

MODELLING OF HOT CORROSION RESISTANCE OF INCONEL718 COATED BY SIMULTANEOUS YTTRIUM- DOPED ALUMINIZING-SILICONIZING PROCESS

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Abstract

Yttrium-doped aluminizing-siliconizing diffusion coatings were deposited on Superni718 (Inconel718) alloy. Hot corrosion studies were conducted on coated specimens in different salts (Na_2SO_4 , NaCl , and V_2O_5) at temperatures range (800-900°C) under cyclic conditions . A series of experiments is performed on the four hot corrosion kinetics parameters (Na_2SO_4 , NaCl , V_2O_5 , and Temperature) to investigate their effect on the hot corrosion resistance . To study the interaction among the factors a half factorial or fractional factorial experiments approach has been adopted . The hot corrosion resistance model was formulated based on Analysis of Variance (ANOVA) using Minitab® statistical package . The outcome is represented graphically and in the form of empirical model which defines the hot corrosion kinetics of Inconel718.

Keywords: Hot corrosion, ANOVA, design of experiments, Inconel718, interactions effects.