



UNIVERSITY OF
CAMBRIDGE

Speaker 7

Role of toughness in abrasion, and impact-abrasion wear

SPEAKER / LEAD AUTHOR:
Appa Rao Chintha

INSTITUTION:
University of Cambridge

OTHER AUTHORS:
Dr K. Valtonen, Tampere University, Finland
Professor V.T. Kuokkala, Tampere University, Finland
Dr S. Kundu, Tata Steel Ltd., India
Dr M.J. Peet, University of Cambridge
Professor H.K.D.H. Bhadeshia, University of Cambridge

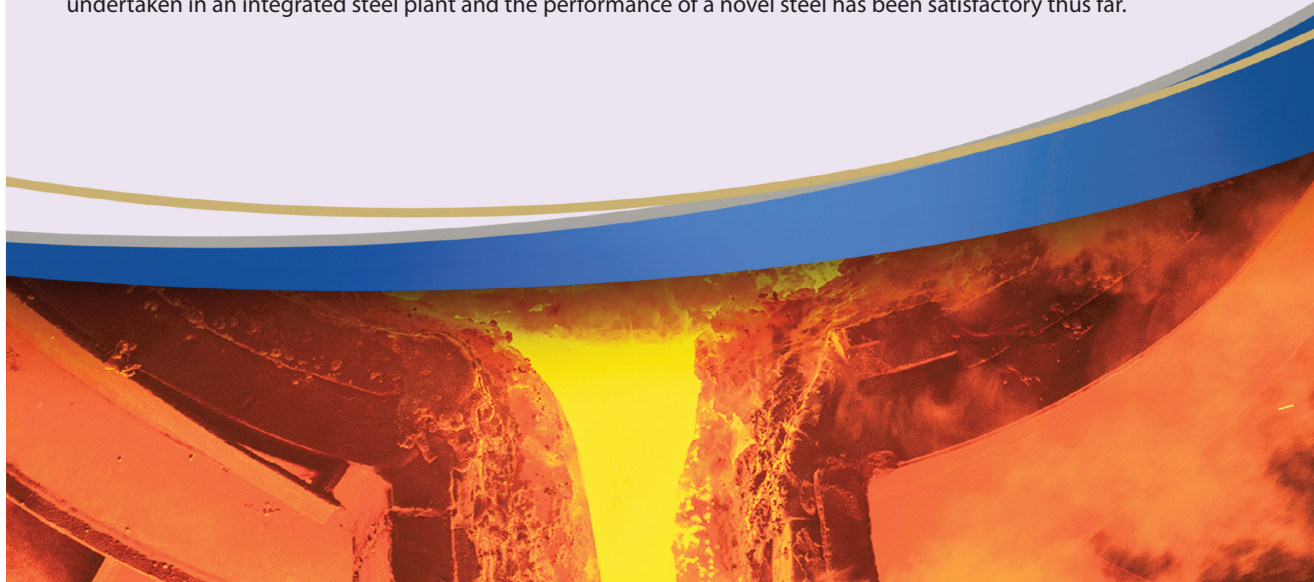
ABSTRACT:

Despite the significant progress in understanding the wear mechanisms and associated factors, steels for components susceptible to wear are developed primarily based on their hardness. Hardness certainly helps to improve the wear properties, but it is known in the context of lifting and excavation equipment that other properties, such as toughness, may also play a role. In any event, it always is necessary to optimise a basket of properties rather than a single parameter, because the manufacture of a component requires a combination of performance criteria.

In the present work, a remarkable new steel has been studied to reveal the role of toughness on a particularly dramatic wear scenario involving both abrasion and impact. It is demonstrated with clarity that toughness becomes incredibly important in impact-abrasion, though not during abrasion on its own. Detailed microscopy and other characterisation techniques have revealed explanations for these observations. Based on the laboratory test results, full scale trials were undertaken in an integrated steel plant and the performance of a novel steel has been satisfactory thus far.



Appa Rao Chintha



Organised by:



I.M3

Associate Sponsor:

