

Fast inverse method for experimental evaluation of contact stress during rolling process

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ABSTRACT

Knowledge of the contact stress between roll and strip becomes a critical factor in modern, high-speed rolling mills. Direct measurements such as friction pin sensors are not considered because they damage the strip and disturb the local lubricant flow at the interface. Instead, an inverse analytical method is developed to determine the contact stress in the roll gap by measuring deformations with fibre optics at only one point inside the roll body (fully embedded). The inverse elastic calculation is presented as well as the experimental equipment and rolling tests a on pilot mill. Results are discussed with respect to industrial predictive models.