Perspective
Volume 10:12, 2021
DOI: 10.37421/iem.2021.10.328

Industrial Engineering & Management

ISSN: 2169-0316 Open Access

Hazardous Conditions and Its Impact on Constructions: A Scientific Simulation

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Perspective

Extreme winds are responsible for a considerable share of natural-disaster-related economic loss. Evidence also suggests that the number of deadly severe wind episodes is increasing. However, knowledge of the effects of unusual wind occurrences on building structures (e.g., tropical cyclones, thunderstorms, and tornadoes) is limited. Most current design regulations and criteria for assessing wind load on structures have been based on research of synoptic wind events up to now. As a result, it is critical to increase our understanding of structural responses under extreme winds, with physical modelling being one of the most prominent approaches for doing so. It's important to note that traditional physical simulation in a boundary layer wind tunnel is primarily utilised to represent synoptic wind. Nonetheless, new modelling systems for extreme wind research, such as tornado and downburst simulators or boundary layer wind tunnel modifications, are progressively being created.

The goal of this Research Topic is to bring together academics from many fields of wind and structural engineering, with a focus on physical modelling of high wind occurrences and their effects on structures. Contributions on novel and sophisticated technologies for simulating high winds, validation of physical simulations utilising full-scale or numerical simulation data, and experimental assessment of structural performance under extreme winds are all welcomed. From a physical simulation standpoint, the provided studies should describe and demonstrate in detail how the outcomes contribute to a better understanding of high winds and their impact on structures. The findings are expected to have significant consequences for furthering our understanding of structural behaviour in extreme winds, and, more crucially, for assisting in the design of wind-resistant structures.

The goal of this Research Topic is to gather and advance research on emerging ways for realistically simulating high winds and their influence on structures. Among the topics of interest are, but are not limited to

• Comparison of simulated extreme wind field with field measurements

• Experimental assessment of structural response under extreme wind events

• Comparison of physical and numerical simulation of structural behaviour subjected to extreme winds

Construction procedures are more likely than others to foster risky behaviours, and the ramifications of these acts can be severe. This paper begins by reviewing the current state of research on construction team risky conduct. It then uses agent-based modelling (ABM) technology to evaluate the complicated mechanisms that lead to risky behaviour and build a three-layer structural model. In the study of dangerous conduct in construction teams, this modelling deals with complexity and elaborates on crucial topics and new research ideas. The impact of various incentive methods on the safe conduct of construction teams under various management scenarios were investigated using the ABM approach. The findings revealed that when members have a fair assessment of the circumstance, the excess performance incentive distribution has a better effect than the average distribution effect, depending on the member's level of safety awareness.

This is true whether the member's level of safety behaviour is positively or adversely related to his or her level of safety awareness. The three-layer structural model is shown to be feasible, valid, and ubiquitous in this study. It also comes to certain management findings and develops some proposals for future development. The goal of this work is to serve as a starting point for future research on containing and preventing dangerous behaviour in construction teams.

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Received 09 December 2021; **Accepted** 23 December 2021; **Published** 30 December 2021

How to cite this article: Zhaohan Sheng . "Hazardous Conditions and Its Impact on Constructions: A Scientific Simulation." *Ind Eng Manage* 10 (2021): 328.