

WELDING RESIDUAL STRESS OF AUSTENITIC STAINLESS STEEL AND ITS MEASUREMENT BY HOLE-DRILLING METHOD

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Urgent requirement of residual stresses information in stainless steel structures which is the basis of technical policy or treatment is driven by a large amount of stress corrosion cracking failure. It has been found that simple and available hole-drilling method is suitable for residual stress measurement of stainless steel if the match between rosette of strain gage with hole diameter and preparation of surface to be measured are selected appropriately. It is supposed that the match between strain gage type BE120-3BA with $\Phi 2.3 \times 3.0$ mm drilled hole could be used for residual stresses measurement of austenitic stainless steels. Wet-grinding in water adopted to stainless steels surface preparation for strain gage bonding is appropriate. Moreover, its feasibility measuring higher residual stress in stainless steel is better than in carbon steels.

It has been shown through experiments that welding residual stress in stainless steel is higher than yield stress of base metal. The peak of longitudinal residual stress in SMAW butt-welded joint consisted of SUS 321 base metal and E347-16 weld accesses to value 540MPa.

Key words: welding residual stress, hole-drilling method, austenitic stainless steel

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