

Design of a Vehicle Door Structure Based on Finite Element Method

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Abstract : The performance of door assembly is very significant for the vehicle design. In the present paper, the finite element method is used in the development processes of the door assembly. The stiffness, strength, modal characteristic, and anti-extrusion of a newly developed passenger vehicle door assembly are calculated and evaluated by several finite element analysis commercial software. The structural problems discovered by FE analysis have been modified and finally achieved the expected door structure performance target of this new vehicle. The issue in focus is to predict the performance of the door assembly by powerful finite element analysis software, and optimize the structure to meet the design targets. It is observed that this method can be used to forecast the performance of vehicle door efficiently when it's designed. In order to reduce lead time and cost in the product development of vehicles more development will be made virtually.

Keywords : vehicle door, structure, strength, stiffness, modal characteristic, anti-extrusion, Finite Element Method

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