# The Stress Improvement and Design Optimization for the Structure of an Aluminum Alloy Rim


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**ABSTRACT**

According to the CNS regulation for 13o impact test on aluminum alloy rims, this study had employed commercial software to perform finite element analyses. Based on the results of analyses, schemes for the improvement of stress distribution subjected to loading are proposed. Furthermore, design optimization had also been implemented to obtain minimum weight for aluminum alloy rims. Nonlinear dynamic analysis was finally carried out so that the safety of aluminum alloys may be secured. This study first employed COSMOSWORKS to perform quasi-static analysis and structural design optimization. The obtained optimal solid model was then imported into the HYPERMESH for creating the finite element model required by LS-DYNA, based on which the nonlinear dynamic analysis was finally carried out.



Keywords : Aluminum alloy rim , 13 degree impact test , Finite element analysis ,Optimization .


**Table of Contents**



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