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Experimental Verification and Finite Element Analysis of a Sliding Door System Used in Automotive Industry

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Abstract : A sliding door system is used in commercial vehicles and passenger cars to allow a larger unobstructed access to the interior for loading and unloading. The movement of a sliding door on vehicle body is ensured by mechanisms and tracks having special cross-section which is manufactured by roll forming and stretch bending process. There are three tracks and three mechanisms which are called upper, central and lower on a sliding door system. There are static requirements as strength on different directions, rigidity for mechanisms, and door drop off, door sag; dynamic requirements as high energy slam opening-closing and durability requirement to validate these products. In addition, there is a kinematic requirement to find out force values from door handle during manual operating. In this study, finite element analysis and physical test results which are realized for sliding door systems will be shared comparatively.

Keywords : finite element analysis, sliding door, experimental, verification, vehicle tests
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