Quality in Non-Ferrous Pyrometallurgy

Editors

M.A. Kozlowski
Falconbridge Limited
Falconbridge, Ontario, Canada

R.W. McBean
Falconbridge Limited
Kidd Creek Division
Timmins, Ontario, Canada

S.A. Argyropoulos
University of Toronto
Toronto, Ontario, Canada

Symposium organized by the Non-ferrous Pyrometallurgy Section, the Computer Applications Committee and the Long Range Planning Committee of the Metallurgical Society of CIM

34th ANNUAL CONFERENCE OF METALLURGISTS
34e CONFÉRENCE ANNUELLE DES METALLURGISTES DE L'ICM
Contents

Foreword v
Symposium Organizing Committee vii

ACHIEVING QUALITY IN THE NON-FERROUS INDUSTRIES

Implementation of ISO 9000 at Falconbridge Dominicana 3
D.A. Uceda and C.B. Anglon

A document control system to support the continuous improvement of metallurgical processes 17
M.G. Meyer and J.F. Higginson

Quality management initiatives at Canadian Electrolytic Zinc 25
R. Mallouh

Benefits of ISO 9000 in the management system 31
R.W. McBean

The evolutionary process for obtaining ISO 9001 registration at Hatch Associates Ltd. 41
J.T. Shimotakahara

The business of smelting 53
G.B. Watson

RECENT DEVELOPMENTS IN UNDERGRADUATE ENGINEERING EDUCATION — A DISCUSSION FORUM

Introduction — A. McLean 69
Speakers — M. Rigaud, J. Peace, S. Thorpe and T.R. Meadowcroft

COMPUTER APPLICATIONS IN QUALITY

Fundamentals of statistical quality control 73
S.A. Argyropoulos and G. Pouskouleli

Prospective benefits from a holistic approach to quality management software 91
S.L. David
Statistical engineering software
  
  C.W. Carter

A software solution to implementing quality management programs in the metals industry
  
  A. Utji and A.T. Skinner

The three “F”s in quality and reliability — Fault tree analysis, FMECA, FRACAS
  
  P.W. Tsung

CONTROL OF IMPURITIES AND METAL LOSSES

Behaviour of minor elements during the soda slag refining of dore metal
  
  T. Luganova-Chnyrenkova, R. Harris and E. Mast

Converting of silver-rich selenide mattes
  
  D.R. Swinbourne, D. Garner, G.G. Barbante and W.J. Rankin

The self-propagation high-temperature synthesis (SHS) of ultrafine high-purity tungsten powder from scheelite
  
  J.C. Jung, S.K. Ko, C.W. Won, S.S. Cho and B.S. Chun

A process control system for oxygen lead softening
  
  J. Kapusta and G.G. Richards

The Mitsubishi process ensures lower copper content in slag
  
  S. Ajima, T. Igarashi, T. Shimizu and T. Matsutani

Elimination of impurities from molten copper:
  Searching for oxide slag systems with high refining ability
  
  T. Fujisawa, Y. Shimizu, H. Fukuyama and C. Yamauchi

PROCESS OPTIMIZATION

Applications of equation-oriented modelling to metallurgical processes
  
  M.T. Rahbar, J.F. Higginson and P. Burke

Rotating field modelling for melt cleaning
  
  M.D. Slack and A.E. Wraith

Improved control of top-blowing processes
  
  F. Mucciardi and N. Jin

Improvement in refining characteristics by gas injection through rotary lance
  
  M.C. Diaz, S.V. Komarov and M. Sano

Measurement of electrical voltage distribution in submerged arc electric smelting
  
  Y.Y. Sheng, G.A. Irons and D.G. Tisdale
Improved dust capture using PTFE filter material
   K. Scott and T. Fisher

Design of smelter gas handling systems for trouble free operation
   F. Porretta

FUNDAMENTAL STUDIES

Effect of arsenic on the Cu-Ni matte separation process
   J.M. Toguri, H. Babaie and R. Sridhar

Characterization of the compositions of copper and nickel/copper mattes
   J.W. Matousek

The pyrometallurgy of sulphide ores and their use in the Mexican industry
   B. Vidales

Fundamentals of a pyrometallurgical treatment for zinc leach residue
   T. Nakamura, H. Itou, T. Takasu and F. Noguchi

Behaviour of lead and zinc in non-ferrous bath smelting
   Y. Lee, N. Moon and C. Choi

Surface and interfacial tension of the calcium-ferrite copper slag system
   T. Sakai, S.W. Ip and J.M. Toguri

Precipitation selectivity of boron components from slags
   Z. Sui, P. Zhang and C. Yamauchi

Author Index

Keyword Index