Insight on the Dynamics of Corrosion and Anti-Corrosion Protection Progresses on Steel: A Brief Review

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Abstract

Steel is one of the prevalent metals used in many applications; however, steel corrosion and its severe deterioration are associated with temperature, pressure, and atmospheric climate change. The steel failure from pitting evolution results in high cost and manufacturing flaws due to design error and extreme environmental conditions. Several preventive measures have often been adopted to resist this failure. This paper reviews the challenges of materials in application as relates to structural deformation, corrosion, and mechanical failure. The impact of new inhibitive activities for engineering component advances was ascertained. The review concluded that failure of engineering materials regardless of the manufacturing flaws can be addressed through component proper design and physiochemical activities of extracts with responsive ions. It also elucidates that metallic steel protection against sudden failure depends on the nature of surface preparation and stress initiation at the surfaces. The different progression through which corrosion occurs and the methods for mitigation were established in this work.

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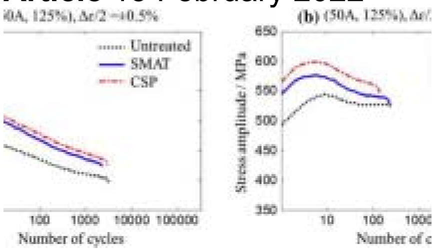

[A review on the corrosion fatigue strength of surface-modified stainless steels]

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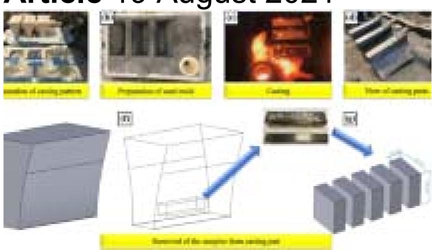

[Effect of Different Heat Treatment Procedures on the Corrosion Behavior of High-Manganese Austenitic Steels]

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Remilekun R. Elewa: Investigate the study; Ojo S. I. Fayomi: Supervise the work; Olufunmilayo O. Joseph: Compiled the work.

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Ethics declarations

Competing Interests

The authors declare no competing interests.

Ethical Approval

Not applicable to this paper.

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