

Risk-based Process Safety Management through Process Design Modification for Gas Oil Separation Plant

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A new QRA methodology for the feasible integration of process modeling and accident simulation is proposed using commercial simulators with the goal of carrying out risk-based process safety management of an existing gas oil separation plant (GOSP). Particularly for the gas treatment unit (GTU) among the various subsections of the GOSP process, this methodology attempts to assess the potential risk at the preliminary design stage and modify the process design of an existing process to alleviate the major hazard with two design alternatives. Consequently the modified design with different operation conditions reduces the total risk integrals by 27% at the expense of the total capital investment increase of \$50,000. In addition, sensitivity analysis of the total risk to varying success probability of insulation process is carried out in order to give an insight for a safer and more reliable process design.