UNIVERSITY OF **LEICESTER**

Poster 13

CFD modelling of Electric Arc Furnace Process for Sustainable Steelmaking

Mohammed Siddiqui

AUTHOR OF POSTER:
Mohammed Siddiqui

INSTITUTION:
University of Leicester

ABSTRACT:
University of LeicesterElectric Arc Furnace (EAF) is integral to ferrous metallurgy, offering a sustainable route for steelmaking through scrap recycling. However, challenges such as production quality, operational capacity, energy consumption and CO_2 emissions continue to hinder its full potential. This research focuses on developing a Computational Fluid Dynamics (CFD) model to optimise the EAF process by simulating fluid flow, heat transfer and chemical reactions. The study emphasises the fundamental principles of multi-physics interactions within the furnace and their impact on EAF performance and sustainability. By aligning with circular economy principles, the research aims to provide actionable insights for improving process efficiency, reducing energy consumption and minimising CO_2 emissions. This work contributes to advancing the field of ferrous metallurgy by establishing a solid foundation for EAF digital twin model and facilitating the industry's transition towards more sustainable steelmaking.

Organised by:

Materials Processing Institute

ARMOURERS & BRASIERS' COMPANY

I·M3
Institute of Materials, Minerals & Mining

PRISM