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## Investigation the Effect of Various Operation Parameters on H<sub>2</sub>S/SO<sub>2</sub> Emissions from Existing Claus Sulfur Recovery Unit at Mellitah Complex.

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### ABSTRACT

Hydrogen sulfide (H<sub>2</sub>S) is a byproduct of processing natural gas, and considered as one of the most noxious industrial gases and highly toxic gas. H<sub>2</sub>S removal from natural gas is particularly required for reasons of environment, safety, and corrosion problems. The most common conversion method used is the Claus process. This method have been developed for the removal of hydrogen sulfide from gaseous emissions. In this paper, the effect of various operating parameters on the emissions of H<sub>2</sub>S/SO<sub>2</sub> from the existing Claus unit at the Mellitah-complex was studied. In order to achieve this objective, the existing Claus unit was simulated by using process simulator Aspen-HYSYS® V10. Acid Gas was used as fluid package to determine various operating parameters such as air/feed ratio, burner temperature and overall sulfur recovery, have the greatest impact on the emissions of H<sub>2</sub>S/SO<sub>2</sub> ratio in tail gas leaving Claus unit. A series of simulations were carried out by increasing air flow rate/acid gas feed ratio. The emissions of H<sub>2</sub>S/SO<sub>2</sub> controller set at 2 is optimum value. A tail gas ratio of 2 is used for the remainder of the simulations. Also the overall efficiency of the unit is related to the ratio of H<sub>2</sub>S/SO<sub>2</sub> in tail gas, is related to the control of air flow rate/feed ratio and the ratio between the two variables. Higher recovery efficiency mean less sulfur compounds are emitted in tail gas.

**Keywords.** Claus unit; Acid gas feed; Furnace temperature; Sulfur recovery.