

## Cooling Profile Analysis of Hot Strip Coil Using Finite Volume Method

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**Abstract :** Manufacturing of multiphase high strength steel in hot strip mill have drawn significant attention due to the possibility of forming low temperature transformation product of austenite under continuous cooling condition. In such endeavor, reliable prediction of temperature profile of hot strip coil is essential in order to access the evolution of microstructure at different location of hot strip coil, on the basis of corresponding Continuous Cooling Transformation (CCT) diagram. Temperature distribution profile of the hot strip coil has been determined by using finite volume method (FVM) vis-à-vis finite difference method (FDM). It has been demonstrated that FVM offer greater computational reliability in estimation of contact pressure distribution and hence the temperature distribution for curved and irregular profiles, owing to the flexibility in selection of grid geometry and discrete point position, Moreover, use of finite volume concept allows enforcing the conservation of mass, momentum and energy, leading to enhanced accuracy of prediction.

**Keywords :** simulation, modeling, thermal analysis, coil cooling, contact pressure, finite volume method

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