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A Tradition of Excellence and Hard Work

Buisier Engineering provides a complete assesment & Design for Pressure Relief & Flare Systems in the Oil & Gas Fields.

Design of Pressure Relief & Flare Systems in Oil & Gas Fields

The pressure relief and flare system is a system of process safety management (PSM). Pressure relief and flare systems are considered to be critical mechanical equipment that gathers and safely burns hydrocarbons from pressure and vapor which relieves and depressurizes systems. Buisier Engineering provides complete assessment and design for pressure relief and flare systems in oil and gas fields. The system must be continuously available and reliable for years, and capable of performing through plant emergency conditions, including a site-wide general power failure or a weather event including a storm failure.

•The major factors influencing flare system design are flow rate, gas composition, gas temperature, gas pressure available, utility costs and availability, safety requirements, environmental and social requirements. The system design shall be accomplished as follows.

•Flare system design will first start by taking the P&ID and highlight it to show the protected equipment/lines and will also highlight the pressure source along with any control valve or block valve that marks the boundary of the system that a PSV is going to protect.

•All credible overpressure scenario is identified with description of why a particular scenario is credible.

•The relief rate is calculated for the identified credible overpressure scenario and then performing PSV sizing and PSV inlet and outlet line sizing to see if existing PSV is adequately sized. In case of any identified shortfalls, recommendations that would be best suited for the application shall be made.

•Once PSV sizing study is completed a PSV report is prepared. This report will have PDF of the calculation workbook that is used to perform PSV sizing and other details like Equipment MAWP data, Control Valve data, Pump Curve (if applicable) and highlighted P&ID.

•For Knock Out Drum evaluations all flares are supposed to have a knock out drum with purpose to separate vapor and liquid before the flare. The liquid is separated from vapor as flare stacks are not designed to handle any liquid flow.

•KO Drum sizing will be performed using in-house excel based software to see if the existing KO Drum is adequately sized or if there are any deficiencies it would be highlighted in the findings report.

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•After all PSV's are evaluated for all identified overpressure scenarios, the Flare Net model is ready to be built. One model will be built for each flare. Then all global scenarios like fire zones, electricity failure, cooling water failure etc. will be identified. Next, a list of PSVs that would relieve in each of these global cases is made.
•All identified global cases will be run to model based on constrains that are as per API-520/521 standards. First, the model will be run in "Design" mode to identify limitations or short falls of the existing flare header, then run the model in "Rating" mode that will allow flare net to size the flare header.
•Simulation using computer software of existing Gas-Oil separation plants to assess and quantify the flare systems.
•Based on available information regarding global cases the design case for the flare stack will be identified. Usually the case with highest relieving rate will be the design case for the flare stack.
•The Design package includes all aspects such as civil, electrical, environmental, and the control system.
•The Pressure Relief and Flare Systems design is conducted in close cooperation with equipment manufacturers who have the ability to provide after sales services to the client in the operations area.