

## **Flowsheet Development, Simulation and Optimization of Carbon-Di-Oxide Removal System at Natural Gas Reserves by Aspen-Hysys Process Simulator**

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**Abstract :** Natural gas is a cleaner fuel compared to the others. But it needs some treatment before it is in a state to be used. So natural gas purification is an integral part of any process where natural gas is used as raw material or fuel. There are several impurities in natural gas that have to be removed before use. CO<sub>2</sub> is one of the major contaminants. In this project we have removed CO<sub>2</sub> by amine process by using MEA solution. We have built up the whole amine process for removing CO<sub>2</sub> in Aspen Hysys and simulated the process. At the end of simulation we have got very satisfactory results by using MEA solution for the removal of CO<sub>2</sub>. Simulation result shows that amine absorption process enables to reduce CO<sub>2</sub> content from NG by 58%. HYSYS optimizer allowed us to get a perfect optimized plant. After optimization the profit of existing plant is increased by 2.34 %. Simulation and optimization by Aspen-HYSYS simulator makes available us to enormous information which will help us to further research in future.

**Keywords :** Aspen-Hysys, CO<sub>2</sub> removal, flowsheet development, MEA solution, natural gas optimization

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