



Poster 7



A review of published models to predict the extent of surface oxidation



Nicola Beech

AUTHOR OF POSTER:
Nicola Beech

INSTITUTION:
University of Warwick

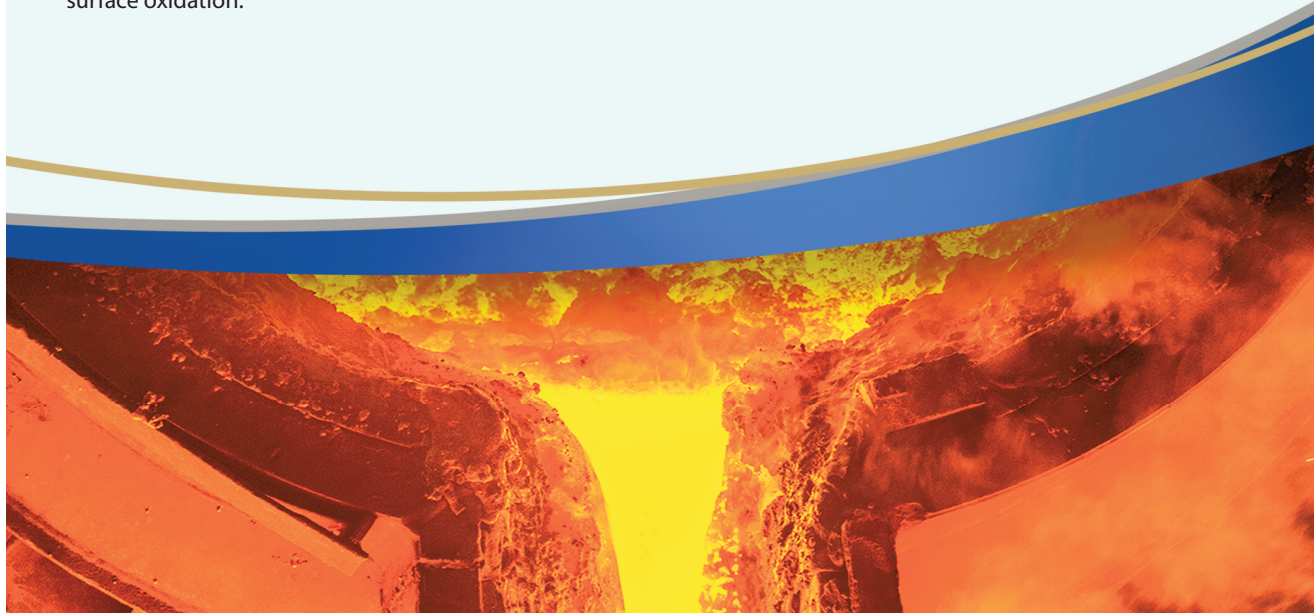
OTHER AUTHORS:
Michael Auinger, University of Warwick

ABSTRACT:

Advanced High Strength Steels (AHSS) are widely used in car structures to reduce vehicle weight, thus lowering fuel consumption and CO2 emissions. While these steels possess excellent mechanical properties such as yield strength and elongation, their corrosion resistance is poor.

AHSS therefore require the application of a zinc coating, which corrodes preferentially and protects the base material. Prior to galvanising, these steel grades are annealed at temperatures of around 800°C in atmospheres containing up to 100% hydrogen. Under these conditions, AHSS-alloy additions (e.g. Mn, Si, Al and Cr) can oxidise and form an external oxide layer that liquid zinc may fail to adhere to. Consequently, surface quality issues such as bare spots can arise.

If the critical conditions leading to external oxide formation were known, manufacturers could strategically avoid their occurrence by encouraging internal oxidation. This poster presents a review of published models to predict the extent of surface oxidation.



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