16th Topical Conference on Ethylene Producers 2004

Held at the 2004 AIChE Spring National Meeting

April 25-29, 2004
New Orleans, Louisiana, USA

Volume 1 of 2

Printed from e-media with permission by:

Curran Associates, Inc.
57 Morehouse Lane
Red Hook, NY 12571
www.proceedings.com

ISBN: 978-1-60423-459-6

Some format issues inherent in the e-media version may also appear in this print version.
TABLE OF CONTENTS

Volume 1

Sessions 54 and 57 - Rotating Machinery Reliability - Impact of Operational Practices
Session 54 Chair: Ed Oberthier
Session 54 Vice Chair: Mike Thuillez
Session 57 Chair: Gampa Bhat
Session 57 Vice Chair: Terryl Matthews

54a Online Asset Management Tools for Machinery Systems .................................................................1
   Glenn Poché

54b Surge- What It Is, Why It Will Damage Your Compressor, and How To Avoid It, with Discussions on Choke ...........................................................................................................................................13
   Theodore Gresh, Bruce G Heckel and Brian Spencer

54c Minimum Flaring Impact on Compression System...............................................................................50
   Greg Dunnells, Kazim Akhtar and David Payne

54d Knowledge-Based Predictive Maintenance For Olefins Turbocompressors .......................................58
   Constatine Lau and Martin Maier

54e Using Improved Inspection Tooling to Perform Machinery Condition Assessments .......................73
   Chris Brown and John R Dugas

57a Rotating Machinery Roundtable - Operational Impacts on Equipment Reliability Discussion ..........98
   Rotating Machinery Subcommittee

Session 55 - Feedstock Contaminants in Ethylene Plants. How Does Your Plant Measure Up?
Chair: Tom Kopecky
Vice Chair: Marilyn Blaschke

55a Report on Activities of the NOx in Ethylene Recovery Task Group....................................................99
   Dane C Grenoble

55b Feedstock Contaminants in Ethylene Plants - An Update ................................................................109
   Art Baumgartner, Marilyn Blaschke, Steven T Coleman, Robert Kohler and Timm E Paxson

55c Mercury Removal from Cracked Gas and Liquid Streams ................................................................174
   Steve Coleman, Jason Ries, Don Campbell and Keith Clark

55d Adsorbent Reactivity: An Important Factor in Contaminant Removal .............................................183
   Vladislav I Kanazirev and David L Smith

Session 56 - Ethylene Producers Conference Keynote Address/Ethylene Plant Environmental Issues
Chair: Michael Kennedy
Vice Chair: Bill Turk
56a Ethylene Producers Conference Keynote Address .................................................................199
Sally Shaver

56b The Increased Focus on Episodic Air Emissions in Texas and Louisiana ..............................200
Jennifer Keane

56c Environmental Self-Analysis and Self-Reporting under Title V and Sarbanes-Oxley .............211
Matthew Kuryla and Whitney Swift

56d Gas Imaging, A New Alternative to Method 21 ......................................................................225
Michael Smylie and Michael Koonce

56e What Can We Do About HRVOC's? .......................................................................................235
Stephen Lang and Richard Churns

56f Ethylene Plant Cooling Tower Monitoring and Heat Exchanger Repair Methods .....................253
Lisa S LeBlanc

Sessions 58 and 61 - Ethylene Plant Maintenance - Maintaining Olefins Plant Energy Efficiency
Session 58 Chair: Steve Bradford
Session 58 Vice Chair: Larry Bayer
Session 61 Chair: Larry Bayer
Session 61 Vice Chair: Thomas Cannon

58a Energy Efficient Burner Design and Maintenance in the Olefins Industry ............................265
Darin R Foote

58b Utilities Leak and Steam Trap Inspection and Repair Program ..............................................276
David B Johnston

58c The Use of Torque Meters for Monitoring Turbine/Compressor Performance ..........................289
Louis J Trahan and Lee W Allison

58d Turbo Machinery Efficiency Gains through Reliability Improvements ......................................304
Patrick J. Cooper

58e Steam System Optimization ......................................................................................................317
Robert Aegerter

58f Maintaining and Increasing Cooling Tower Efficiency ..............................................................327
James L Willa

58g Maintenance and Energy Economics .......................................................................................341
Claire Cagnolatti

61a Ethylene Plant Maintenance- -Maintaining Olefins Plant Energy Efficiency - Roundtable ..........345

Session 59 - Olefins Production: Fundamental and Technological Aspects: Creativity and Technological Innovation
Chair: Gilbert Froment
Vice Chair: Martin Carrera

59a Propylene: Olefin of the Future? ............................................................................................346
Jeffrey S Plotkin

59b Options for Meeting Propylene Supply-Demand Gap ............................................................348
Robert B James, Dan Wei, Jim Andersen and Walter Vermeiren
Volume 2

Session 60 - Ethylene Plant Operations
Chair: Matthew A Taylor
Vice Chair: Brenda Donnelly

60a Ethylene Plant Start-up Strategy for Flaring Minimization .................................................................393
Sasha Vragolic

60b Erosion/Corrosion Failure of Compressor Interstage Coolers in an Ethylene Plant .............................403
Luiza M Jorge, George Nowowiejski and Jose Antonio C Cunha

60c Troubleshooting a Cooling Water System with a Rigorous Flow and Pressure Network Model ..........409
André Bernard

60d Repeat Issues With a High Pressure Steam Control Valve .................................................................420
Brian D Baca

60e F-P3-1180 Furnace Failure ......................................................................................................................426
Bryce Kagay

60f Auto-Refrigeration and Brittle Fracture Analysis of Existing Olefins Plants - Identification of Potential Excursions ...........................................................................................................................................433
Ralph E King

60g EEPC Working Group-Issue Group: Operator Training .......................................................................455
Howard S Kruman, K. Funk

Session 62 - Ethylene Plant Safety
Chair: Gary Lovetinsky
Vice Chair: Ray Stroud

62a Implementation of the Hazards and Effects Management Process (HEMP) ........................................491
Mark Siddoway and Natalie Salter

62b Pipeline Integrity Management Program Implementation Obstacles ...............................................503
Reggie Harris

62c Safety Instrumented System Design for a Grassroots World Scale Ethylene Complex ........................508
Alastair Anderson and Mark M Moderski

62d Software Upgrade Triggers Events that Lead to Plant Shutdown ........................................................526
David Gent

62e Morris Plant Furnace Start-Up Incident & Lessons Learned .................................................................549
Bala S. Devakottai, Denise R Karstensen and Bruce R. Raeburn
62f Flare Line Failure Case, What Have We Learned? .................................................................556
Abram Kuo and Ryan Pitt

Sessions 63 and 64 - Ethylene Plant Technology - Furnace Burner Technology Review and Roundtable
Chair: Chris Wallsgrove
Vice Chair: Chell Chellappan

63a Burners: Where We Are and How We Got Here .................................................................576
R. Waibel

63b Flame Rollover and Other Flame Shape Problems .............................................................577
Ron Just

63c The Impact of NOx Regulation on the U.S. Ethylene Industry ..............................................585
Vikki Medley

63d/64a The Latest Generations of Ethylene Furnace Burners. A Market Perspective From Vendors .........................................................................................................................................600
Scott Reed, Doyle Bishop, Michael Wignal, John Grever and Ashok Patel

64b Commercialization of Ultra-low NOx Burners for Ethylene Heaters ..................................601

64c Furnace Burner Open Forum/Roundtable .............................................................................602
Furnace Burner Roundtable

Session 65 - Ethylene Plant Process Control
Chair: R. Donald Bartusiak
Vice Chair: James E Hackney

65a Optimising Ethylene Plant Production Using Model Predictive Control and Dynamic Real Time Optimization .........................................................................................................................................611
Michael Boell, Rob Vasbinder and Nic Castelijns

65b Alternate Methods of Process Model Identification: Benzene Distillation ................................628
Sasha Vragolic

65c Furnace Optimizer in a Naptha Cracker ..................................................................................639
Hitoshi Shindo, Kheng Lau, Ryugi Kaneko and John S Ayala

65d After the Alarm Rationalization - Managing the DCS Alarm System ....................................650
Jamie Errington, Tim DeMaere and Dal Vernon Reising

65e Maximizing the Yield and Throughput of Ethylene Plants Through Advanced Turbomachinery
Constraint Control Systems ............................................................................................................666
Krishnan Narayanan, Anurag Gupta, Paul Fisher, Jagadeesan Kumar, Sankara Ramakrishnan and Khalid N Al-Rushoud

65f Implementation of Alarm Management Software in a DCS-controlled Ethylene Plant ............688
Doug Rode, Karim Moti, Allen Monholland and Richard Bykowski

Session 66 - Ethylene Plant Technology - Advances in Distillation Technology for Ethylene Plants
Chair: Steven Borsos
Vice Chair: Brian Bahr