CONTENTS

NEW DEVELOPMENTS IN THE CONTINUOUS CASTING OF BILLETS

The Thermal and Mechanical Behaviour of Continuous-Casting Billet Moulds
  L.V. Samarasekera, J.K. Brimacombe ........................................... 2
Copper and Copper Alloy Mold Liners for Continuous Casting of Steel
  H. Gravemann, J.J. Brown, C.D. Tapley ...................................... 22
Influence of Deformation on the Internal Crack Formation in Continuously Cast Bloom
  J. Miyazaki, T. Mori, K. Narita, T. Ohnishi ................................ 35
High-Volume Strict-Quality Casting of Aluminum-Dioxidized Bar Steels
  K. Fischer, G. Klages, S. Robert, R.W. Simon .......................... 44
Alloying of Steel Billets by the Injection of Solid Particles During Continuous Casting
  L. Heaslip, A. McLean, J. Mitchell, A. Hohulin, N. Woost, J. Buchannan 54

CONTINUOUS CASTING OF SLABS FOR PIPE AND PLATE APPLICATIONS

Improvement of Cleanliness in Continuously Cast Slabs at Kashima Steel Works
  M. Hashio, M. Tokuda, M. Kawasaki, T. Watanabe ........................................... 65
Engineering Requirements for the Casting of Plate Grade Slabs
  A. Perkins, M.G. Brooks, D.E. Humphreys ........................................... 74
Mathematical Analysis of the Solidification Process in High-Speed Continuous Casting at Various Cooling Conditions
  H.A. Wiesinger, K.L. Schwaha, O. Kriegner ........................................... 86
Direct Containment Model for Strand-Cast Slabs and Blooms
  W. Heinemann ................................................................. 95
New Developments for Improving the Surface Quality of Continuously Cast Semis
  H. Schrewe, F.P. Pleschitschnigg, Dr. ........................................... 114

THE USE OF MOLD POWDERS AND REFRACTORIES IN CONTINUOUS CASTING

An Analysis of the Fluid Flow of Liquid Mold Powder in the Space Between the Continuous-Casting Mold and the Steel Shell
  G.J.W. Kor ................................................................. 124
Casting Fluxes: A Discussion of Physical Properties Affecting Strand Lubrication
  M.D. Lanyi, C.J. Rosa ................................................................. 133
Development of Mold Fluxes for High Speed Strand Casting of Slabs Free from Surface Conditioning
  T. Sakuraya, T. Emi, K. Emoto, T. Koshikawa ........................................... 141
Use of Thin Walled Refractory Tubes in Continuously Casting Small Sections
  R. Valsecchi, H.B. Johnson, G.J. Mackie ........................................... 148

CONTINUOUS CASTING OF STAINLESS AND HIGH ALLOY STEELS

Water Modeling of Slab Caster Flow Conditions
  R. Sobolewski, D.J. Hurtuk ......................................................... 160
Ridging Properties of Type 430 Steel Sheet Rolled from Slabs Produced By Improved Casting Practices
  T. Ashiura, S. Uchida, Y. Koyasu, S. Izumi, Y. Itoh ........................................... 166
Surface and Subsurface Defects on Stainless Steel First Slabs  
A.R. Obman, W.T. Germanoski, R.C. Sussman ........................................ 175
Problems in the Casting of Stainless and High Alloy Steels  
V.P. Ardito, R.A. Walsh ................................................................. 180
Continuous Casting of High Carbon Steel Slabs at Chiba Works  
K. Sorimachi, M. Shiraishi, K. Kinoshita ........................................... 188

THE USE OF PROCESS CONTROL AND MODELLING IN CONTINUOUS CASTING

Implementation of Automatic Metal Level Control at the Inland Steel No. I Slab Caster  
C.C. Smith, D. Rellis ................................................................. 195
Breakout Protection by Automatic Mold Heat Removal Control  
H.L. Gilles ................................................................. 205
Parameters Influencing the Steel Cleanliness of Continuously Cast Billets  
A. Palmaers, P. Dauby, P. Russe, F. Anselin ........................................ 213
High Productivity Slab Caster in Yawata Works/N.S.C.  
Fluid Flow Studies in the Tundish of a Slab Caster  
F. Kemeny, D.J. Harris, A. McLean, T.R. Meadowcroft, J.D. Young ........................................... 232
Process Productivity in Continuous Casting  
H.M. Pielet ................................................................. 246
Reoxidation of Steel by Air Entrained During Casting  
I.D. Sommerville, E.J. McKeogh ........................................... 256

NEW DEVELOPMENTS - HORIZONTAL CASTING AND ELECTROMAGNETIC STIRRING

Influence of Electromagnetic Stirring on Quality of Continuously Cast Billets  
L. Beitelman, J.A. Mulcahy, R. Hadden, M.W. Bates, D. Desrosiers ........................................... 270
Discussion/Contribution to Lecture 2: Influence of Electromagnetic Stirring on Quality of Continuous Cast Billets  
P.J. Heisbourg ................................................................. 278
Operational Techniques of Bloom Caster for High Quality Wire Rod and Bar  
H. Takagi, T. Ohishi ................................................................. 281
Solidification of Steel Bar Cast Incrementally in a Horizontal Mold  
F.J. Webbere, D.J. Harvey ................................................................. 286
Development and Metallurgical Analysis of the Horizontal Continuous Casting  
Y. Miyashita, S. Miyahara, Y. Ueno, M. Ishikawa, A. Honda ........................................... 293
New Technology: Southwire's Proposed System for Continuous Casting and Direct Rolling of Steel  
U.K. Sinha, G.C. Ward, R.J. Schoerner ........................................... 300
Electromagnetic Stirring on Lukens Slab Caster  
J.F. Longenecker, T.W. Lewis, H.E. Woodruff, C.Q. Williamson ........................................... 308

Authors' Index ................................................................. 317