Short Communication
Volume 7:3, 2021

Journal of
Steel Structures & Construction

ISSN: 2472-0437 Open Access

Steel Structures: Brilliant Ideas, Advances and Discussions

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Introduction

Brilliant ideas are worth as much as a complete research. Steel structures have followed a quite well-trodden and yet challenging path, particularly with the advent of new materials in construction industries. As a result, innovative and stimulating ideas played a significant part, since both researchers involving in constructions and/or industries drew comparisons among different materials to achieve most optimal ideas. In different research and construction projects, the major concern that whether sole material or a composition of two (or more) materials outweigh, has always been raised among decision makers. Notwithstanding, the significant role of steel as a crucial element in construction has remained inarguable. Despite this, the need for new ideas has been always vitally felt to come up with innovations in steel comparable with concrete and other materials. To this end, Journal of Steel Structure and Construction (JSSC) aims to provide an open international forum for bright ideas on steel structures. This paper outlines the significance of the ideas in steel elements and puts few instances forward among the new advances.

When it comes to primary oil, the iron and steel industry consumes the majority of fossil fuels, with coking coal accounting for the majority of energy consumption. Coal provides three quarters of the energy used in the iron and steel industry in 2017. (IEA, 2019).To follow the recent trend of risk management, the construction firms venturing into overseas markets are recommended to hold a global view to identify systemic risks rather than just project-only risks. Some professional reports have forecast ERM to grow in the construction industry. Compared with the traditional approach, ERM enables companies to shift the focus of the risk management function from primarily defensive to increasingly offensive and strategic and provides a new way to improve PRM in construction firms. Given the complexity and diversity of the risks, construction firms have been seen as prime candidates for ERM adoption.

Unlike other materials in civil engineering, steel structures are more vulnerable to the uniformity or perfection of the geometry. There have been some advances over the past few years about the uniformity of the geometry in which the normal fabrication-related imperfections or post-construction imperfections were evaluated against perfect structures. This section aims to point out a number of instances to stimulate authors of this field that the topics about the integrity of any structural element are welcome to be considered. In all references the author and the collaborators have tries to show the detrimental effects of non- uniformities , i.e, in terms of rate and criticality of the mentioned effects.

Although different materials have been put forward and accordingly developed in the construction industry, steel – as a conventional material in building and construction – has not lost its widespreadness among both researchers and people dealing with construction and performance. It is, however, fitting to mention that concrete among the other materials has competed well and therefore, remarkably caught eyes of different researchers over the past decades. Besides, carbon fiber reinforced plastic is vastly seen particularly within the last twenty years. Notwithstanding, steel as a single material in general – due to its inherent feature of being light weight and yet strong – and in combination with the other materials in particular, still plays a key role in the construction industry. Highly cited papers, nowadays, are seen on the topics concerning with the rehabilitation of the steel with the new materials, which are also welcome to be considered in JSSC.