

# Fatigue Analysis of Go-Kart Frame

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## ABSTRACT

Competition Go-kart is not equipped with differential gear and suspension system, so it is very important to raise tire fraction by the ability of load transfer of kart frame. In this study, Finite Element Analysis (FEA) was used to perform static, dynamic, and modal analyses of the kart frame. With some designed clamps used in static and dynamic tests, experiments on the characteristics of the frame were conducted. Every test about the mechanical property was done to validate the accuracy of the analytical theory and design method. For lacking of suspension system, the design of frame of a racing karting with load transfer function during cornering is the key to maintain wheel traction and driving speed thereof. This thesis aims at the development of the frame for a karting with better performance. At the early phase of this study, the metallic frame acquired from the product in the market is analyzed and tested in order to establish its specification on performance. Most components of machines have the characteristic of accumulating of damage during cyclic loading, and this is the reason of fatigue of material. Generally, S-N curve is used to describe the life of material in fatigue test, but actually, it must be combined with suitable fatigue mode to obtain the value of accumulation of damage of the material. By incorporating the Stress-Life Method of stress and fatigue life, the fatigue life of whole frame was obtained. In the Xi-Hu baby racing track, After Go-Kart accepting the 68630 cycle loading history of the chassis could be obtained.

Keywords : Go-Kart, Finite Element Analysis, Stress-Life Method, Xi-Hu baby racing track

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