

## Annexure .I

### Technical specifications for Gate Valve for Chloride Condensor

#### 1. SCOPE:

Procurement of raw materials & welding consumables, fabrication, inspection, testing and supply at Central Stores, NFC, Hyderabad for the following item.

| S.No. | Description  | Qty.    | Item Code |
|-------|--|---------|-----------|
| 1.    | Gate Valve for Chloride Condensor<br>As per Drg. No. B-D&W-DR-707/R3 | 10 Nos. | 210004707 |

2.0 Materials of construction.

2.1 The stainless steel plates shall conform to SA-240 & SA-480 of ASME section-II & the additional requirements specified in the drawing and shall be in solution annealed and pickled condition.

2.1.1 The Inconel Plates shall conform to SB-168 of ASME section – II

2.1.2 The plates shall be free from surface defects like pits, cracks, Laminations and inclusions. If any grinding is done to remove these defects, it shall be ensured that there is a smooth merger of the ground surface with the remaining surface.

2.2 All the welding consumables used for welding shall conform to SFA 5.1 / 5.4 /5.9/5.14 of ASME Sec II and shall be of standard make like Advani, L&T, D&H, ESAB etc.

2.3.1 ER NiCr 3 / ER Ni Cr Fe 5 welding consumables shall be used for welding Inconel to Inconel.

3.0 Pre-Fabrication requirements:

3.1 The vendor shall submit a detailed manufacturing procedure, any additional working drawings, QC plan & stage wise check lists and documentation formats along with time schedules to the purchaser for approval before fabrication.

3.2 Manufacturing plant shall include the detailed procedure of manufacture, the equipment used and the tolerances that are maintained at various stages of manufacture to achieve the final required specifications

3.3 QC plan shall detail the procedures for carrying out inspection and testing at various stages.

3.4 Templates, metrology instruments and testing consumable used in DP test, radiography etc. shall be approved by the purchaser.

3.5 The welder and welding procedure shall be qualified as per ASME Sec IX. However, if valid documents of welder and welding procedure qualification carried out as per ASME Sec IX by QA, NFC or any other agency acceptable to the purchaser are already available with the vendor, clearance for welding will be given on the basis of these documents.

#### 4.0 Fabrication:

- 4.1 The fabricated components shall be numbered as per the identification number given by the purchaser. The number shall be legibly marked by welding at the specified locations.
- 4.2 The edges/surfaces to be welded shall be cleaned thoroughly using acetone/TCE before welding. . D.P. check shall be conducted on the weld chamfers, root pass, back gouged surface & final passes of all the welds are as ASME Sec VIII div I, 1998.
- 4.3 After completion of welding, the inside weld reinforcement of all the welds shall be ground flush with the parent material if specified in the drawing.
- 4.3.1 The components after fabrication shall be free from injurious defects such as dents, Pits, handling marks, remains of fixtures etc.

#### 5.0 Inspection & Testing:

- 5.1 Inspection & documentation by the vendor shall include the following checks before, during and after fabrication:
- 5.2 Inspection of materials of construction visual, dimensional, chemical and mechanical on the samples taken as per relevant specification and drawing.
- 5.3 Accuracy of templates / Marking / cut-outs.
- 5.3.1 Dimensional checks / alignment / Ovality /Skew ness/flatness/finish before & after (a) Assembly (b) Welding (c) Machining & (d) final fabrication.
- 5.4 D.P. Inspection of edge preparation, root pass, back gouged surface & final welds. DP test shall be carried out by colour contrast penetrate technique using solvent removable penetrate systems. 100% DP test shall be carried out on all the welds. Any unacceptable defect shall be corrected as per the procedure approved by the purchaser followed by retest to ensure that the defects within acceptable limits. The die, developer and cleaner used for DP test shall be reputed brands like Megnaflux , P Met (or any other brand approved by the purchaser) and spray type only and shall confirm to the specifications given in ASME Sec V .
- 5.5 Leak tests: shall be conducted if specified in the drawing.
- 5.6 Welding consumables: one sample specimen of welding consumables / weld deposit from each heat nominal diameter and batch shall be tested for chemical composition / mechanical properties as specified in SFA 5.4 / 5.9/5.14 of ASME section II. Test certificates pertaining to the chemical compositions /mechanical properties shall be furnished by the vendor to the purchaser .
- 5.7 Welder and welding procedure, qualification:  
Welder and welding procedure qualification shall be in accordance with ASME section IX . Welding of the test coupons shall be done in the presence of the Representative of the approve third party QA agency and all the documents connected with the qualification, including formats (duly filled) and evaluation

reports counter signed by the QA agency, shall be submitted by the fabricator to the purchaser for verification. Production welding shall be taken up only after clearance from the purchaser.

- 5.8 Hold points for inspection.  
Following shall be the hold points for stage wise inspection.
- 5.9 Pre-fabrication :
- a) Raw material clearance
  - b) Consumable clearance
  - c) Approval OF manufacturing engineering, Instructions and QC plans .
  - d) Welders and welding procedure qualification
- 5.9.1 In process clearance:
- a) Shells inspection.
  - b) Flange clearance
  - c) Fit –up at all assemblies stages.
  - d) Final inspection of all welds.
- 5.9.2 Documentation:
- a) At Pre-fabrication stage
  - b) In process
  - c) Post fabrication

Note: The above are indicative . The actual hold points shall be as per the QC plan submitted by the Vendors and approved by the purchaser.

- 6.0 GENERAL:
- 6.1 All the materials of construction shall be procured from the manufacturers/ authorised agents of manufacturers. Local traders shall be avoided The material shall be neatly stacked by the vendor with proper identification marks to avoid to mix-up and to ensure correct usage .
- 6.2 The vendor shall give the details of The Sub-contractor in case of any sub-contract and the sub-contractor shall be approved by the purchaser before sub-contracting.
- 6.3 Final approved drawings with / without minor revisions will be given to the vendor on placement of order.
- 6.4 The vendor shall strictly comply with the approved drawings , specifications and codes and shall maintain and submit complete documentation of fabrication, inspection and testing at every stage up to the final product.
- 6.5 Inspection shall be carried out at various stages by NFC representative as per agreed QA plan.