

Highlights from the Texas Industrial Energy Efficiency Program Newsletter Volume 5, Number 1, November 2023

Greetings, from the Texas Industrial Energy Efficiency Program!

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Upcoming TIEEP Events

Save These Dates!

Tuesday-Thursday, November 28-30, 2023: TIEEP's Fall Energy Forum will be collocated with the [ChemE Show](#) in Galveston, Texas. Registration is now open at <https://cheme-show.com/register/>. When prompted for a discount code, TIEEP participants can enter SPTC10off for a 10% discount.

Off To A Fast Start!

TIEEP, and our sister organization the Texas Industrial Efficiency Network (TIEEN), are off to a fast start this fall, with three events in quick succession:

Plastics and Sustainability Symposium

TIEEP co-presented the symposium with UH Energy, in-person at the University of Houston on September 21. The panelists were Jill Martin (Dow Chemical Company), Scott Pasternak (Burns & McDonnell), and Aura Cuellar (LanzaTech). Tracy Hester (UH Law Center) moderated the discussion.

Materials circularity and the fate of materials at end of life have become important considerations as sustainability issues have become central to their use. Focusing on the multifaceted nature and enormity of the challenge, the discussion centered around what would circularity means for the future of production and consumption, meeting consumer demand, and creating and preserving utility across the value chain, while addressing emissions reduction and waste management through new technologies, standards, regulatory



mechanisms like extended producer responsibility, and stakeholder engagement. A recording of the symposium is available on YouTube: <https://www.youtube.com/watch?v=2CVZhxH-qME>

TIEEN Webinar



TIEEN's collaborative webinar took place October 17. This was a panel discussion on the topic *Legislative and Regulatory Developments in Texas Impacting Energy Production, Efficiency, and Use*.

The recent Texas legislative session included several bills with significant potential impacts on both deployment of renewables and energy efficiency. For example, Senate Bill 624 would have created a new layer of state approval for all new wind and solar farms, making projects much more difficult and costly to implement. Meanwhile, Senate Bill 258, which would have increased energy savings goals for utilities, was left pending in committee. Furthermore, operators are getting mixed signals from Federal and State governments. This makes it difficult to manage their operations, and especially difficult to plan for new projects. Our expert panelists shared their insights in this engaging online panel discussion.

Our panelists were:



Doug Lewin (Moderator),
Founder, Stoic Energy; Executive
Director, Texas Energy Summit



Kay McCall, President and Executive
Director of the Renewable Energy
Alliance Houston.



Jack Belcher, Principal, Advisory
Services at Cornerstone
Government Affairs, Inc.

A recording of the webinar, together with pdfs of slides, is available in our event archive at: <https://uh.edu/uh-energy-innovation/uh-energy/educational-programs/industrial-energy/tieen/tieep-events-archive.php>

Energy Day

Energy Day is Houston's largest annual free family festival showcasing science, technology, engineering, and mathematics (STEM). The event is based on interactive demonstrations and exhibits that teach students and their families about the various forms of energy, along with efficiency, conservation, and other related issues.

Energy Day 2023 took place on Saturday, October 21, and TIEEP and TIEEN were there, in collaboration with UH Energy. Our simple distillation activity attracted hundreds of children, parents, and teachers, and led to many valuable discussions on energy, industry and career opportunities.



Shivraj Thosar, Gary Gildert and Jasmin Gildert prepare to share distillation basics with the children of Houston at Energy Day.

Event Previews

Fall Energy Forum



TIEEP's Fall Energy Forum takes place in a new environment – the [ChemE Show](#) at Moody Gardens in Galveston. The ChemE Show is organized jointly by Hydrocarbon Processing and AIChE, and it includes both an exhibition and a [technical program](#), running November 28-30, 2023. Registration is now

open at <https://cheme-show.com/register/>. When prompted for a discount code, TIEEP participants can enter SPTC10off for a 10% discount.

The TIEEP Energy Forum consists of two technical sessions the afternoon of Wednesday, November 29:

Session 09: Energy Efficiency & Decarbonization - Success Stories
Wednesday, November 29, 1:00-2:30 pm

Energy Management Principles for Carbon Reduction
Frank Roberto
ExxonMobil (Retired)

Accelerate Your Sustainability Program
Dr. Douglas White, *Principal Consultant*
Emerson Automation Solutions

Path to Net-Zero Carbon Emissions: Opportunities, Technologies, and Strategies for Dow
Mike Curtis, *Carbon and Energy Technology Principal*
The Dow Chemical Company

Session 11: Energy Efficiency and Decarbonization - Projects and Programs
Wednesday, November 29, 3:00-4:30 pm

Enterprise-wide Energy Efficiency Fleet Monitoring Tool
Bill Hicks, *Principal Sustainability Engineer*
ExxonMobil

Continuous Energy Improvement at Chevron Phillips Chemical Orange Plant
Denyse Howard
Chevron Phillips Chemical

Decarbonized Olefin Production
Chris Scharf, *Vice President, Petrochemicals*
KBR

CCUS Commercial Deployment: What Will It Take To Make It Happen?

Carbon capture, utilization, and storage (CCUS) is a key part of many decarbonization strategies. It is recognized by the International Energy Agency and the U.S. Department of Energy as a necessity for the decarbonization of our society. Markets such as oil and gas, petrochemicals, cement, electric power, hydrogen, and the circular plastics economy all depend on the broad commercial deployment of CCUS.

TIEEP will co-present a workshop on *CCUS Commercial Deployment: What Will It Take To Make It Happen?* with UH Energy and the Center for Carbon Management in Energy, Thursday, December 7, 2023, 8:30 am – noon, in the Theater, Student Center South, at the University of Houston. Further details, and registration requirements, will be available soon.

From the Casebook: Yes, It Does Matter!

I was talking to the energy manager at a large oil refinery. I had worked on the design for a crude unit revamp there the previous year. He casually commented, “By the way, they decided to put E-15B in parallel with E-15A.” He paused for a moment when he saw the look on my face. “That doesn’t matter, does it?”

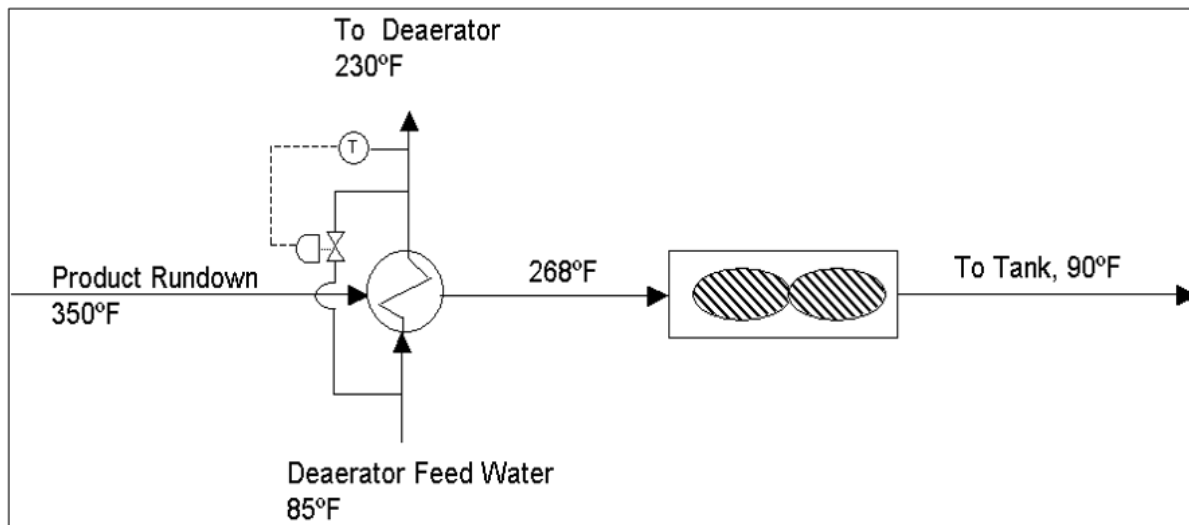
“They did WHAT!” He was rather shaken by my vehement response.

A key part of the preheat train design was a new shell and tube heat exchanger, E-15B, added in a countercurrent series arrangement with an existing heat exchanger, E-15A, to recover additional heat from a major product rundown stream. As discussed in our last TIEEP Highlights Bulletin (Volume 4, Number 3, June 2023), this configuration improves the use of temperature differences, and thus increases heat transfer. Unfortunately, during the implementation of the revamp project, the construction team found that the piping would be simpler if they placed E-15B in parallel with E-15A, so they installed it that way. That change turned out to be significant: It reduced the heat recovery benefit of the revamp by about 50%.

I asked the energy manager if they could correct this error. He was doubtful. The first opportunity to make any changes was several years away, at the next turnaround. Even then, the change would be mechanically difficult, and he doubted that it would be given priority. No wonder I have lost most of my hair!

There was a different problem with a heat recovery project at a petrochemical complex. This project added a new heat exchanger to preheat deaerator feed water, using heat from a product rundown stream. The project was intended to reduce both the steam demand in the deaerator and the air cooler’s heat load.

We had to limit the deaerator feed water temperature to 230°F. I recommended a system that bypassed a portion of the rundown stream around the new heat exchanger to control this temperature. However, the project was installed with the bypass on the deaerator feed water instead (see figure).



Shortly after the project came online, operators reported that the preheated water temperature frequently exceeded the 230°F limit, and the pressure drop in the deaerator feed line was excessive due to vapor locking in the new heat exchanger. The problem was in the control scheme. Bypassing deaerator feed water around the heat exchanger reduced heat pick-up, as expected. However, though the heat pick-up went down, the amount of water passing through the heat exchanger went down even more. Consequently, the temperature of the water leaving the heat exchanger rose as the bypass opened, and it often reached its boiling point – hence the vapor locking. This would not happen with a bypass on the rundown stream.

In this column I have described projects I designed that failed because they were installed incorrectly. The root problem was poor communication, as is so often the case. I have often wondered how many projects have failed because of mistakes in my designs – but I am unaware of any such cases. If you happen to know of any, please don't tell me about them, and leave me in my blissful ignorance!

Adapted from: Alan Rossiter, "Yes, It Does Matter" *Chemical Processing*, Vol. 84, No. 7, p. 12, July 2022.

For More Information: Alan P. Rossiter, 'Back to the Basics', *Hydrocarbon Engineering*, Vol. 12, No. 9, pp. 69-73, September 2007.

In Closing...

Thank you for taking the time to read along with us. We hope you found the information useful, and that you'll join us at our upcoming events.

If you would like to ensure that you receive all program updates and notices of upcoming events, please subscribe on our [webpage](#). The subscribe button is at the bottom right-hand corner.

If you have any questions, or difficulties with registration, or to request removal from this distribution list, please contact Alan Rossiter, aprossit@central.uh.edu or 713-743-1566.