

High-cycles Fatigue of Different Casted Secondary Aluminium Alloy

Lenka Kuchariková, Eva Tillová, Milan Uhrčík, Juraj Belan, Ivana Švecová

Faculty of Mechanical Engineering, University of Žilina. Univerzitná 8215/1, 010 26 Žilina. Slovak Republic. E-mail: lenka.kucharikova@fstroj.uniza.sk, eva.tilova@fstroj.uniza.sk, milan.uhrick@fstroj.uniza.sk, juraj.belan@fstroj.uniza.sk, ivana.svecova@fstroj.uniza.sk

Nowadays manufacturers currently use about 35 % of secondary aluminium and about 65 % of primary aluminium to meet their needs. The production of secondary Al alloys have significant advantages. Most important is saving of natural resources with a consequent material cost reduction and a considerable energy-saving associated to reduction in pollution and CO₂ emissions. The positive fact is that secondary Al alloys has comparable mechanical properties with primary aluminium alloys. Therefore it is necessary to study properties such alloys especially those which are used for transport industry in order to keeping the quality of casting. One of the major properties of casting for transport industry are fatigue properties. Research point to the fact that more than 90 % of broken engineering components are fractures caused by fatigue of used material. Extremely dangerous are fatigue fractures in transport, for example rails, tire parts, plane wings and hulls of ships, because these are usually connected with human casualties. Due to this fact were studied fatigue properties of aluminium alloys used especially for automotive castings – AlSi9Cu3. The great object was influence of casting to the different mould (sand and metallic) without modification, heat treatments or grain refinement of experimental material to fatigue resistance of the casting. This work shows differences between materials properties which were casted into the different mould.

Keywords: Fatigue properties, aluminium castings, AlSi9Cu3 cast alloy, casting into the sand mould, casting into the metallic mould

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