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Optimization of Sulfur Recovery Unit Recovery

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ABSTRACT

In this sulfur recovery unit (SRU), hydrogen sulfide (H_2S) is converted to elemental sulfur using modified sulfur recovery unit. In the present study, first the simulation of Claus process has been considered using a process simulator called TSWEET then the effect of H_2S concentration, H_2S/CO_2 ratio and acid gas flow of AG splitter in three different concentrations of oxygen (in input air into the unit) on the main burner temperature and sulfur recovery have been studied and compared. It is shown that temperature of the main burner increases up to maximum temperature increasing fraction of AG splitter flow to main burner then it is reduced by a sharp slope; this is true for all three concentrations of oxygen. However, if two other parameters (concentration of H_2S and H_2S/CO_2 ratio) increase, temperature of main burner increases monotonically; this increase has different slopes depending on oxygen concentration in input air. Also in this paper it is shown that recovery rate of sulfur increases up to a maximum value then decreases as H_2S concentration and H_2S/CO_2 ratio (in all three concentrations of oxygen) increase. If 70-85% acid gas feed are entered the main burner, more optimal sulfur recovery rate than other flows would be achieved.

Keywords: Acid gas, Concentration of H_2S , H_2S/CO_2 ratio, Sulphur recovery

1. Introduction

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