The Thirty-Sixth Industrial Energy Technology Conference

PROGRAM

Hosted By:

IETC.TAMU.EDU
On behalf of the hosts and sponsors of the thirty-sixth Industrial Energy Technology Conference (IETC), welcome! Our program brings together nationally prominent experts from many areas of industrial energy management.

The IETC staff and your hosts, Texas A&M University System’s Energy Systems Laboratory and the Louisiana Department of Natural Resources, along with our many co-sponsors are committed to providing all attendees with a wealth of information that will help them improve the performance of their companies—something to take home and use immediately!

This year’s 2014 Energy Managers’ Workshop builds on its past successes and will again provide a great opportunity for you to expand your energy management proficiency. Eight top energy managers and industry leaders present an extensive workshop agenda entitled: “Energy Management: Strategies and Successful Applications.” The conference will wrap up with two post-conference workshops. Spirax Sarco Inc. will present “Steam System Workshop” and Christopher Russell will present “Business Case Bootcamp for Energy Managers”.

We are confident that you will profit from the experience and technical expertise of our presenters and panelists, and best of all, the interaction with so many energy professionals in one place.

Malcolm Verdict, C.E.M., Chair
Industrial Energy Technology Conference

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**Technical Sessions**
The traditional technical sessions consist of 25-minute presentations followed by a 5-minute question and answer period after each presentation. There will be a 5-minute break between papers to permit movement of conferees between sessions.

**Workshops**
The Pre-Conference Energy Managers Workshop continues for its twenty-second year, exploring the topic of “Energy Management: Strategies and Successful Applications.” There are two post-conference workshops this year.

**Sponsored Reception**
The Welcome Reception at 5:30 p.m. on Wednesday evening May 21 is sponsored by Champion Energy Services.

**Sponsored Breakfast – Wednesday 7:15 – 8:00 am**
The Session Chair and Presenter Breakfast is sponsored by ICF International, Feliciana Room 10th Floor
Breakfast for all others in the Parish Hall, 10th Floor

**Sponsored Coffee Breaks**
Wednesday’s & Thursday’s Breaks are sponsored by Soteica Visual MESA LLC.

**Wednesday Keynote Speakers**
Features Nick Jones of Exxon Mobil Corporate Strategic Planning and Dr. Helmuth Ludwig of Siemens Industry Sector USA.

**Thursday Awards Lunch**
Features IETC Energy Awards presentations to DuPont Protection Technologies and Dr. R. Neal Elliott of the American Council for an Energy Efficient Economy.

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**Proceedings**
The IETC Proceedings are available on the IETC website:
http://ietc.tamu.edu/program-2

**Call for Papers**
Abstracts are now being accepted for the Thirty-seventh Industrial Energy Technology Conference. Interested authors should submit one electronic abstract of not more than 400 words by no later than September 22, 2014 to:

James A. Eggebrecht Phone: (979) 845-1508
IETC Executive Director Email: jim@esl.tamu.edu

**Continuing Education & Professional Development Credits**
The Industrial Energy Technology Conference and the workshops meet the criteria for continuing education and professional development hours required by many state professional engineering boards. Check with Alissa or Jim at the registration desk for information and a CEU form.
ENERGY MANAGERS WORKSHOP SCHEDULE

Tuesday, May 20

7:30 - 8:00 a.m. Registration and Breakfast in Parish Hall, 10th Floor
Workshop held in Feliciana Room, 10th Floor

8:00 - Opening Remarks – James Eggebrecht, Texas A&M University

8:15 - 9:15 “Integrated Industrial Site Planning,”
Peter Garforth, Garforth International llc

9:15 - 9:45 “The Gulf Coast Industrial Investment Renaissance and New CHP Development Opportunities,”
David E. Dismukes, Center for Energy Studies, Louisiana State University

10:15 - 11:00 “Building an Energy Team at a Site,”
Fred C. Schoeneborn, FCS Consulting Services Inc.

11:00 - 11:45 “Identifying and Quantifying Opportunities in Industrial Plants,”
Walter Brockway, Alcoa Inc.

12:00 - 1:00 p.m. – Lunch in St. Landry Room, 9th Floor

1:00 - 1:30 “Energy Data Capture and Reporting that Drives Strategic Decisions – Case Study from a Major Manufacturer,”
Peter Garforth, Garforth International llc

Christopher Russell, Energy Pathfinder Management Consulting LLC

2:45 - 3:30 “Industrial Opportunities from Federal GHG Emissions Regulations,”
R. Neal Elliott, American Council for an Energy Efficient Economy

James E. Robinson, DES Global, LLC

4:15 - 4:40 “SEEA Industrial Energy Efficiency Survey: Drivers of Value for Manufacturers”
Robert Bruce Lung, President – IEEA

4:40 - 4:50 Wrap-up, critiques & dismissal
Steam Best Practices Workshop

8:00 am  Welcome and Introductions

8:20 am  Steam System Fundamentals - What is steam?
  • Basic Steam Properties
  • Generation of Steam
  • Steam Distribution
  • Condensate Line Sizing

  9:40 am - Break

10:00 am  Steam Trapping
  • Steam Trap Types
  • Operating Characteristics
  • System Requirements
  • Matching steam trap Characteristics & system needs

Business Case Bootcamp for Energy Managers Workshop

8:00 am  Welcome and Introductions

8:20 am  Setting the Stage: Facilities Management Version 1.0

8:50 am  The Role of an Energy Manager

  9:40 am - Break

11:00 am  Process Heating Equipment
  • Condensate Drainage
  • Vacuum
  • Backpressure
  • Steam Trap pressure differential
  • Potential Problems & Solutions

  12 noon - Lunch

1:00 pm  Condensate Recovery
  • Energy & Utilities cost justification
  • Condensate pump types – Electric & Non-electric
  • Problems & Solutions

  2:00 pm - Adjourn
Conference Sessions  DAY ONE Wednesday Morning, May 21

7:00 - 5:00  Registration, Parish Hall, 10th Floor
7:00 - 8:00  Breakfast for Authors and Session Chairs in Feliciana Room, 10th Floor, sponsored by ICF International
All other attendee breakfast in Parish Hall, 10th Floor
8:00 - 8:25  Plenary and Welcoming Remarks: Malcolm Verdict, IETC and Energy Systems Laboratory, Louisiana Ballroom, 10th Floor
8:25 - 8:40  American Chemistry Council Recognition of Energy Awards
8:40 - 9:05  Keynote Speaker: Nick Jones, Exxon Mobil Corporate Strategic Planning
9:15 - 11:50  Sessions 1 - 5

Session 1  American Chemistry Council Award Winners 1
Session Chair: Dave Lauterbach, DuPont
LaFourche Room, 9th Floor
10:20 - 10:45  Coffee Break and Exhibits - Parish Hall, 10th Floor

Session 2  Bass Connections Program in Industrial Energy Efficiency
Session Chair: Gale Boyd, Duke University
Pointe Coupee, 9th Floor
10:20-10:45  Coffee Break and Exhibits – Parish Hall, 10th Floor

Session 3  Energy – Getting the Big Picture
Session Chair: Peter Garforth, Garforth International, llc
St. Landry Room, 9th Floor
10:20-10:45  Coffee Break and Exhibits – Parish Hall, 10th Floor

Session 4  Equipment Analysis and Related Issues
Session Chair: Jim Robinson, DES Global, LLC
St. Tammany Room, 9th Floor
10:20-10:45  Coffee Break and Exhibits – Parish Hall, 10th Floor

Session 5  Superior Energy Performance
Session Chair: Paul Scheihing, US Department of Energy
Terrebonne Room, 9th Floor
10:20-10:45  Coffee Break and Exhibits – Parish Hall, 10th Floor
1:45-5:00  
**Sessions 6 - 10**

2:50-3:15  
Coffee Break and Exhibits - Parish Hall, 10th Floor

5:30 - 7:00  
Welcome Reception Sponsored by Champion Energy in La Piazza d’Italia, outdoors next to hotel entrance. Entertainment, food & prizes!

### Session 6
**American Chemistry Council Award Winners 2**

**Session Chair:** Ray Ratheal, Eastman Chemical  
LaFourche Room, 9th Floor

1:45-2:15  

2:20-2:50  
“Data Center: Efficiency & Sustainability at Work,” George Flowers, SABIC.

### Session 7
**The Energy/Water Nexus in the Process Industries**

**Session Chair:** Kathey Ferland, Texas Industries of the Future  
Pointe Coupee, 9th Floor

1:45-2:15  

2:20-2:50  

2:50-3:15  
Coffee Break and Exhibits – Parish Hall, 10th Floor

3:15-3:45  

3:50-4:20  
“The Energy-Water Nexus: Implications for Energy Efficiency,” Michael R. Muller, Rutgers University, John Gardiner, Boise State University, Michael B. Muller, Rutgers University, and Dev Shrestha, University of Idaho.

### Session 8
**International Industrial Energy Conservation Efforts**

**Session Chair:** Michaela Martin, ICF International  
St. Landry Room, 9th Floor

1:45-2:15  

2:20-2:50  

2:50-3:15  
Coffee Break and Exhibits – Parish Hall, 10th Floor

3:15-3:45  

3:50-4:20  
“Lessons Learned: Guidance Based on Early Experiences of Implementing ISO 50001 and SEP,” Paul Monaghan, Enerit Ltd.

4:25-4:55  

### Session 9
**Equipment Analysis**

**Session Chair:** Thomas Theising, BASF Corporation  
St. Tammany Room, 9th Floor

1:45-2:15  

2:20-2:50  

2:50-3:15  
Coffee Break and Exhibits – Parish Hall, 10th Floor

3:15-3:45  

3:50-4:20  

4:25-4:55  

### Session 10
**Metering for Energy Conservation**

**Session Chair:** Eric Soucy, Natural Resources Canada  
Terrebonne Room, 9th Floor

1:45-2:15  

2:20-2:50  

2:50-3:15  
Coffee Break and Exhibits – Parish Hall, 10th Floor

3:15-3:45  
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<thead>
<tr>
<th>Session 11</th>
<th>American Chemistry Council Award Winners 3</th>
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<tbody>
<tr>
<td><strong>Session Chair:</strong> Frank Roberto, ExxonMobil Chemical Company</td>
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<tr>
<td>Feliciana Room, 10th Floor</td>
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<tr>
<td>8:30-9:00</td>
<td>“BASF Corporate Energy Management Process,” Ty Geiger, BASF Corporation</td>
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<td>9:35-10:15</td>
<td>Coffee Break and Exhibits – Parish Hall, 10th Floor</td>
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<tr>
<th>Session 12</th>
<th>Offshore Energy Conversion from Wave Energy</th>
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<tbody>
<tr>
<td><strong>Session Chair:</strong> Scott Harrison, TXU Energy</td>
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<tr>
<td>Terrebone, 9th Floor</td>
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<tr>
<td>8:30-9:00</td>
<td>“Wave Energy Conversion Overview and it’s Renewable Energy Potential for the Oil and Gas Industry,” Jeremiah C. Pastor, Yucheng Liu, and Yangqing Dou, University of Louisiana – Lafayette.</td>
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<td>9:35-10:15</td>
<td>Coffee Break and Exhibits – Parish Hall, 10th Floor</td>
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<thead>
<tr>
<th>Session 13</th>
<th>Pneumatic Systems Energy Usage</th>
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<tr>
<td><strong>Session Chair:</strong> Vestal Tutterow, Project Performance Company</td>
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<tr>
<td>St. Landry Room, 9th Floor</td>
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<tr>
<td>8:30-9:00</td>
<td>“Compressed Air System Analysis and Retrofit for Energy Saving – An Industrial Case Study,” Andrew Chase Harding and Darin Nutter, University of Arkansas – Fayetteville.</td>
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<td>9:35-10:15</td>
<td>Coffee Break and Exhibits – Parish Hall, 10th Floor</td>
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<thead>
<tr>
<th>Session 14</th>
<th>Corporate Energy Programs that Produce Results</th>
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<tr>
<td><strong>Session Chair:</strong> Walter Brockway, Alcoa Inc.</td>
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<tr>
<td>St. Tammany Room, 9th Floor</td>
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<tr>
<td>8:30-9:00</td>
<td>“Life Cycle Assessment and Sustainability of Chemical Products,” Abdelhadi Sahnooune, ExxonMobil Chemical Company.</td>
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<td>9:35-10:15</td>
<td>Coffee Break and Exhibits – Parish Hall, 10th Floor</td>
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Conference Sessions  DAY TWO Thursday Afternoon, May 22

12:00 - 1:30  IETC Energy Awards Luncheon, Louisiana Ballroom, 10th Floor
Award Recipients: DuPont Protection Technologies and Dr. R. Neal Elliott, American Council for an Energy Efficient Economy

1:45 - 3:20  Sessions 15 - 17

2:50 - 4:00  Coffee Break, Parish Hall, 10th Floor

Session 15  Texas A&M University Energy Research and Analysis
Session Chair: Billy Williamson, Louisiana Department of Natural Resources
Feliciana Room, 10th Floor


Session 16  Energy Usage Analysis on a National Scale
Session Chair: Eddy Trevino, Texas State Energy Conservation Office
Terrebonne Room, 9th Floor

1:45-2:15  “U.S. Manufacturing Energy Use and Loss, the Big Picture,” Sabine Brueske and Ridah Sabouni, Energetics Incorporated.

Session 17  Using 'Big Data' to Minimize Costs
Session Chair: Neal Elliott, American Council for an Energy Efficient Economy
St. Tammany Room, 9th Floor

**Program at-a-glance**

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<tr>
<th>Date</th>
<th>Time</th>
<th>Event Description</th>
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<tr>
<td><strong>Monday, May 19</strong></td>
<td>5:00 pm - 6:30 pm</td>
<td>Registration – Parish Hall, 10th floor</td>
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<tr>
<td><strong>Tuesday, May 20</strong></td>
<td>7:30 am - 5:00 pm</td>
<td>Registration – Parish Hall, 10th floor</td>
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<td>8:00 am - 4:30 pm</td>
<td>Energy Managers Workshop – Feliciana Room, 10th floor</td>
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<td>12:00 noon - 1:00 pm</td>
<td>Energy Managers Workshop Lunch – St. Landry Room, 9th Floor</td>
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<tr>
<td><strong>Wednesday, May 22</strong></td>
<td>7:00 am - 5:00 pm</td>
<td>Registration – Parish Hall, 10th floor</td>
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<td>7:00 am - 8:00 am</td>
<td>Breakfast for All Attendees – Parish Hall, 10th floor</td>
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<td>7:15 am - 8:00 am</td>
<td>Breakfast Meeting for All Authors and Session Chairs – Feliciana Room, 10th floor</td>
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<td>7:00 am - 5:00 pm</td>
<td>Exhibits – Parish Hall, 10th floor</td>
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<tr>
<td><strong>Plenary</strong></td>
<td>8:00 am - 9:05 am</td>
<td>Opening Welcome – Louisiana Ballroom, 10th floor</td>
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<td>Keynote Speaker: Nick Jones, Exxon Mobil Corporate Strategic Planning – Louisiana Ballroom, 10th floor</td>
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<tr>
<td><strong>Sessions 1 - 4</strong></td>
<td>9:15 am - 11:50 am</td>
<td>Technical Sessions</td>
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<tr>
<td>Coffee break &amp; Exhibits</td>
<td>10:20 am - 10:45 am</td>
<td>Parish Hall, 10th floor</td>
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<tr>
<td><strong>Sessions 5 - 8</strong></td>
<td>1:45 pm - 5:00 pm</td>
<td>Technical Sessions</td>
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<td>Coffee break &amp; Exhibits</td>
<td>2:50 pm - 3:15 pm</td>
<td>Parish Hall, 10th floor</td>
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<tr>
<td><strong>Tuesday, May 20</strong></td>
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<td>IETC Luncheon – Keynote Speaker: Helmuth Ludwig, Siemens Industry Sector USA – Louisiana Ballroom, 10th floor</td>
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<tr>
<td><strong>Thursday, May 22</strong></td>
<td>7:00 am - 11:00 am</td>
<td>Registration – Parish Hall, 10th floor</td>
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<tr>
<td><strong>Sessions 11 - 14</strong></td>
<td>8:30 am - 11:55 am</td>
<td>Technical Sessions</td>
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<td>Technical Sessions</td>
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<td>Coffee break:</td>
<td>2:50 pm - 4:00 pm</td>
<td>Parish Hall, 10th floor</td>
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<tr>
<td><strong>Friday, May 23</strong></td>
<td>7:00 am - 8:00 am</td>
<td>Business Case Bootcamp for Energy Managers Workshop – West Feliciana Room, 10th floor</td>
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<td>8:00 am - 2:00 pm</td>
<td>Steam Best Practices Workshop – East Feliciana Room, 10th floor</td>
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<td>Lunch – Parish Hall, 10th floor</td>
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### Room Assignments

- **LaFourche Room** 9th Floor
- **Pointe Coupee Room** 9th Floor
- **St. Landry Room** 9th Floor
- **St. Tammany Room** 9th Floor
- **Terrebonne Room** 9th Floor

- **Feliciana Room** 10th Floor
- **Terrebonne Room** 10th Floor
- **St. Landry Room** 10th Floor
- **St. Tammany Room** 10th Floor

- **Piazza D’Italia outdoors**
- **Parish Hall, 10th floor if inclement weather**

- **Texas A&M University Energy Research and Analysis**
- **Energy Usage Analysis on a National Scale**
- **Using ‘Big Data’ to Minimize Costs**
**Mr. E. Nick Jones, Energy Advisor, Exxon Mobil Corporate Strategic Planning Department**

“The Outlook for Energy – A View to 2040”

Nick Jones is an Energy Advisor in ExxonMobil’s Corporate Strategic Planning Department. In this capacity, he is responsible for assessing economic and energy trends, emerging energy technologies, and related market and public policy issues around the world. He is a principal contributor to ExxonMobil’s long-term global energy outlook, including the identification of potential implications for energy markets and the Corporation’s strategic plans. He is also active in communicating ExxonMobil’s view of the energy future to a wide variety of audiences.

Nick has worked for ExxonMobil since 2001 in a variety of technical and management positions. He holds a B.S. in Chemical Engineering from the University of South Carolina and a Ph.D. in Chemical Engineering from Purdue University.

**Dr. Helmuth Ludwig, Chief Executive Officer, Siemens Industry Sector North America**

“Manufacturing More Competitively in America”

As Chief Executive Officer of the Industry Sector in the U.S., Helmuth Ludwig is responsible for all business activity and executive management of the Siemens Industry Sector business in the United States. In his more than 20 years with Siemens, Helmuth has held a broad range of strategic leadership positions.

He joined Siemens in 1990, working in corporate strategy developing regional business plans. After serving as general manager of Siemens’ first organization in Kazakhstan, he joined the Automation and Drives group where he was responsible for process automation systems in Karlsruhe, Germany. He then became head of Siemens Energy and Industry division in Buenos Aires. Later, he became president of the Systems and Software House within the Automation and Drives headquarters in Nuremberg, Germany.

Helmuth then moved to the Systems Engineering Business Unit as president before being appointed president of Siemens PLM Software, a business acquired by Siemens in 2007 and headquartered in Plano, Texas. In that role, he successfully led the organization’s integration into Siemens with its 50 legal entities and multiple facilities in 26 countries while working with its management team to develop long-term strategic direction. In 2010, Helmuth became responsible for the global communications activities of the Industry Sector’s Industry Automation division. He took over as CEO for the Industry Sector in North America in October 2011.

Helmuth holds a master’s degree (“Diplom”) in industrial engineering from the University of Karlsruhe, Germany; a Master of Business Administration from the University of Chicago; and a doctorate from the Christian-Albrechts-University in Kiel, Germany. He also teaches as Adjunct Professor for Corporate Strategy at Southern Methodist University’s Cox School of Business in Dallas. He is fluent in German, English and Spanish.
Dr. R. Neal Elliott, PE
2014 IETC Energy Award Winner

Dr. Neal Elliott’s energy efficiency career spans over three decades of outstanding dedication to the field of industrial energy efficiency programs, education, and research at the state and national levels. He is an internationally recognized expert and author on energy efficiency programs and policies, industrial energy policy, combined heat and power, and a highly sought speaker at domestic and international energy conferences.

Since 1993, he has been the Associate Director for Research at the American Council for an Energy-Efficient Economy (ACEEE), one of the leading energy-efficiency advocacy groups in Washington, D.C. He oversaw the establishment of ACEEE’s State Clean Energy Resource Project that collects data on state energy efficiency policies, managed the development of ACEEE’s annual State Policy Scorecard, and helps prepare state-specific energy efficiency potential and policy assessments. He is also one of the foremost advocates for Combined Heat and Power [CHP] at the national and state levels. Neal is the past president, past board and executive committee member, and past Chair of the Legislative Policy Committee of the U.S. CHP Association. He is frequently asked to testify before Congress and local governments on industrial energy policy and programs.

Prior to joining ACEEE, Elliott was an adjunct associate professor of Civil and Environmental Engineering at Duke University and Senior Engineering Project Manager at the N. C. Alternative Energy Corporation. Elliott has B.S. and M.S. degrees in Mechanical Engineering from North Carolina State University, and a Ph.D. from Duke University in civil and environmental engineering.

Last but not least, he serves generously with his time on the Strategic Advisory Group for the Institute for Industrial Productivity and on the Advisory Board of the Industrial Energy Technology Conference since 1998. He has received numerous energy efficiency awards and is a registered Professional Engineer in North Carolina and holds six U.S. patents.

DuPont Protection Technologies
2014 IETC Energy Award Winner

Process steam condensate is recovered and flashed to generate low pressure steam in this DuPont unit operation. The low pressure condensate formerly was flashed further to an atmospheric flash tank and then that condensate used in the process elsewhere. A compact heat plate and frame heat exchanger was installed to preheat feed using the condensate flow from the low pressure flash tank to the atmospheric flash tank, eliminating the use of injected virgin steam to preheat the feed. In addition to energy savings from injector steam, the preheat via heat exchange lowered the waste water load from this operation by approximately 50%, saving an estimated two million gallons per year. Special mixers were installed that allow for the utilization of the heat recovery equipment under all conditions without severe water hammer. By allowing all condensate to flow through the heat recovery equipment all the time, steam that would have been vented during the bypassed time was productively put through the flash tank and heat recovery equipment.

The approach was innovative for the plant, because they had little experience with welded plate exchangers. In addition, the use of special mixers to eliminate water hammer to allow for maximum utilization of the heat recovery equipment was novel and not normally done. In this case having the ability to mix hot flashing condensate and relatively cold sub cooled condensate was absolutely necessary for the economics of the heat recovery equipment. It also solved a safety issue. The energy savings exceeded the expectations. The feed was able to be heated farther than designed, resulting in greater energy savings. Because of this, more of a volatile component flashed out prior to the unit operation resulting in the plant being able to reduce stripping steam in addition to eliminating injected steam.
## Sponsors

- American Chemistry Council
- Champion Energy Services
- ICF International
- Louisiana Department of Natural Resources
- Soteica Visual MESA, LLC
- Spirax Sarco, Inc.
- TLV Engineering
- US Department of Energy - Advanced Manufacturing Office

## Exhibitors

- Association of Energy Engineers
- Champion Energy Services
- EPI Engineering
- Miura Boilers
- Soteica Visual Mesa LLC
- Spirax Sarco, Inc.
- TLV Engineering
- US DOE

## Supporting Organizations

- Association of Energy Engineers
- Chemical Engineering Progress
- LonMark International

## Hosts

- Energy Systems Laboratory - Texas A&M Engineering Experiment Station
- Louisiana Department of Natural Resources