

COMPARISON OF SMAW WELDING RESULTS IN LAND AND IN WATER ENVIRONMENTS TO TENSILE STRENGTH AND WELDING DEFECTS OF SS 400 STEEL PLATE MATERIALS

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ABSTRACT

Welding is one of the joining techniques between two or more metal parts using heat energy. One type of welding that is SMAW welding. The SMAW welding process in the land environment does not require special treatment, but it is different when the SMAW welding process in the water must use a protective electrode. The material used is low carbon steel SS 400 with variations in the comparison of welding results on land and in water, the position used is 1G electrode E6013 with a diameter of 2.6 mm. The welding used is a V-groove butt joint 60°. The standard for acceptance of welding results is EN ISO 5817. The NDT Penetrant Test was tested using the standard ASME Section V Article 6. The tensile test specimen size used (ASTM) E8/E8M-09, which the manufacture of tensile test specimens after welding. The results of the land environment welding have weld defects that are slightly different from welding in the water which has slightly more weld defects. The results of the tensile test SMAW welding results in a land environment, the highest stress value was 317.07 N/mm² and the highest strain value was 0.26%. Meanwhile, from the SMAW welding results in water, the highest stress value is 336.24 N/mm² and the highest strain value is 0.52%

Keywords : *welding, low carbon steel SS 400, welding defect, NDT penetrant test, tensile test.*