37th Ethylene Producers Conference 2025

Topical Conference at the 2025 AIChE Spring Meeting and 21st Global Congress on Process Safety

Dallas, Texas, USA
6 - 10 April 2025

ISBN: 979-8-3313-3921-0

Printed from e-media with permission by:

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



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

Copyright© (2025) by AIChE
All rights reserved.

Printed with permission by Curran Associates, Inc. (2026)

For permission requests, please contact AIChE
at the address below.

AIChE
120 Wall Street, FL 23
New York, NY 10005-4020

Phone: (800) 242-4363
Fax: (203) 775-5177

www.aiche.org

Additional copies of this publication are available from:

Curran Associates, Inc.
57 Morehouse Lane
Red Hook, NY 12571 USA
Phone: 845-758-0400
Fax: 845-758-2633
Email: curran@proceedings.com
Web: www.proceedings.com

TABLE OF CONTENTS

Enhancing Furnace Performance Through AI and Convection TMT Predictions 1
Sameer Thorat, Arun Pitchaiahrajan, Deepesh Sawhney, Amrita Sachan

Enhancing Ethylene Plant Operations Through Generative, Predictive, and Prescriptive Applied AI Solutions 18
Pratap Nair

Evolution of Coking Mechanisms in Aging Ethane Steam Cracking Coils: From Radical to Catalytic Coking 37
Andrii Chornobryvets, Towje Kirchner, Benjamin Aymans, Dietlinde Jakobi, Kevin Van Geem

Characterization and Impact of Oxygenates in Plastic Waste Pyrolysis Oils on Steam Cracking Process Efficiency 49
Marvin Kusenberg, Simon De Langhe, Behzad Parvizi, Anas J. Abdulrahman, Robin J. Varghese, Syam U. Aravindakshan, Antti Kurkijarvi, Andres E. M. Gandarillas, John Jamieson, Steven De Meester, Kevin Van Geem

Plastic Pyrolysis Oils as Feedstock for Steam Crackers: Opportunities and Challenges 61
Harald Schmaderer, Torben Hoefel

Retrofit of a Steam Turbine-Driven Centrifugal Compressor with an Electric-Driven Geared Variable SPEED DRIVE 68
Lucas Jackling

Electrifying Compression: A Decade of Success with Critical, Non-Spared Electric Motors and VFDs on Ethylene Production. 81
Matthew Pickard, James Nanney, Kalyan Malnedi, Manish Verma, Stephan Bondy

Assessing Efficiency of a Condensing Steam Turbine with a Torque Measuring Coupling 88
Matthew Pickard

Top 5 Contaminants from a Process Safety Perspective 97
Michael Salvatore

Conversion of Ethane Crackers to Net Zero Direct Emissions 101
Christoph Boese, Torben Hoefel, Felix Roessler

Real-Time Gas Cloud Mapping for the Chemical Industry 115
Simon Bunegar, Peter Maas

Efficient Flue Gas NO_x Removal: Eliminating SCR System Fouling 125
Andrew Kline

Ethylene Plant Flare Gas Recovery Operating Experience 137
Micah Mohieddin, Alex Harbula, Gurwinder Singh

Journey to Increase LEU Run-Length 145
Reinaldo Nascimento, Viviane M. Pinto, Israel T. Lamb, Joice Boll, Daniel Mota, Fernanda Amano, Daiane C. Fernandes

Operation and Maintenance of Safety Instrumented System (SIS) 164
Rajeev Limaye

Front-End Acetylene Converter Exotherm Event Due to Oxygen Ingress 172
Ashley Pedretti, Taemin Eom

Plastic Waste as a Circular Carbon Feedstock for Industry 183
Ismaël Amghizar, David Brown, Lin Chen, Andres E. M. Gandarillas, Guy B. Marin, Kevin Van Geem, Gordon Woolf, Elisa Alcolea, Héctor Hernando

Plastic Pyoil Learnings for Ethylene Producers 201
Javier Florencio, Fabrice Cuoq

Development of a Commercial Scale Ethylene Furnace Hydrogen Burner 221
David Spicer, William Aslaner, Dominic Agentis

Starbridge™ - Commercial Design and Implementation of Electric Cracking Furnaces 238
Christoph Boese, Torben Hoefel, Felix Roessler

Maximizing Pyrolysis Oil Utilization in Existing Naphtha Crackers 254
Andres E. M. Gandarillas, Ismaël Amghizar, Lin Chen, David Brown, Guy Marin, Kevin Van Geem

Technip Energies Primary Feed Effluent Exchanger Testing Program 265
Peter Oud

From Plastic Waste to Ethylene: Steam Cracking of Supercritically Produced Naphtha 291
Kevin Van Geem, Richard Daley

Methane-to-Ethylene Conversion via Integrated Post-Plasma Catalysis: A Novel Pathway to Sustainability 305
Victor Rosa, Fabio Cameli, Kevin Van Geem, Georgios Stefanidis

Author Index