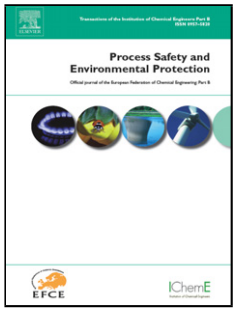

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An extension to Fuzzy Fault Tree Analysis (FFTA) application in petrochemical process industry

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Abstract

Fault Tree Analysis (FTA) is an established technique in risk management associated with identified hazards specific to focused fields. It is a comprehensive, structured and logical analysis method aimed at identifying and assessing hazards of complex systems. To conduct a quantitative FTA, it is essential to have sufficient data. By considering the fact that sufficient data is not always available, the FTA method can be adopted into the problems under fuzzy environment, so called as Fuzzy Fault Tree Analysis (FFTA). This research extends FFTA methodology to petrochemical process industry in which fire, explosion and toxic gas releases are recognized as potential hazards. Specifically, the case study focuses on Deethanizer failure in petrochemical plant operations to demonstrate the proposed methodology. Consequently, the study has provided theoretical and practical values to challenge with operational data shortage in risk assessment.

Keywords: risk assessment; fault tree analysis; fuzzy sets; petrochemical industry.

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