

Research Programs

Heat Transfer Coefficient Variation in Permanent Mold Casting (ACRC)

Research Team:

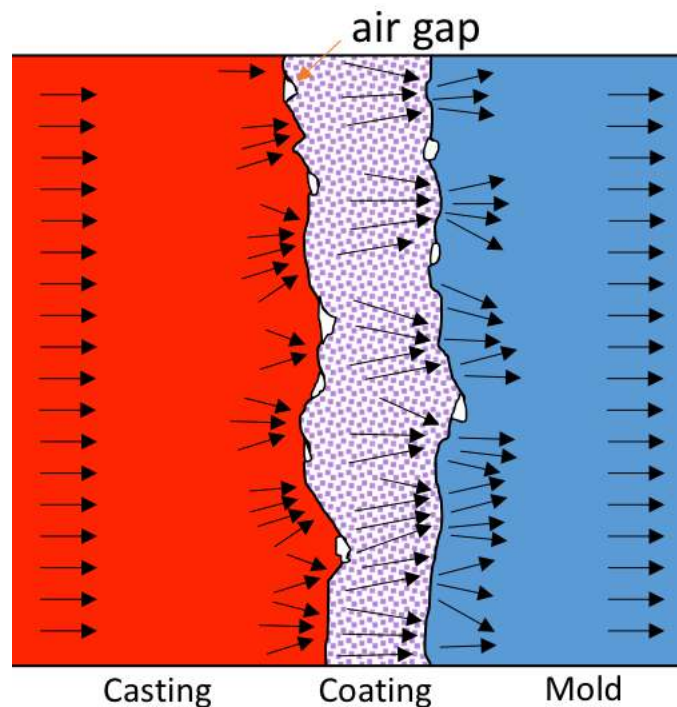
S. Darvish
D. Apelian

Overview

This knowledge is a key input parameter for solidification modeling. With proper input parameters, the simulation/modeling results may be used as predictive tools as the fidelity between modeling and plant data will more congruent.

Focus Group Members

John Cowan, Rod Riek and Sean Roorda (ATEK Technologies)



During permanent mold casting, heat elimination from the casting proceeds through the solidified layer, coating film and mold. The heat transfer coefficient at the casting/coating or coating/mold interface is mainly associated with the formation of air gap as a result of density difference between solid and liquid states. Although, controlling the formation or elimination of the air gap is often impossible, it can be tuned by many variables, which are a function of the solidification stage, coating materials, coating application process and the

surface properties. The ACRC team is establishing how the Interfacial Heat Transfer Coefficient (IHTC) varies as a function of key processing variables.