

# From The Inside Out

Jeff Dover

## STRIKING a BALANCE

### Achieving energy savings through proper air balancing

What does air balance in a restaurant mean? How can it affect customers and employees? Why does it determine such a large amount of energy usage in a building? All of these questions are important in regard to the overall building envelope. Facility managers regularly deal with all kinds of projects, from HVAC to landscaping, but many air balance issues go unnoticed. As long as there are no complaints of doors being hard to open or hot and cold spots, balancing is usually not on the radar.

However, my experience has shown the majority of restaurants are negatively balanced. All air-handling equipment and controls must be operating properly to have a balanced store. Over time, equipment gets adjusted, replaced or worn out, which changes the air flow rates and unbalances a store.

### Checking for Balance

The simplest way to check for negative or positive air balance is to first turn on all the HVACs, as well as all hood exhaust fans and make-up air fans. From the inside of the restaurant, go to any exterior door, crack it open and hold up a small flame from a lighter, candle or match and see which way it flickers. If it flickers toward the inside, the store is under a negative pressure. If it is pulled toward the outside, the building is positive.

Other indications of a negatively pressured building include:

- Hot or cold spots in the dining room
- Condensation (water) dripping from the diffusers
- Drafts coming in from the exterior doors or windows
- Smoke coming out of the hood capture area
- Cookline areas that are very warm
- Fast-moving air flowing from the dining room

### Benefits of Positive Pressure

The ideal is a slightly positive balanced building. That's because a positively pressured building offers several advantages, including:

- Hot or cold outside air cannot enter the building
- The cooling and heating output of the HVACs is minimized, which maintains or lowers overall utility consumption
- Smoke capture for the hoods in the kitchen is improved
- Gas water heater performance is optimized
- Fewer bugs are able to enter the store
- The comfort of customers and employees is improved

### Improving Your Balance

Optimize your restaurant's balance by first checking the following items:

- Make sure thermostats are properly programmed with the fan in the "on" position.
- Check to ensure all HVAC equipment, including the make-up air, is on and running.
- Check for leaking ductwork above the ceiling or in the attic space.
- Ensure all HVAC air filters are clean. Clogged filters will restrict airflow.
- Regularly clean all rooftop coils, as dirty ones restrict airflow.
- Ensure the make-up air filter is in place and clean.
- Make sure manual outside fresh air dampers on A/C units are open and set properly. Check operation on automatic dampers for proper opening.
- Seal curbs on all rooftop equipment.
- Ensure all hood filters are in place and sized correctly, with no gaps.
- Be sure all blower motors are running at full load amps.

### Partner with a Pro

Most facility professionals do not have airflow-reading equipment at their disposal. Flow hoods, anemometers and RPM gauges are great to have, but it takes a professional to complete a proper testing and balance.

The recommended interval for rebalancing is every three to five years as belts, filters and coils degrade over time. Other appropriate times for rebalancing include during a remodel, during a major cooking equipment change or addition and when a rooftop unit is replaced.

Rebalancing a restaurant on a regular interval can actually pay for itself over time. In a negatively balanced restaurant, the HVACs have to run substantially longer to replace all the extra air that is being exhausted through the hoods. This air is being heated or cooled using added natural gas and electricity. However, in a properly balanced facility, there is a financial payback in lower overall energy consumption and costs, since equipment will only be running when needed. Additionally, customers and employees will both benefit in better environmental conditions inside the store.

Your local HVAC company will need to be the facility manager's eyes in the field, since they are usually in the stores and on the roof more often. In completing their normal HVAC/R duties, they should be well versed in building balance parameters. They need to check on the items noted above to ensure the facility is properly balanced. If problems persist, a complete professional testing and balance may be required. RFMA has several vendor members that can be contracted to complete this work.

Proper building balance is a real asset in restaurants because it adds to overall energy efficiency and comfort; however, it often gets overlooked as there is nothing to touch or feel. Don't let that be the case in your restaurants.

I'm always looking for feedback. Feel free to contact me at (972) 805-0905, ext. 3, or email [jeff@rfmaonline.com](mailto:jeff@rfmaonline.com).

Dover and out.

Jeff Dover's facilities career started in 1985. He has been employed by several major chains (Ponderosa, Steak & Ale, Bennigan's, TGI Friday's, Fuddruckers and recently Five Guys Burgers and Fries). His technical education enabled him to take the lead as energy manager, facilities manager and director of facilities at the various brands.