



Product Line: Manufacturing the 6 Gun Electron beam furnace for Titanium processing.

Objectives:

- 6 Gun's and their vacuum pumps need to be connected through pipeline and these pumps are needed to be placed perpendicular to the floor surface on the lid of melting chamber.
- The pipeline needs to be designed for minimum length (between Gun and Vacuum pump) to get more service area in the "Lid top".
- Need to be maintaining the minimum distance 9 mm between Lid top surface and Vacuum pump bottom surface

Issues:

- Difficult to Place all six Gun assembly in the minimum area of "lid top".
- Difficult to maintain 9mm between Lid top surface and Vacuum pump bottom surface by keeping pumps on the vertical position.
- Need to consider the service space while design the pipeline for periodical maintenance.

Approach:

- Positioned the Guns and Vacuum pumps on the right position (Vertically) by maintaining 9mm between Lid top surface and Vacuum pump bottom surface.
- Weldment joints are used instead of elbows to connect the Gun's and their vacuum pumps to reduce the pipe line length and process cost

Benefits:

- Because of using Weldment joints the pipeline length will be less. So can get more service space and also cost effectiveness.
- Because of maintained 9mm between "Lid-top" surface and Vacuum pump bottom surface the vacuum pump can be easily remove for maintenance and Pumps head not easily transferred to Lid.