

A Resilience Engineering Approach for Sustainable Safety in Green Construction

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ABSTRACT

Sustainable construction is a complex endeavour, involving various stakeholders, resulting in situations that are incompletely described or underspecified. Traditional risk assessment methods require detailed description of the system states and safety focus on undesirable outcomes, losses, incidents and accidents. This research describes a new way to deal with risk assessment in green construction industry using a Resilience Engineering method. The Functional Resonance Analysis Method (FRAM) defines a systemic framework to model complex systems based on combinations of functions variabilities during normal work. To quantify the results for risk assessment we use FRAM together with the analytic hierarchy process (AHP). Results of a case study during the modernization of a sports stadium construction show that FRAM-AHP can be used to assess and quantify the performance variabilities that may lead to occupational or environmental accidents, providing new recommendations about how work processes should function to minimize accident possibilities.