ANALYSIS ON THE EFFECT OF MULTIPLE REPAIR WELDING ON WELD JOINT MATERIAL PROPERTIES WITH PIPE MATERIAL ASTM A 106Gr.B Sch 80

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Abstract

To support the process of distribution hydrocarbon fluid from Sukowati Pad B to CPA (Central Processing Area), JOB Pertamina-Petrochina East Java installed onshore pipeline. The possibility of error in the welding process can not be avoided and could be fatal to the structure itself. Of these situations can occur due to non-technical errors, such as errors and mistakes the use of electrode application is not suitable filler causing defect. Another way that may result defects in the welding process is at the turn of the welder, in this case is often called human error. Treatment necessary to repair it, if the errors in the welding process is then repeated to perform multiple weld repair at the joint. As a result of multiple repair carried out will greatly affect the Haz and weldability of the base metal itself. This welding job done on the position SMAW method 1G (flat) with using electrode AWS E-70160th and E-7018. Through the observation of metallographic structure of the macro, the welding repair 2x and 3x apparent widening of heat input to the HAZ. At the micro-structure observation, it appears that the martensite phase does not appear in the results without repair welding to repair three times. Hardness value of material welding repair 3x greater than the hardness of the material in the repair welding with 2x, 1x repair and welding without repair, in the amount of 180.79 (Hv2) > 177.93 (Hv2) > 173.91 (Hv2) > 165.57 (Hv2). Tensile strength values without repair welding results slightly higher than the tensile strength of welded with repair 1x to 3x repair, respectively for 54.04 Kgf/mm² > 53.78 Kgf/mm² > 53.75 Kgf/mm² > 53.72 Kgf/mm². All of this indicates that the more experienced plumbing repair mechanical properties are more brittle than the material in the welding pipes without repair.

Key Word: multiple repair, weld joint, mechanical properties, micro structure.