

Fault Tree Analysis and Bayesian Network for Fire and Explosion of Crude Oil Tanks: Case Study

Authors : B. Zerouali, M. Kara, B. Hamaidi, H. Mahdjoub, S. Rouabhia

Abstract : In this paper, a safety analysis for crude oil tanks to prevent undesirable events that may cause catastrophic accidents. The estimation of the probability of damage to industrial systems is carried out through a series of steps, and in accordance with a specific methodology. In this context, this work involves developing an assessment tool and risk analysis at the level of crude oil tanks system, based primarily on identification of various potential causes of crude oil tanks fire and explosion by the use of Fault Tree Analysis (FTA), then improved risk modelling by Bayesian Networks (BNs). Bayesian approach in the evaluation of failure and quantification of risks is a dynamic analysis approach. For this reason, have been selected as an analytical tool in this study. Research concludes that the Bayesian networks have a distinct and effective method in the safety analysis because of the flexibility of its structure; it is suitable for a wide variety of accident scenarios.

Keywords : bayesian networks, crude oil tank, fault tree, prediction, safety

Conference Title : ICMIMR 2015 : International Conference on Modelling in Industrial Maintenance and Reliability

Conference Location : Istanbul, Türkiye

Conference Dates : July 29-30, 2015