

CEST02\_067

## Study on Flare Gas System to Minimize Waste Gases Emissions into the Atmosphere

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### ABSTRACT

Flare gas system is an important part of onshore and offshore chemical plants as well as petrochemical complexes which allow the treatment of excess gases come from both production lines and safety lines. The main role is for safety system, because no chemical plant can operate without safety valves which are the extreme protections at downstream of each process. Generally, flaring is the open-air burning of natural gas. In this process, all excess gases are collected and passed through flare knock-out drum, then sent to flare stack as last component of network to be burnt. A great amount of these gas mixtures such as CO<sub>2</sub>, SO<sub>2</sub> and NO<sub>x</sub> has a high heating value and in some cases it can be used as the raw material for various units. It is clear that burning such gas mixtures in flare stack causes environmental problems like air and noise pollution. This paper presents an analysis and simulation of a flare gas recovery system with a single stage liquid ring compressor by using process simulator. Aspen HYSYS® Flare System Analyzer. The method has applications in refineries and petrochemical plants gas waste treatment.

**Keywords.** Flare gas system simulation, Thermal radiation, Noise Level, waste gases Emissions..