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Lower Leg Foam과 TIC를 고려한 Towing device 설계

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Design of the Towing device for the Lower Leg Foam and TIC with CAE

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Abstract : In Europe, all motor vehicles must have a special towing-device fitted at the front, to which a connection part, such as towing-bar, or tow rope. Towing-device is part of the bumper structure. Pedestrian protection and TIC performance can be improved by well-located of the towing-device into the bumper structure.

In this paper, various position of the towing device for TIC and Pedestrian protection were researched by CAE. LS-Dyna quasi-Static with contact and explicit code was used for the simulations. Stamping effect was considered to get more exact simulation results of the towing case study.

The shape and thickness of the impact foam with changing the position of the towing-device affect the lower leg performance. Also, the excessive strength of the towing structure with impact beam had a serious influence on the increasing plastic strain at the bumper and body structure. Thus, TIC with the inordinate towing structure was shown poor performance. The results which are obtained from this paper, show lower leg foam and TIC performance can be improved by proper composition of the towing device position and strength optimization.

Key words : Towing (견인), Pedestrian protection (보행자 보호), Lower Leg Foam (보행자 다리 모형), TIC (자동차 수리비 산정등급), Quasi - Static Simulation(준정적 해석)