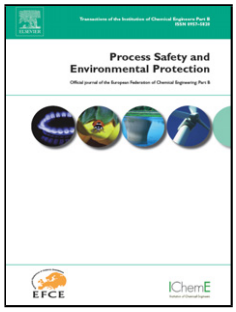

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An integrated modeling framework for quantitative business continuity assessment

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Abstract

Systems are increasingly exposed to threats of disruptive events, e.g., failures, natural disasters, terrorist attacks, etc. A proactive approach is needed to protect the business and reduce the potential losses caused by these disruptive events. Business Continuity Management (BCM) is a way to integrate the recovery process within the preventive framework of risk assessment. Such integrated risk management strategy offers great potential benefits. However, the complexity of applying it in practice is such that existing BCM strategies are mainly based on qualitative methods only, which limits the potential added values. To support quantitative BCM, in this paper we define a set of quantitative business continuity metrics. The defined metrics are based on the estimated losses incurred by the disruptive event in the whole business process. For this, the business process is divided into four sequential phases, i.e., protection phase, mitigation phase, emergency phase and recovery phase. For each phase, a specific modeling method is developed and an integrated modeling framework is constructed for the business continuity. Simulation can, then, be used to quantify the business continuity metrics. The developed methods are applied to assess the business continuity of an oil storage tank farm.

Index Terms

Business continuity management, risk analysis, event tree, event consequence diagram, semi-Markovian model

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