

FINAL Minutes of June 14, 2018 Ethylene Producers' Environmental Sub-Committee Meeting
(June 14, 2018, Rev. 1)

Following are the minutes of the June 14, 2018 Ethylene Producers' Environmental Sub-Committee Meeting, held via teleconference with Walter Postula, Shell Global Solutions (US) Inc., as host.

Present:

Brandon Lithgoe, NOVA Chemicals
Walter Postula, Shell Global Solutions (US) Inc.
Gerardo Ruiz-Mercado, US EPA (AIChE Environmental Division Chair)
Mark Schmidt, DuPont
Edward Soliz Jr., SASOL North America
Mark Ulrich, Linde Engineering North America
Gary Wojnowski, BASF

Absent:

Rick Beleutz, LyondellBasell
Benjamin Burns, SASOL North America
Ted Heron, The Catalyst Group
Jacob Hilbrich, ChevronPhillips
Brad Hopper, BASF
Patti Long, Eastman
Dan Lutz, Ineos
Arijit Pakrasi, APTIM
Jeffrey Seay, University of Kentucky (AIChE Environmental Division)
Debalina Sengupta, Texas A&M (AIChE Environmental Division)
Dick Siegel, R&B Consulting Services (AIChE Environmental Division)
Russell Wozniak, Dow

The teleconference began at 9:00am with Walter Postula reading the Ethylene Producers' Committee (EPC) anti-trust statement:

No activity of the committee shall involve the exchange, collection, or dissemination of information among competitors for the purpose of bringing about or attempting to bring about an understanding or agreement, written or oral, formal or informal, express or implied, among competitors, with regard to costs, prices, pricing methods, terms or conditions of sale, distribution, production quotas or other limitations on either the timing or volume of production or sales, or allocation of territories or customers.

The meeting agenda was published in advance and is included below:

- 1) Reading of Anti-Trust Statement [9:02 AM]
- 2) Brief Introductions [9:04 AM]
- 3) Chair/Co-Chair for session [9:10 AM]
- 4) Review of 2018 Session Feedback [9:20 AM]
- 5) Discussion of Potential Topics for Environmental Session [9:35 AM]
- 6) Date for Potential Face to Face [9:50 AM]
- 7) Review of Action Items [9:55 AM]
- 8) Important Date Reminders
 - June 29, 2018 – Call for abstracts opens
 - November 12, 2018 – Call for abstracts closes

- December 14, 2018 – Papers accepted or rejected
 - January 18, 2019 – Program goes live
 - March 8, 2019 – Paper submission closes
 - April 1–4, 2019 – Spring Meeting – New Orleans, LA
- 9) Adjourn [10:00 AM]

Brief Introductions: This was the first EPC environmental subcommittee meeting for Gerardo. Everyone on the line introduced themselves with name and affiliation.

Chair/Co-Chair for Session: Mark Ulrich, the 2018 Session Co-Chair, volunteered to accept the 2019 Session Chair role. Brandon Lithgoe volunteered for the 2019 Session Co-Chair role. Thank you Mark and Brandon! Others on the subcommittee who have filled one/both of these roles previously agreed to be available to help Mark and Brandon with questions they may have.

Review of 2018 Session Feedback: Mark Schmidt summarized the feedback received on the 2018 Environmental session.

Subjects attendees would like to see 1) Optical gas imaging (submitted by folks that did presentation on same); 2) Emissions measurements when decoking to firebox (volunteered to be co-author of such a paper); 3) An update on the Ethylene RTR (our 1st paper).

Comments on individual papers 1) Ethylene RTR – too long, very informative (x2), good speaker; 2) Predicting Long Term Evaporative Cooling Tower Water Usage - The Energy-Water Balance – wanted discussion of potential methods to reduce water usage.

Overall, session feedback was very positive. Attendance was a bit lower than the previous three years (conference location may have played a role). For the Spring Meeting, AIChE was happy with the attendance.

Discussion of Potential Topics for Environmental Session: The list below was generated.

- 1) Optical gas imaging
- 2) Emissions measurements when decoking to firebox
[Potential speaker\(s\) from feedback form, from ACC?](#)
- 3) Update to RTR/EMACT
[Potential speaker from ACC, Steve Smith again?](#)
- 4) Methods to reduce water usage / conservation
[Potential speaker from KBR? Gave paper that generated topic.](#)
- 5) Techniques that producers' are using to detect leaks from process into cooling water
- 6) Rejected papers from 2018 session ([abstracts and presenter contact info in Appendix](#))
 - a. Smokeless Operation of Flares: Design and Physical Testing of Industrial Scale Flares
 - b. Practical Low NOx Burner Retrofit Considerations for Ethylene Furnaces
 - c. New Direct Flame Monitoring Technology to Help Operators Comply with Increasingly Stringent Flaring Regulations

Brandon mentioned that he's heard rumors that Fenceline Monitoring will not be part of new EMACT. 2018 presenter on subject mentioned that there was plenty more he could have covered, but being left out of EMACT would make follow-up less relevant.

Date for Potential Face to Face: Agreed that face-to-face meeting was beneficial for those who can attend. Settled on October 11, 2018 meeting date. Mark Ulrich and Linde once again agreed to host.

Review of Action Items: **Walter Postula** to provide contact information for 2018 rejected abstracts to Mark Ulrich and Brandon Lithgoe (Note: Completed on June 14th). **Brandon Lithgoe** to look into

potential speaker for RTR/EMACT idea and decoking to firebox idea. **Rick Beleutz** to check if Steve Smith is willing to follow up on his RTR/EMACT presentation. **Mark Ulrich** to contact 2018 rejected abstract authors to gauge interest in presenting for 2019. **Mark Ulrich** to contact either the KBR presenter from 2018 or a potential Linde presenter to see if they could present on the water conservation idea, and to raise question on the rapid assessment of process leaks into cooling water.

Important Date Reminders: The dates provided in the agenda were reviewed.

Adjourn: The meeting/teleconference was closed at 9:40 am.

APPENDIX

2018 Environmental Session “Rejected” Abstracts

Smokeless Operation of Flares: Design and Physical Testing of Industrial Scale Flares

Abstract Text:

Increased enforcement and changing regulations have placed a renewed focus on flare operation and design. Industrial scale test data is presented for the operation of a flare with mixtures of propane, propylene and nitrogen. The data is compared with standard calculations for flare sizing as well as with general design practices. The data reveals that some common assumptions about the operation of flares may not transfer among flares of differing geometries.

Matthew Martin

Email: matthew.martin@honeywell.com

Honeywell UOP Callidus

Senior Product Line Manager

Practical Low NO_x Burner Retrofit Considerations for Ethylene Furnaces

Abstract Text:

Case studies are presented for retrofit installations of low NO_x burners that comply with new air quality regulations. While the effects of air leakage, fuel gas condition and burner design have been widely studied, here the effects on both NO_x and heater performance are explored and documented through physical experimentation, computational fluid dynamics, and field installation.

Colin Deller

Email: colin.deller@honeywell.com

UOP Callidus

General Manager, Burner Business

New Direct Flame Monitoring Technology to Help Operators Comply with Increasingly Stringent Flaring Regulations

Abstract Text:

Known shortcomings of current flare monitoring methods plus new EPA standards drove the need to develop a new direct flare combustion efficiency (CE) measurement and monitoring method – a technology that directly, autonomously, and continuously monitors flare performance in real time. This patented method, known as VISR, or Video Imaging Spectro-Radiometry, utilizes a multi-spectral infrared (IR) imager to simultaneously measure the relative concentrations of combustion products, carbon dioxide (CO₂), and unburned hydrocarbons (HC) at the pixel level. Directly monitoring flare CE eliminates inaccuracies associated with the current practice of monitoring indirect parameters (heating value, velocity, etc.). Because VISR devices can operate autonomously, no aiming or manual data reduction is required. Remote measurement removes the need for contact with corrosive process streams, making VISR devices less costly to maintain and operate over time. This paper will discuss the VISR technology and how it can be used to generate continuous, real-time data on CE and smoke, allowing operators to optimize flare performance in real time.

Brian Duck

Email: Brian_Duck@zeeco.com

Zeeco, Inc.

Flares

Global Business Manager