

Life assessment of 3RYSH Superheater tubes in thermal power plant

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Life assessment of 3RYSH Superheater tubes in a thermal power plant is described in this research. Risk Based Inspection method was employed to collect data related to the causes of corrosion attack outside boiler tubes, operating conditions, materials selection, and fuel usage for life assessment of Superheater tubes. The values of remaining life of the tubes between 6-47 years, were estimated. The most important position that should be inspection and maintenance at 3RYSH Superheater tubes, cause of 6 years remaining life, was E position, which near Waterwall tubes and next to 2RYSH Superheater tubes. In this area, the high volume of sodium (Na) and vanadium (V) in fuel may cause Oil ash corrosion. Inductively Coupled Plasma Mass Spectrometry and X-ray Diffractometry were used to analyze the composition of the scales on the tubes. Na and V were observed. Observation of the tube surfaces covered by scales using an optical microscope and a scanning electron microscope revealed accumulative of carbides at all grain boundaries and porosity outside surface of tubes. These would accelerate the corrosion rates.