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KEYWORDS

Capsule Decomposition Zones Empty Fruit Bunch (EFB) Leaching Torrefaction. Friction welding surface roughness corrosion rate uniform corrosion galvanic corrosion Investment casting, penyusutan, kerataan, cacat pengecoran. Kekerasan Magnesium AZ31 Struktur Mikro Toughness airfoil thickness to chord ratio computational fluid dynamics lift coefficient drag coefficient biogas charging co-firing coal biomass adiabatic flame temperature air-to-fuel ratio combustion CO2 emission cooling tank characterization of temperature changes natural circulation steady state FASSIP-02 Test Loop drying process solar dryer Moringa leaves greenhouse effect moisture content hydroxyapatite titanium implant osseointegration removal torque test kekuatan tarik kotoran sapi paraffin wax phase change material polypropylene solar water heater

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Title and Abstract

Title: Evaluasi Laju Pengelasan terhadap Mikrostruktur Sambungan Aluminium 5052 dengan menggunakan Metode Friction Stir Welding

Abstract

Friction stir welding (FSW) adalah salah satu jenis pengelasan yang mampu menyambung bahan paduan aluminium. Pada penelitian sebelumnya telah dilakukan penyambungan aluminium 5052 namun hasil pengujian tarik memperlihatkan penurunan kekuatan sambungan. Sehingga pada studi ini bertujuan untuk mengevaluasi secara focus mikrostuktur yang terbentuk pada sambungan plat aluminium 5052 yang telah dilakukan FSW. Plat aluminium dengan dimensi 150 x 75 mm dengan tebal 6 mm dilas dengan metode FSW, pahat pin berbentuk silinder pada kecepatan putar 1000 rpm dan laju pengelasan 20, 30 dan 40 mm/menit. Penampang hasil las diamati dengan menggunakan mikroskop optic dan Scanning Electron Microscope (SEM). Hasil pengamatan memperlihatkan adanya cacat makro dan perubahan struktur mikro pada sambungan. Cacat ini dipengaruhi desain pin yang tidak tepat sehingga daerah adukan tidak merata yang berakibat sambungan menjadi tidak sempurna.

Friction stir welding (FSW) is one type of welding that is able to joining aluminium alloy. In previous studies, aluminium 5052 has been joined, but the results of the tensile test showed a decrease in the strength of the connection. Therefore, in this study the aim is to focus on evaluating the microstructure formed at the 5052 aluminium plate welding join that has been carried out by FSW. Aluminium plates with dimensions of 150 x 75 mm with a thickness of 6 mm were welded by the FSW method, cylindrical pin chisel at a rotational speed of 1000 rpm and welding rates of 20, 30 and 40 mm/minute. The cross section of the weld was observed using an optical microscope and Scanning Electron Microscope (SEM). The results of the observations showed that there were macro defects and changes in the microstructure of the joints. This defect is influenced by the improper design of the pin so that the area of the mixture is uneven which results in an imperfect connection

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