Continuous Casting Consortium
Annual Report

University of Illinois, August 20, 2014

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Yonghui Li
MS Thesis, University of Illinois, MechSE, 139p, 2014, CCC Report 201405

Transient Model of Preheating a Submerged Entry Nozzle
Li, Y., and B.G. Thomas
AISTech 2014, Indianapolis, IN, May 5-8, 2014, Assoc. Iron Steel Technology, Warrendale, PA, pp. 2907-2922

Model of Gas Flow through Porous Refractory Applied to an Upper Tundish Nozzle
Rui Liu and Brian G. Thomas
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Measurements of Molten Steel Surface Velocity and Effect of Stopper-rod Movement on Transient Multiphase Fluid Flow in Continuous Casting
Rui Liu, Brian G. Thomas, Joydeep Sengupta, Stephen D. Chung and ManhKha Trinh,
CCC Report 201401

Modeling Transient Multiphase Flow and Mold Top Surface Behavior in Steel Continuous Casting
Rui Liu
PhD Thesis, University of Illinois, MechSE, 332p, 2014, CCC Report 201406

Numerical Investigation of Slag Entrainment in Continuous Casting Molds
Swartz, Kenneth E, Lance C. Hibbeler, Brendan P. Joyce, and Brian G. Thomas
AISTech 2014, Indianapolis, IN, May 5-8, 2014, Assoc. Iron Steel Technology, Warrendale, PA, pp. 1865-1879

Mold Flow - Reprints

Large Eddy Simulations of Double-Ruler Electromagnetic Field Effect on Transient Flow during Continuous Casting (reprint)
Singh, R., B.G. Thomas, and S.P. Vanka.
Metallurgical and Materials Transactions B, Vol. 45B, No. 3, (June), 2014, pp. 1098-1115. DOI: 10.1007/s11663-014-0022-2

Slidegate Dithering Effects on Transient Flow and Mold Level Fluctuations Iron and Steel Technology (reprint)
Liu, Rui, Brian G. Thomas, Love Kalra, Tathagata Bhattacharya, and Aloka Dasgupta Iron and Steel Technology, 11:7, July, 2014. (reprinted from AISTech 2013 Proceedings, Pittsburgh, PA, May 6-8, 2013, Assoc. Iron Steel Technology, Warrendale, PA, pp. 1351-1364)

Transient Fluid Flow During Steady Continuous Casting of Steel Slabs Part I: Measurements and Modeling of Two-phase Flow (reprint)
Seong-Mook Cho, Seon-Hyo Kim, and Brian G. Thomas
ISIJ International, Vol. 54, No. 4, (April), 2014, pp. 845-854

Transient Fluid Flow During Steady Continuous Casting of Steel Slabs Part II: Effect of Double-Ruler Electromagnetic Braking (EMBr) (reprint)
Seong-Mook Cho, Seon-Hyo Kim, and Brian G. Thomas
ISIJ International, Vol. 54, No. 4, (April), 2014, pp. 855-864

Transport and Entrapment of Particles in Steel Continuous Casting (reprint)
Thomas, B.G., Q. Yuan, S. Mahmood, R. Liu, and R. Chaudhary
Metallurgical and Materials Transactions B, Vol. 45B, No. 1, pp. 22-35, 2014. DOI: 10.1007/s11663-013-9916-7.

Fluid Flow – Model Fundamentals

Particle Transport in a Turbulent Square Duct Flow with an Imposed Magnetic Field
Liu, R., Surya P. Vanka, and Brian G. Thomas
J. Fluids Engineering, submitted, 2014.

Round Continuous Casting with EMS-CFD Coupled
Galdiz, P., J. Palacios, J.L. Arana, and B.G. Thomas
8th European Continuous Casting Conference, (ECCC2014), Graz, Austria, June 23-26, 2014, pp. 1312-1321

Combining Models and Measurements to Better Understand Steel Continuous Casting
Brian G. Thomas, Rui Liu, and Bret Rietow
8th European Continuous Casting Conference, Graz, (ECCC2014), Austria, June 23-26, 2014, pp. 1130-1139

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Maldonado, Yadira G., Claudia Barraza de la P., Sergio Rodríguez A., A. Humberto Castillejos E. and Brian G. Thomas
CCC Report 201404

Transient Thermo-Fluid Model of Meniscus Behavior and Slag Consumption in Steel Continuous Casting
ASM Jonayat and Brian G. Thomas
Metallurgical and Materials Transactions B, submitted April, 2014

Transient Thermo-Fluid Model of Meniscus Behavior and Slag Consumption in Steel Continuous Casting
ASM Jonayat
MS Thesis, University of Illinois, MechSE, 132p, 2014, CCC Report 201407

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Correlation for Mold Heat Flux Measured in a Thin Slab Casting Mold
Duvvuri, Prathiba, Bryan Petrus, and Brian G. Thomas
AISTech 2014, Indianapolis, IN, May 5-8, 2014, Assoc. Iron Steel Technology, Warrendale, PA, pp. 2881-2893

Simulation and Online Measurement of Narrow Face Mold Distortion in Thin-Slab Casting
Lance C. Hibbeler, Brian G. Thomas, Ronald C. Schimmel, and Henk H. Visser
8th European Continuous Casting Conference, (ECCC2014), Graz, Austria, June 23-26, 2014, pp. 675-684

Multiphysics Modeling of the Steel Continuous Casting Process
Lance Hibbeler
PhD Thesis, University of Illinois, MechSE, 156p, 2014, CCC Report 201408

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Distributed Parameter Control of Heat Diffusion with Solidification
Bryan Petrus
PhD Thesis, University of Illinois, MechSE, 181p, 2014, CCC Report 201409

Applications of Enthalpy-Based Feedback Control Methodology for the Two-Sided Stefan Problem
B. Petrus, J. Bentsman, and B. G. Thomas
American Control Conference 2014. Portland, Oregon, USA, in press