

Conceptual Design of Gas Sweetening Process using Methanol as a Solvent

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The gas sweetening process using methanol as a solvent is conceptually designed. The process removes acid components such as hydrogen sulfide (H_2S) and carbon dioxide (CO_2) in the coal-gasified gas stream at the low temperature and the high pressure. The process consists of one absorption column and two desorption columns which are composed of acid gas removal column and methanol/water separation column. The design specifications of the absorption column are to absorb 95% of CO_2 as a bottom stream and to reduce H_2S content at a top vapor stream to 1.0 ppm. The design specification of the acid gas removal column is to remove H_2S and CO_2 as a top vapor stream and that of the methanol/water separation column is to produce a solvent stream as a top product. The process is conceptually designed using commercial software, PRO/II with an appropriate thermodynamic model.