

ABSTRACT

THE INFLUENCE OF ROTATION AND SPEED TOOL TO MECHANICAL ASPECT ON WELDING THE FRICTION STIR WELDING ALUMINIUM 5052

By

MUHAMMAD IQBAL

Aluminium is one metal which has good resistance to corrosion, it is due to the phenomenon of passivation, in addition to its corrosion. Resistant, aluminium also has a lighter weight than steel so it is often used as a boat building material especially on the deck, superstructure insulation, fuel and fresh water tanks.

Welding is process of splicing among two or more metal parts using heat energy generally aluminium welding using fusion processes such as Metal Inert Gas or Tungsten Inert Gas, but on those methods, there may be the formation of defects such as porosity, cracks and prone to deformation during the cooling process and the formation of the weld metal the purpose of the study was to determine the effect of tool rotation and welding speed to the mechanical properties of aluminium 5052 with Friction Stir Welding method.

Welding process parameters are carried out in this study is a tool Rotation speed and welding. There are two tool rotations used i.e. 1800 rpm and 1100 rpm. Welding speed also used two variations which are 11,4 mm/min and 19,8 mm/min. The Mechanical testing conducted there were three test, namely testing the hardness, impact test, and tensile testing.

The Research showed that rotation tool and welding speed greatly effects the mechanical properties of aluminium that has been welded because the tool that spinning faster will increase the tensile strength of aluminium, while the small welding speeds increases the hardness of aluminium that has been welded.

Keywords: aluminium, welding, friction stir welding, mechanical aspect of metals