Simulation the Stress Distribution of Wheel/Rail at Contact Region

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Abstract : This paper discusses the effect of different loading analysis on crack initiation life of wheel/rail in the contact region. A simulated three dimensional (3D) elasto plastic model of a wheel/rail contact is modeled using the fine mesh technique in the contact region by using Finite Element Method FEM code ANSYS 11.0 software. Different loads of approximately from 70 to 140 KN was applied on the wheel tread through the running surface on the railhead surface to simulate stress distribution (Von Mises) and a life prediction of the crack initiation under rolling contact motion. Stress analysis is achieved and the fatigue life to the rail head surface is calculated numerically by using a multi-axial fatigue life of crack initiation model. All results obtained from the previous researches are compared with this research.

Keywords : FEM, rolling contact, rail track, stress distribution, fatigue life

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