

Numerical Simulation and Experimental Study on Cable Damage Detection Using an MFL Technique

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Abstract : Non-destructive testing on cable is in great demand due to safety accidents at sites where many equipments using cables are installed. In this paper, the quantitative change of the obtained signal was analyzed using a magnetic flux leakage (MFL) method. A two-dimensional simulation was conducted with a FEM model replicating real elevator cables. The simulation data were compared for three parameters (depth of defect, width of defect and inspection velocity). Then, an experiment on same conditions was carried out to verify the results of the simulation. Signals obtained from both the simulation and the experiment were transformed to characterize the properties of the damage. Throughout the results, a cable damage detection based on an MFL method was confirmed to be feasible. In further study, it is expected that the MFL signals of an entire specimen will be gained and visualized as well.

Keywords : magnetic flux leakage (mfl), cable damage detection, non-destructive testing, numerical simulation

Conference Title : ICSECM001 2016 : International Conference on Structural Engineering, Construction and Management

Conference Location : Osaka, Japan

Conference Dates : October 10-11, 2016