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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 April Program

“Perspective on Process Control”

James J. Downs
Advanced Controls Technology Group
Process Engineering
Eastman Chemical Company

Tuesday April 3rd, 2012 Noon to 1PM

B-150 Auditorium

(Pizza will be served at 11:30)

Abstract

Automatic control of the world around us has been a focus of ingenuity for a long time. As the industrial age arrived, the need to automatically control our processes and our machines caused the ideas of dynamics and control to grow into a technology of their own. Control technology has expanded its reach to control of not only machines and processes, but also finance, medicine, and social systems. As computer power grows, some of the control ingenuity of the past has given way to more systematic and repeatable approaches. Early notions of automatic control have been defined, refined, parameterized, mathematized, algorithmized, and computerized in our effort to master our systems. However, the importance of understanding the process that we wish to control has remained. As our goal of perfect control seems so close, it is the understanding of our systems that remains elusive. The purpose of this talk is to present perspective on changes that have occurred in process control technology and to ponder what may be coming in the future.

About the Speaker



Dr. James J. Downs (PE) is manager of the Advanced Controls Technology group at Eastman Chemical Company. He has 35 years of experience in the design, startup, and support of industrial processes. His work has included the design of advanced control systems for reaction systems, distillation processes, polymer processes, extraction and other separations processes, gas handling systems and compressors, and other unit operations. He developed regulatory and overall plant-wide operation strategies for numerous capital expansion projects combining plant design and control system design techniques. He developed rigorous distillation simulation programs capable of handling simultaneous distillation and chemical reaction for both steady state and dynamic (transient) modeling of distillation columns. His current research interests include plant-wide control strategy design, plant-wide process optimization, and the process design/process control interface. Dr. Downs has participated in many workshops and symposia concerning process control research and process control education. He was recognized for his contribution to the profession by receiving the AIChE CAST Computing Practice Award in 1996 and the Perley S. Wilcox Award in 2011.

Dr. Downs and his wife Patricia have been married 36 years and have two sons, ages 28 and 25. He is an instrument flight instructor, and his hobbies include flying, traveling, and hiking.

Letter from the Chair

Steve Miller

The East Tennessee Section of AIChE has had a mission since Dr. R. L. Hasche presided over our first meeting on April 10, 1945. Throughout our section's history, there has been an effective focus on supporting and enhancing the profession of chemical engineering and a consistent record of providing seminars and classes by which our membership can further develop relevant knowledge and skills. Furthermore, the section has sought to contribute to our community, with efforts ranging from funding college scholarships to assisting with science fairs.

Despite the fact that we have always had a mission, we have not had a formal mission *statement* – at least not to my knowledge. That changed last month when the officers of the section approved the following mission statement:

Enhancing the professional excellence of chemical engineers in the East Tennessee region through continuing education, collaboration, and community outreach.

I believe this statement captures the essence of the driving force behind the past 67 years of the East Tennessee Section, and I believe it will be a helpful focal point as we continue to strengthen our organization in the future. In addition to having a mission statement, we also have a new official logo. The new primary logo for our section is shown below on the left; it is based on the logo submitted by Matt Hedlund (thanks, Matt!). The secondary logo, which we will probably use as letterhead, is shown below on the right:



In the *Letter from the Chair* last month, I highlighted the fact that our East Tennessee Local Section is blessed to have capable and involved members; our mission statement and new logos are the result of the efforts of such dedicated members. Particular thanks go to Luke Stewart, Lane Daley, and Patrice Riesenberg.

March Program Recap

Laci Kemp

“Piloting/Scale-Up Visions for the Future”



Brad Duckworth, Eastman Chemical Company

Brad Duckworth, the Specialty Chemicals Process Improvement Group Leader in Chemicals Development Division at Eastman Chemical Company, discussed Eastman’s vision for improved chemical plant piloting and

scale up. Chemical companies are increasingly focused on growth, both organic and inorganic. A major key to success with organic growth is piloting competency. Through each of the phases of piloting, from idea to commercial scale, time-to-market is critical to the success of piloting.

A team at Eastman was charged with developing a vision for how piloting should be done. Using a Six Sigma approach, the team has completed the *Define*, *Conceptualize*, and an additional *Homework* step on the Six Sigma roadmap. Broad industry and expert bench-marking helped the team to develop several key concepts for the piloting vision. Concepts discussed include utilizing core competencies and expertise, optimizing assets (modular facilities), developing a piloting coordinator role, as well as several others. This program provided an interesting insight to both Eastman and other chemical companies' piloting strategies.

February Program Recap

Matt Hedlund

“Combustible Dust Explosions”



Pete Lodal and Wayne Chastain, Eastman Chemical Company

Pete Lodal and Wayne Chastain from Eastman Chemical Company discussed the topic of “Combustible Dust Explosions” in the United States during the February meeting. Due to several high-profile dust incidents over the past 10 years, there has been an increased interest in awareness, training and regulation regarding the hazards of combustible dust.

Combustible dust incidents in the US range across a wide variety of products and industries in many different unit operations. In a CSB report, from 1980-2005 there were 281 recorded events resulting in 119 deaths and 718 injuries. Dust explosions can result in personal injury or loss of life, as well as financial losses including equipment damage, liability, fines, and lost production.

A combustible dust is a combustible particulate solid that presents a fire or deflagration hazard when suspended in air or some other oxidizing medium over a range of concentrations, regardless of particle size or shape. In addition to the traditional three components of the fire triangle (fuel, heat/ignition, and oxygen in air), dust requires two additional conditions - both the dispersion of the dust particles and confinement of the dust cloud.

In protecting for dust explosions, strategies may be preventive or mitigating. Removing either the fuel or oxidant can prevent combustion, and containing/venting/suppressing can mitigate the explosion.

The most critical elements in preventing dust explosions are good housekeeping, proper equipment design, attention of preventive maintenance, and proper grounding of conductive components. The control of ignition sources should not be the sole means of protection. Proper training of personnel in the risks posed by combustible dusts and management of change are critical to safety but often overlooked. Beware of the “we’ve never had an incident” syndrome. OSHA has a housekeeping standard that, if enforced, would have prevented nearly 90% of all fatalities listed in the CSB report.

Looking Forward to May

**An Evening at the Gray Fossil Site
with Our Friends from the American Chemical Society**



**Thursday May 3rd, 2012
6:00pm – 8:00pm**

Bring your family or a friend and enjoy the museum, a nice meal, some good fellowship, and an interesting program.

We will have a joint meeting with the Northeast Tennessee Section of the American Chemical Society on May 3rd. Our speaker will be Norman P. Jacob, Section Manager, Process Improvement and Fuel Development Engineering, Nuclear Fuel Services, Inc. **More information about the speaker's topic and the cost of the meal will be provided in the April edition of The Pipeline and in a separate email notice.**

Check out the Gray Fossil Site and the Natural History Museum via www.grayfossilmuseum.com.

Project Benjamin Awards

Rebecca Glaspie

The East Tennessee Local Section was selected as the March featured section by National because of Project Benjamin. Through Project Benjamin, 35 chemical engineers from East Tennessee and Southwest Virginia became national and local section AIChE members for free. These new members have helped our section's national membership grow by almost 16%. Two others missed the application deadline and were given membership for the reduced price of \$59 for National and local dues. This reduced membership is still available to anyone who has a chemical engineering degree and lives in East Tennessee or Southwest Virginia. Thank you for considering National membership and giving us the honor of being the featured section!

Where Do My Dues Go?

Rebecca Glaspie

Some of the dues go to the pizza lunches that are provided for you during our regular program meetings, but the dues also go to make a difference in the community. Last year the East Tennessee Local Section donated \$2,600 to wonderful programs. Several of the programs were E-Week, Egg Drop, the North East Tennessee Science Bowl, National Chemistry Week and several science fairs. All of these events are being sponsored again this year. With increased membership, and great turn out for the engineering short course, we were even able to increase our donations from \$1,500 to \$2,000 to the East Tennessee Engineering Associations' Council scholarship. This scholarship gives assistance to students in our area that are interested in majoring in engineering. See the thank you letter below for information on the 2011 recipients:

"Through the generous support of area industries and engineering societies last year, we were able to award \$3,600 in scholarships to three deserving high school students from upper East Tennessee and Southwest Virginia who are now pursuing engineering degrees at ABET accredited universities.

2010/2011 ETEAC Scholarship Recipient Biographies

Peter E. Kenneson was a student at Science Hill High School in Johnson City, TN. He was captain of the soccer team and a member of the Science Club. Mr. Kenneson has been recognized as a National Merit Commended Scholar and a Tennessee Scholar. He was also involved in numerous community service activities including working in rural Kenya to aid in the construction of a library and teaching math. Mr. Kenneson plans to pursue a degree in engineering at Clemson University.

Charles Leighton Rogers was a student at Morristown-Hamblen High School East in Morristown, TN. He was captain of the Scholar's Bowl Competitive Team and a member of the German Society. Mr. Rogers has been awarded the SASEF Excellence Award and DAR Good Citizen Award. He graduated with High Honors. Mr. Rogers plans to pursue a degree in engineering at Tennessee Tech University.

David Matheson was a student at David Crockett High School in Jonesborough, TN. He was on the football, soccer, track, and cross country teams, and was a member of Crockett Congregation Choir and OPUS. He was also involved in numerous community service activities including work with Gear Up and involvement through his church. Mr. Matheson was in the top 10% of his class and was named Social Studies Student of the Year twice.

He has also excelled in automotive endeavors, receiving the Editor's Top Show Car Award at the Bristol Super Chevy Show. He plans to pursue a degree in engineering at the University of Tennessee."

East TN AIChE YP Group Kick-off was a Big Success!

Lane Daley

Are you a recent graduate who is interested in becoming more involved in AIChE? We have a group for you! The East Tennessee Local Section of AIChE has started a Young Professionals' (YP) Group. The objective of the group is to provide chemical engineers under the age of 36 with an opportunity to network with other professionals in the area, participate in professional development opportunities, and give back to the community in a fun, group environment. Our next social will be held on Monday, April 2nd at Biggie's Clam Bar in Kingsport. If you would like more information on how you can get involved with the YP group, please contact Lane Daley (adaley@eastman.com, (423) 229-3064).

What's New at National AIChE

Noah McMillan



[Registration Is Open for the 2012 Spring Meeting & 8th Global Congress on Process Safety](#)

Don't miss the premier technical conference for Chemical Engineers working in industry, April 1-5, 2012 in Houston, TX. This year's keynote speaker is Michael Dolan, Senior VP, Exxon Mobil. Program highlights include the 8th Global Congress on Process Safety, the 24th Ethylene Producers Conference, the 12th Natural Gas Utilization Conference, and the 15th Topical Conference on Refinery Processing. [Learn more and Register.](#)



[Meet AIChE'S 'New Faces in Engineering' 2012 Honoree](#)

The National Engineers Week Foundation has selected a cross-section of young engineers whose commitment and engagement are making a difference. This year, Dr. Christopher Jewell has been chosen as the AIChE honoree. Learn more about Christopher by clicking on the link above.



[Featured E-Learning: Chemical Engineering for Non-Chemical Engineers](#)

This on line course is designed for technicians in the chemical industry, non-chemical engineers involved who work with or supervise chemical engineers, and legal and other professions who must interact with or manage chemical engineering work. Self-paced. On Demand. [Learn more.](#)

Need additional training or PDH's? Don't worry! Reap the benefits of your AIChE membership!! AIChE Members are entitled to as many as 6 FREE ChemE on Demand credits each year, good on all webinars (live and archived) as well as other content. That's over \$700 worth of content for only \$199. Non-Members pay \$179 for each.

Upcoming Live Webinars:



[**AIChE Webinar: Effective Delegation**](#)

Presented by Henry T. Kohlbrand

Wednesday, March 21, 2012

Delegation is a critical skill in today's fast-paced and increasingly global business world. This webinar focuses on how supervisors and teams can effectively delegate important tasks and get optimal results.



[**AIChE Webinar: Maintenance and Reliability for Chemical Engineers, Part 4- Building the Business Case**](#)

Presented by David A. Rosenthal

Tuesday, April 10, 2012

This webinar was originally scheduled for Tues., Feb. 21, 2012 at 11 a.m. ET.

This webinar encompasses how to develop a business case for reliability improvement. The webinar covers both benchmark and margin analysis approaches to understanding the value of the opportunity faced by the facility.

Please note that this is the fourth and final webinar of a four-part series. The first three sessions can be viewed in the ChemE on Demand archive. The first session explores the evolution of maintenance, its intended function, value of reliability, and the components of asset management. The second session focuses on machine failure and the application of preventative and predictive care. The third session covers root analysis, defect elimination (five why's), failure modes and effects analysis (FMEA), criticality,

reliability-centered maintenance, and bad actor management.



AIChE Webinar: Understanding Those Chemical Engineers!

Presented by Jack Hipple

Wednesday, April 18, 2012

This webinar will overview some of the basic principles of chemical engineering for use by other engineers as well as other disciplines that must interact with chemical engineers. Key scaleup issues and design relationships will be reviewed for safety and reactive chemicals, mass and energy balances, distillation and other mass transfer operations, and process control.



AIChE Webinar: Understanding Why Bulk Solids Behave Differently Than Liquids

Presented by Eric Maynard

Wednesday, April 25, 2012

This webinar will provide insights into why bulk solids behave differently than liquids. Concepts regarding powder flow testing, bin/silo design, feeder integration, flow rate limitations, and mechanisms of powder segregation will be introduced.



AIChE Webinar: Patents And The America Invents Act-Strategies In View Of Patent Law Reform

Presented By: Heath Briggs

May 9, 2012

Be the first to learn about how the new U.S. patent laws affect you and your company! Webinar participants will be exposed to the changes in these patent laws, as well as presented with strategies that can help them take advantage of the new patent laws.



AiChE Webinar: Energy Storage: Research Directions, Applications, and Limitations

Presented by Dr. Tim Mueller, Dr. Leon Shaw, and Dr. Trung Nan Nguyen. Moderated by Anita Luong.

Wednesday, May 23, 2012

ASME Egg Drop Competition

This year's Annual Tri-Cities Area ASME Egg Drop competition will be held on April 28th at the Kingsport Town Center Mall. This is our 6th year of hosting the Egg Drop Competition and has grown in popularity every year. The event fosters a hands-on approach to science and math while promoting the profession of engineering. It allows kids to see what it means to be an engineer, since we often struggle to find a simple explanation of engineering. Please consider volunteering to help execute this event which requires just a few hours on the 28th. If you would like to volunteer the day of the event or if you would like to help in the planning stages please contact Wendy Lick by e-mail at wlick@eastman.com.

eChemExpo**Meadowview Convention Center****May 23, 2012**

Registration is now open for the 7th eChemExpo Solutions Marketplace & 5th Technology Innovations Conference. This one-day Exposition and Technology Innovations Conference is emerging as the most robust solutions marketplace held in more than a decade. Well over 100 solution providers have already committed to demonstrate hundreds of products and services to save time, increase profitability and streamline plant operations.

An expanded four track, 35 seminar, "meet the experts" **Technology Innovations Conference** will put you on the leading edge of new developments. The 2012 theme is *Successful Expansion of Manufacturing & Engineering Capabilities in Uncertain Economies*.

Get more information about the keynote, the Expo participants, and the conference seminars at

www.echemexpo.com

Register now!

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:

- Young Professionals Group, Biggie's Clam Bar in Kingsport – April 2nd, 2012
- Perspective on Process Control, James Downs (Eastman Chemical Company) – April 3rd, 2012
- An Evening at the Gray Fossil Site with our Friends from the American Chemical Society – May 3rd, 2012

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!

2012 Local Section Officers, Directors, & Support Staff

Chair:	Stephen Miller	224-7350
Chair-Elect and Program Committee Chair:	Noah McMillan	224-8114
Secretary:	Lane Daley	229-3064
Treasurer:	Rebecca Glaspie	229-6144
Directors:	Paul Fanning	229-8500
	Mark Harrison	229-6952
	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
Corporate Relations Coordinator:	Braxton Sluder	578-6225
AICHE Pipeline Newsletter Editor:	Mark Kettner	229-3907
ETEAC Representative:	Lane Daley	229-3064

2012 Local Company Contacts

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Nuclear Fuel Services Inc., a subsidiary of The Babcock & Wilcox Company	Tracy Coates tjcoates@nuclearfuelservices.com
Domtar	Rhonda Smith, Process Control Engineer 423-392-2797, Rhonda.Smith@domtar.com

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