Speaker 2

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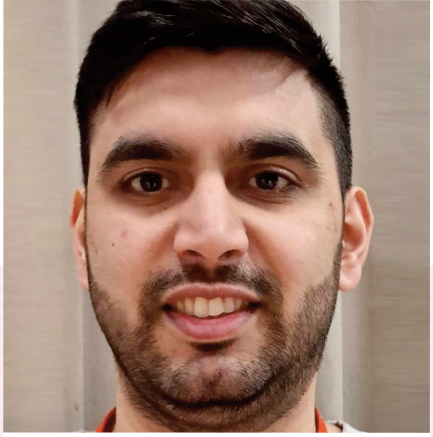
The influence of composition on the cast microstructure for different casting technologies



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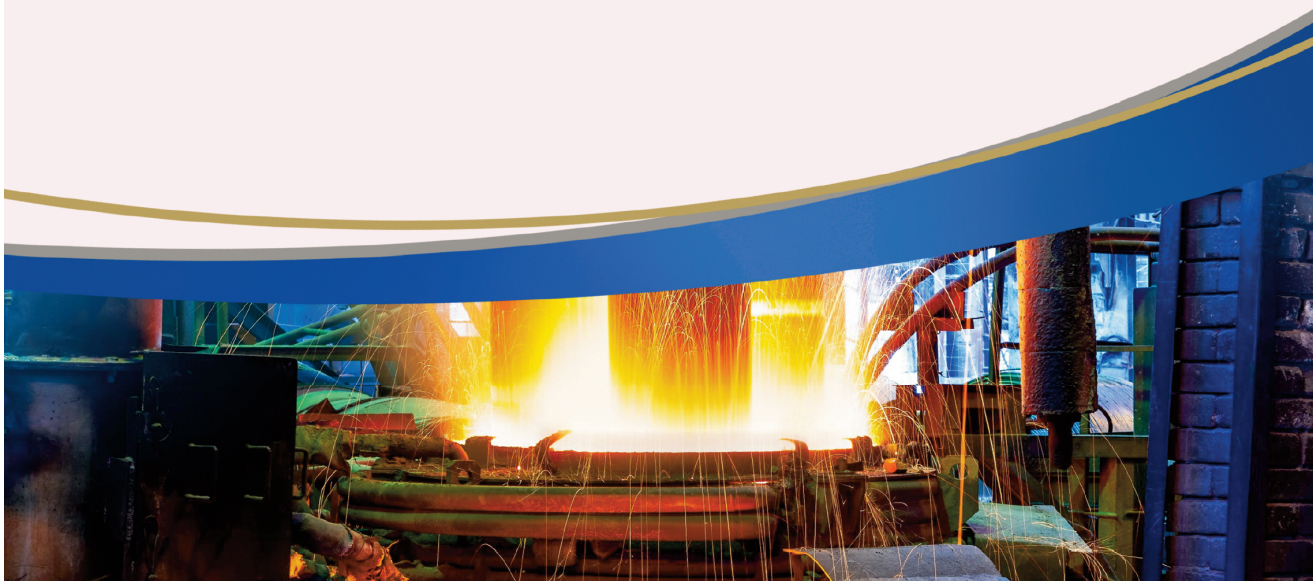
ABSTRACT:
Next generation casting technologies such as thin slab, belt or strip casting have gained popularity due to the reported energy saving, which can be as high as 1.6 GJ/tonne when compared to conventional thick slab casting. However, these casting approaches result in changes in cooling rate during solidification and in thickness reduction to the required product geometry, both affecting the final microstructure and properties.

In this work the secondary dendrite arm spacing (SDAS) and micro-segregation levels for the range of cooling rates relevant for different casting technologies (1 to 10 °C/s) have been assessed using Confocal Laser Scanning Microscopy (CLSM). SEM-EDX line scans have been used to characterise micro-segregation levels. An S275 and a DP800 steel grade have been chosen as baseline materials before residual elements are added (Cu and Sn). The segregation ratio is calculated from the elemental spatial distribution values as 95th % percental value / 5th % percental value.



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