Abstract

The roll deflection during hot rolling can result in uneven thickness distribution across the width of a plate (crown). A conventional rolling mill is equipped with bending systems that can control this convex shape of the plate. However, the determination of the proper bending load is very complicated as the plate crown is influenced by the rolling conditions. In this paper, a thermo-mechanical Finite Element Model on LS-DYNA software was utilized to predict crown evolution based on the rolling conditions in order to determine the setting values for achieving the target crown. The simulation results were compared and verified with actual industrial data for rolling force, plate temperature and plate crown. This approach is essential for pass schedule design and process parameter optimization in order to achieve the desired product quality.