

Speaker 5



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The impact of high recycled content on high formability products

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ABSTRACT:

The switch to electric arc furnaces can enable a higher proportion of scrap steel usage within the melt, however a higher proportion of scrap leads to an increase in residual elements. An exploration of changing temperatures within the industrial process where dynamic and static recrystallisation occur to investigate whether this will negate the impact residual elements: Copper, tin, nickel and chromium. Texture formation during hot rolling and annealing determines end-product formability with a high intensity of {111} grains being the favourable texture. Previous studies have focused on each element and their individual effect on mechanical properties in low carbon steels. This study focuses on the effect of temperature to negate the impact Cu, Sn, Ni and Cr in combination on formability and texture in lab-scale low carbon steel. It is predicted that lowering the reheat temperature and increasing the annealing temperature will inhibit deterioration of {111} texture in low carbon steels. Tensile testing and EBSD techniques will be deployed to illustrate phases, grain orientation and grain size.



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