

American Institute of Chemical Engineers

20th Ethylene Producers Conference

Topical Conference at the
2008 AIChE Spring National Meeting

April 6-10, 2008
New Orleans, Louisiana, USA

Printed from e-media with permission by:

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

ISBN: 978-1-60560-208-0

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

ISBN: 978-1-60560-208-0

Copyright (2008) by the American Institute of Chemical Engineers.
All rights reserved.

For permission requests, please contact the American Institute of Chemical Engineers at the address below.

American Institute of Chemical Engineers
Proceedings
Three Park Avenue
New York, NY 10016-5991
Phone: 212-591-8100

www.aiche.org

American Institute of Chemical Engineers

20th Ethylene Producers Conference
2008

TABLE OF CONTENTS

University of Ethylene and Freshman Orientation	1
<i>Julie Stilley</i>	
Gasoline Fractionator - Treatment Program to Extend Run Length.....	7
<i>Darrell Thrash</i>	
Bflp Gasoline Fractionator – Stone & Webster Ripple Tray® Installation	8
<i>Dirk Vergaelen, Vance Ham</i>	
Critical Condition Management	26
<i>Lothar Lang</i>	
Operating Experience and Enhanced Acetylene Reactor Performance	34
<i>Thomas J. Gonzales</i>	
Corrosion Under Insulation	51
<i>Donna Fruge, Karl Bishop</i>	
Steam System Process Upset Review & Validation of Response	65
<i>Andre Bernard</i>	
Compressor Surge.....	83
<i>Joe Moreno, Charlie Rutan</i>	
Use of Dynamic Simulation in the Design of Ethylene Plants	93
<i>Greg Berry, Vinod Patel, Jeffrey Feng</i>	
Steam Turbine Internal Blade or Diaphragm Corrosion and Fatigue Failure	112
<i>Satoshi Hata</i>	
Noise Control in Ethylene Plants	151
<i>Joe Bhavsar</i>	
Consider Piping Dynamics with Compressor Revamps.....	160
<i>Ken Atkins</i>	
Olefins Plant Compressors' Reliability Performance - EPC 2005 Survey Results.....	206
<i>Rashmi K. Shah</i>	
Ethylene 2028 - Feedstock Scenarios.....	226
<i>Allen Kirkley</i>	
Ethylene Producers' Conference 20th Anniversary.....	227
<i>Neil Shannahan</i>	
20 Year Reflection of EPC Operations.....	228
<i>Sam Valleru</i>	
Abnormal Events - Operations Roundtable	229
<i>Vance Greishop</i>	
Operations Roundtable Small Group Discussion	237
<i>Vance Grieshop</i>	
Operations Roundtable Events Discussion & Summary	238
<i>Vance Grieshop</i>	

Equistar Chemicals Olefins Environmental Agreement	239
<i>John R. Evans</i>	
Greenhouse Gas Emissions Trading	244
<i>Vianney Schyns</i>	
Smart LDAR: Pipe Dream or Potential Reality	256
<i>J. Derek Reese, Wayne A. Sadik, Charles Melvin</i>	
Application and Performance of Solar Technology Next Generation Combustion System	276
<i>David J. Brown, Bradley Adams, Richard Waibel</i>	
Evaluation of Treatment of An Ethylene Plant Waste Water with a Membrane Bioreactor	286
<i>Bryan S. Cashion, Robert J. Wentz, Michele Migliavacca, Mike Howdeshell, Guihe Tao, Kiran A. Kekre, Jianjun Qin</i>	
Cracking Heater Convection Retrofit with Integral SCR	300
<i>Mark S. Karrs, Philip S. Crepinsek</i>	
Dust Emissions during Cracking Furnace Decoking – Regulations Versus the Measured Performance	312
<i>Kari J. Enqvist, Dagfinn Torpe, Jim Middleton</i>	
Management of Hazards Associated with Location of Process Plant Portable Buildings	329
<i>Mark Whitney, William Erny</i>	
Guidelines for Controlling Catastrophic Releases by Means of Remotely Actuated Valves	346
<i>Jan Windhorst</i>	
Emergency Isolation System at BASF/FINA Petrochemicals Port Arthur Olefins Plant	361
<i>Johnathan Weatherly, John Lycan</i>	
Unexpected Fire at Dupont While Preparing to Feed Check Furnace	365
<i>Robert Kelcher</i>	
Automated Switch-Over Between Transfer-Line Valve & Decoke Valves	371
<i>Robert Clauss</i>	
Hazardous Flue Gas Mixtures in Furnaces Due to Fuel-Rich Combustion	389
<i>Andrew Hawryluk</i>	
Damaging Mechanisms in Ethylene Plant	402
<i>Pinakin Mistry, Bala Devakottai</i>	
Plant Ageing	404
<i>Dave Oulton, Ann Shalanski</i>	
Damage Mechanisms and Risk in An Ethylene Plant	406
<i>Tim Munsterman, Mike Hurley</i>	
Taking Optimal Advantage of Feedstock Flexibility with COILSIM1D	408
<i>Kevin M. Van Geem, Marie-Françoise Reyniers, Guy B. Marin</i>	
Emisshield: Application to Pyrolysis Furnaces	422
<i>John Olver</i>	
Catalyzed-Assisted Manufacture of Olefins (CAMOL): Realizing Novel Operational Benefits from Furnace Coil Surfaces	429
<i>Steve Petrone, Yan Chen, Robert Deuis, Les Benum, David Gent, Randy Saunders, Chi Wong</i>	

Front End CDHYDRO® Raw Gas Hydrogenation Achieved	431
<i>Stephen J. Stanley, Robert J. Gartside, Jose de Barros</i>	
Increasing the Propylene Yield: Converting the Butene in Mixed Butane Butene Streams (RAFF-2) into Propylene and Linear Internal Olefins	439
<i>Peter Ginn</i>	
Integrating CPT with Existing OCT Units	451
<i>Robert J. Gartside, James M. Hildreth, Shaun McGovern</i>	
An Optimization Program in Lyondell.....	460
<i>James Hackney</i>	
Implementation of Unit-Wide Advanced Process Control in An Ethylene Plant.....	472
<i>Gabe Haarsma, Rajendra Mutha</i>	
Overcoming Numerical Ill-Conditioning in a DMCplus® Composite Controller at the Baton Rouge Chemical Plant	483
<i>Darren S. Jenkins, Antonio G. Gonzalez, Mike Keenan, Bary Eagleson</i>	
Dynamic Instabilities of Two Parallel Integral Superheaters to Vaporize NGL Feed to Olefins Cracking Furnaces	494
<i>L. Chutny, K.K. Botros, P. Talbot, M. de Boer</i>	
Securing the Control System against Improper Change after Alarm Rationalization.....	511
<i>Carolyn Lehman, Jack Roachell, Bill Hollifield</i>	
Process Control Systems Lifecycle Management.....	520
<i>Stephen C. Deschamps</i>	
Refractory Life Cycle Considerations in Ethylene Cracking Heaters.....	521
<i>Keith A. West, Jim McCarter</i>	
Incorporating Reliability, Availability and Maintainability (RAM) into Process Synthesis	522
<i>Qiyang Scarlett Yin, Robin Smith</i>	
Transfer Line Exchangers in Ethylene Furnaces: Operating and Reliability Experience.....	543
<i>Bernd Thomas Schoepe, Karsten Stueckrath</i>	
Failure Analysis and Reliability of Ethylene Furnace Components	572
<i>Thomas Garza, Dennis Stanfield</i>	
Progression of Environmentally Driven Heat Exchanger Maintenance Practices for Olefins Plants	573
<i>Robert M. (Bob) Pritchett, Chris Eubanks, Diana Garza</i>	
Model Predictive Control.....	585
<i>James B. Rawlings</i>	
Controller Performance Monitoring	586
<i>Sirish L. Shah</i>	
The Changing Dynamics of Olefin Supply and Demand.....	587
<i>Dr. Jeffrey S. Plotkin, Alan Nizamoff</i>	
Maximizing Propylene through Catalytic Cracking: Indmax Fluid Catalytic Cracking (I-FCC) Process.....	593
<i>Dalip S. Soni, Scott Shorey, M. Rama Rao</i>	
Catalytic Routes to Olefins	602
<i>Michael J. Tallman</i>	

Catalytic FCC Type Processes	615
<i>Colin Bowen, Dilip Dharia, Chris Santner</i>	
FCC Propylene Production – Technology Integrations	627
<i>James P. Glavin, Keith A. Couch, Bob Mehlberg, Dave A. Wegerer, Jibreel A. Qafisheh</i>	
Catalytic Routes to Olefins Shaping the Integrated Complex Configuration	651
<i>Sanjeev Kapur, Anil Rajguru, Denis Menegaz</i>	
Top 5 Contaminants in Ethylene Production Unit Feedstocks	661
<i>Mark Brayden, Dwight Hines, James Graham, Art Baumgartner, Thomas Pickett</i>	
Ethylene Plant Contaminants: A Database and Interactive Tool	676
<i>Andre Bernard, Sheri R. Snider</i>	
Formation of Gum and Deposits in An Oxygenated Naphtha Stream.....	685
<i>Feridoun Fahiminia, Patricio Herrera, Ted Salari, Steve Schmidt, Paul Watkinson, Yonghua Li</i>	
Myths and Mysteries in the Manufacture of Ethylene	694
<i>Steve Coleman, Art Baumgartner</i>	
Author Index	