

عنوان مقاله:

Surface Tension and Temperature Effects on Bubble-induced Surface Defects of Steel Slabs

محل انتشار:

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خلاصه مقاله:

The entrapment of gas bubbles onto the solidifying front of molten steel in the continuous casting mold, which is the major cause of the surface defect of steel slabs, was investigated. The dynamic model of bubble and particle entrapment was developed in order to elucidate the effect of surface tension gradient induced forces (Marangoni forces) due to the concentration gradient of sulfur and the gradient of temperature. The numerical analysis and water model experiment were conducted to apply the present model under various conditions. The calculation result is compared with experimental and plant data in continuous casting mold. It shows that the thermal Marangoni force plays an important role and this model predicts the bubble behavior in the vicinity of solid/liquid interface more precisely.

کلمات کلیدی:

surface defect; bubble; continuous casting; surface tension gradient; Marangoni force

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