BOC Bulletin

A Newsletter for BOC Graduates, Enrollees and their Employers

WINTER/SPRING 2017

BOC'S ALIGNMENT WITH ISO 17024:

Enhanced Recognition of Building Operator Skills

BOC is closing in on the end of its second decade offering quality training to facilities maintenance personnel. The program started in the Pacific Northwest and has since expanded across the country, so it seemed time to reassess the program and, given the changes in the facilities maintenance (FM) industry, determine how to assure that the beneficial training BOC provides be recognized as a standard in the field.

BOC instructor John Welch teaching electrical safety with the aid of a branch panel board during a BOC 1007 class in Georgia in early 2016.

Already recognized in the industry as a solid credential for building operators, as the landscape of FM evolves and creates new demand for training and certifications as a basis for employment, the need to strengthen and codify the meaning of BOC certification to conform with standards for the industry across the board became clear.

The industry is changing and demand for training and certification is growing. Driving this demand are a retiring "traditional" FM workforce, the ever-evolving list of skill requirements for building operation and management (O&M), and an emphasis on professional credentials as a requisite for hire. Recognized and standardized certification allows a skill set to be more portable from an employee perspective, as well as helping an employer understand the skill set of a prospective hire.

So What Is ISO?

As its website (www.iso.org), states, ISO (the International Organization for Standardization) is "an independent, non-governmental international organization with a membership of 163 national standards bodies." Membership is by country, not by company. ISO was founded in 1946 to "create a new international organization 'to facilitate the international coordination and unification of industrial standards.'" The ISO has more than 21,000 international standards for technology and manufacturing. Meeting ISO requirements means credibility across your field – like accounting certification or medical boards. It ensures a level of competency.

ISO has a process by which it develops a standardized test across a particular field. Per its website it does not initiate standards but rather answers a need when asked. The standards are based on a consensus of that field's experts from all over the globe and a standardized test is composed.

What Does This Mean for BOC?

BOC training classes and completion requirements remain the same. Once an individual successfully completes the course series and all requirements have been met, participants will receive a BOC Training Certificate of Completion (TCOC) and will continue to maintain this credential according to the current guidelines.

This is where the difference comes in. Once participants have completed the series – or even another comparable training program – they can apply to add another credential to their resume by taking the ISO 17024 aligned exam. This is a three-hour comprehensive exam, as developed by a committee of Subject Matter Experts the

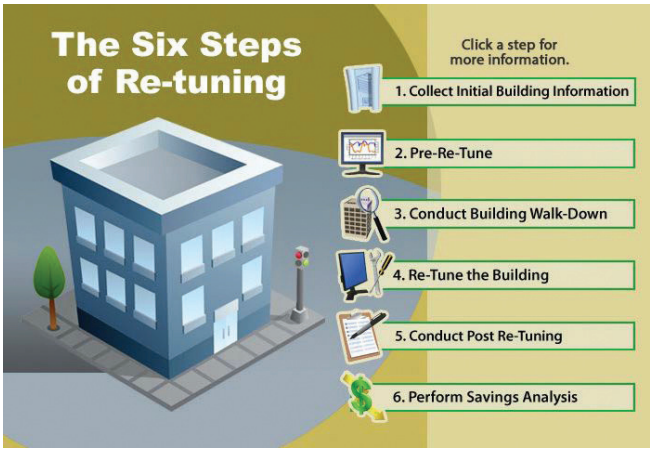
*(Continued on page 5. See **ISO 17024**).*

IN THIS ISSUE

BUILDING RE-TUNING™ TRAINING:

Providing Energy Saving Solutions through Interactive e-Learning

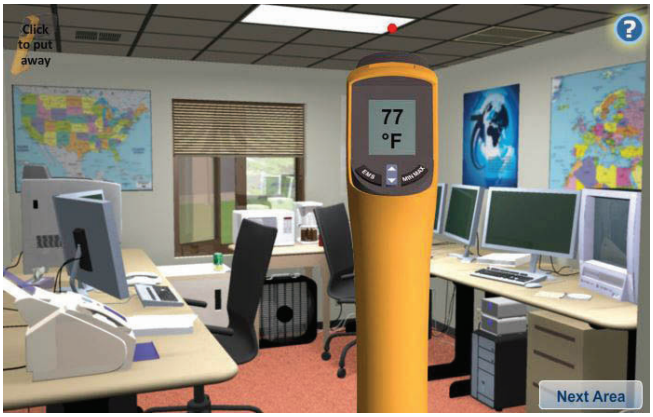
Commercial buildings account for almost 20% of the total U.S. energy consumption, and 10-30% of the energy used in commercial buildings is wasted because of improper and inefficient operations. While sophisticated energy management and control systems are used in large commercial buildings to manage heating, ventilating, and air conditioning systems and components, many buildings are not properly commissioned, operated, or maintained. This lack of proper operation and maintenance leads to inefficiencies, reduced lifetime of equipment, and—ultimately—higher energy costs.



An animation describes the primary steps of re-tuning. The icons representing the steps are re-used in lessons to reinforce the particular step.

The U.S. Department of Energy's Pacific Northwest National Laboratory (PNNL) has developed a Building Re-Tuning approach to detect energy savings opportunities and implement improvements. Re-tuning is a systematic process to identify operational problems by leveraging data collected from the building automation system (BAS) and correcting those problems at no-cost or low-cost. Originally, PNNL provided Building Re-tuning classroom instruction and field training to hundreds of building operators, engineering, and energy managers. PNNL now offers a free interactive e-learning course to anyone interested in improving a building's energy performance and occupant comfort.

The intended audience for this e-learning course is onsite employees responsible for day-to-day building operations; offsite contractors (retro-commissioning agents or control vendors) hired to improve a building's energy efficiency; and college students interested in entering this field. The focus is on large (100,000+ sq. ft.) commercial buildings such as office buildings, malls, and schools, but the concepts and techniques presented can be applied to any type and size of facility that has a BAS.



When walking down the inside of the building, learners talk to occupants; examine equipment; check vents, doors, windows; and more. Learners can even use an infrared thermometer to help in their assessment.

About PNNL Pacific Northwest National Laboratory is a Department of Energy Office of Science national laboratory where interdisciplinary teams advance science and technology and deliver solutions to America's most intractable problems in energy, the environment and national security.

CREDIT QUIZ

(Companion piece to technical feature).

Tech Article Assignment:

We have selected five lessons from the Building Retuning online training to serve as the Tech Article and Quiz for this issue of the *BOC Bulletin*. By reviewing each lesson and taking the quiz, you can earn 1.5 maintenance points toward renewal of your BOC credential. The time commitment for completing this assignment is approximately 60 minutes for the five lessons, and 30 minutes for the quiz. Review each of the following five lessons below. Good luck!

LESSON 1:
Introduction to Building Retuning - 3 mins

LESSON 2:
Case study – Real Life Example - 3 mins

LESSON 3:
Getting Started with Building Inspections - 5 mins

LESSON 4:
Building Inspection Tutorial - 10 mins

LESSON 5:
Building Inspection for an Older Building. Inspect the roof and perimeter office in order to complete the quiz – 40 minutes

To access the Building Retuning lessons, follow these steps:

1. Register yourself for the training (registration is free): **http://retuningtraining.labworks.org/training/lms/cgi-bin/register**
2. Once registered, go to the training site: **http://retuningtraining.labworks.org/training/lms/**
3. There are two choices. Choose **"Retuning for Buildings without BAS."**
4. Take each of the five lessons noted above.

Go through the lessons and then take the online quiz for your credit at **www.theBOC.info.**

BOC Grads Making a Difference

Matthew Gaylor

The View from Both Sides

Matthew Gaylor is currently the **senior facility manager** at Cepheid* in Lodi, California. Lodi is the primary plastic molding operation for Cepheid which is a molecular diagnostic company. Initially starting out on the vendor/contractor side of the facilities world, he worked for Siemens Building Technologies and Johnson Controls, developing building system controls, fire alarm systems and overall building operations expertise.

In 2005 though, Gaylor went to Johnson and Johnson to become a building systems administrator, overseeing the building management systems and infrastructure. "My controls and fire system background allowed me to understand interactions with various mechanical systems and how they can affect a building. However my exposure to overall building operations was limited. And there's a lot more to managing a building than just controls and fire alarm systems."

Gaylor's manager and mentor at the time, David Benjamin, suggested BOC to him. He researched the course content and decided that it was "exactly what I needed. It allowed me to take my current knowledge and expand it to become a better, well-rounded building operator."

Gaylor started Level I in 2005 and finished in January 2006, but was also able to start Level II training in December 2005 by working with Teresa Squillace at the BOC/NEEC office. "Teresa has always been a tremendous help and along with Teresa, I have seen a lot of familiar 'BOC' faces over the years, which gives me confidence in the continuity of the program," he states.

As a big proponent of BOC, that continuity is one of the reasons Gaylor wants to provide his technicians the opportunity to get the same training. Most of his team technicians are from plastic molding operations so he says building operation is new for them and that BOC training "allowed them to grow as a team member, providing them with an overall understanding of building operations and the interactions with various systems. It provides them with expanded knowledge that can help both their future career potentials and provide the company with better support."

Cepheid-Lodi is a 24/7 operation in over 200,000 square feet across four buildings – two involved in plastic molding manufacture and two as office support for the business so the challenges vary. Gaylor say he looks at a building as an orchestra with facilities management as the conductor trying to direct a collaborative effort across the systems – the orchestra's instruments – so that the building runs harmoniously. "We do not like people to notice that there are issues and want people to rely on their building and systems. If all is normal, facilities personnel are doing their job."

> *"The BOC program has allowed my team to flourish and become aware of the various types of systems throughout a facility. How they interact and co-mingle in a production environment. A great avenue to gain knowledge and training on overall building operations and systems, it is also tremendous means to allow for networking amongst the trades. It is imperative for new technicians and members that have been in one single discipline to attend this course."*
>
> *– Matthew Gaylor*

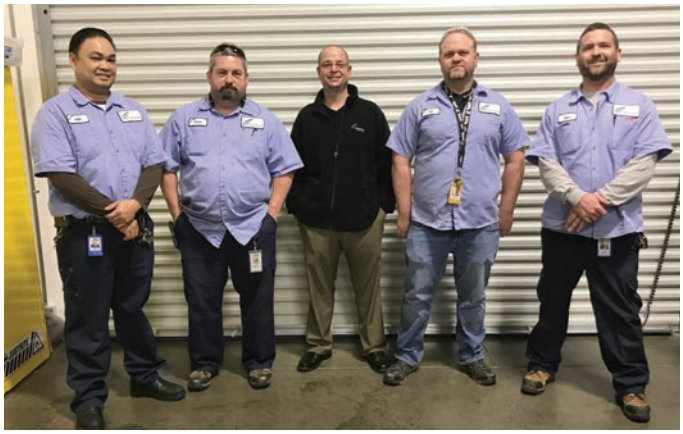
They have done several lighting retrofits and continue to look for rebate opportunities or special programs that may be offered by their local utility and often use BOC homework as a basis for technicians to do local assignments across the four-building facility.

"My team is very hands-on and likes to learn by doing; the assignments required by BOC make a good tool for that," says Gaylor. It also has the added benefit of getting the buildings mapped out in terms of systems and energy use so that the building management system can be used more effectively.

Besides Gaylor, two of his staff have completed Levels I and II (Dareo Mavar and Ryan Anderson), two have completed Level I (Jeff Wilcox and Seth Sunga) and will take Level II this year. All new employees will also take BOC as a requirement. The fact that they run 24/7 makes it difficult to schedule time off, especially for the night shift, he explains.

Another advantage Gaylor cites, and one that is a recurring theme for BOC grads, is the networking with peers and the sharing of information that can and does occur, among both participants and instructors. He has always found people to be more than willing to help with an issue.

As Gaylor sums it up, "The BOC program has allowed my team to flourish and become aware of the various types of systems throughout a facility, how they interact and co-mingle in a production environment. A great avenue to gain knowledge and training on overall building operations and systems, it is also tremendous means to allow for networking amongst the trades. It is imperative for new technicians and members that have been in one single discipline to attend this course."


Cepheid Team members and BOC graduates from left to right: Seth Sunga, Dareo Mavar, Matthew Gaylor, Jeff Wilcox and Ryan Anderson.

As a result of Gaylor's engagement with the BOC program, he is now a member of the program's Certification Advisory Commission. The Commission advises the program on its certification program policies, procedures, and exam content. A welcome addition to the BOC team!

** In November 2016, Cepheid Inc. was acquired and is now an indirect wholly owned subsidiary of Danaher Corporation.*

Q&A With BOC Instructor Bill Burns

Bill Burns

How did you become involved with facilities management?

I graduated with a mechanical engineering degree in the mid-80s and took a job in nuclear power plant design, working on HVAC system design and HVAC system startup, which provided a remarkable range of learning experiences. After a few years doing the start-up design work, I moved to the operating side at a nuclear plant as an HVAC system engineer. The system engineer is responsible for the design, operation and maintenance of critical HAVC systems and after several years, I also began training new engineers on these HVAC systems. In 1999, I moved from the nuclear side to the distribution side of the electric utility as an energy efficiency engineer, providing energy efficiency support to commercial and industrial utility customers.

When and how did you hear about BOC?

I was introduced to BOC in 2003 when my manager asked me if I would be interested in applying to be one of the instructors for a new training program that the Midwest Energy Efficiency Alliance (MEEA) would be offering with funding and support from Illinois Department of Commerce & Opportunity. I applied and was one of the instructors for the first BOC series in the Midwest! As the BOC program has grown, I have had the opportunity to provide program input and I have seen many of my suggestions incorporated into the material. While material updates have not always occurred as fast as I would like, BOC and MEEA have always been committed to improving and updating the material.

What is your area of expertise in FM?

My specialty would be HVAC certainly but I also teach the building automation systems and the energy analysis classes.

What do you see as the greatest challenge to facilities management in your particular field or to facilities management in general?

I would say that resources are becoming more and more constrained. There are fewer people available so they're spread thinner and there are more codes and rules, which makes compliance more challenging for the building operators and managers. There's just so much more that people need to understand in the current FM environment. In my vintage, very often FM personnel had extensive military training, which would be costly to duplicate in the private sector. Training for new building operators when it exists at all, seems to have switched over to more on-the-job training, which is very hit or miss. Facilities in general are a long-term capital investment but O&M is not viewed as a part of that investment so it's hard to convince decision-makers that paying for training will save money in the long run. One of the challenges is how to effectively present the advantages.

The other interesting thing is that there is definitely going to be more turnover. The old-timers are retiring so you're losing the 20-30 year veterans that stayed with a building for years. There are likely no pension plans holding people coming into the industry so there will be more movement within the industry and those people will take their experience elsewhere – good for the new place but not so much for the building they left.

Is there anything that surprises you when you teach BOC classes?

I'd have to say that in pretty much every class, there is always something that comes up in discussions that is new to me. What's interesting is that it creates an opportunity to make it clear that nobody "knows everything." You learn from others and you learn by doing.

Do you have any FM tips you'd like to share?

From an energy perspective, probably one of the most significant things is to operate systems when they're needed – taking the time to keep the building automation system schedule in sync with the actual occupancy schedule of the building – and it's an ongoing challenge. Building occupancy is becoming more fluid, less of the 9 to 5 type occupancy.

Control what you can but accept that there will always be things that are just out of your control.

Bill Burns, PE, is a senior energy engineer for ComEd in Oakbrook Terrace, Illinois.

Q&A with BOC Sponsor: Oklahoma Gas & Electric

JeannieTroxel

How did you become involved with energy efficiency initiatives?

I've always had a passion for energy efficiency and have been involved with the OG&E energy efficiency department for six years. Having assisted all the managers of the various efficiency programs, I have a good understanding of our energy efficiency programs.

How did you and your company first hear about the BOC program?

SPEER had a meeting in Oklahoma City and one of your staff members introduced OG&E to the BOC Certification. We are always looking for additional educational opportunities for our customers and this sounded like a good fit. We started offering the class in 2013. To date approximately 125 individual have completed the course. The classes are almost always fully subscribed. We have only offered the Level I training, but we have had interest from colleges and hospitals about offering the Level II class.

BOC Bulletin Goes Green!

In the BOC-minded spirit of energy conservation, we're moving from snail mail delivery of the **BOC Bulletin** to digital distribution via email effective with this winter/spring 2017 edition.

We recognize that some of our subscribers may prefer a hardcopy version. If that is your preference or if you would like to return to hard copy delivery, you can opt-in at any time by request.

Just contact the BOC Help Desk at **877-850-4793** or **bocinfo@theboc.info** to request hardcopy delivery. Be sure to include your preferred postal mailing address.

How do you go about promoting the training to your commercial and institutional customers?

We are very customer-oriented and really want our customer to have lower energy so they can pay their bills every month and be comfortable in their homes. That also translates to the commercial sector. To that end, we have an energy efficiency team that works with our commercial customers to promote our energy efficiency programs. This proactive communication gives the team many opportunities to promote BOC as another means to greater energy efficiency savings. In addition, if a customer calls about a bill or has questions about their account, our representatives also use that occasion to tell them about the program.

What benefits does BOC provide for your customers?

As energy demand increases, one of the cheapest ways to offset that is with efficiency measures. It's a lot less expensive than having to build a new plant! BOC delivers more advanced and efficient ways of reducing energy use. The training also stresses the benefits of interaction with utilities to stay informed about the utilities energy efficiency and other program offerings.

What would you say is the sector breakdown for BOC training participants?

We had been somewhat focused on schools last year but have more recently opened it up to other sectors so that we could have some diversity. This time our focus has been on industrial, hospitals, and colleges.

What type of feedback do you get on the training?

I've only had positive feedback and they have been very excited about the classes.

Is there anything else you'd like to add?

This class offers our customers additional ways to save energy and to discuss both facilities management issues and successes with other companies. It becomes a team effort.

OG&E electric services

This discussion was with Education Program Manager and DSM Clerk Jeannie Troxel of Oklahoma Gas and Electric (OG&E).

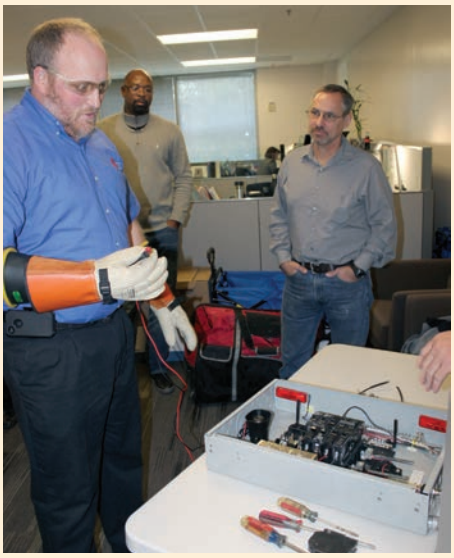
DoD Continues Its Commitment to Energy Savings

The Building Operator Certification (BOC®) program is recognizing two Department of Defense (DoD) installations for their commitment to professional development for building operators and to energy management. Making the investment in their operator teams prepares them to support the installations' energy management and operational efficiency goals while complying with the Federal Buildings Personnel Training Act as well as Executive Order 13693. The BOC program partnered with Naval Air Warfare Center Weapons Division (NAVAIR China Lake) in China Lake, CA and Joint Base Lewis McChord, located in Washington State to offer the BOC training to their facilities staffs in 2016.

A unique component to these training sessions for Joint Base Lewis McChord and China Lake was a follow up assignment the BOC program assigned to students. Each student was asked to identify two actions they wanted to take to improve operations in their building or department as a result of training. The top three most frequently cited actions were adjustments to HVAC schedules to align with occupied hours, installing occupancy sensors for lighting, and including specifications for energy saving equipment in future RFP's.

The DoD's commitment to the BOC program has a solid history. Go to the BOC website to access the winter/spring issue of 2015 and you will find a feature story on San Diego's Camp Pendleton, detailing the efficiency measures they have taken at their facility. The savings continue.

ISO 17024 *(Continued from page 1).*



Participants in the Georgia BOC class learn the importance of safety - and respect - for electricity when working on electrical systems.

BOC program has convened over the past three years. Passing the exam will confer a specific designation of CBO (Certified Building Operator). It covers all the critical work functions of building management. All the applicable information is covered in BOC Level I training.

Visit the BOC website (www.theBOC.info) for more information on this new credential and what it entails.

And Why Take This Next Step?

As Bill Babbitt, Chief Building Engineer Supervisor of the global real estate services company CBRE Asset Services puts it:

The BOC program is well known in our community and offers a good, well-rounded overview of the various elements of our jobs; HVAC, electrical, water & energy savings, etc. It is great especially for entry or junior level engineers for them to get a better idea of the bigger picture of what we do and how it has real impact on our buildings and occupants. The additional qualification obtained by taking the Certification Exam gives more strength to the qualification. Taking the classes and passing those tests is one thing; sitting for a three hour exam and answering over 100 questions of real world systems knowledge, proves that the individual knows the information and has understanding, and just hasn't crammed the day before the exam. I would highly encourage graduates of BOC to further their credentials by obtaining this certification.

Check out BOC's Technical Webinar Series!

The BOC (www.theBOC.info) offers both live and recorded webinars available for viewing at your convenience. Complete a quiz at the conclusion of the session and you can earn 1.5 points towards maintaining your BOC credential. Visit the BOC website to check out current options of recorded webinars, as well as the schedule for 2017 live sessions.

The **LIVE webinars** offered in 2017 will be held from 11 AM to noon Pacific Standard Time. Topics for the 2017 Series are:

- **New Technologies for Lighting Retrofits and Upgrades –** *February 15*
- **Operational Improvements using Building Automation Systems –** *March 22*
- **Building Envelope Leakage/Infiltration: Air, Moisture and the Problems They Cause –** *April 19*
- **Troubleshooting Common Air Handler Problems –** *May 17*
- **Addressing Hot and Cold Calls: What's your procedure? –** *September 14*
- **Building Re-tuning without a Building Automation System –** *October 18*

Check out the BOC website for details. And remember, BOC graduates who maintain their credential receive a **20% discount** on the BOC webinars series.

New to BOC®?

Listen to a FREE Informational BOC Webcast:

BOC Informational Webcasts are for newcomers to the program. Learn about Level I and Level II course topics, schedules and certification requirements in detail. Listen in and find out who benefits by attending BOC training and how graduates are improving their facilities.

Informational webcasts last approximately one hour, starting at :

8:30AM - 9:30A M (PST)
9:30AM - 10:30AM (MST)
10:30AM - 11:30AM (CST)
11:30AM - 12:30PM (EST)

The next live broadcast for 2017 is scheduled for **Feburary 15th.** Please note that pre-recorded webcasts can be downloaded from the BOC website 24/7. To sign up go to: **www.theBOC.info**

Training is available from Maine to Hawaii, Montana to Texas – and now even Ontario!

Stay Ahead: Prep for BOC Maintenance Now!

The BOC program has recently aligned with the **ISO 17024 standard,** affecting some of our graduates. Be sure to check your communications from us regarding your credential's standing. Please read the feature article on why we have decided to align the BOC program with this prestigious, international standard. It is a benefit for the BOC program, which means that it is a benefit for its students, graduates, and stakeholders.

To learn more about this enhanced certification, please visit the BOC website or call us at the Help Desk number below.

To maintain your BOC credential, graduates must accumulate maintenance points each year following a full calendar year after they've earned their credential. Level I maintenance requires five points each year and Level II requires ten. Points may be earned as follows:

- Continued employment in building operations ..... ***2 points/year***
- Continuing education in building operations..... ***1 point per hour of classroom time***
- Energy efficiency projects completed at your facility..... ***Up to 11 points/year***
- Membership in a building operations association..... ***1 point/year***
- Offices held in membership associations..... ***2 points/year***
- Awards received for efficient building operations..... ***2 points/award***
- BOC newsletter tech article quiz (see Pg 8 for details)..... ***1 point/passed quiz***
- Completion of an energy consumption benchmark for the previous twelve-month period using Energy Star® Portfolio Manager or alternative energy accounting tool ..... ***3 points/year***
- Enrollment in a BOC webinar and completion of its quiz (See webinar announcement on this page) ..... ***1.5 points/passed quiz***

BOC graduates whose credential expires **March 31, 2017** will have received their applications via email and US mail in early January. To complete the application, graduates will report maintenance points (Level I maintenance requires five points and Level II requires ten) and submit the maintenance application fee ($65 for either Level I or II).

Use our HELP Desk **(1-877-850-4793)**, whose knowledgeable staff can address questions and assist with the maintenance application. **The deadline for application submission is March 31, 2017.**

Continuing Education Opportunities for Credential Maintenance Points

There are a number of national organizations that offer continuing education courses that are applicable to annual BOC credential maintenance. Go to the BOC website (**www.theBOC.info**) and access the drop-down menu on the ***About*** tab and scroll to Resources. On this page you will find links to many of these organizations under Additional Resources "Helpful links". Browse their Education, Professional Development and Events Calendars to see what exciting opportunities there are for you.

Are you a Current Credential Holder?

WIN FREE STUFF!

Twice a year, current credential-holders may enter a drawing to win merchandise such as BOC gear, diagnostic tools, or reference manuals. Our next drawing for a BOC hat, mug or shirt is April 3rd.

Congratulations to the winner of our October drawing, **Cliff Baughn** of L-3 Communications in San Carlos, California!

ENTER TO WIN HERE:

https://www.surveymonkey.com/r/boc-spring2017

Another Benefit for BOC Credentialed Operators

BOC graduates who maintain their credential receive a **20% discount** on the BOC webinars series. Watch for details of new offerings at the BOC website **(www.theBOC.info)**.

Testing HVAC for Sound and Vibration Problems

Components of HVAC systems sometimes produce unnecessary sounds and vibrations that are transferred into building structures and occupied spaces. Chillers are one component that depending on its severity, this noise can injure, tire, and bother building occupants. In addition, excessive vibration may also promote early mechanical failure and poor performance of rotating HVAC equipment.

Five Typical cause of Sound and Vibration issues

1. Improperly aligned motor and fan sheaves.
2. Failure to remove all shipping brackets.
3. Improper alignment of pumps and couplings.
4. Excessive air volume is being achieved.
5. Incorrect installation and tension of belt(s).

The Fluke 805FC Vibration Meter is a reliable vibration screening device available for frontline mechanical troubleshooting teams that need repeatable, ISO-10816 severity-scaled readings of overall vibration and bearing condition. The easy to use hand-held meter has a built-in data base that provides a four-level severity scale assessing the urgency of problems for overall vibration and bearing condition. Up to 3,500 measurements can be stored internally and downloaded to a PC with the included USB cable. Pre-built Microsoft Excel templates are available for trending the measurements.

805FC

The Extech SDL600 Sound Level meter displays and stores sound level readings in the 30 to 130 db range. The SDL600 records data on an SD card in Excel format. High accuracy ±1.4dB meets ANSI and IEC 61672-1 Type 2 standards. 30 to 130dB measurement range. Auto or Manual ranging. AC analog output for connection to an analyzer or recorder. Large backlit LCD display. Stores 99 readings manually and 20M readings via 2G SD card. Datalogger date/time stamps and stores readings on an SD card in Excel format for easy transfer to a PC.

805FC

Courtesy of Duane Lewellen, BOC Instructor and Senior Project Manager at the Smart Buildings Center's Tool Lending Library.

For more about the Seattle-based Tool Lending Library and its 2017 expansion of service in to neighboring Oregon, please see the story below or visit the website at ***www.smartbuildingscenter****. org for lots of informative tips and instruction.*

SBC's Diagnostic Tool Lending Library Expands to Oregon

For 2017, Energy Trust of Oregon (ETO) has a new way to help improve the energy performance of your buildings. Whether you're implementing Strategic Energy Management at your site, or working on improving operations and maintenance, having the right tool to measure energy use can help you manage it more effectively.

The Diagnostic Tool Lending Library (TLL), operated by the Smart Buildings Center (SBC) in Seattle (and featured in our last issue), lends 85 different types of diagnostic tools and has more than 1,000 pieces of equipment available. SBC is now expanding this lending service to include Oregon. Talk with your Energy Trust representative to learn which tools are most useful for your facility.

SMART BUILDINGS CENTER

Diagnostic tools include: data loggers, ultrasonic flow meters, power loggers, infrared cameras, flow hoods, power meters, liquid manometers, light meters, airflow meters and more.

Energy Trust provides this expanded access to the library at no cost to qualified customers. Tools will be shipped to your site with instructions on how to return. For more information and to check out diagnostic tools, visit **www.smartbuildingscenter.org/tool-library.**

Even for those not in the Washington and Oregon area a visit to the SBC site is valuable. In addition to an extensive tool inventory list, you can access application guides on how to use the tools in the Tool Library's Tool Resource section, as well as some instructional videos.

For questions, call 206.538.0685 or email tool-library@smartbuildingscenter.org. Business hours are Tuesday through Thursday, 9 a.m. – 4 p.m. (PST).

National Conferences & Symposiums 2017

Conferences and Symposiums are a great way to get exposure to new technologies and techniques in facilities management, as well as an opportunity to network with your peers. Attendance at a trade show earns you one point toward your BOC credential maintenance. Attending educational sessions as part of a conference earns one maintenance point per hour of educational time as well! For a listing of **FM trade shows** around the country, visit the BOC website at **www.theBOC.info** and go to the ***Continuing Education*** tab.

Building Operator Certification
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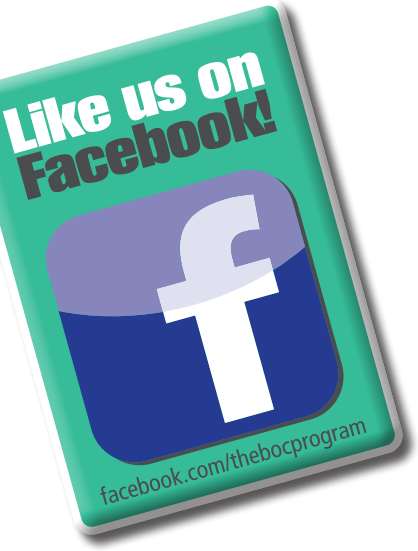
www.theboc.info



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BOC PARTNERS

Partners in the BOC program include: Canadian Institute for Training, Focus on Energy, Gwinnett Technical College, Intermountain Building Operators Association, Midwest Energy Efficiency Alliance, National Sustainable Structures Center at Pennsylvania College of Technology, New York State Energy Research & Development Authority, Northwest Water & Energy Education Institute, Northwest Energy Efficiency Council, Santa Fe Community College, South Carolina Community College System BOC Consortium, South-Central Partnership for Energy Efficiency as a Resource, S&W Enterprises, LLC, University of Hawaii – Maui College, and University of Hawaii – Manoa.

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