World Academy of Science, Engineering and Technology
International Journal of Energy and Environmental Engineering
Vol:8, No:03, 2014

Titanium-Aluminium Oxide Coating on Aluminized Steel

Authors : Fuyan Sun, Guang Wang, Xueyuan Nie

Abstract : In this study, a plasma electrolytic oxidation (PEO) process was used to form titanium-aluminium oxide coating on aluminized steel. The present work was mainly to study the effects of treatment time of PEO process on properties of the titanium coating. A potentiodynamic polarization corrosion test was employed to investigate the corrosion resistance of the coating. The friction coefficient and wear resistance of the coating were studied by using pin-on-disc test. The thermal transfer behaviours of uncoated and PEO-coated aluminized steels were also studied. It could be seen that treatment time of PEO process significantly influenced the properties of the titanium oxide coating. Samples with a longer treatment time had a better performance for corrosion and wear protection. This paper demonstrated different treatment time could alter the surface behaviour of the coating material.

Keywords : titanium-aluminum oxide, plasma electrolytic oxidation, corrosion, wear, thermal property
Conference Title : ICCMREA 2014 : International Conference on Composite Materials and Renewable Energy Applications
Conference Location : Madrid, Spain
Conference Dates : March 27-28, 2014