



Analysis of Stainless Steel Cladding over Low Carbon Steel by GMAW

Weld cladding is a method of depositing a thick layer (more than 3 mm) of a corrosion resistant material over corrosion prone material to boost the corrosion resistance properties. The cladding material is usually an austenitic stainless-steel or a nickel alloy, though certain copper-base alloys are also used. In present work, low carbon steel plates were cladded with stainless steel (ER309L) electrode wire. Two experimental design approaches such as Taguchi design and Box Behnken Design were used for weld parameters optimization. First of all both design matrices were prepared using MINITAB software and then bead samples were prepared according to the designed matrices. These designs were analysed for the obtained responses in order to get optimum results. Out of selected range of parameters, three samples with different heat input levels were prepared in order to study the effect of heat input. For each heat input level, a cladding sample was prepared having two layers of stainless steel (ER 309L) over low carbon steel. These cladded samples were then analysed for hardness and chemical composition variation in base metal, weld metal and heat affected zone (HAZ).