

IAC Student Collaboration Webinar

U.S. DEPARTMENT OF
ENERGY

Energy Efficiency &
Renewable Energy



Thomas Wenning, PE
Oak Ridge National Laboratory

**IAC Student Webinar
Series
August 2016**

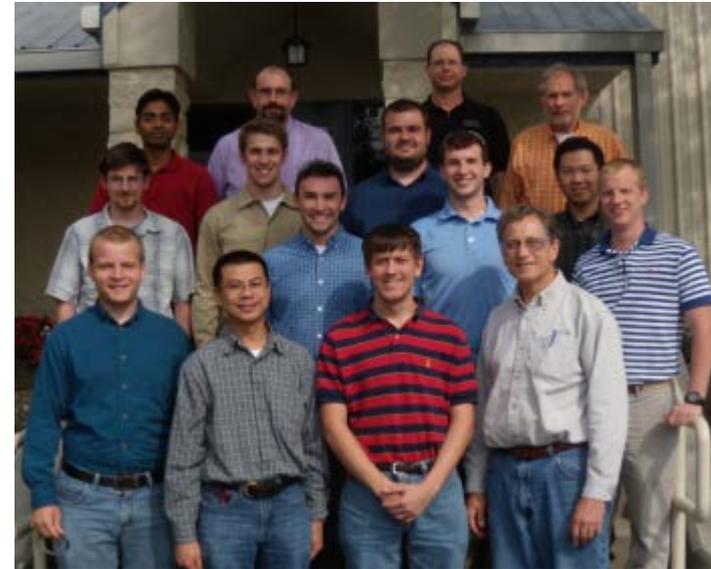


Industrial Assessment Centers 2012-2016

Energy Efficiency & Renewable Energy



- Mechanism for IAC-to-IAC student collaboration
- Possible topics:
 - Relevant items for day-to-day IAC operations (client recruitment, report writing, etc.)
 - New technologies and innovations
- Rotate speakers and topics each month
- Each center will lead or contribute a presentation to a future webinar



IAC Student-Led Webinars

- Increasing Energy Efficiency of an Industrial Hydraulic System -- Tom Blansett , Product manager - Engineered Systems, Behco-MRM
- Pneumatics Best Practices --Jon Jensen, Energy Conservation Group Manager for SMC Corporation of America and Past President of the International Fluid Power Society
- Overview of Cogged V-Belts vs. Standard V-Belts--Chad Dunkel, University of Idaho IAC
- New IAC Website Introduction and Overview - IAC.University--Mike Muller, IAC Field Management, Rutgers University
- DOE's Steam System Modeler tool--Mike Muller, IAC Field Management, Rutgers University
- 2015 World Energy Engineering Congress (WEEC)--Kaustubh Gosavi and Maria Blaneck, Iowa State University IAC
- Pump Impeller Surface Treatment to Reduce Operating Cost -- Sean Rosin, Boise State IAC
- Energy Management using ISO 50001 and SEP--Amir Abolhassani, Chandana Chada, and Dr. Ed Crowe, West Virginia University IAC
- Efficiently Reducing Thermal Stratification at Small and Medium-Scale Industrial Facilities--Jillian Burgoyne, Michael Garrett and Nhan Phan from Syracuse University IAC
- The Use of Cloud Storage for More Effective Communication Between TTU IAC Collaborators--Ian Swagerty and Anthony Taylor, Tennessee Tech IAC
- A Novel Method for Non-Intrusive Measurement of Compressed Air Leakage Flow Rates—Trevor Terrill, Texas A&M IAC
- Waste Heat Recovery from Industrial Process Heating Equipment --Dr. Sachin Nimbalkar, R&D Staff, Manufacturing Systems Research Group at Oak Ridge National Laboratory
- Rutgers Field Management Review-- Don Kasten, IAC Technical Operations, Rutgers
- New Student Training Process--Jillian Burgoyne, Syracuse University IAC
- Process for Baseline Analysis of Plant Data --Alexandra Brogan, University of Dayton IAC
- Power Logging and Data Collection Overview-- Joel Zahlan and Ahmad Seyfi, University of Miami IAC OSU Energy Efficiency Reference-- Tracie Tran, Oregon State University IAC

Webinar presentations and recordings can be found at:

<http://www.iacforum.org:8080/iac/webinars.jsp>



We want your feedback (date, time, topics, etc)!
....and Volunteers!

Webinar Survey

1. Did you find this webinar helpful (1 being least helpful and 5 being most helpful) ?

1 2 3 4 5

2. What topic or topics would you like to see addressed in future IAC student-led webinars?




3. Would you be interested in leading a future webinar?

Yes
 No

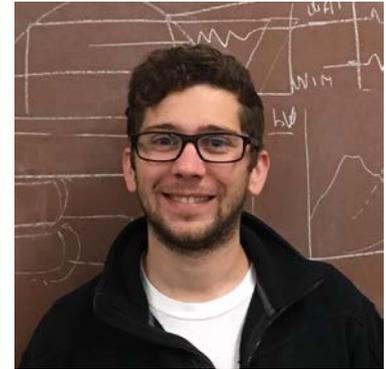
4. If interested in leading a future webinar, please list your name and contact email.




- **Topic:** Best Practices of Marketing your IAC; SFSU IACs marketing approach to engaging and recruiting IAC clients
- **Who:** Bitul Sinha and Stephen Sidletsky, San Francisco State University IAC

bsinha@mail.sfsu.edu

ssidlets@mail.sfsu.edu



SAN FRANCISCO
STATE UNIVERSITY

IAC MARKETING

Industrial Assessment Center
San Francisco State University



SAN FRANCISCO

STATE UNIVERSITY

The goal of IAC Marketing

- ▣ Schedule 20 assessments, by
 - Targeting and identifying qualified plants in the designated territory
 - Collecting basic process information from the interested plants
 - Collecting energy and water billing information for at least 12 months
- ▣ Distribute the assessments throughout the year in a reasonable manner

The goal of IAC Marketing (cont.)

- ▣ Target Distribution of Assessments:

Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.
2	2	1	2	2	2	2	1	2	2	2	0

Prospective Customers

- ▣ Manufacturers (SIC 20 – 39) we target, need to satisfy 3 out of 4 criteria:
 - Fewer than 500 employees at a given plant
 - Less than \$100 million gross sales per year
 - Annual utility bills more than \$100,000 and less than \$2 million
 - No in-house energy expertise
- ▣ Normally we audit plants within 150 miles of IAC
- ▣ SFSU IAC also audits wastewater treatment facilities

Methods to Find Prospective Manufacturers

- ▣ On average, the process of scheduling one successful assessment- from generating leads for prospective manufacturers, collecting information to finally scheduling an assessment-can take several months. It is important to plan at least 4 months ahead of time.
- ▣ Major marketing channels:
 - Direct mailing
 - Referrals by utility companies
 - Word-of-mouth referrals
 - Cold calling
 - Placing a Public Service Announcement in trade publications

Direct Mailing

- ▣ The goal of direct mailing is to generate about 4% response rate from each mailing. The manufacturers who respond to the direct mailing become the prospects for the assessments.
- ▣ **How often should you do direct mailing?**
- ▣ On average, you need to conduct about 1 direct mailing per month. Each direct mailing consists of about 60-120 mailing pieces from a mail merge obtained from your database.
- ▣ **What promotional materials are included in a single piece of direct mail?**
- ▣ Cover letter
- ▣ IAC Brochure
- ▣ Reply card

IAC Brochure



INDUSTRIAL ASSESSMENT CENTER
Sponsored by the US Department Of Energy
at the School of Engineering of San Francisco State University

NO COST PROFESSIONAL GRADE ENERGY AUDIT SERVICES

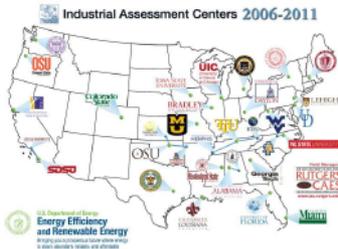
BY THE INDUSTRIAL ASSESSMENT CENTER AT SFSU

This outstanding opportunity is financed by the US Department of Energy and offered free of charge to eligible industrial production facilities through a nationwide network of Industrial Assessment Centers

The nationwide Industrial Assessment Centers Program, funded by the US Department of Energy (USDOE), was created in 1976 with the objective of facilitating the implementation of energy efficiency concepts and practices in small and medium-sized industrial production facilities, with the objective of helping them to cut production costs, thereby becoming more competitive. This Federal Program provides **no cost** energy audit services through a network of Centers located at the Engineering Departments of major Universities.

The Industrial Assessment Center at the San Francisco State University School of Engineering (IAC/SFSU) has been funded by the USDOE since 1992, and has since conducted over 450 Energy Audits of industrial production facilities in Central and Northern California. On average, each audit has identified savings for 10-20 % of the total energy costs of the audited facility, and in average more the 50% of the identified Energy Conserving Opportunities (ECOs) are implemented by the Facilities.

The audits are carried out by IAC/SFSU student engineers and faculty during a one full day non-intrusive visit at the facility.



To be eligible for this unique program, an industrial production facility must satisfy at least three of the following criteria:

- ✓ Fewer than 500 employees
- ✓ Less than \$100 M gross sales per year
- ✓ Annual Utility bills more than \$100,000
- ✓ No in-house energy efficiency expertise

Audited Facilities are under **NO OBLIGATION** to implement **ANY** of the proposed Energy Conserving Opportunities (ECOs)



Typical IAC/SFSU Auditing Team

The IAC/SFSU organizes and conducts Energy Efficiency Audits in strict compliance with industry wide accepted procedures. The auditing team, composed of student engineers and faculty, is well versed in energy efficiency principles and practices, industrial safety, and comes equipped with a complete set of data collecting instrumentation.



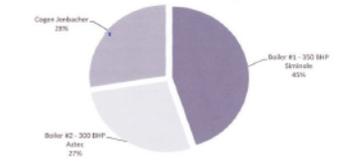
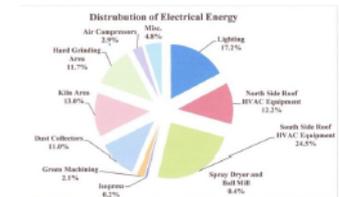
A typical energy assessment takes one full day of hands-off inspection and data collection at the facility site, and focus on all energy consuming equipment, both electric and fossil. The assessment also evaluates the facility's waste process (minimization, recycling, disposal), and water consumption. **All data collected during the Audit are treated with the utmost confidentiality.**

Within two months from the audit, the audited facility will receive a comprehensive Audit Report, which contains a complete energy analysis, both electricity and natural gas if applicable, of the facility's operation, as well as a complete description of the identified ECOs along with the calculations used to quantify the proposed energy savings, an estimate of the implementation costs, and of the simple pay-back period.

FOR FURTHER INFORMATION PLEASE CONTACT:

Dr. A Ganji at aganji@sfsu.edu

Ms. Vickie Hall iac@sfsu.edu



Typical Distribution Diagrams (electricity and Nat Gas) included in Audit Report

Summary of Savings and Costs				
ECO No. & Description	Energy Savings (kWh/yr)	Demand Savings (kW)	Cost Savings (\$/yr)	Payback Period (yr)
1. Connect the Sludge Mixing Pumps to Fuel Cell Distribution	762,482	87	77,652	0
2. Reduce Mixing and Recirculation on Digester #3	182,896	20.9	18,634	0.4
3. Replace Multistage Blowers with VFD-Controlled Turbo Blowers	1,383,282	157.9	136,139	1.4
4. Install VFDs on Hot Water Circulation Pumps	75,958	-	5,606	2.1
5. Install Lighting Controls	29,278	4.1	3,106	3.4
6 - Install VFDs on Bulk Volume Fermenter Supply Pumps	67,002	7.6	6,582	4.3
7. Replace the SE Lighting with HE Lighting	111,995	20.8	12,603	4.8

Typical Summary Table of proposed ECOs

Direct Mailing (cont.)

Identify companies via database

We use California Manufacturers Database via EZ Select on ezselect.com.

We follow the following steps to create a list of clients for mailing

- ▣ Select 4 or 5 SIC codes between SIC 20-39
- ▣ Select about 70 companies from the California Manufacturer Directory according to the following criteria for each company:
 - ▣ Company within a 150 mile radius.
 - ▣ **AND**
 - ▣ Company has 30 or more employees
 - ▣ **AND**
 - ▣ Company has sales between 5 to 100 million
 - ▣ **AND**
 - ▣ If a company's "Sq. Ft" information is listed, select those companies with at least 20,000 square feet.
 - ▣ Make sure that the mailing list does not include former IAC customers of the past 5 years.
 - ▣ Make sure the listing is for a manufacturing plant, not a sales office or corporate headquarters. Use the directory to get a contact name: best choices are plant managers, facilities or production managers.

REFERRALS BY UTILITY COMPANIES

Utility companies, especially municipal utilities refer several customers to IAC each year for assessment. To maintain contact with these utility companies, the IAC marketing team has made regular phone contacts and sent program information to these companies.



WORD-OF-MOUTH REFERRALS

IAC receives word-of-mouth referrals from the former clients or IAC members regularly. After receiving a word-of-mouth referral, contact that prospective manufacturer by following the guidelines stated later in this presentation under “How to follow-up on leads and set up assessments”.



Cold Calling

- We do the cold calling according to a prepared script, noting that:
 - This is a no cost DOE sponsored program
 - We are calling from a university
 - A team of faculty and students will do the audit
 - We normally identify savings of 10-20%
 - We request to talk to plant manager, maintenance or operation manager



Cold Calling - Common Questions

- ▣ What does the IAC offer/do:
- ▣ How does this benefit us?
- ▣ How many people will be here?
- ▣ What is the one day audit like?
- ▣ Which Systems do you analyze/evaluate?
- ▣ What is the process to apply for an energy audit/assessment?

PUBLIC SERVICE ANNOUNCEMENTS IN TRADE PUBLICATIONS

We announce our services in trade publications and newsletters

Think about types of industries that IAC would want to market to, as well as area that the IAC serves.

- ▣ Two Sources to find the organizations that may have publications: Ulrichsweb and Business Source Complete
- ▣ Your Library website will have these databases for extraction of information.

Follow-up on Leads and Set up Assessments

The process of contacting prospective manufacturers and setting up an assessment can be divided into five stages.

- 1) Obtain Manufacturer's information sheet
- 2) Set up tentative assessment timeframe & request energy/water/sewer bills
- 3) Confirm assessment date upon receiving bills
- 4) Turnover Company information to student coordinator
- 5) Arrange Transportation

Manufacturer's information sheet



Industrial Assessment Center
San Francisco State University
School of Engineering

1600 Holloway Avenue
San Francisco, CA 94132-4163

Tel: (415) 338-6202
Fax: (415) 338-3086
E-mail: iac@sfsts.edu

Manufacturers Information Sheet

The information requested in this form will help us better understand your company and its manufacturing processes. Data included in this form need not be complete or exact at this time. Kindly mail, fax or e-mail this form back to the IAC so that we may qualify your plant for an assessment.

Company Profile:

1. Company Name:	7. Number of employees:
2. Address:	8. Plant Size (Sq. Ft):
3. Contact Person:	9. Annual Energy Cost:
4. Contact Phone #:	10. Approx. Annual Production:
5. E-mail:	11. Approx. Annual Gross Sales:
6. Principal Product:	12. Distribution: <input type="checkbox"/> Local <input type="checkbox"/> National <input type="checkbox"/> Global

Process Description:

Manufacturing Process (Please attach a general description or process diagram, if available)

Raw Materials: _____

Major Equipment Types: _____

Major Waste Streams: _____

Operating Schedule

Area	Hours (AM-PM)	Hours per day	Days per week	Weeks per year

Pre-Audit Documents:

To schedule an assessment, the following information should be mailed to the IAC 4 weeks prior to the assessment:

- 1) Copies of the latest twelve months of electric and gas bills
- 2) Copies of the latest twelve months water and sewer bills.

A copy of the plant layout and the industrial waste bills can either be mailed to the IAC prior to the audit or be submitted on the audit day.

Post-Audit Publications:

The success of the IAC is largely dependent upon the success of our clients in saving energy and reducing production costs, would your company agree to allow the use of its name in connection to the publication of IAC Success Stories? (Note: All proprietary information will be protected; clients will be able to review and approve all information data associated with the plant prior to any publication)

We would like to be included in IAC publications
Yes No

Set up Tentative Assessment Timeframe & Request Bills

- ▣ Check the manufacturer information sheet to assure company's eligibility for audit
 - Set up a tentative assessment date
- ▣ Request 12 months of,
 - Energy bills – Alternatively you can ask for authorization to obtain the billing information from the energy utility
 - Water and sewer bills
 - General description of manufacturing process if available

Set up Tentative Assessment Timeframe & Request Bills (cont.)

- ❑ After receiving electric/gas/water/sewer bills, call the manufacturer to confirm the assessment date. Also remind them to send any missing information if they haven't done so. Explain that a student coordinator will contact them to coordinate the assessment.
- ❑ Hand over the entire manufacturer's folder (with all the information including the Checklist, Manufacturer's Information Sheet, billing information, fax covers, email messages, cover letter, etc.) to the designated student coordinator in a staff meeting.
- ❑ About two weeks before the assessment, contact the manufacturer to remind them about the assessment date and any missing information.

Thank You





WEEC Invitation

- **September 21 – 23** in Washington DC
- AEE's WEEC is open to students
 - Free admission for **3 students per center**
 - Applications were emailed to directors
 - Send to me (wenningtj@ornl.gov) and/or Susie Allen (allensc@ornl.gov) by **August 26**
 - **On your own** with respect to transportation, hotel, and meals
 - Informal IAC meet-up??



Please return this form at your earliest convenience to Pritola Rivera: fax (770-446-3969); E-mail privera@gaeboundation.org; or mail to Scholarships-WEEC, 3168 Mercer University Drive, Atlanta, GA 30341

REGISTRATION FORM

Please check the events you will attend:
(This information will help us make more accurate catering guarantees.)

Name: _____ (Last) _____ (First)

Status in your local energy organization, if applicable (president or other officer, member, etc.): _____

College or University: _____

Address: _____

City/State/Zip: _____

Phone: _____ E-Mail Address: _____

I hereby confirm that I am a full-time college or university student: _____ Yes

Wed Sep 21 - Fri Sep 23 - 2016 WEEC CONFERENCE

Complimentary Registration to Conference (\$895 Value) - Yes, I will attend

Tue Sep 20 - LEGENDS IN ENERGY / Rock on the Potomac (6:00 - 10 pm)

\$150 - Yes, I will attend \$150 - Yes, my guest will attend - Name: _____

Wed Sep 21 - AEE AWARDS BANQUET

\$50 - Yes, I will attend \$50 - Yes, my guest will attend - Name: _____

Wed Sep 21 - MEET THE AUTHORS NETWORKING EVENT (4:00-6:00 PM)

Free - Yes, I will attend Free - Yes, my guest will attend - Name: _____

Thurs Sep 22 - CWEEL BREAKFAST (7:30 - 9:00 AM)

Free - Yes, I will attend Free - Yes, my guest will attend - Name: _____

Thurs Sep 22 - Energy Star Portfolio Manager Benchmarking Workshop (12:30 - 2:30 pm)

Free - Yes, I will attend Free - Yes, my guest will attend - Name: _____

Thurs Sep 22 - CWEEL RECEPTION (4:00 - 6:00 PM) (Free to CWEEL Members)

\$30 - Yes, I will attend \$30 - Yes, my guest will attend - Name: _____



The screenshot shows the IAC Forum website interface. At the top, there is a navigation bar with the text "IAC FORUM A Website for Students and Alumni of DOE's Industrial Assessment Center" and the Oak Ridge National Laboratory logo. Below this is a menu with "Registry", "Exchange", "Careers", "Resources", and "Contacts". A sponsor notice for "USDOE Advanced Manufacturing Office" is also present. The main content area features a large banner for the "COLLEGE OF ENGINEERING" with a photo of three people and the text "Student Research Awards and 2013 Center of Excellence Announced". Below the banner are three columns: "LinkedIn" (with a link to a group of over 500 members), "IAC Website of the Month" (highlighting Boise State University), "News" (listing recent announcements like a \$5 million grant and industry study), and "Metrics" (a line chart showing participation and certificates from 2004 to 2014).

IAC FORUM
A Website for Students and Alumni of
DOE's Industrial Assessment Center

OAK RIDGE
National Laboratory
About Site Map Login Search

Registry Exchange Careers Resources Contacts

Sponsor: USDOE Advanced Manufacturing Office

COLLEGE OF ENGINEERING
Student Research Awards
and 2013 Center of
Excellence Announced
See more IAC news

LinkedIn
The IAC Forum manages a [LinkedIn Group](#) with over 500 members.

IAC Website of the Month
 BOISE STATE UNIVERSITY

News

- Energy Department Announces \$5 Million for Residential Building Energy Efficiency Research and University-Industry Partnerships
- ACEEE Summer Study on Energy Efficiency in Industry August 4-6, 2015
- IETC June 2-5, 2015 in New Orleans

[More news...](#)

Metrics

Year	Participating	Certificates
2004	400	50
2005	380	50
2006	350	50
2007	300	50
2008	320	50
2009	350	50
2010	380	50
2011	400	50
2012	450	50
2013	420	100
2014	400	100

[Metrics page...](#)

➤ Lead Student Responsibilities

- Ensure all students complete registry entry
- Ensure all students complete exit interview
- Ensure that lead/active/inactive status is current

➤ Exit Interviews

- Identify new lead students
- Update contact information for alumni
- Capture alumni career data

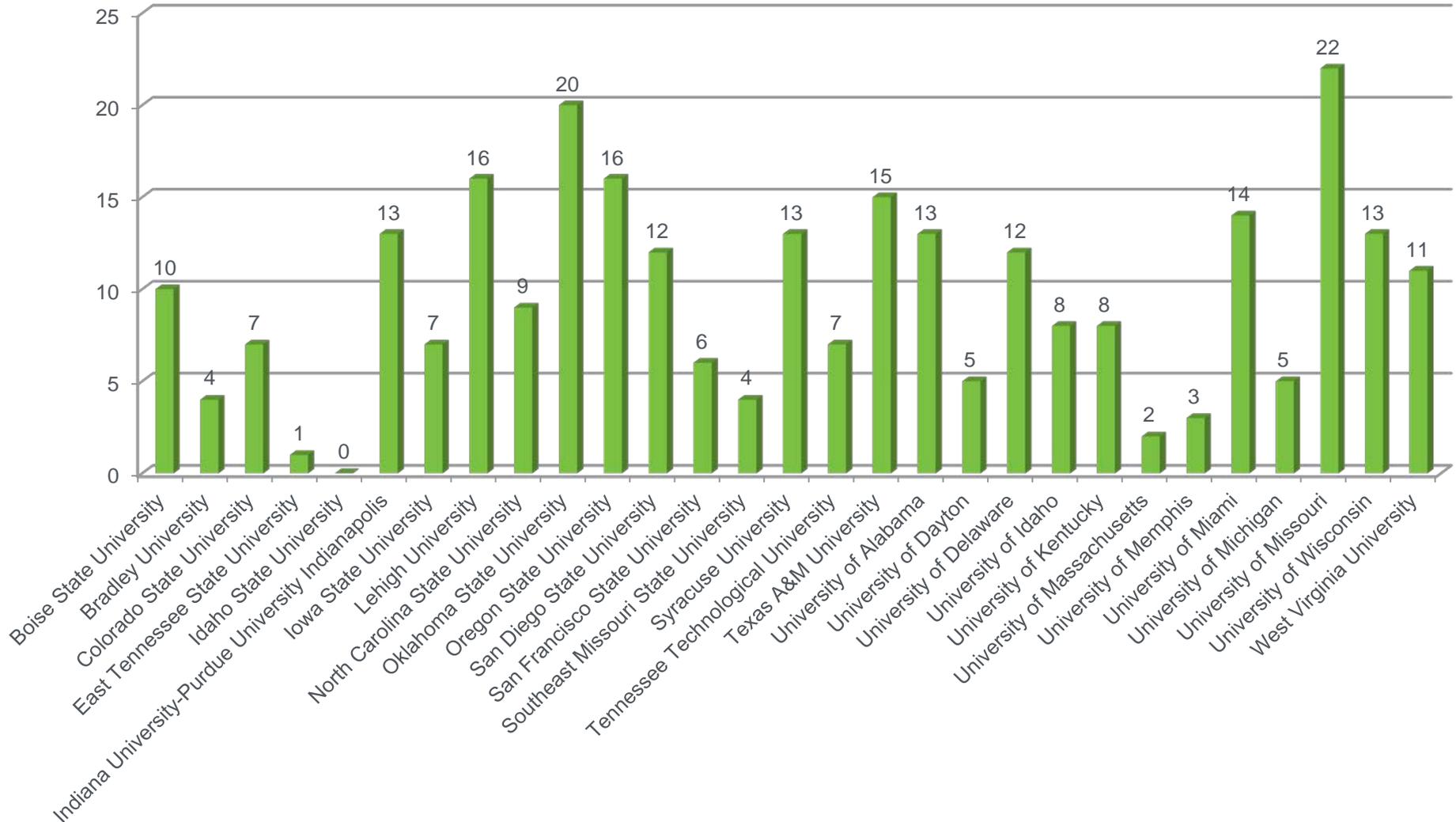


The screenshot shows the IAC Forum website with a navigation menu (Registry, Exchange, Careers, Resources, Contacts) and a main banner for the Oak Ridge National Laboratory. A red arrow points to the 'Registry' link in the navigation menu. A text box on the banner reads: 'New students must create a registry record; alumni are asked to maintain the registry information'. Below the banner are sections for LinkedIn, IAC Website of the Month (Boise State University), News, and Metrics.

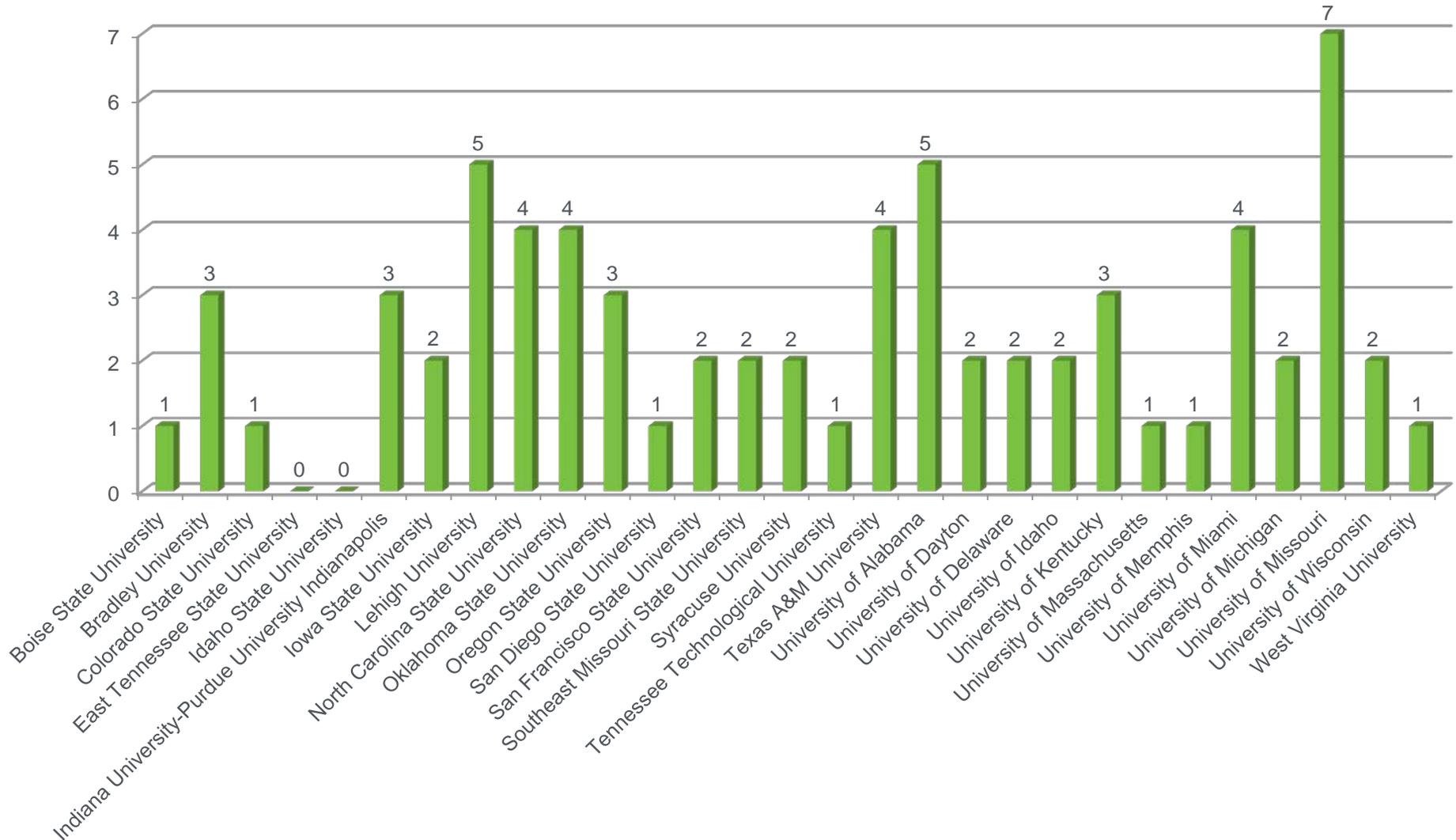
Year	Participating	Certificates
2004	450	100
2005	400	100
2006	350	100
2007	300	100
2008	350	100
2009	300	100
2010	350	100
2011	450	100
2012	400	100
2013	350	100
2014	300	100
2015	250	100

<http://www.iacforum.org/>

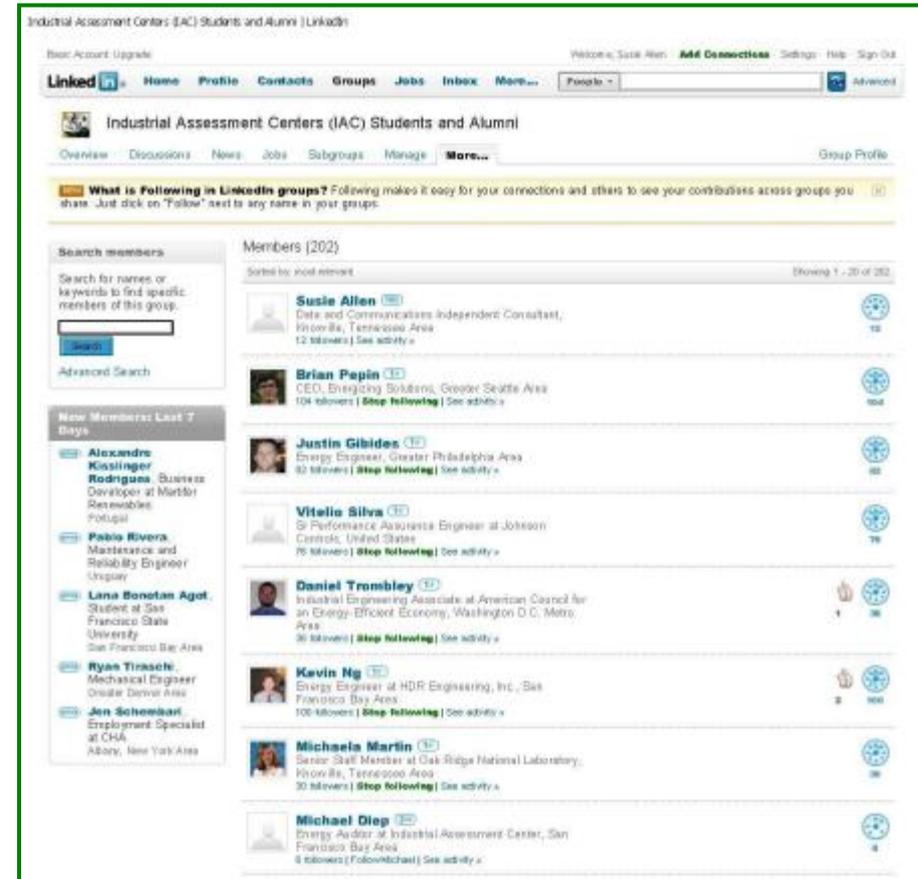
Number of Students Currently Listed as Active in the IAC Student Registry



Number of Currently Active Students Listed as "Lead Student"



- Established in 2008
- Professional networking site for IAC students and alumni
- 605+ members
- News items, professional profiles, discussions
- **Please utilize for ongoing collaboration or technical questions**



<https://www.linkedin.com/grp/home?gid=912947>

Facebook IAC Page & Group

This screenshot shows the Facebook page for the US DOE Industrial Assessment Center Program - IAC. The page features a cover photo of two workers in hard hats. The navigation bar includes 'Page', 'Messages', 'Notifications', and 'Publishing Tools'. The main content area displays the page name, a 'Create Call to Action' button, and a 'Share' button. Below the cover photo, there is a 'Timeline' section with a 'Reach a new milestone' notification for 100 Likes and a 'Promote Page' button. The 'ABOUT' section is partially visible, showing an 'Add street address' field.

This screenshot shows the Facebook group page for the US DOE Industrial Assessment Centers. The group name is 'US DOE Industrial Assessment C...' and it is a 'Public Group'. The navigation bar includes 'Discussion', 'Members', 'Events', 'Photos', and 'Files'. The main content area features a 'Write Post' section with options to 'Add Photo / Video', 'Ask Question', and 'Add File'. Below this is a 'RECENT ACTIVITY' section with a post by Thomas Wenning about EERE News. The right sidebar contains 'MEMBERS' (3 Members), a 'DESCRIPTION' section, 'CREATE NEW GROUPS', and 'RECENT GROUP PHOTOS'.

Page - <https://www.facebook.com/USDOE.IAC>

Group - <https://www.facebook.com/groups/543916505784912/>

Request: Pictures, Video Clips, Articles & Stories



The requested video cannot be displayed in your region

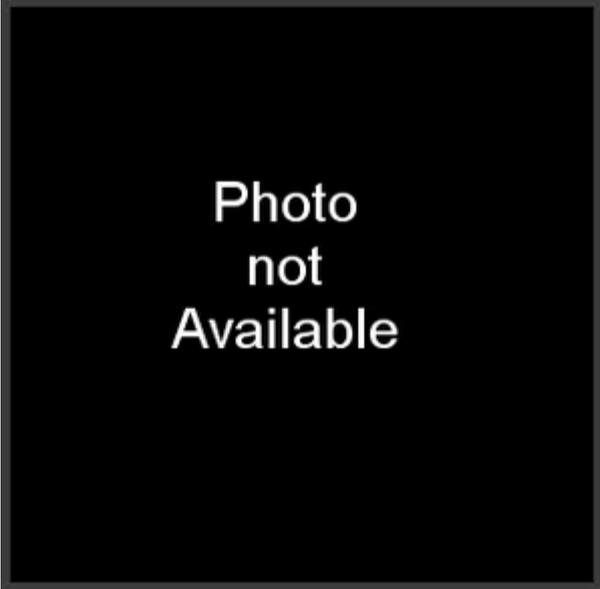
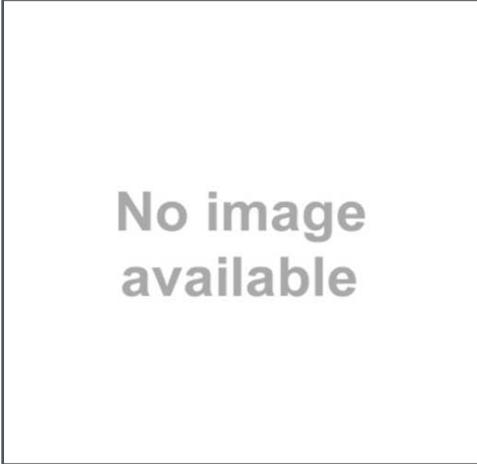


Photo
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Available



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available

Please send to:
wenningtj@ornl.gov

- **Topic:** AIRMaster+ tool demonstration and AIRMaster+ Qualified Specialist Training/Certification discussion
- **Who:** University of Alabama IAC
- **When:** September 13, 2016
2:00 PM EST

Thank You!

Thomas Wenning, PE

IAC Student Activities Coordinator

Oak Ridge National Laboratory

865-946-1504, wenningtj@ornl.gov

