Abstract

A method for weld repairing airfoils made from nickel based super alloy material is provided. The method includes removing a damaged portion of the airfoil by machining the airfoil to a relatively smooth surface. Powdered alloy material, such as IN-100 material is then fed to a plasma arc welding device. A plurality of weld beads are deposited along the damaged portion of the airfoil in a continuous bi-directional pattern by the welding device to eliminate abrupt thermal transients at the ends of the weld, thereby reducing the thermal stresses that cause cracking in susceptible alloys such as IN-100.