

Frontier Technologies in Steel and Composite Structures

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ABSTRACT

This paper addresses the future technologies in steel and composite structures in order to deal with the challenges of infrastructure development in the future. With the increased urbanisation of the world, the demand on building ever taller structures and longer bridges is increasing. Furthermore, the need to build and maintain the transport and urban infrastructure that allows the world to ensure that this rapid urbanisation is able to be achieved is ever present. The World Economic Forum has projected that annually there is a \$1 trillion spending gap or deficit on infrastructure spending each year.

This paper will outline what measures can be taken in the area of steel and composite structures to ensure that this infrastructure gap is bridged. The paper will highlight the advances in materials particularly in the area of steel and concrete and their composite assemblages. The use of innovative structural systems and their ability to rethink, reduce, reuse and recycle from previous approaches of construction is also addressed in detail. The paper also introduces the concepts of structural health monitoring and how they can be deployed in steel and composite structures to make them more efficient. In addition, the concepts of structural reliability and how it can be used both on an elemental level and system level and further deployed in structural updating will also be highlighted. The paper concludes with thoughts on future/frontier research in the area of steel and composite structures to achieve the aim of addressing our future infrastructure needs.

REFERENCES

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