

ABSTRACT

IMPROVED SULFUR RECOVERY PROCESS FOR TREATING LOW TO MEDIUM MOLE PERCENT HYDROGEN SULFIDE GAS FEEDS WITH BTEX IN A CLAUS UNIT

An enrichment apparatus and process for enriching a hydrogen sulfide concentration in an acid gas stream to create a hydrogen sulfide rich stream for feed to a Claus. The enrichment apparatus comprises a hydrocarbon selective separation unit operable to separate the acid gas stream into a hydrocarbon rich stream and a purified acid gas stream, wherein the acid gas stream comprises hydrogen sulfide, carbon dioxide, and hydrocarbons, a hydrogen sulfide selective separation unit operable to separate the purified acid gas stream to create the hydrogen sulfide rich stream and a hydrogen sulfide lean stream, the hydrogen sulfide rich stream having a concentration of hydrogen sulfide, and the Claus unit operable to recover sulfur from the carbon dioxide lean stream. The enrichment apparatus can include a carbon dioxide selective separation unit in fluid communication with the hydrogen sulfide selective separation unit, operable to separate the hydrogen sulfide rich stream.

FIG. 4