

METHOD FOR FABRICATING A COATED SUPERALLOY STABILIZED AGAINST THE FORMATION OF SRZ

ABSTRACT OF THE DISCLOSURE

A coated superalloy article (18) is prepared by applying a protective coating structure (32) to a surface of the nickel-base superalloy substrate (34) that is susceptible to the formation of SRZ (secondary reaction zone (46)). The coating application is performed by placing the nickel-base superalloy substrate (34) into a deposition apparatus, thereafter depositing a carbon-containing layer (32) overlying and contacting the surface of the nickel-base superalloy substrate (34), and thereafter depositing an aluminum-containing layer (36) overlying and contacting the carbon-containing layer (32). The step of depositing the aluminum-containing layer (36) is performed in the same deposition apparatus, preferably a vacuum deposition apparatus such as an EB-PVD apparatus, as the step of depositing the carbon-containing layer (32) and without exposing the nickel-base superalloy substrate (34) to an ambient atmospheric condition. The article (18) may have a thermal barrier coating applied, and may be heat treated.

(Figure 3)