Development of Risk-based Maintenance Method for Railway Track Using Image Analysis Technology

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We developed, for railway track maintenance, a hazard sensing technology that can extract the hazard factors related to expansion of the damage caused by a derailment accident. We also developed a risk-based maintenance method for track irregularity management using the hazard sensing results and the risk statistical model. As a result, it became possible to extract the magnification factors of the derailment damage (collision to the structures and the public, fall from the elevated spot) by image analysis using the front image of the operating train. In addition, a maintenance and management model was constructed to calculate the appropriate values of the management value of track irregularity and the inspection cycle, considering the track maintenance cost and the damage scale of the derailment accident.