boiler.

Model : HG-460/14.29-YM19

<table>
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<th>Final Super Heater &amp; Reheater Details</th>
<th>Final Superheater</th>
<th>Final Re heater</th>
</tr>
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<tbody>
<tr>
<td>Effective heating surface area (m²)/modified</td>
<td>1048</td>
<td>786</td>
</tr>
<tr>
<td>Total circumferential heating Surface area(m²)</td>
<td>1059</td>
<td>704</td>
</tr>
<tr>
<td>Gas flow path area(m²)</td>
<td>33.4</td>
<td></td>
</tr>
<tr>
<td>Max steam side metal temp. (Deg. C)</td>
<td>560</td>
<td>608</td>
</tr>
<tr>
<td>Max. gas side metal temp. (Deg. C)</td>
<td>600</td>
<td>645</td>
</tr>
<tr>
<td>Type of flow(counter/parallel)</td>
<td>Parallel</td>
<td>Parallel</td>
</tr>
<tr>
<td>Method of joining tubes</td>
<td>Welding</td>
<td>Welding</td>
</tr>
</tbody>
</table>

Economiser:-

<table>
<thead>
<tr>
<th>Type</th>
<th>Non Steaming</th>
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</thead>
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<tr>
<td>Gas flow path area</td>
<td>40m²</td>
</tr>
<tr>
<td>Design pressure of the tubes</td>
<td>172Kg/cm²</td>
</tr>
<tr>
<td>OD of tubes</td>
<td>32mm</td>
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Actual thickness of tubes : 4mm
Length of the tubes : 138049/1392126mm
Pitch : 76mm
Total weight of tubes : 103748kg

**Scope for supply material:-**

1. ALL IBR rule to be followed during manufacturing process.
2. Credentials to be provided where similar activity performed priorly at min. 120 MW capacity Boilers.
3. Third party QA Checks will be in Vendor Scope, Third Party will be decided by BALCO.
4. Pre Dispatch Clearance will be provided after witnessing the Hydro Test by BALCO at your respective Workshop.
5. 5 Years guarantee required for the Supplied Materials.
6. Activities related to IBR Approvals right from the manufacturing to till the Clearances before Installation (Ground Inspection by CG IBR at BALCO Premises) at Chhattisgarh will be in Vendor Scope.
7. Drawing to be certified prior to Manufacturing by BALCO.
8. QA Plan to be submit and get it certified before Execution by BALCO.
9. 100% Radiography and Stress Relieving (Where ever applicable as per IBR) to be perform and submit the reports to BALCO.
10. Materials IBR Test Certificates to be submit to BALCO.
11. Transportation Damages of Materials will be taken care by Vendor. If any Damages found while receiving at Site, Should be Supply immediately at free of Cost.
12. Supply of Materials will be within 3 months from the date of PO.
13. Witness to be at Site while Erection activities of the supplied Materials.
Scope of Work for Replacement of Final Superheater n Final Reheater n Economiser:-

Final Superheater, Final Reheater Panels, Economiser coils Replacement Regarding:

BALCO CPP2 consists of 540 MW (4X135MW).


Boiler consists of Pressure Parts with Boiler Drum, Water wall, and Back pass, Roof Tubes, Economiser, Low Temperature Superheater, Divisional Panel, Platten Superheater, Final Superheater, Radiant Reheater, Platten Reheater and Final Reheater.

**In Final Superheater, Total No of Panels Installed: 61 Nos.:**

Each Panel consists of 24 tubes which are initiated by 3 Inlet Tubes from Inlet Header thereby reaching with 3 Outlet Tubes to Outlet Header.

MOC of the Tubes Consisting in Final Superheater are:

SA 213 T22, SA 213 T91 and SA 213 TP 304 H.

**In Final Reheater, Total No of Panels Installed: 61 Nos.:**

Each Panel consists of 14 tubes which are initiated by 7 Inlet Tubes from Inlet Header thereby reaching with 7 Outlet Tubes to Outlet Header.

MOC of the Tubes Consisting in Final Reheater are:

SA 213 T22, SA 213 T91 and SA 213 TP 304 H.

**In Economiser, Total No of Banks Installed: 3 No’s (Top, Middle n Lower).:**

Top Bank Consists of 130 Coils (Each Coil consists of 8 Tubes)

Middle Bank Consists of 130 Coils (Each Coil Consists of 24 Tubes)

Lower Bank Consists of 130 Coils (Each Coil Consists of 14 Tubes).

MOC of the Tubes : SA 210 Gr C.

Considering the Replacement of 130 Coils in each Bank of Economiser and Replacement of 61 Panels of FSH and 61 Panels of FRH,
Services Work Consists of:

1. Study of the Replacement of Final Superheater and Final Reheater Panels and Economiser at Site.
2. Preparing a complete plan includes: Structure Modifications if required
   Working Platform Erections for Removing and Installation of panels
   Detailed Description wrt to Tools n Tackles (Certified by Competent Authority), Vehicles, and Manpower for Execution of the Activity.
3. Respective Area ASH Removal for Execution of the Plan is in Vendor Scope.
4. Removal and Joining of the same of Extended Steam Cooled Wall Tubes and water wall Screen Tubes (Work Execution base requirement of any Cutting/Welding Activities) just below and above the FSH and FRH.
5. Cutting of the Panels from Penthouse for FSH n FRH and from Economiser zone for Eco Coils and safely placing them in the 0 m in beds (Should be prepared by Vendor).
7. Shifting of Old Panels and Coils from 0 m to Respective location inside the Plant as per EIC.
9. Shifting of New Panels and Coils from Respective area inside the Plant to Site as per EIC Instructions.
10. All the IBR Permissions regarding the Execution of the Job should be taken care by Vendor as per IBR Regulations.
11. During Execution of the Job, All the Joints should be 100% Radiographed and rectification of the same as per report and Stress Relieving Activities to be done as n when required as per IBR rules.
12. During Execution of the Job, Miscellaneous Activities like Scaffolding, Temporary Approaches, Insulation Removal/Installation, site requirements is in Vendor Scope.
13. After Erection Activities, furnace pressurization test will be performed for leakage testing, Penthouse Sealing should be perfect and Leakage Free.
14. After completion of the Job, Hydro Test of the boiler should be carried out by Vendor and if any leakage observed, should be rectified by vendor.
15. Commissioning Activities should be supported by Vendor.
16. IBR Certified Welders should be tested at site before Job performed and get it certified by BALCO EIC.
17. WPS (as per the IBR) should be Submitted before prior start of the JOB and get it certified by BALCO EIC.

18. Work Activities Execution regarding Maintenance Practices, Hiradec, JSA should be approved through BALCO as per BALCO SAFETY Norms.

19. Welding Electrodes/Fillers should be of D&H, ESAB, MODI Make.

20. Detailed Schedule Plan and Progress to be circulated on daily progress regarding Job Execution and Detailed Report of the Work Execution should be submitted after Completion of the Job.

21. Persons Involving in the Execution should Undergone PME Test, Height Test, etc as per BALCO SAFETY Rules.

22. Any Violations during execution of the job will be penalized (Depending on the severity of Violation as per BALCO EIC/Safety) heavily in terms of Safety, Work Quality, etc.

23. All norms pertaining to BALCO are applicable to VENDOR.

24. Scrap removal and Shifting of the same to designated Scrapyard on Daily basis, failing which heavy penalty will be imposed without second thought.

25. Total Duration for Execution of the same will be 25 Days.

26. 2 yrs. Guarantee for the workmanship from the date of lit-up.

27. Two Boiler Pr. Parts erection Engineer and Two Quality Engineer should be present from Vendor side for quality inspection.