



## Two BOC Graduates Share Tips for Handling Hot and Cold Calls

Now that we understand the relationship between office comfort and productivity, let's take a look at the role building operators can play in maintaining a comfortable, productive workplace. What procedures are you using to address these concerns, take corrective action, and provide good customer service? We asked two BOC graduates to share their how-to's with us for this article.



David Johnson

**David Johnson**, is a Chief Engineer with ABM Engineering Services in Irvine, CA, and holds a BOC Level II certificate. He recommends his team follow a step-by-step checklist of verification steps

for addressing HVAC calls. "We get three kinds of calls – hot and cold, and the "stuffy" room," says Johnson. His engineers carry a basic set of tools when they go out to investigate. "The variety of tools we use escalates as we investigate, but the starting point is always a calibrated thermometer for verifying space temperature and thermostat calibration." For measuring potential drafts, they use a thermo-anemometer for temperature and air velocity. If the air balance or CFM sensor is suspect, they verify actual CFM delivered with a balometer. For conference rooms or "stuffy" calls they use a psychrometer to determine RH (latent heat).

"I avoid IR thermometers for anything but "spot checking" equipment temperatures such as motor bearings, electrical breakers, and switches," Johnson notes. He recommends a Fluke web page which explains the ins and outs of using hand held IR thermometers.

<http://en-us.fluke.com/community/fluke-news-plus/temperature/how-to-get-great-results-with-an-infrared-thermometer.html>

"I'm sure there will be those who think this is a lot, but it all boils down to the continuous commissioning and system optimization every building engineer should be capable of doing," says Johnson. Not only do these practices help with office comfort, but his team reduced electrical use for the company by 500,000 kWh of electricity over the previous year. While the reduction is primarily due to LED lighting projects, it wouldn't be possible if the HVAC systems did not remain optimized.



Dean Carter

For **Dean Carter**, Chief Engineer with CBRE in Seattle, WA, customer satisfaction is paramount. Tenants call the customer service center to report comfort problems, or they may pass the service center and

submit a work order themselves. "We ask them to address a set of questions to help the engineering staff understand the conditions – for example, what area or room do you work in? What is the temperature in your area?" Their standard setting for heating season is 71F, explains Carter. If he verifies the zone temperature is within 71F, then he'll talk to others in the space to determine general

satisfaction. Sometimes it's just one person with the complaint, at which point he'll explore other factors such

**"Giving people options and staying in close communication are the best ways to increase satisfaction"**

– Dean Carter

as relative humidity, and air distribution (it is blowing on them?), and fan operation. Can we redirect the air from the diffuser if there's a draft on them? "Giving people options and staying in close communication are the best ways to increase satisfaction."

says Carter. He may offer to adjust temperature in the space one degree, adjust air flow, trend temperatures at the person's desk over time. If all else fails, the manager of the complaining employee has the ability to request a space heater.

What's Carter's favorite tool? "A sling or electronic psychrometer is ideal. I also use an infra-red (IR) gun" says Carter.



## Checklist for Responding to Common HVAC Calls

### Hot and Cold Calls:

- Is the thermostat calibrated and reading correctly? If the T-Stat is out of calibration, it doesn't matter if the rest of the system is working perfectly – you will never achieve the correct temperature at the zone level.
- Is working correctly? Check damper actuator and linkage for proper operation.
- Check wire terminations for sensors, actuators and communications.
- Is the air handling unit (AHU) providing supply air at the correct temperature and static pressure?
- Is the boiler on line and making hot water at setpoint?
- Conference and meeting rooms can be occupied rapidly. Latent heat loads produced by people (respiration, perspiration) will rise faster than the sensible heat load resulting in hot calls. Keep this in mind when you are verifying T-stat calibration – 73 degree dry bulb temperature with high humidity is going to “feel” like it's 76 degrees! Open the VAV damper manually to bring sensible temperature down a degree or two.
- Check air balance! If the CFM sensor is not reading correctly, perform air balancing and recalibrate CFM sensors.



### Draft or “Stuffy” Calls:

- Is the variable air volume (VAV) system working correctly?
- Is the AHU providing supply air at the correct temperature and static pressure?
- Measure air velocity at area where complaint originated. If feet per second (FPS) measures 50 or greater you definitely have a draft.
- Change direction of supply grills as needed for draft calls.
- In open areas, check surrounding zones. The problem may be with an adjacent VAV.
- Check air balance! If the CFM sensor is not reading correctly, perform air balancing to recalibrate. Changing CFM set points without checking air balance is only going to compound the problem.

### Building Pressure:

- Are return fans operating as they should?
- Are AHU's in startup or shutdown mode?
- Is building pressure sensor calibrated?
- Are outside doors closed?

— Courtesy —

David Johnson,  
ABM Engineering Services

## TECH QUIZ - SIDE BAR 2

### Favorite Tools and Resources

**Johnson:** Calibrated thermometer, thermo-anemometer for temperature and air velocity, bolometer for CFM, psychrometer for “stuffy” rooms.

**Carter:** Sling or electronic psychrometer, Infra-red (IR) gun.

#### Read about Using Data Loggers to Address Comfort Complaints:

<http://www.onsetcomp.com/files/Comfort-Complaints.pdf>

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<http://en-us.fluke.com/community/fluke-news-plus/temperature/how-to-get-great-results-with-an-infrared-thermometer.html>

#### BOC Technical Webinar: Addressing Hot & Cold Calls – What's your procedure?

September 27 from 11am-12noon  
<http://www.theboc.info/continuing-education/webinars/>