

Corrosion properties of PEO coated AZ31 magnesium alloy

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ABSTRACT

Improving corrosion resistance of AZ31 magnesium alloy in environments containing chlorides by duplex surface treatment was studied. Duplex surface treatment consisted of plasma electrolytic oxidation (PEO) with subsequent sealing the coating's pores by temporary oil preservatives containing corrosion inhibitors. Evaluation of corrosion resistance was performed by using both electrochemical and exposure tests. Namely electrochemical impedance spectroscopy and potentiodynamic polarization were performed among electrochemical tests in 0.1M NaCl solution. As exposure test were chosen salt spray test according to STN EN ISO 9227 standard. The obtained results from the performed measurements confirmed significant improvement of corrosion resistance reached on AZ31 magnesium alloy by duplex surface treatment compared to the simple PEO coating and untreated one. Therefore, performed duplex treatment is a very perspective alternative for magnesium alloy applications in severe conditions or for temporary protection of magnesium products coated by PEO during marine transport.

BIOGRAPHY

Milan Štrbák is currently both researcher at Research centre UNIZA and PhD. doctoral student at university of Žilina. While studying at the University of Žilina, he studied at foreign universities in Portugal and Brazil, where he gained valuable experience. Currently, he works with corrosion and fatigue properties of modified magnesium alloys. His enthusiasm for doing research gives him the driving force to work with and meet researchers worldwide. Therefore, any experience in science and research, whether in the form of conference or research study stay, is attractive to him.

