

Wear Performance of Stellite 21 Cladded Overlay on Aisi 304L

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Abstract : Stellite 21 is cobalt based super alloy used in improving the wear performance of stainless steel engineering components subjected to harsh environmental conditions. This piece of research focuses on the wear analysis of stellite 21 cladded on AISI 304 L substrate using SMAW process. Bead on plate experiments were carried out by varying current and electrode manipulation techniques to optimize the dilution and microhardness. 80 Amp current and weaving technique was found to be optimum set of parameters for overlaying which were further used for multipass multilayer cladding of AISI 304 L substrate. The wear performance was examined on pin on discs wear testing machine under room temperature conditions. The results from this study show that Stellite 21 overlays show a significant improvement in the frictional wear resistance after TIG remelting. It is also established that low dilution procedures are important in controlling the metallurgical composition of these overlays which has a consequent effect in enhancing hardness and wear resistance of these overlays.

Keywords : surfacing, stellite 21, dilution, SMAW, frictional wear, micro-hardness

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