ETHYLENE PRODUCERS' TECHNICAL SUBCOMMITTEE MEETING

Date: Thursday: Feb 10, 2022

Time: 4:30 to 5:30 PM CDT

Attendance:

Jason Hamilton, David Spicer, Jose de Barros, Bala Devakottai; Humera Rafique, Jack Buehler, Greg Kehrier, Aivars Krumins, Mark Whitney, Michael Tallman, Muhammad Imran

Agenda:

1) **Anti-Trust Statement Read by Jason Hamilton**

No activity of the Committee shall involve the exchange, collection or dissemination among competitors of information, or be used for the purpose of bringing about or attempting to bring about any understanding or agreement, written or oral, formal or informal, express or implied, among competitors with regard to costs, prices or 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.

2) **Five Minutes on Safety** – Discussed Covid -19 Omnicron safety.

3) **Welcome New Member:**

Gregory Kehrier Shell

Greg is a Senior Technologist in Shell's Projects & Technology Base Chemicals organization, supporting all Shell's ethylene plants and byproduct units across the globe. He started with Shell in 2008 after obtaining a BS in Chemical Engineering and a MS in Industrial (Applied) Mathematics at Michigan State University. Greg has had various roles in the US and the Netherlands including process unit operations support, project design, economics & hydrocarbon plan optimization, and process technology consultation to numerous root cause analysis investigations, process safety studies, and techno-economic optimization projects. Greg prides himself on solving complicated problems collaboratively by bringing in all perspectives, by applying his engineering background to extract value from data, and by developing teams to take better-informed decisions. Outside of work Greg enjoys spending time with his wife Erin and their dog Raven, playing the guitar, and volunteering as a math tutor.

4. **Farewell Ravi Lal**

Ravi is retiring from Technip Energies July 1st, 2022 after of years of service. He will discontinue EPC TSC membership effective today. He will not be attending the conference this year. Thank you for your input and work over the years!!!

5) **General Note to all Session Chairs.**
   a. **Papers to be published will be collected at start of session by AiChE.**
   b. **Authors' need to submit papers to Session chairs.**
   c. **Session chairs will in turn submit papers/upload to EPC .**
   d. **Authors' need to upload papers to AiChE.**

6) **Review Status: Fundamentals Session: Jack and Bob**
   a. **Papers Selected (in order of presentation):**
      i. **New Process Technology Development for the Sustainable Production of Olefins [DOW]**

ii. **From Steel to Ethylene: Super Dry Reforming of CO2 [U Gent]**
iii. **NOVEL Low-Emission Ethylene Plant (renewable power to green H2 for fueling furnace- use ethylene plant / FG storage to remove fluctuations in renewable energy) [Technip]**
iv. **Novel Catalyst for Single Step Conversion of Plastic Waste with 85% Olefin Yield [U Gent]**
v. **Processing of Renewable Gasoil in a Steam cracker [Lyondell-Bassell]**
vi. **Reforming of Cracker Fuel Gas (generate Blue H2 to fuel furnace - capture CO2) [Technip]**

As of today drafts of all 6 papers. Currently, we have 1 draft power point from #3 "low emission ethylene"

7) **Review Status Circularity/Decarbonization Session**

a. **Circular/Decarbonization: Aivars (Co-Chair Humera)**
Papers Selected (in order of presentation):

1. **1 Green Ethylene By Steam Cracking of Renewable Feedstock (Worley)**
2. **2 Hydro-PRT – The Differentiated Plastic Waste Recycling Technology from KBR (KBR)**
3. **3 Circular Economy with Plastics Pyrolysis and Purification (Technip)**
4. **4 Efficient Steps for Meeting Ethylene Process Sustainability Goals (Ingenero)**
5. **5 A Practical Approach to Near-Term Decarbonization of the Ethylene Plant (Technip MHI)**
6. **6 Propane Dehydrogenation and Steam Cracking: Heuristic Approaches to Plant Integration (Linde)**

No drafts yet. Drafts due by 2/18/2022. Approvals by mid-March.

b. **Review Status: Panel Session – Energy Transition & Decarbonization = "Big Picture View" (Sanjeev)**

This session will focus on the big picture issues and strategies to address Energy Transition & Decarbonization within the heavy industries, especially petrochemical industry. Petrochemical industry will play a significant role and contribute towards global efforts in addressing climate change and sustainability.

Our panelists are experts in policy matters, energy studies and bridging the science and policy to develop solutions for a sustainable future. We intend to focus on the following key issues with our panel members:

Three papers to be presented before coffee break:

- Tackling industrial emissions through climate policy initiatives and multilevel engagement
  - Discuss the key policy and governance considerations for achieving decarbonization
- Energy Transition & Geopolitics
- The Path to Sustainability & Circular Economy

Panel discussion with Panelist after coffee break from:

i. **Big Picture of Emission Policies, e.g. Paris Agreement. Panelist from SEI**
ii. **Energy Transition and Geopolitics: Panelist from Rice Univ**
iii. **Path Sustainability and circular economy: Panelist from Rice Univ**
iv. **Key note speaker may also be invited as panelist.**

Speakers and panel members have been contacted. Speakers have been asked for a presentation with notes at minimum and paper if they are willing. Target dates given end of Feb for draft. Mid March for final paper/presentation with notes. Markups changes/final presentation April 1st. If you have any questions for the session please send Sanjeev an email.

8) **Review Status: Ethylene Plant Distillation Tutorial: Bala and Mohamad**

Papers: (In order of presentation)

i. **Distillation Column Fundamentals in Olefins Plants (Sulzer)**
ii. **Gamma Scanning in Ethylene Plants (Quantum)**
iii. **Expanding the Capacity of Ethylene Plant Distillation Towers (Koch-Glitsch)**
iv. **Liquid Cracker Quench Water Tower Choice of Internals and Operation (Sulzer/SCG Chemicals)**
v. **Distillation in Ethylene Plants – An Operators' Overview (NOVA)**
vi. **Systematic Approach to Tower internals in Olefins Plants (UOP)**

Presentation Drafts 1st week of March. Speaker assignments will be clarified in March as well.

This is the final meeting prior to the conference. See you in San Antonio in April.

Future Meeting Dates

June 16, 2022
Aug 11, 2022
Oct 13, 2022
Dec 8, 2022
Jan 26, 2023

March 12-16, 2023 EPC Conference is in Houston, TX