Evaluation of Strength of End Structures of Intermediate Rolling Stocks of a Train during Train Crash Accidents

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The structural design standard for rolling stock body structures was evaluated from the viewpoint of the crash worthiness. Current Japanese Industrial Standard, JIS E 7106 Code, which defines the least static loading conditions in order to provide structural integrity of car body structures for their normal operation, does not obviously take the crashworthiness into account. Here, one of detailed FE models for the end structures of EMU stock, designed in accordance with the JIS E 7106 standard, was taken as an example, and numerical analysis was carried out under such the several irregular loading conditions as the collision of end structures of intermediate rolling stock of a rake, caused by the overriding or train set buckling occurring during events of train crash accidents. The numerical analyses results have shown some points to be solved in terms of the strength of upper structures as well as draw gears around coupling devices.