
AIChE® The Pipeline

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A. Shaikh, M. Kettner, Co-Editors

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NEWSLETTER OF THE EAST TENNESSEE SECTION OF AIChE

Local section website

<http://www.tnengineering.net/AICHE/>

Local section mailing address

PO Box 7448 Kingsport, TN 37664-7448

Upcoming March Program

“Pump BLEVE’s (Boiling Liquid Expanding Vapor Explosions)”

Thursday, March 24, 11:30am to 1pm in the B150 Multimedia Room

1 pdh will be offered

Abstract

Do you work with pumps or anywhere near pumps? Then this is a MUST SEE presentation. A sometimes overlooked safety issue with centrifugal pumps occurs when they are isolated (both suction and discharge) while running, which can lead to catastrophic failure of the pump casing via a boiling liquid, expanding vapor explosion (BLEVE). Three case histories will be used to illustrate several key points, such as the fact that seal failure will not give you adequate protection, and that this phenomenon can occur even with clean, non-flammable liquids. Several mitigation and control strategies will also be presented.

About the Speaker



Peter Lodol is a Technical Fellow and group leader of the Plant Protection Technical Services group at Eastman Chemical’s site in Kingsport, TN. He has been with Eastman in various positions for more than 32 years, 17 years in process engineering, and the past 15+ years in process safety and loss prevention. He is Eastman’s representative to the Center for Chemical Process Safety (CCPS) Technical Steering Committee, is the chair of the CCPS Planning committee, and is the past chair of the Reactivity Management Roundtable (RMR). Pete chairs the Process Safety Subteam for the American Chemistry Council (ACC), and serves on the International

Editorial Board for the *Journal of Loss Prevention in the Process Industries*. Pete is the author or co-author of over 20 papers and publications, a Fellow of the American Institute of Chemical Engineers (AIChE) and a Fellow of the Center for Chemical Process Safety (CCPS). He is a past Director of both his local AIChE section (East Tennessee), and was the 2010 Chair of AIChE's Safety and Health division. Pete holds BS and MS degrees in Chemical Engineering from Purdue University, and is a registered Professional Engineer in the state of Tennessee.

Recap of February Program

Patrice Riesenber

Process Heat Transfer 101- The Practical and Theoretical Basics



Brad Killen is Eastman's Heat Transfer Specialist. Brad presented a whirlwind of information on heat transfer. He reviewed basic heat transfer theory, design, information on condensers and reboilers, fouling, and trouble shooting. From the basic equations,

$$Q=UA \Delta T_{\log \text{ mean}}$$
$$Q=m C_p \Delta T$$

Brad expanded on how to correctly calculate delta T log mean for various scenarios, and reviewed convection and conduction. There was too much information to write about in this article, so review his presentation and learn from his notes at our website. Go to <http://www.tnengineering.net/AICHE/> and scroll down to Web News Archives. The presentation is full of useful information such as heat capacity tables, diagrams, tube information, rules of thumb, and practice equations.



He reviewed how thermosiphon reboilers actually work, the various boiling scenarios inside a reboiler, and why proper sizing is critical. Various types of shell and tube exchangers were briefly reviewed explaining their benefits in a variety of services. Tube, shell, and baffle arrangements and proper exchanger flow distribution were discussed. After briefly reviewing economics, fouling, and troubleshooting, the program concluded with some interesting slides of problems with heat exchangers.

Letter from the Chair

Patrice Riesenberg

We are near the end of our program year themed “Enhancing Professional Excellence”. I want to thank national AIChE for funding us with the Program Planning Grant. Below are our final topics before summer.

Program	Speaker	Date
Pump BLEVE's	Pete Lodal, Eastman	Mar 24, 2011
Growth and Innovation	Greg W. Nelson, Eastman	Apr 2011
A Fun (but Educational) History of Chemistry joint meeting with ACS celebrating the International Year of Chemistry	Dr. Al Hazari, UTK Professor of Chemistry	May 2011

Distillation Seminar Recap

Mike Visneski

As part of our Enhancing Professional Excellence programming theme for the year, Dan Summers presented a four-hour Distillation Seminar on March 8, 2011 in the B150 Multimedia Room. Dan Summers is the Tray Technology Manager for Sulzer Chemtech, USA at their Tulsa, Oklahoma facility. He has been involved with separations ever since he graduated with a bachelor’s degree in Chemical Engineering from the University of Buffalo in 1977. He has also worked for Union Carbide, Praxair, UOP, Stone & Webster and Nutter Engineering. He has been involved in the design, operation, and troubleshooting of all forms of tower internals in the hydrocarbon, ethanol, specialty chemical, refining, air separation, and natural gas industries. He has authored over 45 papers on the topic of distillation and is the holder of one US Patent (for a Modified Bubble Cap Tray). He has been a member of AIChE his entire career, he is a registered professional engineer, and is the chair of FRI’s Design Practices Committee.

Dan began the seminar with the basics and some early history in “Distillation 101.” The many different types of trays and their design considerations were discussed in “Basic Tray Training,” followed by a discussion of packed-tower internals in “Basic Packing and Distributor Training.” “Myths about High Capacity Trays” dispelled the perception of the magical powers of high capacity trays. Improving tray performance by picketing of the outlet weir was presented in “Low Liquid Load Design Techniques.” To finish the morning session, Dan presented one of his papers which was recently published in *Chemical Engineering Progress* on “How to Properly

Evaluate & Document Tower Performance.” Following lunch and to complete the seminar, several attendees stayed to quiz Dan on their specific distillation-related questions during the “Open Forum.”

Upcoming April Program

Tuesday April 12th, 11:30am to 1pm in B150 (Multimedia room or Auditorium)

Growth and Innovation

Pursuing growth and innovation can generate bold possibilities for a business. Breakthrough process technology that can introduce a broad product application set in a market, like Eastman’s recently announced wood acetylation technology, is just one way to win the growth game with innovation. Not only does breakthrough process technology become a necessary growth driver, but innovation opportunities can be found in almost any key business and technology area like marketing, applications and product development, engineering and construction, and partnering strategy, among others. The diverse skills displayed by chemical engineers are relevant in this entire space and this talk will look through that lens as we explore the powerful relationship between growth and innovation through the acetylated wood opportunity.

BIOGRAPHY

Dr. Gregory W. Nelson

Senior Vice President and Chief Technology Officer

Eastman Chemical Company



Dr. Gregory W. Nelson is Senior Vice President and Chief Technology Officer of Eastman Chemical Company. Nelson is responsible for Technology and R&D, IT, Innovation and Licensing.

A native of Birmingham, Alabama, Nelson received a bachelor’s degree from the University of Alabama and a PhD in analytical chemistry from Emory University.

Dr. Nelson joined Eastman Chemical Company in 1988 and conducted research in polymers chemistry and online spectroscopic analysis of polymer processes. After holding a number of posts in the Research and Development

organization, he was appointed several management positions in both business and technology management. After completing the Harvard Business School Advanced Management program in 2007, Nelson was appointed Vice President, Corporate Technology. He was appointed to his current position in August of 2008.

Dr. Nelson is a member of the American Chemical Society and the Industrial Research Institute. He is also an active member of the United Way.

Short Course Announcement

Mark Shelton

The East Tennessee Section of AIChE is pleased to announce that the following short course will be offered this fall. Please keep this course in mind when fulfilling your personal development goals for the year. The exact timing and cost have yet to be determined; however, a two day course typically runs about \$1,000/participant.

Multi-Disciplinary Process Development (CH757)

2 Days, 1.5 CEUs, 15 PDHs

In this course, we will present a unique industrially proven approach to process development which encompasses decision making across various layers which include; business layer, chemistry layer, reaction/reactor layer, separations layer, heat recovery layer and the utility systems layer.

You will learn:

- Process development from the time a process chemistry is invented in the lab to the development of a commercial scale process
- Critical issues at each level on the development workflow
- The available technologies for solving problems and key information required

Who should attend:

Chemists, engineers and technology managers involved in the chemistry, design, development, scale-up, or production of new and existing chemical processes

Instructors: Lionel O'Young and Vaibhar Kelkar

For more information, please contact Mark Shelton at (423) 229- 4753 or shelton@eastman.com.

Information from National AIChE

Steve Miller

Keep Pace With New Developments Through Participation In AIChE Conferences

AIChE's conferences and meetings are designed to help you stay current on the latest advances in core areas and emerging fields, from bioengineering and nanotechnology to process safety and also include many topical conferences covering a wide range of areas in chemical engineering.

As an AIChE member, you save \$200 or more on registration fees. Membership pays for itself when you attend just one conference. Plus, you can save up to 15% on airfare and 25% on rental cars when you book through AIChE's travel center.

2011 Conferences
Offshore Technology Conference (OTC) 2011 Reliant Park Houston, TX May 2-5, 2011
AIChE-DECHEMA Global Conference on Energy Sustainability in the Process Industries (ESPI) Hong Kong University of Science and Technology (HKUST) Hong Kong SAR, China June 5-8, 2011
56th Annual Safety in Ammonia Plants and Related Facilities Symposium Sheraton Montreal Hotel Montreal, QC September 11-15, 2011
6th AIChE/SPE Joint Workshop - Challenges in Flow Assurance and Crude Oil Quality Omni-Houston Westside Houston, TX September 26-28, 2011
OTC Brasil 2011 Riocentro Rio de Janeiro, Brazil October 4-6, 2011

[2011 AIChE Regional Process Technology Conference](#)

Moody Gardens Hotel

Galveston, TX

October 6-7, 2011

[Annual Meeting](#)

Minneapolis Convention Center

Minneapolis, MN

October 16-21, 2011

Continuing Education – Professional Development Hours Available



Eastman Employees Only: Are you a professional engineer seeking to meet state continuing education requirements for professional development hours (PDH's)? If so, please visit this website for a list of potentially eligible courses and more information: [Continuing Education for Professionals](#)

Calendar of upcoming events



Several great programs are planned for the upcoming programming year. Topics include:

- Pump BLEVE's, Pete Lodal, March 24, 2011
- Growth and Innovation, Greg W. Nelson, April 12, 2011

Keep Up With the Local Section Online

Up-to-date information about the East Tennessee Section of the American Institute of Chemical Engineers can be found [on our website \(www.tnengineering.net/AICHE\)](http://www.tnengineering.net/AICHE). The website includes the Local Section Bylaws, List of Officers from 1945 to present, and an archive of Pipeline Newsletters - to mention only a few aspects of the information covered. Photos from past events can be found, along with contact information for the Local Board. Review the site occasionally and keep up with the local section!

2011 Local Section Officers, Directors, & Support Staff

Chair:	Patrice Riesenberg	229-8980
Chair-Elect and Program Committee Chair:	Stephen Miller	224-7350
Secretary:	Rebecca Glaspie	229-6144
Treasurer:	Braxton Sluder	578-6225
Directors:	Mark Harrison	229-6952
	Jennifer Mize	224-7018
	Lauren Moyer	229-2208
Local Section Webmaster:	Tim Nolen	229-8287
Short-Course Coordinator:	Mark Shelton	229-4753
Professional Development Coordinator:	Joe Parker	229-3850
AIChE Pipeline Newsletter Co-Editors:	Ashfaq Shaikh/Mark Kettner	229-8840
ETEAC Representative:	Joey Watson	229-6486

2011 Local Company Contacts

Eastman Chemical Company	Patrice Riesenberg, P.E. 423-229-8980, patrice@eastman.com
BAE Systems, Ordnance Systems Inc.	Braxton Sluder, Process Chemical Engineer Acids Manufacturing 423-578-6225, braxton.sluder@baesystems.com
Nuclear Fuel Services Inc., a subsidiary of The Babcock & Wilcox Company	Natalie Robertson 423-743-2526, nsrobertson@nuclearfuelservices.com
Domtar	Rhonda Smith, Process Control Engineer 423-392-2797, Rhonda.Smith@domtar.com

American Institute of Chemical Engineers
PO Box 7448
Kingsport, Tennessee 37664-7448