Numerical impact simulations on home appliances to optimize its packaging: a case study on a refrigerator

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Abstract

Numerical simulations are used to investigate the behavior of complex products such as home appliances. LS-DYNA® is a powerful tool for performing repeated analysis of large assembled parts of the final product, including the packaging. The main goal of simulations is to verify the performance and suitability of the packaging and its interaction with the structure in case of drop. The studies are done to guarantee the integrity of the product from factory to customer and therefore reduce service calls and costs.

In particular, numerical impact simulations on a refrigerator and its packaging were carried out using LS-DYNA®. The model reproduced the testing conditions defined by internal standards. A rear and frontal edge drop tests were studied and results were used to improve current products.

The paper will present the current methodology used to speed up the product development and reduce time to market. Experimental and numerical results will be shown.

Keywords: Home appliances, Drop Testing , Refrigerator, Packaging