IAC INDUSTRIAL ASSESSMENT CENTERS

A Program of the U.S. Department of

Beginning in 1976, the Industrial Assessment Centers (IACs) have provided small and medium-sized manufacturers with site-specific recommendations for improving energy efficiency, reducing waste, and increasing productivity through changes in processes and equipment.

WINTER NEWSLETTER **2018**

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SIGN UP for an assessment at **http://iac.university**

or contact your nearest center.

IAC PROGRAM HIGHLIGHTS

IAC Directors Teach Exciting Courses in Fall 2018

Industrial Assessment Center (IAC) Directors wear many hats in their roles at their respective institutions – they teach and conduct research, mentor engineering students, and lead the IACs through site visits. During the fall 2018 semester, IAC Directors taught energy efficiency and renewable energy

courses that complemented the hands-on learning IAC students received through assessments. The following courses were offered to undergraduate and graduate IAC students and their peers:

- "Energy Systems: Analysis and Measurement" – Dr. Keith Woodbury, University of Alabama
- "Introduction to Fuel Cell Systems" – Dr. Comas Haynes, Georgia Institute of Technology
- "Energy Conservation in Industry" – Dr. Stephen Terry, North Carolina State University
- "Advanced Energy Systems" – Dr. Alexander Domijan, University of Texas Rio Grande Valley
- "Renewable Energy Systems" – Dr. John Gardner, Boise State University
- "Energy Conservation and Conversion" – Dr. Glenn Cunningham, Tennessee Technological University
- "Industrial Assessment & Improvement" – Dr. Hitesh Vora, Oklahoma State University
- "Energy Efficient Manufacturing" – Dr. J. Kelly Kissock, University of Dayton

These courses impart invaluable knowledge regarding energy efficiency and renewable energy that put students ahead of the curve when they graduate. Through these courses, the IAC directors are preparing hundreds of students annually for a successful career in energy systems.

PROGRAM HIGHLIGHTS

WE² Can Do It: Empowered Women Empowering Women in the IAC

An advisory board of women with experience in the IAC program will lead a new Women for Energy Efficiency (WE²) network to broaden the impact of the IAC program and encourage female

leadership in the industry. The network will help members foster their mentoring and networking relationships – two elements that are crucial to a successful career in energy engineering. The board will create strategies for advancing leadership, provide mentorship and career advice to students, as well as lead efforts in professional development and advancement opportunities. Membership is open to IAC students, alumni, faculty, and staff.

According to the IAC database, 33% of participants at the start of the program are female, a larger percentage than the overall ratio of 20% females in engineering (as reported by the Society of Women Engineers). However, by the time students leave the program to enter the workforce, the percentage drops to 13%. The goals of WE² are to determine why women are leaving the engineering field and to take proactive steps to increase retention rates.

The advisory board is managed by Siddika Pasi, Associate Director of the Rutgers Field Management team, and includes Sandy Glatt [U.S. Department of Energy (DOE)], Michaela Martin (ICF), Dr. Zheng O'Neill (University of Alabama), Dr. Elizabeth Carroway (Clemson University), Dr. Sandra Eksioglu (Clemson University), and Julie Sieving (University of Utah).

WE² kicked off its first event on Wednesday, October 17, with a video call to connect the advisory board with some of the members of the program. A panel discussion focused on mentorship and careers will take place in the near future. Additional panel discussions and regional meetings are also planned for the WE² group. WE² plans to create a strong presence within the IAC program through networking events and social media campaigns. ■

CENTER SPOTLIGHT

Tennessee Tech Snags Top Spot with the 2018 Center of the Year Award

The Tennessee Technological University (Tennessee Tech) IAC, along with its satellite center at the University of Memphis, received the 2018 Center of the Year award at the IAC Director's Meeting in Chicago, Illinois.

IAC Leadership - Dr. Glenn Cunningham received his PhD at Tennessee Tech and is an associate professor in the mechanical engineering department. He has been the Director of Tennessee Tech's IAC program for the past decade and has led 147 industrial assessments and trained 163 students during that time. The Tennessee Tech IAC has helped companies save almost $6 million since beginning assessments in 2007. Tennessee Tech's IAC team performs approximately 15 assessments annually with an average of six students per assessment, making it a consistent top performer in the IAC program. Dr. Cunningham teaches undergraduate and graduate level HVAC (heating, ventilation and air conditioning) Design and Energy Conservation and Conversion courses. He also works with Dr. Larry Moore, director of the satellite center in Memphis, on a program that optimizes the oxygen levels in wastewater treatment plants.

Industry Partnership - Dr. Cunningham procured a formal partnership with the Tennessee Valley Authority (TVA), a federally owned utility company that powers most of Tennessee and parts of Alabama, Mississippi, and Kentucky. A representative from TVA accompanies students on their assessments and helps them identify opportunities. Establishing a partnership with the local

CENTER SPOTLIGHT

utility company gives the center access to more plants and financial support for some of their recommendations. Dr. Cunningham is also working with the Magnolia Combined Power Plant in Ashland, Mississippi to achieve ISO 50001 certification, making this plant the first in the country to do so.

Mentorship and Outreach - Dr. Cunningham also mentors and trains faculty and staff at other IAC centers. He coached the Clemson University IAC on how to perform energy assessments. He has conducted a number of non-IAC energy assessments including a training for Purdue in steam systems. He also conducts InPlant trainings for the DOE Better Plants Program in steam, compressed air, and pumping systems. Dr. Cunningham has done research on organic Rankine cycles and their use in industry. He conducted more than 250 assessments a year for the DOE Save Energy Now program.

Dr. Glenn Cunningham *receives Center of the Year award from DOE Program Manager, John Smegal, at the 2018 IAC Director's Conference.*

When asked for a comment about receiving the award, Dr. Cunningham stated that he was pleasantly surprised about the win and that he is proud to be a part of the IAC program. He believes it is important to students' learning as it gives them hands on experience in energy efficiency. He enjoys being a part of this program and has a tremendous respect for the other centers, directors, and program administrators. ■

CLIENT TESTIMONIAL

University of Missouri – Columbia

"The audit was very well done. Not only did it provide Dean Foods with sustainability projects and the savings calculations used for project justification, it also provided your students with real world hands-on experience. Dean Foods, like many organizations today, is being asked to dig deeper for sustainability and cost savings projects, so this audit will allow us to fill the pipeline. We will get together to look over the projects and discuss possible timelines for completion."

– Jerry Brunner, Director, Regional Engineering – North Region at Dean Foods (Rockford, Illinois)

Louisiana State University

"Your recommendations are excellent and I thank you and your team for spending time on this project. Come back any time!"

– Jacob Talley, CEO at Tin Roof Brewing Company (Baton Rouge, Louisiana)

Indiana University – Purdue University of Indianapolis

"Thank you very much for the reports! We find this very helpful information. Thank you and your team for producing this."

– Ben Wines, Maintenance Manager at Cooper Standard (Fort Wayne, Indiana)

IAC Program Quarterly Results April—June 2018

Between April and June of 2018, IACs conducted 101 assessments (Table 1). As a result, IACs made 681 recommendations that identified more than $13.92 million in potential cost savings.

IDENTIFIED SAVINGS

	This Quarter	Annual
Energy Savings	*10.1 M Therms*	*38.1 M Therms*
Electricity Savings	*78,334,449 kWh*	*270,905,130 kWh*
Generation Reduction (approx)	*8.94 MegaWatts*	*30.92 MegaWatts*
Natural Gas Savings	*0.7 M Therms*	*4.0 M Therms*
CO2 Reduction	*0.06 Tons*	*0.08 Tons*
Energy Related Savings	*$11.19 Million*	*$29.37 Million*
Productivity Savings	*$1.84 Million*	*$4.14 Million*
Waste & Water Savings	*$0.89 Million*	*$1.85 Million*
TOTAL Cost Savings	*$13.92 Million*	*$35.37 Million*

Table 1. IAC Assessments, April – June 2018 **Note: metrics delayed by one quarter. Metrics source: IAC Database*

LOCATIONS

Plants assessed were located in 31 states (Figure 1). The assessed plants represent a broad range of industries, with food, plastics and rubber products, and fabricated metals being the most common (Table 2).

Figure 1. IAC Assessments Nationwide, April—June 2018

PARTICIPATION

A total of 274 engineering students were active during the quarter in the IAC program across the 28 centers. More than 30% were new to the program, an increase of 10% relative to the previous quarter.

INDUSTRIES

Industrial Category (NAICS #)	Assessments
Fabricated Metal Product Manufacturing (332)	*13*
Transportation Equipment Manufacturing (336)	*13*
Plastics and Rubber Products Manufacturing (326)	*11*
Chemical Manufacturing (325)	*9*
Food Manufacturing (311)	*9*
Primary Metal Manufacturing (331)	*8*
Wood Product Manufacturing (321)	*7*
Machinery Manufacturing (333)	*7*
Computer and Electronics Manufacturing (334)	*6*
Nonmetallic Mineral Product Manufacturing (327)	*3*
Printing and Related Support Activities (323)	*3*
Beverage and Tobacco Product Manufacturing (312)	*3*
Paper Manufacturing (322)	*2*
Electrical Equipment Manufacturing (335)	*2*

Table 2. IAC Assessments, April – June 2018

More information on the services and results of assessments performed since 1981 can be found in the IAC database located at https://iac.university/#database.

U.S. DEPARTMENT OF ENERGY
Energy Efficiency & Renewable Energy

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