

Title: microstructure and mechanical properties of inconel weld overlay on heat resistant steel

Authors: mgr inż. Paweł Petrzak, prof. dr hab. inż. Marek Blicharski

Abstract: The investigation deals with characterization of changes in microstructure, chemical composition and hardness of a heat resistant steel (in a form of water wall tubing in power boilers) weld overlaid by Inconel 625. The analysis comprised a study of macro- and microstructure (considering weld imperfections and degree of overlapping of particular weld beads), geometrical parameters (including overlays thickness), hardness and chemical composition (iron content in the overlay near surface areas). The metallographic investigation was carried out by a Zeiss Axio Imager M1m light microscope. Chemical analysis was performed in a scanning electron microscope equipped with a Noran energy dispersive spectrometer (EDS). The analysis of iron content was carried out on the surface and on the specimen cross sections. The hardness measurements were performed by Tukon 2100 (Wolpert-Wilson) hardness tester across the weld overlay interface.