Effect of welding process and filler metal on microstructure and mechanical behavior of dissimilar stainless steel welds

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Abstract : Dissimilar weldments have been widely used in the industry and there are many applications in which weldments are made from metals of different compositions, because of economic benefits. However dissimilar is often more difficult than joining the same metals, due to the differences in the physical, mechanical, and metallurgical properties of the metals to be joined.In this work the effect of welding process parameters and filler metal types on microstructure and mechanical properties of dissimilar stainless steel welds joints are studied. Microstructure, microhardness and tensile strength of the welds joints have been evaluated and the results are compared. The fracture surfaces of the tensile specimen were examined by scanning electron microscopy (SEM). From this investigation it is observed that we can used austenitic and duplex filler if the welding process parameters are optimized.

Keywords : GTA welding, dissimilar stainless steel, welding process, microstructure, mechanical properties, fracture surface