

Problems with Old Pneumatic Control System

Problems

The majority of Building Owners and Managers hate their pneumatic control systems. Their usually old, have moisture and dirt in the pneumatic lines causing thermostats to fail, with costly repairs. The pneumatic lines developed leaks causing additional problems. Pneumatic thermostats cannot be programmed for daily schedules, vacations etc. Motion detectors are not able to turn them off. There are thousands of buildings with pneumatic that are over 50/60 years old. There are 40 million pneumatic thermostats in the nation. **That's a lot of headaches!!!**



Energy waste is a major concern. Can't turn off a pneumatic thermostat!
Imagine having a thermostat in your home that you can't turn off. That's exactly what commercial office buildings, hospitals and airports etc. have to deal with. Commercial office buildings usually operate 12 hours a day but the average occupancy is 6 to 8 hours.



One of the most popular HVAC systems is the VAV system, which utilizes a ridiculous zone sequence called minimum position air flow. Quite a few building owners have installed motion detectors that turn off the lights. When the lights are turned off in the unoccupied space they are actually causing an increase in energy consumption. Because, cold air continues to flow into the unoccupied space until the heating system has to **reheat** to bring the temperature back up. Without the motion detector the minimum position air flow utilize the **lighting system's heat** to help maintain the unoccupied space temperature.

So, if you bought motion detectors for your lighting system and you have an old pneumatic VAV system.

You got screwed!



Pneumatic thermostats get an **F** grade on communications. There's sometimes hundreds of thousands of dollars worth of mechanical equipment, trying to provide the proper air and water temperatures to the zone's systems and all this expensive equipment doesn't know the room temperature. Pneumatics are dumb!!!



The above expensive equipment is relying on return air average conditions, which is not able to spot the problem areas and provide the proper temperature for these areas of concern. The bottom line is, there usually overworking the primary mechanical equipment with too low and high of temperatures and complicating the zone controls ability to maintain temperature. The wrong temperatures provide for higher maintenance, repair costs, and energy waste.



In the last 5 or 6 years potential lawsuits have been threatening the Building Owners. Because of poor indoor air quality associated with the VAV system and ridiculous minimum position air flow. When the system is in minimum position it **ruins the air distribution**. Occupants, at the end of the ductwork runs do not get adequate/no air circulation. Tenants that know about this can break their lease and/or sue the Building Owner. **No Air = Poor Indoor Air Quality**



The pneumatic control system provides zero data. In the mechanical system, the most important data is room and zone supply air temperatures.

"Data is an Asset. No data with pneumatics. Information is valuable. Technology today is able to manipulate, organize and use data so we can save energy, protect our equipment, diagnose and predictive breakdowns, reduce operating and labor costs."



The **Building Managers** spend hours a day receiving complaints, dealing with disgruntled occupants, scheduling repairs, follow-up communications, dealing with the time-consuming payments and bookkeeping.

Solutions

Solution 1:

Simple! Rip out all the pneumatic controls and install all electric 24V DDC controls. This is no surprise to most building owners, **the cost is outrageous** and the ROI can be as high as 4 to 6 years. A building with 100 pneumatic zones, the average DDC retrofit is approximately **\$200,000/\$250,000**. Technicians are pulling cables all through your facilities ceilings for 24V power, ripping out valves with garbage cans underneath to catch the dripping water, than installing and commissioning the new electric DDC controls. If you can afford this, it's a no-brainer.

Solution 2

Invest in an old pneumatic control system? This is definitely not advisable! **WPT** replaces your existing pneumatic thermostat with a new pneumatic thermostat that can be adjusted remotely from a computer. Approximately \$500 per zone. Cannot totally shut off the air. This gives you zone temperatures monitoring like in solutions 1 but does not compare to the energy savings and is not compatible with future all electric DDC retrofits. This Band-Aid is eventually thrown away and quite often is immediately destroyed from pneumatic lines contaminated with moisture and oil, adding to the high cost to maintain the old pneumatic control system. Does not work with VAV reheat systems because it cannot turn off the air 100%.

Solution 3

Burn the building, collect insurance money and **go to jail**.



Solution 4:

ecWizard-P100 www.ecWizard.net

About the Author

George Fincher, the old pro is Inventor of the Patented DDC Control the **ecWizard-P100**



Patent Pending's ecWizard-E100 and ecWorkStation/Office Desk Sensors.

A visionary is someone who sees a target that no one else can see. A visionary genius, hits the target.