

Simplified modeling to avoid breakage of sheet metal during tandem rolling

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Abstract : In the tandem rolling, the simultaneous passage of the sheet between multiple cages poses a control problem of inter-stand tension [1,2]. Manufacturers tend to ask the equal tension between a cage and another, that is to say between the output of a cage and the input of the next cage. This causes a speed regulation problem. Indeed, this generally gives different speeds between the input and pass out of the previous pass. Which may lead to ripples or excessive tension may cause breakage of the strips. To illustrate this situation, we propose to take the data from the tandem mill site steel complex Arcelor-Mittal El Hadjar Algeria. It contains five stand tandem mill. The purpose of this work is to get to determine for each case, the correction to be made to obtain equal speeds and tensions between the output of each cage and the door of the cage that follows. To our simplified calculation model, two Matlab program was developed:-the first: Greenhouse to the rolling calculation (speeds, the neutral plane,)-the second: to make corrections tensions in order to obtain equal speed between the output of a cage and the input of the next cage. The Results show the convergence speed after the correction of tension, like that, to avoid the risk of breakage or undulation of the rolled strip and pre calculated magnitudes we do not stray from reality.

Keywords : modeling, rolling, tension, speed., breakage