Development and protection evaluation of two new, advanced ceramic composite thermal spray coatings, Al₂O₃–40TiO₂ and Cr₃C₂–20NiCr on carbon steel petroleum oil piping

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Publication date: 2016/3/31
Journal: Ceramics International
Volume: 42
Issue: 4
Pages: 5203-5210
Publisher: Elsevier

Abstract: Carbon steel is the most commonly used material in the petroleum Industry owing to its high performance and relatively low cost compared with highly alloyed materials. The corrosion resistance of carbon steel in aqueous solutions is dependent on the surface layer created on carbon steel. This layer often consists of scale (FeCO₃) and cementite (Fe₃C), but it is neither compact nor dense. To improve the carbon steel surface resistance against corrosion and wear, a compact and dense layer can be deposited onto the surface...

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