

TECHNICAL SPECIFICATION
FOR
FABRICATION AND SUPPLY OF NEUTRALISER SCRUBBER TANKS

1. GENERAL:

Scope of supply includes procurement of materials, preparation of quality assurance plan, fabrication, radiography, hydraulic testing, cleaning and delivery of 2 nos. of neutralizer tanks as per ASME sec 8, Div 1, 2004.

The tanks shall be fabricated as per the technical specification furnished in Annexure-1 and fabrication Drawing No. TE/LPSC/ESES/SCSTD/PVNS.

Minor changes/modifications, if required, are to be carried out by the supplier as per the instruction from LPSC Engineers, without any extra cost.

2. MATERIAL:

Materials of construction are as per the bill of materials shown in the enclosed drawing. Any change in material specification shall be done only with written approval from the department.

3. FABRICATION:

1. All SS welding shall be TIG including second passes.
2. Filler wire shall confirm to A120 or equivalent.
3. All the butt welds shall be radio-graphed.
4. Dished ends have to be stress relieved after forming.
5. All nozzles shall be covered with blind flanges, bolts, nuts & gaskets.
6. Nozzles shall be stiffened with gussets.
7. Name plate & bracket shall be provided for the tank.

4. INSPECTION:

1. The equipment will be inspected by LPSC Engineers. The inspection shall have free access to all parts of the manufacturing works connected with this order.
2. Hydro test and pneumatic test of the tanks will be witnessed by Department Engineers at supplier's site.

3. During pre-delivery inspection, the entire test certificates such as material (physical and mechanical), radiography, hydro and pneumatic tests will be checked by LPSC engineers.
4. Copies of all inspection reports shall be forwarded to the purchaser.

5. **CLEANING:**

The tanks have to be mechanically cleaned, degreased after hydraulic test according to the procedure given below.

I. **Mechanical cleaning:**

All surfaces inside and outside having scales and foreign materials have to be cleaned. This can be done by:

- Scrubbing with metallic brush.
- Sand slashing (iron free sand) and the loose scales and powders obtained from the above process can be cleaned by blowing or washing.

II. **Degreasing:**

This is to remove oil and grease. This can be achieved by vapor phase degreasing using trichloroethylene.

III. **Pickling: (for inside surface only)**

This is carried out after mechanical cleaning and degreasing operations to remove all the rusts and scales.

Following are the guidelines for carrying out the same.

- Cleaning with water.
- Pickling with a solution containing Hydrofluoric and nitric acid.
- The composition of the pickling solution and duration of pickling are adjusted after trial test on a sample piece to remove uniformly less than 25 micron thick materials. Mostly the composition is 5% Hydrofluoric acid (by wt) + 15 to 20% Nitric acid (by wt) + balance water at 50° C.
- Rinsing with ordinary water

IV. **Passivation: (for inside surface only)**

This is to be done after the pickling operation. A solution contains 25% HNO₃ (by vol.) and 75% water (by vol.) at ambient temperature will be used for this purpose. Duration of the Passivation should be 2 hours minimum. Finally rinsing with demineralised water (having the resistance of 50000 Ω-cm is to be carried out.

Note:

- After the process, no mechanical cleaning should be attempted.
- The cleaned surface is to be checked by using a white filter paper. Rubbing of the paper on the surface should not change the color of the paper.
- By analyzing the final used water the quality of cleaning can be checked. The rinse water should not have suspended particles more than 20 mg/m² (based on surface area). The pH value of the demineralised water must be between 6.5 - 7.5.

V. Drying:

The drying is done to remove water and is to be done by purging with Nitrogen gas having dew points less than -25° C and free from oil and grease (less than 10 ppm) at 60° C till the moisture level at the exit comes to the inlet concentration.

VI. Sealing:

After drying, the tanks should be sealed so that ambient moisture never enters inside. The tanks are to be pressurized to 50 m. bar (g) with dry GN2 gas.

6. DOCUMENTS TO BE ATTACHED WITH MASTER FILE:

A master file should be supplied along with the vessels, and shall contain the following documents:

1. Certified material Records/Reports giving the complete chemical analysis and physical properties.
2. Copies of hydrostatic and pneumatic test certificates.
3. Inspection report and other NDT certificate.
4. Copies of stamping details.

7. GURANTEE:

The pressure vessels fabricated and supplied shall be guaranteed for trouble free service against all manufacturing defects and faulty material used for the fabrication for a period of 12 months from the date of final acceptance of the vessels. In case any defects are noticed during that period, the same shall be replaced/rectified at free of cost. Guarantee certificate as per this condition shall be furnished along with the dispatch documents.