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Automated ladle pouring in the steel industry

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ABSTRACT:

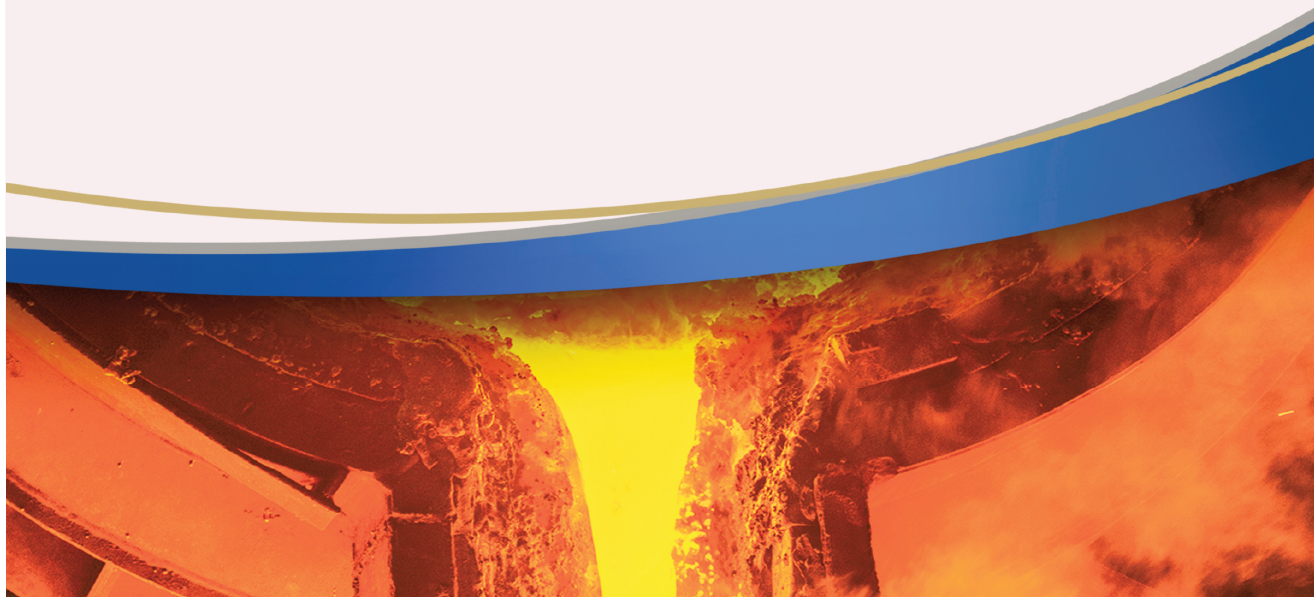
Hot metal (HM) pouring can release substantial amounts of flame and fumes. This problem is frequently encountered within the Basic Oxygen Furnace (BOF) steelmaking process.

The pouring process is often manually operated and relies on the skills and precision of the crane operators. Limiting the release of flame during pouring allows extending the lifetime of components in the proximity of the furnace thus reducing the need for frequent maintenance and associated costs.

One way of reducing the release of flame is through process automation, standardising the pouring rate and position of pouring. As part of this research project, video recordings of numerous pours were analysed utilising colour-based image segmentation to evaluate the release of flame. Through this analysis, relationships between pouring rate, scrap metal type amount and flame release were established. Future work will be concentrated on using this data for the optimisation of pouring position and establishing automatic on methodology.



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