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عنوان مقاله:

Statistical Approach on Corrosion Behavior of Dissimilar Welds of A۳۸۷-Gr۹۱/AISI۳۱۶ Steels with PCGTAW Process

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خلاصه مقاله:

In this study, an attempt was made to minimize the corrosion rate and maximize pitting potential of dissimilar metal welded joints of A۳۸۷-Gr۹۱/AISI۳۱۶ steels. Process parameters of the pulsed current gas tungsten arc welding (PCGTAW) including of peak current (P), background current (B), pulse frequency (F), and on time percentage (O) were chosen as the influencing factors on corrosion behavior. Design of Experiments (DOE) were done using Taguchi's L۹ (۳۴) orthogonal array. Signal to noise (S/N) ratio Analysis indicated that corrosion rate was affected by peak current, frequency, on time percentage, and background current whereas pitting potential was mostly influenced by on time percentage, peak current, frequency, and background current, respectively. Optimum conditions of P, B, F, and O factors were found as ۱۳۵A, ۷۵A, ۱۰Hz, ۸۰% for Corrosion rate and ۱۲۰A, ۶۰A, ۶Hz, ۶۰% for pitting potential, respectively. Furthermore, analysis of variance (ANOVA) demonstrated that the contribution of P, B, F, and O were ۲۸.۷۹%, ۱۳.۰۶%, ۲۸.۶۳%, and ۲۹.۵۱% for corrosion rate and ۱۳.۹۷%, ۲.۷۹%, ۱۲.۲۰%, and ۷۱.۰۴% for pitting potential, respectively. Results from welded samples at optimum conditions, showed good agreement with predicted values for .corrosion rate and pitting potential

کلمات کلیدی:

Taguchi method, analysis of variance (ANOVA), Pulsed current gas tungsten arc welding (PCGTAW), A۳۸۷-Gr.۹۱, AISI۳۱۶

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