**Temperature evolution in disc brakes during braking of train using finite element analysis**

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**ABSTRACT**

Disc brake system is used in LHB coaches of Indian railways for braking of the train. In the present work, temperature evolution during braking process is analyzed. Heat dissipation during braking process is estimated by considering the dissipation of kinetic energy. The variation of heat dissipation with respect to braking time is assumed to be linear. Three-dimensional finite element model is used for estimation of temperature. Heat distribution in the disc surface is taken as axis-symmetric and dissipated heat is uniformly distributed on the disc surface. Temperature independent material properties are assumed for analysis. Heat loss to environment due to convection and radiation is taken into consideration. Maximum temperature rise of 190°C is observed on the outer surface of disc brake at about 65% of braking time while braking from 160 kmph.

*Keywords: disc brake; LHB coaches; temperature evolution; finite element analysis.*