

ABSTRACT

The construction industry for industrial buildings, especially the oil and gas industry is very vulnerable to the risk of uncertainty because of the nature of its business from the assessment of the initial project investment to the physical completion at the end of the project. Risk management ensures that risks can be examined and mitigated by stakeholders as key in every decision making. The application of risk management in a project is very necessary so that the success rate is high and generate high profits on the project team. In this study the risk and cost study was carried out by analyzing the HAZOP study report with probability techniques and the Monte Carlo method with the help of Crystal Ball version 11.1.2.3 software. To determine the most significant risk and cost consequences in the entire system in the production plant and the feasibility of the project to be able to continue in the construction phase (EPC). From the simulation results at 90% confidence level, the risk range values in low category based on *owner* risk ranking matrix specifications. Estimated cost of the project based on the AACE international standard at 90% confidence level is still within the range of the cost value.

Key word : Risk Management, HAZOP study, Monte Carlo Simulation and Crystal Ball