

Scope of work for Deaerator Heater

- Dished end and Spherical Dishes :
Unless otherwise specified, getting the Dished end and Spherical dishes pressed as per BHEL's Product standard HE 5 1370/ Rev.00 and at BHEL approved Dished End Vendor's works, is in vendor's scope. The required raw material for Dished Ends and Spherical dish will be supplied by BHEL as free issue material.

The following requirements shall be met for the Dished End and Spherical dish

- a) Material and dimensions should confirm to drawing given for the project
 - b) Material shall confirm to SA516/70 of ASME SEC-II PART-A year of edition and addenda as per bill of materials.
 - c) Inspection by BHEL appointed TPIA.
 - d) Spherical dish profile should match with Dished End OD as shown in the drawing given for the project
 - e) Normalising shall be done for Dished End and Spherical Dish after pressing.
 - f) Test coupon testing shall be done as per IBR code requirements (to be cut from same plate material of Dished end)
 - g) For other details of Dished End refer Product standard HE 5 1370.
- During the fit up of dished end to shell a reference line shall be marked on the shell at a distance of 100 mm from the end of the shell, which shall be transferred back after welding, to identify weld line
 - For spray valves:
Review and Verification of Material TC's, compliance with specification & PO,. Inspection by BHEL QC/TPIA.
 - For Tray assemblies:
Verification of material TCs for compliance with specification & PO of Trays. Inspection by BHEL QC /TPIA.
 - Down comers and equalizer nozzles of Storage tank shall exactly match with corresponding nozzles on Heater. Alignment of nozzles to be checked in presence of BHEL QC / TPIA with a fixture prepared by vendor for marking and trail assembly checking, before closing these nozzles with end covers.
 - Dimensional conformity of all overall dimensions (including min. thickness measurement for Dished ends of Deaerator heater as per given drg) is required.
 - Water box to be fabricated inside Heater Shell as per drawing, before Heat treatment.
 - Assemble spray valves including locking of nuts after PWHT. BHEL QC/TPIA to ensure
 - a) Welding of double lock nuts for spray valves

- b) Fixing of split pin through the top lock nut and stem of the spray valve before assembly of spray valve
- Visual and dimensional report of Tray enclosure and water box assembly shall be carried out in presence of BHEL QC / TPIA before fit-up of closing Dished end
- Tray enclosure shall be fabricated outside and then pushed in to heater shell assembly. For Tray assembly, follow the procedure given in Tray assembly drawing. BHEL QC / TPIA to ensure
 - a) Hold down rods and nut positions with cleats and hold down angle
 - b) Tray plates shall be stored properly before assembly with heater at vendor's works. Any bend in the trays observed during assembly shall be straightened before assembly.
 - c) Positioning of split pin at the bottom of hold down rod
 - d)
- PWHT for Heater: Post weld Heat treatment of Deaerator Heater shall be carried out in two stages
 - 1. PWHT of Deaerator Heater shell with water box
 - 2. PWHT of closing joint after welding the second (Closing) Dished end on the other end of Deaerator Heater shell. This shall be done after completing all internals like Spray valves, tray assemblies etc. and clearance by BHEL QC/TPIA.

Further instructions related to PWHT are as follows

- a) PWHT shall be carried out as per BHEL plant std.HY0640763 Rev.03
- b) PWHT cycle parameters for Deaerator heater Shell : (If applicable)
 - Stress relieving temp.:600 - 650 deg. C
 - Rate of heating above 300deg.C: 65°C/hr.
 - Soaking time: 135mins
 - Rate of cooling up to 400deg.C: 85°C/hr.
- c) PWHT cycle parameters for heater closing joint : (If applicable)
 - stress relieving temp.600 - 650 deg.C.
 - Rate of heating above 300 deg.C : 195 deg. C/hr.
 - soaking time:70 mins.
 - Rate of cooling up to 400 deg. C: 250°C/hr.

(Soaking, rate of Heating / cooling Subjected to change, in line with code requirements)

- d) Inspection of PWHT by QC /TPIA & IBR.
- Painting scheme outside shell : One coat of zinc silicate primer and two coats of HEAT RESISTANT ALUMINIUM PAINT as per AA56134

Note:- Qualified painters shall only to be engaged on the job.