

ABSTRAK

EXPERIMENTAL STUDY OF LOW CYCLE FATIGUE PROPERTIES ALUMINUM ALLOYS 6061-T6

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Aluminum alloy is now widely used as a construction material because it has outstanding properties that allow the Aluminum element has many uses for applications in various fields. It has a silvery-white appearance and high strength properties, low specific gravity, high casting, high wear resistance, low thermal expansion and high corrosion resistance makes Aluminum has wide application in different domains, such as transportation, home decoration and accessories, building and construction Even for the aircraft industry.

Aluminum alloys have replaced the role of cast iron for some of the major components of vehicle engines, such as cylinder heads, engine blocks and other components in the production of cheap cars in Indonesia, resulting in many aluminum alloys manufactured for components such as pistons, wheels, cylinder heads, gearboxes. The main problem that often occurs in the component is cracked over a certain period of time without being able to be identified early on. The purpose of this study was to determine the mechanical properties and properties of LCF Al-Si-Fe-Ti alloys. This study was conducted on three variations of strain rate on varying strain amplitudes, at room temperature (± 25 ° C).

The process of making specimen shapes and dimensions of tensile test specimen size is prepared according to ASTM E8 standard [ASTM E8, 2004] and for LCF test using ASTM E606 standard [ASTM E606, 2004]. Characterization of changes in material structure and the type of fault that occurs is done by testing OM, SEM and EDX.

The results of this study indicate that the highest fatigue life in this test was obtained at a strain rate of 0.005 / s with a stretching intensity of 0.005 mm / mm whereas the lowest fatigue life was at a strain rate of 0.005 mm / mm with strain amplitude, while resistance to aluminum alloy tensile stress Shows the higher the amplitude of the strain the faster the strain hardening occurs.

Keywords: Low Cycle Fatigue, Aluminum, Fatigue Life, cyclic, Strain Rate and Stretch Amplitude.