

The influence of bath level oscillations on the formation of oscillation marks in continuous casting of steel

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In continuous casting molten steel flows through a submerged nozzle into a chilled mould. There the steel solidifies and forms a shell which is withdrawn downwards. In order to lubricate the passage of the steel shell through the mould flux powder is added on top of the molten steel. The powder melts and is drawn into a narrow lubrication gap between the mould and the strand surface. The mould oscillates vertically to prevent freezing of the steel onto the mould. However, the oscillation of the mould causes more or less regular depressions in the strand surface so called oscillation marks. In this investigation the influence of the bath level fluctuations onto the formation of oscillation marks will be investigated. It turns out that the depth of the oscillation marks and, the distance between two consecutive marks depend strongly on the motion of the bath level. More over the thickness of the the strand shell is effected by the bath level fluctuations. This may trigger further bath level oscillations caused by bulging of the strand shell below the mould.