

SCOPE OF WORK FOR RS02- FABRICATION OF CONE PANELS

General Scope

1. The vendor shall fabricate the Cone Panel, in accordance with the relevant BHEL drawings, Quality Plans, Welding Procedure Specifications (WPS), and applicable standards. The completed panel shall be delivered to BHEL after successful completion of all inspections and tests.
2. All welding shall be carried out only by valid IBR-certified welders using approved welding procedures and BHEL-approved welding consumables.
3. All fabrication, inspection, testing, and documentation shall comply with the latest revisions of the applicable Quality Control Plans (QCP), Shop Quality Plans (SQP), Shop Inspection Plans (SIP), Customer Quality Plans (CQP), and other relevant BHEL quality documents.
4. The vendor shall maintain a complete job history card recording all manufacturing stages, inspections, repairs, and rework carried out during fabrication.

Job Details

1. The vendor shall collect all raw materials from the respective BHEL stores in a timely manner.
2. Welding shall be carried out by IBR-qualified welders using BHEL-approved welding consumables.
3. The vendor shall prepare the Welding Procedure Specification (WPS) and obtain BHEL approval before commencement of production.
4. Raw materials required for WPS qualification, First-Off Trial (FOT), and First-Off Inspection (FOI) shall be arranged by the vendor.
5. All fabrication, inspection, and testing shall comply with the latest revisions of applicable drawing, CQP, SQP, SIP, and QCP documents. Preparation of Form III-B shall be under the vendor's scope.
6. BHEL shall provide relevant drawings, GMS, and quality documents.
7. The vendor shall prepare cutting plans for both panels and attachments and submit them to BHEL (OS) for approval before commencing fabrication.
8. The vendor shall verify that all raw materials conform to the relevant drawings and GMS. Any discrepancy shall be immediately reported to BHEL QC and OS for replacement.
9. Proper colour coding and melt number transfer shall be maintained throughout fabrication to ensure complete material traceability.
10. All attachments shall be fabricated strictly as per the respective attachment drawings.
11. All tubes shall undergo shot blasting before fabrication.

12. Tube end cutting and edge preparation shall be carried out strictly as per the drawing requirements (STD TP 062 05 99).
13. First-Off Trials (FOT) shall be established for every combination of tube outside diameter (OD), thickness, material specification, and bend radius. FOT shall be witnessed by BHEL QC/Customer as per SIP PP-12.
14. Suitable fixture may be used for fabrication of Cone panels. Fixture materials are under vendor scope
15. Bent tubes shall be arranged in the fabricated fixture as per the assembly drawing and offered for layout and dimensional inspection.
16. Shaped plates shall be prepared as per drawing.
17. Tack & full welding of fins & shaped plates (with the recommended consumables). The consumables are to be procured from BHEL approved vendors only. WPS qualification to be ensured for welding. Fins are to be fit and tack weld in between the tube center only (FIN FLY NOT ACCEPTABLE).
18. The Vendor shall establish and follow an appropriate welding sequence to minimize the distortion.
19. Carry out the Hot side & Cold side WELDING sequentially to reduce distortion. Welding shall be carried out by IBR-qualified welders using BHEL-approved welding consumables.
20. Hot correction shall be minimized. Wherever hot correction is employed the heating parameter as per Table-1: Hot Correction; of SQP: PP: 08.
21. Heat treatment is to be done wherever required as per quality plan (Refer SI No:11 in General Fabrication Requirements
22. Hydro Test under vendor scope. 100% Hydro test shall be carried out with DM water. Customer witness for hydro test is subject to CQP requirements.
23. Firms should Shot blast the bend tubes and transfer the Color Code.
24. Firms to provide END CAPS (at their cost) and identification (i.e. stenciling of required information on the job).
25. Edge preparation and chamfering of tubes to be done as per applicable drawings/PO.
26. Inspection will be carried as per SQP by BHEL QC, customer & IBR only.
27. Conduct LPI on all the Panels.
28. Conduct sponge test.
29. Painting of completed jobs should be done according to the painting scheme.
30. Firm to return finished goods / offcut to BHEL.

31. All painting works shall be part of main fabricators responsibility, including procurement of paints & related consumables. Painting shall be done as per applicable QCP / painting schemes.
32. The jobs should be manufactured as per latest appropriate quality documents and applicable drawings relevant to PGMAs and projects.
33. Mark the panel for, gas cut and edge prepare the tube ends to maintain the overall dimension as per the drawing. Tolerance drawing are to be referred for the panel dimensions. Carry out the Final Inspection to BHEL QC, customer and IBR. Dispatch the Cone panel to shipping. Inspection and IBR documents to be done.
34. Reference Documents: QCP: 004*; SQP: PP: 08*; SIP: PP: 03*; SIP: PP: 04*; SIP: PP: 12*; SIP: PP: 15*; SIP: PP: 21*; SIP: PP: 22* and CQP* as applicable. *Latest revision.
35. FORM III B will be in FIRM's scope. The same will be clearly mentioned in the purchase order
36. Handing over of cone panels to logistics is under vendor scope

General Fabrication Requirements

1. Butt joints are not permitted in Cone panel tubes.
2. Suitable allowance shall be provided at both ends of all bent tubes for hydro test.
3. Tube ends need not be edge prepared before arranging the bent tubes in the fixture.
4. Fillet weld sizes shall conform to the drawing requirements.
5. The vendor shall not proceed with stress relieving (SR) until the panel has been inspected and cleared by BHEL QC.
6. After obtaining clearance from BHEL Quality Control (QC), the panel shall be subjected to stress relieving. The stress-relieving process shall be carried out at either of the following locations, as applicable:
 - (a) a stress-relieving facility duly approved by BHEL; or
 - (b) BHEL premises, where stress relieving is carried out at BHEL premises using the facility provided by BHEL, the applicable charges shall be payable at the rate of **Rs. 13.96 per kg.**
7. The vendor shall be fully responsible for ensuring that the panel is handled, transported and stress relieved in a manner that prevents damage, distortion or deterioration of the panel and its components.
8. Any dimensional deviation, distortion, or other non-conformance arising or identified after stress relieving shall be rectified by the vendor. Rectification shall be carried out using methods acceptable to BHEL QC and in accordance with the applicable drawings, specifications, approved procedures and quality requirements.

9. After completion of rectification, if any, the panel shall again be offered to BHEL QC for re-inspection.
10. Applicable reference documents shall include the latest revisions of QCP-004, SQP PP-08, SIP PP-12, CQP, and other relevant quality documents.
11. Hydraulic testing shall be carried out as per SIP PP-04. Any defects identified shall be repaired and the panel retested until acceptance criteria are satisfied.
12. Conduct sponge test as per SIP PP-15. Sponge testing shall be witnessed by BHEL QC/Customer as per CQP
13. The completed panel shall be offered for final inspection along with the following documents:
 - Group Certificate
 - FOT Reports
 - PMI Reports
 - LPI Reports
 - Approved WPS
 - Fixture Clearance Report
 - Dimensional Inspection Report
 - Stress Relieving Report
 - Hydro Test Report
 - Weld Map
16. After final acceptance, the vendor shall provide VCI pellets inside all tubes, fit plastic ID end caps, and install capping channels at both ends of the panel and hand over to BHEL shipping.