

Project Features:

Part Details of Reactors

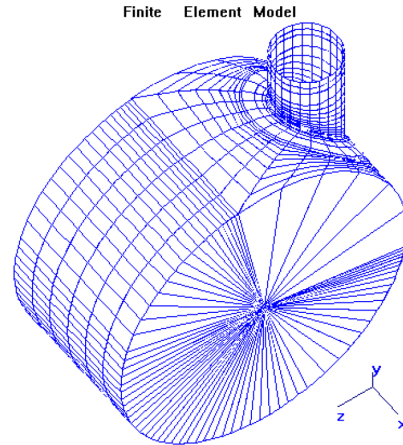
design of Sulfur condensers
Tubesheet

Manufacturing equipment for
Sour service according to NACE
MR 0175

Refractory Lining of Reactors

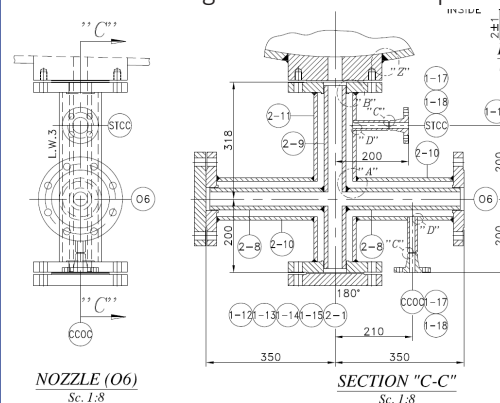
Sulfur condenser drain connections

PVElite software was used for code calculations. To calculate the local stresses on nozzle neck WRC 107 were considered and for nozzles out scope of this bulletin, FEA calculations were done based on ASME SEC VIII DIV.2 part 5 linear method using NozzlePro software.



Mechanical design of sulfur condenser Tubesheets are a very critical issue as they undergo great thermal stresses during operation upset conditions.

Special drain connections were devised to facilitate cleaning of sulfur choke up.



Fabrication

Tubes were Light expanded after welding away from tube to tubesheet welds. Since tubes were thick in sulfur condensers low tube expansion ratio were considered as it may brought tubesheet to undergo plastic deformation and loss of ductility around tubes. Low sulfur electrodes were implemented and hardness of weld metal and HAZ was ensured not to be over 200 HB. Welding were done in a way that ensured least welding heat input. Tubesheet un-tubed area lined with refractory in order to reduce the thermal shock in abnormal conditions during operation. Refractory application is vital to equipment lifetime. refractory anchor size and positioning was designed accurately so to prevent them from cracking the refractory. . Refractory lining thickness 75mm is considered to prevent elemental sulfur contacting metall surface in reactors. The whole equipment were put in furnace and PWHT were conducted to eliminate any residue stresses left during welding and forming operations



Quality Control

Various procedures were prepared and imposed fro conducting manufacturing activities.100% RT were considered to ensure no defect welds. Tube to tubesheet welds, Nozzle to shall welds were checked with UT. After PWHT all welds were NDT tested before hydrotest once more.

Reactors Internal supports, separation plates and lugs and details were specified and their integrity were checked by design by analysis method of ASME SEC. VIII DIV2 Part 5.

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