UNIVERSITY of HOUSTON

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Texas Industrial Energy Efficiency Program
Newsletter Volume 1, Number 2, February 2020

Greetings, from the Texas Industrial Energy Efficiency Program!

Things are moving onward and upward in Texas industries, and I am glad that we are on the journey together. Upcoming events are listed in the sidebar, but I would like to highlight the first one – our electric pricing webinar on February 12.

The electric markets are constantly evolving, and they can have a huge impact on the operation of our plants. In *The $9,000 Cap: A Webinar on ERCOT Electric Prices*, 2 p.m. Central, February 12, our speaker panel from MP2 Energy LLC will provide insights into the workings of the Electric Reliability Council of Texas, the grid operator for much of the state. They will also address real-time electric pricing, and the risks and the opportunities that flow from the ERCOT system to industrial consumers. Please join us online for this first of a kind session – and I look forward to seeing you face to face at other events later in the year.

Upcoming TIEEP 2020 Events

February 12, 2:00-3:00 pm: *The $9,000 Cap: A Webinar on ERCOT Electric Prices.* Register below.

April 1, 1:30-5:15 pm: Clean Energy and Efficiency for US Gulf Coast Industry – TIEEP Sessions at AIChE Spring Meeting, GRB Convention Center, Houston.

April 2, 4:00-6:00 pm: Spring Energy Forum – Shafaii Party and Reception Center, 1622 Federal Road, #30, Houston, TX 77015. Theme: *Plant Resiliency - Lessons from Harvey.*

May 7, 2020, 4:00-6:00 pm: Texas Water Forum – Crowne Plaza Hotel Houston near Reliant Medical, 8686 Kirby Drive, Houston, TX, 77054. Theme: *Save Energy While You Save Water – Better Equipment and Better Strategies.*

October 1-2: Fall Energy Forum – AIChE Southwest Process Technology Conference, Sugar Land, TX.

If you haven't registered yet, you can do it here.

Program Highlight: Texas Industrial Energy Efficiency Network (TIEEN)

SECO State Energy Conservation Office

The Texas Industrial Energy Efficiency Network (TIEEN) is a network of publicly supported industrial energy-efficiency organizations. The goal of the network is to enhance opportunities for effective collaboration by members through structured periodic communication. TIEEN was established by the State Energy Conservation Office (SECO), and administrative support is provided through TIEEP. Please take advantage of the many useful energy efficiency resources offered by our TIEEN members. Read on for program details and contact information.

U.S. Department of Energy
CHP Technical Assistance Partnerships
Southcentral

The HARC Clean Energy team (https://www.harcresearch.org/) leads the US Department of Energy's Combined Heat and Power Technical Assistance Partnership (CHP TAP) program for Texas, as well as ten other states that make up the Southcentral and Upper-West regions. CHP is an advanced and highly-efficient approach to generating electric power and useful thermal energy from a single fuel right at the point of use. Every CHP application involves recovering otherwise-wasted thermal energy and putting it to use for heating, cooling, process thermal energy, or electricity. CHP both reduces operating costs and improves the power resilience of a facility. The CHP TAP program provides technical assistance to varied industrial and commercial sites, including early stage qualification screenings, as well as education and outreach through training sessions, webinars, and workshops.

For more information about CHP TAP – Southcentral Office, please contact Gavin Dillingham, PhD, CHP TAP Director at gdillingham@harcresearch.org, or visit US Department of Energy's Combined Heat and Power Technical Assistance Partnership (CHP TAP) at https://betterbuildingssolutioncenter.energy.gov/chp.

TEXAS PACE AUTHORITY

Texas PACE Authority is committed to assist the industrial sector in utilizing the TX-PACE program as a business-savvy approach to financing energy and water efficiency upgrades. TX-PACE answers the question, "How are we going to pay for it?" and is transforming how owners look at projects, proving that there is a clear path forward for energy efficiency, distributed generation, water use reduction, and resiliency projects for existing facilities. The program allows owners to see an immediate increase to net operating income and preserve capital and credit lines for revenue-generating items including employees, technology, products, and growth.

For more information about the Texas PACE Authority, please contact Charlene Heydinger, President, Texas PACE Authority, at charlene.heydinger@keeppace.org, or visit www.texaspaceauthority.org/industrial.

TMAC works with businesses to accelerate their profitable growth and competitiveness by developing and improving their products, processes, technologies and people.

For more information about TMAC, please contact Kurt Middelkoop at Kurt.Middelkoop@tmac.org or visit http://tmac.org.

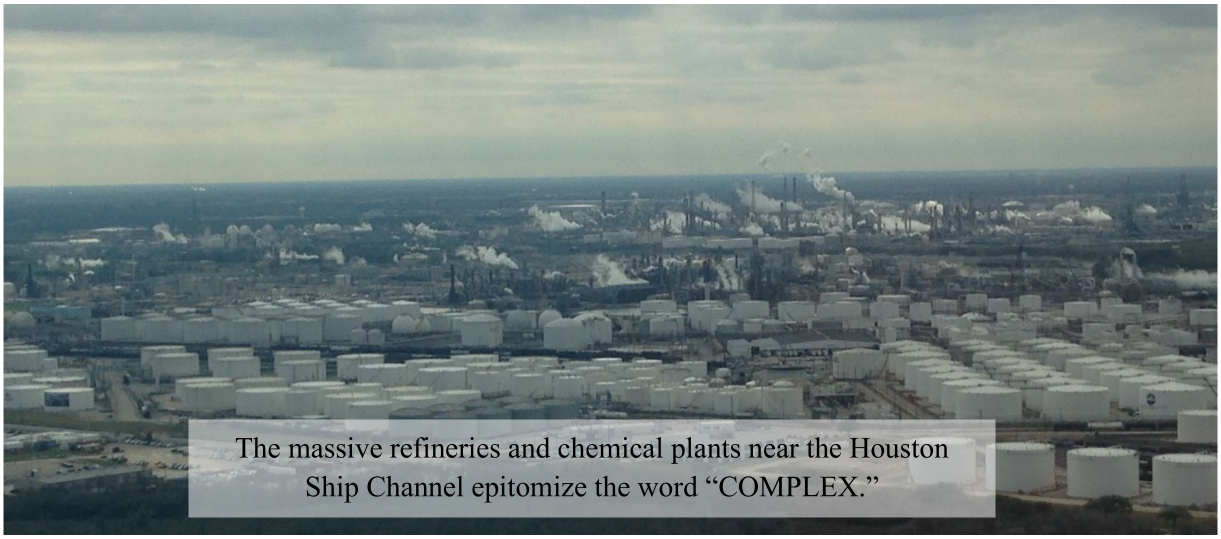
SPEER, one of six regional energy efficiency organizations in the US, aims to accelerate the adoption of advanced building systems and energy efficient products and services in Texas and Oklahoma. SPEER provides educational resources to this sector to advance the understanding and adoption of energy efficiency as a low-cost energy resource, and to design, implement, coordinate, and support regional projects to promote high energy performance and clean distributed energy in the built environment.

For more information, contact Todd McAlister, SPEER Executive Director, at tmcalister@eepartnership.org or visit https://eepartnership.org/program-areas/high-performance-buildings/.

The Texas A&M University Industrial Assessment Center (IAC) provides a no-cost energy conservation study for industrial manufacturing plants within a radius of about 180 miles from College Station, Texas. The US DOE funded IAC program at TAMU is in its 34th year, and has completed over 800 industrial assessments. All forms of energy are evaluated, and all energy usage is scrutinized for conservation opportunities. The IAC Assessment Team is composed of a professional leader (Director or Assistant Director of the IAC) and a 4-5 member team of upper-level staff engineering students who are at the plant site for the one-day assessment site visit. During that day the team will determine the conservation opportunities and gather data in order to quantify the energy and cost savings for each individual project, along with the implementation cost. A formal, bound, professional-quality report is sent to the plant within 60 days of the site assessment visit date which has each project's savings determined, implementation cost, and simple payback. Typically, each report contains 7-12 recommendations and determined savings that average about 11% of the plant total energy spend. Follow-up phone calls to all past plant visit sites has found that about 62% of the projects and savings are implemented by the plants. For more information, contact James Eggebrecht at jegge@tamu.edu, or visit http://iac.tamu.edu/ You may obtain information about the national program at https://www.energy.gov/eere/amo/industrial-assessment-centers-iacs.

From the Casebook: Simple Complexity

The first time I set foot in a large oil refinery, as a member of group of young chemical engineering students, my jaw almost hit the ground. It wasn't just the size; it was the shear complexity. Pipes seemed to go everywhere, huge towers and stacks loomed above my head, and steam leaks hissed and sputtered around us.



The massive refineries and chemical plants near the Houston Ship Channel epitomize the word "COMPLEX."

"How can anyone ever master all of this?" I mumbled, in awe and dread.

Our guide, who happened to be nearby, smiled benevolently. "No-one can. Of course, everyone gets to know parts of it well; but no-one knows the whole thing."

His observation was profound. My formal education had always been about mastering concepts and methods, in order to pass tests. In my naivety, I assumed that the rest of life must be the same. The refinery manager must be the person who had passed all the tests, and understood it all. I was wrong. My guide was right: No-one can know it all.

High levels of complexity create many opportunities for error, though the errors themselves are often very simple, as the following two examples illustrate.

A large chemical plant had been through a major revamp, and now it was experiencing a shortage of cooling water. This created bottlenecks that were limiting production and increasing energy intensity; so management initiated a project to add a cooling tower and upgrade the cooling water pumps.

A colleague of mine was on the project team, but he suspected that something important had been missed. Before starting to design new equipment, he carried out a hydraulic survey of the existing cooling water system. His study yielded a surprising result. A section of plant had been decommissioned during the revamp, but the equipment was left in place. All streams into and out of this area should have been isolated; but the main valve for the cooling water had been overlooked, and it was left open. When my colleague reported this, this valve was closed. This eliminated a large, unmetered cooling water flow. As a result, the cooling water shortage was resolved, without any new equipment or upgrades.

Heat recovery systems are also very important in many process plants. Some of the most complex are the crude unit preheat trains found in oil refineries. Heat exchanger cleaning programs are important in maintaining the performance of these systems, and refinery management has become very sophisticated in this area. Cleaning techniques are improving, and software tools are available for assessing appropriate cleaning intervals for the heat exchangers in the circuit. However, things can and do go wrong.

During a crude preheat train study in a refinery, I noted that one of the heat exchangers was out of service – not unusual, as heat exchangers often require maintenance. However, the records showed that this particular heat exchanger had been idle for more than three months. Further investigation showed that the heat exchanger had been cleaned. When and the work was completed, the maintenance supervisor had notified the shift supervisor. This happened right at the end of the day shift, too late for the shift team to put the heat exchanger back in service. Somehow, the night shift was not informed of the situation; so the heat exchanger remained out of service until I started asking questions three months later. When the unit manager was informed of the situation, it required only a few hours to put the heat exchanger back in service. The energy loss during the time that the heat exchanger had been left idle after the cleaning was worth over $100,000.

In both of these examples, there was a breakdown in communication, and as a result tasks were not completed. I would be very interested to hear from readers who have seen similar miscommunication issues, and simple problems in the midst of complex facilities.

Adapted from: *Don't Get Tangled Up by Complexity*, Alan Rossiter, Chemical Processing, Vol. 81, No. 12, p. 12, December 2019.

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 in 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.

If you have any questions, or difficulties with registration, or to request removal from this distribution list, please contact Li Lopez, llopez37@Central.UH.EDU or 713-743-7904.