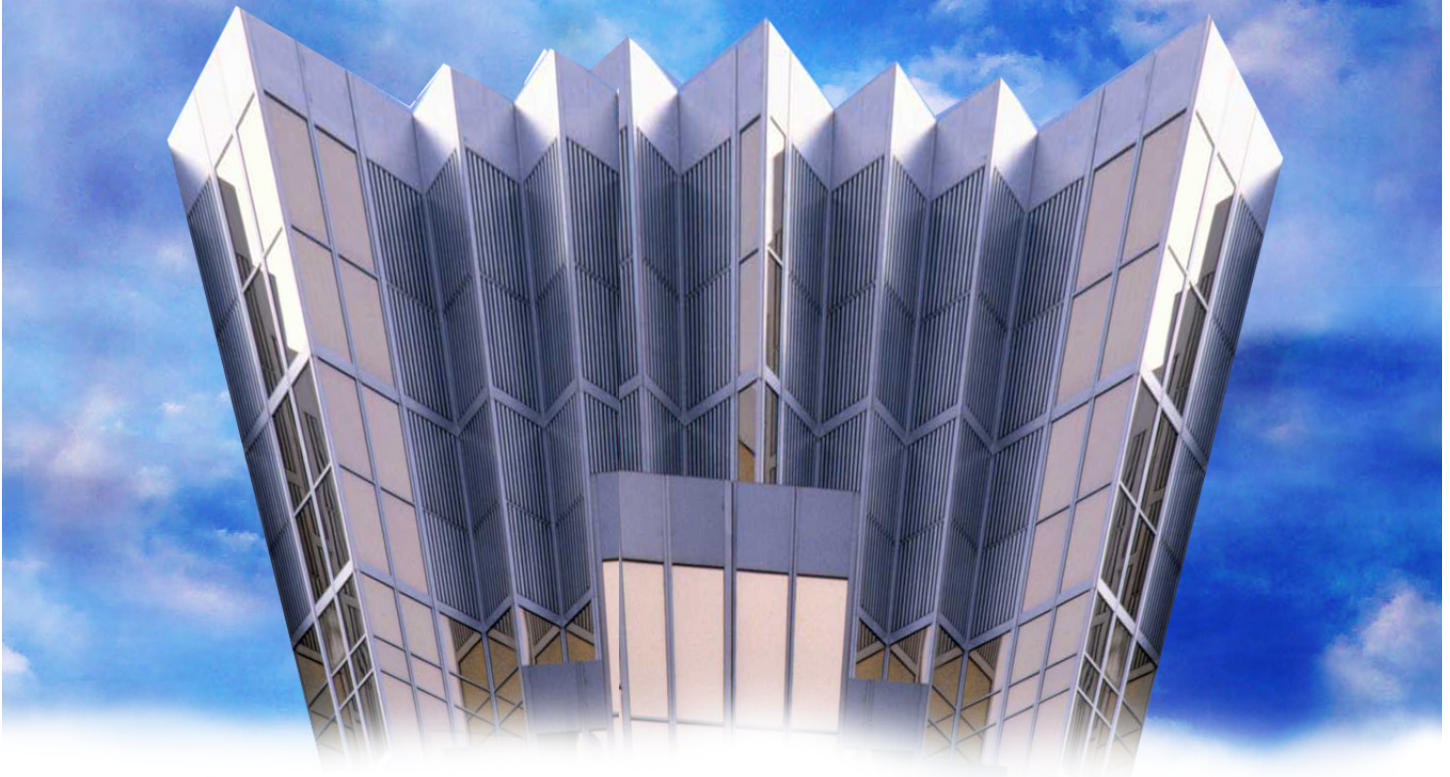
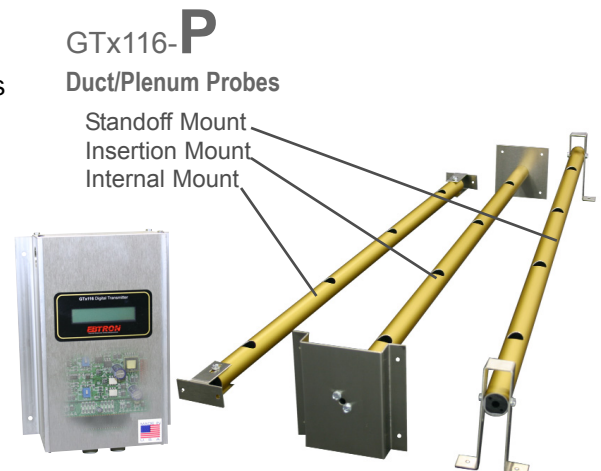


Contents Under Pressure?



Control Pressure to Reduce Mold:

- Improper building pressure can result in **significant water transport** across the building envelope and is a **prerequisite to mold growth**.
- **Compartmentalize** your building into **unique** pressure zones (i.e. air handlers, floors, etc.) for proper pressure control.
- **Maintain airflow differentials** into and out of each pressure zone for stable, independent control.
- Use accurate **EBTRON -P probes** to assure that proper **“net” pressurization** is maintained between pressure zones.
- Measure **“bleed”** airflow rates across critical zones or exterior surfaces to reset differentials with **EBTRON -B sensors**.



EBTRON
Thermal Dispersion Airflow Measurement

Minimize moisture to reduce mold and fungal growth

Pressure is a significant mechanism for water transport across a building envelope.

Owners spend countless thousands on mechanical systems and controls but often cut corners on the instrumentation required to get the most of their high dollar investment. As a result, many well designed systems do not perform as intended.

When it comes to airflow measurement, cutting corners by eliminating equipment or using inferior technology can be catastrophic. The technology is available today from *EBTRON* to maximize the performance of today's HVAC systems. Here are a few examples of how state-of-the-art airflow measurement technology can improve building performance:

Maintain Net Pressure to Control Moisture

Although pressurization is not the sole source of moisture problems in a building, it is a major and often overlooked cause of mold growth in the building envelope. Pressure is a significant

water transport path across the building envelope. Wind pressure cannot be compensated for all of the time without damage to the building envelope (if you develop enough pressure on one exterior wall to compensate for wind pressure you will inevitably over-pressurize another wall). The objective in exterior wall pressurization is to develop a net pressure (positive during cooling, neutral during heating). Net positive pressurization will result in a drying effect during humid summer months.

Define Pressure Zones!

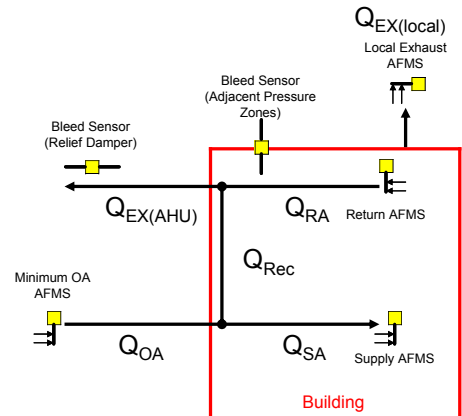
Regardless of whether or not you are concerned about pressure from a moisture (IAQ) perspective or for containment of contaminants (labs, processes) you must define pressure zones within the building. Many buildings have pressurization problems because the designers treated the whole building as a single pressure zone. Buildings with multiple air handling systems have complex dynamics that effect pressurization. A common method to control building pressure is to control fan systems to space static pressure. Unfortunately, static pressure control cannot assure that net pressurization is achieved. All it can do is assure that one or

more pressure points within the building is positive or negative to a reference point outside of the building. The reference point is influenced by both wind and stack pressures.

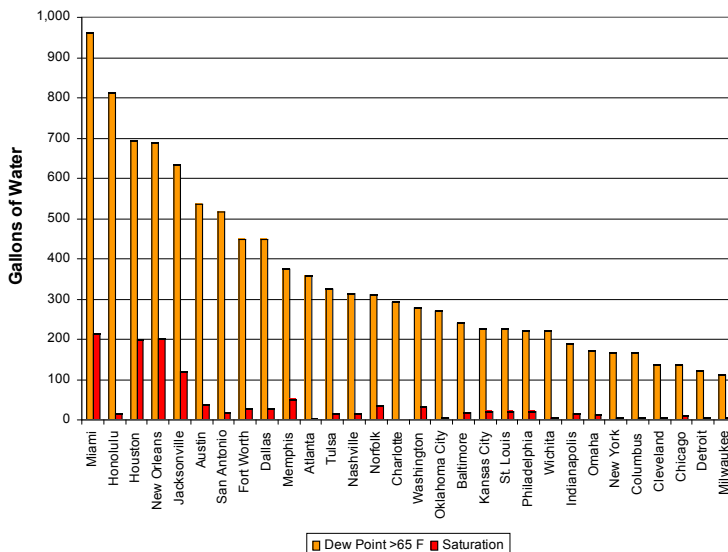
A more significant problem is the interaction of multiple pressure zones when static pressure control is used. This problem becomes apparent when multiple air-handlers are controlled to space static pressure. These systems often result in very poor and sometimes catastrophic building pressurization.

The Solution

Define pressure zones and control the supply and return airflow rates into and out of each zone (Δ cfm). Monitor "bleed" airflow rates between critical spaces and reset the differential as required. In addition, monitor local exhaust flow rates if changes in flow rates during operation will significantly impact pressurization.



Annual Gallons of Water Transported Across the Building Envelope for every 1,000 CFM of Negative Airflow First 30 of top 50 US Cities by Population (2000 Census)



Typical Pressure Zones

- **Single air handler serving a single floor:**
Relief at AHU: control supply and return airflow rates at the air handler.
No relief at AHU: control outside air intake airflow rates.
- **Single air handler serving multiple floors:** control supply and return airflow rates at each floor to compensate for stack effect.
- **Single air handler serving multiple pressure zones on one or more floors:** control supply and return airflow rates at each pressure zone.