

Poster 4



Emissivity and oxidation in the reheat furnace

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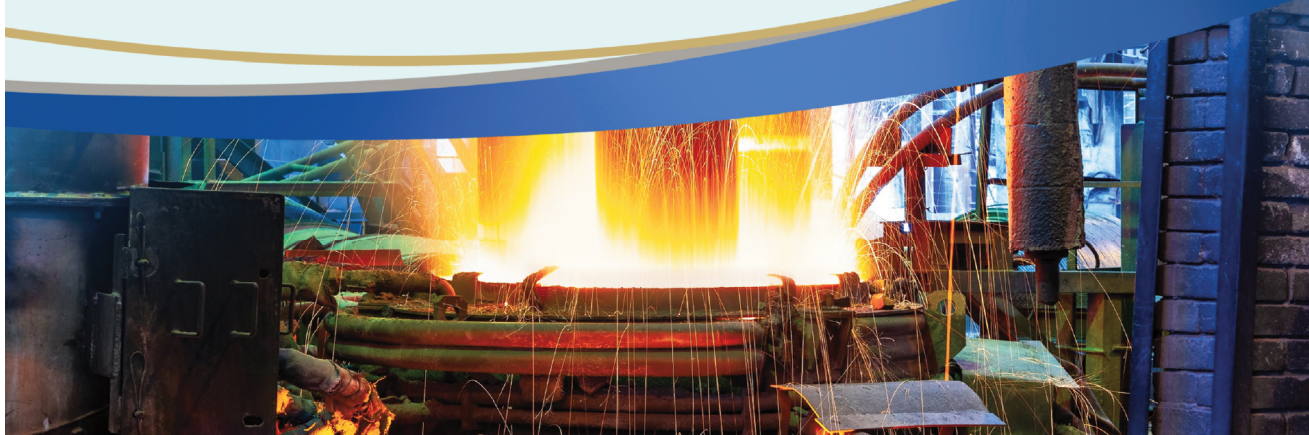
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ABSTRACT:

Understanding of steel emissivity and the oxide formation on its surface is vital within the reheat furnace for mass production of steel. Oxidation is the process where iron-ions react with oxygen in the furnace atmosphere forming scale on a slab's surface, reducing steel yield and requires descaling. Emissivity is the fraction of radiation energy a material will re-emit after absorbance raises temperature and is important when considering energy exchanges within reheat furnaces. Since emissivity is dependent on surface chemistry, the presence of scale, an oxidised-surface chemistry, is likely to impact emissivity. Tests including furnace heating, cooling and thermogravimetric analysis are underway to investigate the emissivity change due to temperature change and oxidation. Three grades are being tested to simulate these effects within the reheat furnace at an industrial scale. Aiming to contribute to the steel industry by reducing energy consumption during reheating and build reheat models specified to steel grade.



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