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A Study on Weight-Reduction of Double Deck High-Speed Train Using Size Optimization Method

Authors : Jong-Yeon Kim, Kwang-Bok Shin, Tae-Hwan Ko

Abstract : The purpose of this paper is to suggest a weight-reduction design method for the aluminum extrusion carbody structure of a double deck high-speed train using size optimization method. The size optimization method was used to optimize thicknesses of skin and rib of the aluminum extrusion for the carbody structure. Thicknesses of 1st underframe, 2nd underframe, solebar and roof frame were selected by design variables in order to conduct size optimization. The results of the size optimization analysis showed that the weight of the aluminum extrusion could be reduced by 0.61 tons (5.60%) compared to the weight of the original carbody structure.

Keywords : double deck high-speed train, size optimization, weigh-reduction, aluminum extrusion
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