

Computing Cooling Intensity from Descaling Experiments

KOMÍNEK Jan

Heat Transfer and Fluid Flow Laboratory,
Brno University of Technology,
Czech Republic

Steel oxidation during the hot rolling in-line process is undesirable behavior. High pressure descaling nozzles are often used to remove oxides from the surface of a product. The water spray from high pressure nozzles also causes intense cooling. Knowledge of this cooling intensity is necessary for on-line simulations used by control systems. Knowledge of boundary conditions can also help with the choice of descaling nozzles. These boundary conditions are surface temperature, surface heat flux and the heat transfer coefficient (HTC). The HTC can be obtained from the measured temperature histories inside a test plate by inverse heat conduction problem or from the measured surface temperatures. This article describes a new inverse method for the computation of HTCs from surface temperature measurements using an infrared line-scanner during descaling experiments. The measurement technique used to obtain data for the inverse method is described as well. Data from real measurements are presented and evaluated.

Co-authors: **Jana Ondroušková, Michal Pohanka**