

SERVICE CALL



Lab Hood Safety -

Fume hoods can contain many different substances, from chemicals to bacteria and viruses. It is important to ensure that the hood is exhausting properly and that fumes are not re-entering the lab in any way. In this photo, a mannequin is used to mimic a lab tech working in front of a hood. The mannequin has sensitive air-sampling analyzers that are calibrated to sense parts-per-million of trace gas. If the hood passes the rigorous test, it can be certified.



Balancing Hood -

Shown in this photo is a balancing hood used to measure precise air flow from diffusers, registers, and grills. Air flow hoods need to be maintained and calibrated, and the technician using the equipment needs special training to use and maintain it. It is important to know that it takes years of experience to balance a building properly.

AIR AND WATER BALANCING

Air and water balancing is a method of regulating air supply, return, and exhaust, or the flow of water through coils, to achieve a neutrally balanced, comfortably conditioned building.

It is important to regulate indoor/outdoor air balance as well as from zone to zone. Improper balance can result in poor indoor air quality, occupant discomfort, and system inefficiency. Fortunately, these issues can usually be easily remedied through professional air and water balancing, otherwise known as TAB (testing, adjusting and balancing). There are a number of symptoms to look for that can warrant hiring a TAB specialist such as MSC to perform air and water balancing. These include:

- ▶ Indoor space has been reconfigured
- ▶ Hot and cold spots
- ▶ Frequent need to adjust thermostat settings
- ▶ Drafts or stuffy areas
- ▶ Odors emanating from air system
- ▶ Doors that open or slam closed
- ▶ The presence of excessive dust or dirt

Air naturally flows from positive to negative areas wherever there is a differential in pressure. A negative building that brings in less air than it exhausts will draw air through cracks, windows, open doors, and other openings, making it difficult to maintain comfortable conditions. Conversely, excessive energy is required when more make-up air is brought in than is exhausted.

Almost all existing systems can benefit significantly from air and water balancing. A TAB professional will conduct a careful system analysis using a detailed checklist to determine where corrections should be made. The process involves comparing as-built drawings with existing conditions; checking the physical condition of coils, dampers and equipment; measuring CFM of air being supplied to diffusers, discharge/return air volume and temperatures, blower RPMs, and motor voltage and current draw; and comparing air changes per hour to ASHRAE standards, among many other checklist items. Water balancing requires a similarly meticulous analysis of water flow through hydronic systems. TAB is performed during retro-commissioning as part of a larger process that verifies temperature, humidification and pressurization in addition to air and water flow.

AIR AND WATER BALANCING *cont. from page 1*

Air and water balancing usually uncovers a combination of issues that can have a negative effect on system performance.

Many of the most common problems uncovered in these analyses, which are listed on the right, can be corrected easily and inexpensively. Buildings and facilities that undergo professional air and water balancing can expect to see significant improvements in occupant comfort, increased energy efficiency, and lowered utility bills.

Now more than ever, building owners and operators are making the simple investment into air and water balancing. Taking a holistic approach to how buildings and systems operate is a key component to system efficiency. Small adjustments and repairs are minor expenses that can have a large impact on return on investment, though it has been our experience that there will always be those who will ignore the symptoms of poor system performance. They will suffer discomfort, pay higher utility bills, have reduced equipment life, replace equipment prematurely, and make unnecessary and expensive repairs when all that may be needed is a little attention.

Past experience also tells us it's never one problem causing discomfort and complaints. Invariably it is an accumulation of small issues and much-needed repairs that, when diagnosed and fixed properly, can bring the system or building back to its original design intent. Most of these repairs can be made during the TAB process, which should always be performed by a technician with in-depth knowledge across multiple disciplines. Always hire a certified pro, especially one with retro-commissioning experience, like MSC. A superior TAB professional will provide a detailed diagnostic report along with all readings and settings clearly documented. This allows a system owner an excellent working knowledge of how systems should run and what parameters to check each season. Buyer beware of the company that is not really listening to your problems or suggesting how to correct them. If they're just trying to sell you a new system without really looking or listening, you need to look elsewhere. Taking care of what you have, repairing what is fixable, and properly maintaining systems through preventive maintenance is almost always the way to go.

If you would like to find out more about how air and water balancing can help you, contact MSC at 973-884-5000.



Air & Water Balancing Issues

Air Balancing -

- Inconsistent system adjustments
- Temporary fixes to resolve temperature complaints
- Leaking or collapsed ductwork
- Dirty filters and coils
- Closed dampers
- Broken diffusers
- Broken VAV boxes
- Clogged flow stations
- Add-ons to existing systems
- Reconfigured indoor spaces
- Poor system design
- Poor execution in original install

Water Balancing -

- Partially closed valves
- Plugged strainers
- Kinked or damaged piping
- Sludge or silt in coils
- VFD problems
- CBVs not set properly
- Poor system design
- Poor execution in original install

