

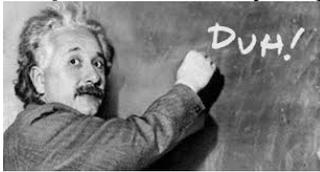
Big Data



The following is from the old pro.

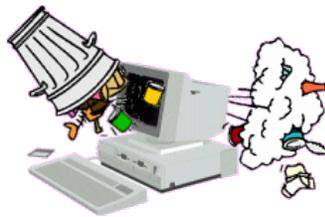
Being retired is like the armchair quarterback watching the HVAC game. Good luck, I think it's time for my golf game or nap I forget.

Big data, analytics, the cloud, Internet of things is very exciting, **but keep it simple stupid.** How are you going to get all that data out of the old buildings?



Nothing in = Nothing out.

Getting the data out of the facility is going to be tough. Older buildings started installing DDC control systems in early 80s. There are millions of facilities with difficult access to data. Once you connected up with the building's old DDC control system to collect the data then you're going to be held responsible for anything goes wrong with their system. Plus, there are millions of old DDC control systems that have inaccurate, sensors etc. why tap into something that the building owner is looking to upgrade. **Garbage in = Garbage out.**



Two of the most important HVAC data points are zone temperature and supply air temperature. (VAV Systems include CFM.) Unfortunately, there are **50 million pneumatic thermostats in the nation today.** Pneumatics cannot provide data. The high costs to retrofit pneumatic zones have left the facilities only wishing that they could upgrade. Wouldn't it be nice to know the HVAC Cost\$/Zone/Min.

I'm sure the big data and sophisticated software can identify the building is not saving as much energy as it should, but it is not going to evaluate how you're going to achieve



this goal of energy savings. **You need additional data.**

One piece of data that's missing in most DDC control systems is the **amperage** of the A/C compressors, pumps, fans etc. Without this valuable information you can't determine your direct costs of your energy consuming pieces of equipment. The boiler information for gas consumption, etc. is also missing.

One of the challenges of working with data is it can be very hard to organize and use across different applications. It is stored in different formats, has inconsistent naming conventions and lacks information to describe what it means. This can take a great deal of time and money. Plus, you're not getting the important data required to make intelligent business decisions.



The most economical solution is to tap in to the wireless market that will allow the buildings to come alive with easily to use common naming conventions and tagging. And hopefully in the future use existing upgraded DDC building data.

Listen to the Building Owners; they want to see the costs of pumps, fans, chillers and cost per BTU of the HVAC system or systems. If your costs went up then the analytics could identify this. They don't care about the Cloud, the Edge or IOT. "Please tell me about the costs of my HVAC, lighting and plug loads". With that information I can manage and reduce my energy costs.



Cost of HVAC?

Quite often I see two large pumps running together in the HVAC piping system. The engineer designed the system for only one pump to operate and the other pump as a backup. I know that running both pumps is a stupid waste of energy. Sensing flow and amperage would allow average building operator to evaluate the energy waste and correct the situation. Cost\$/GPM/Min. (pressures, pipe size, amperage, voltage)

Building owners want to manage their energy usage and it starts by providing the proper data.



Cost\$/CFM/Min, Cost\$/GPM/Min, Cost\$/AC-BTU/ Min, Cost\$/Heating-BTU/Min

Total HVAC Cost\$/Min HVAC Cost\$/Sq.Ft/Min, HVAC Cost\$/Zone/Min

Add all the temperatures, amperage, flows, pressures, voltage and kW cost. Now, you have big data! When the costs of your individual pieces of equipment go up you have energy waste it's that simple. Wireless sensors make it economically feasible to receive big data.

You may have state-of-the-art DDC controls operating your HVAC system and still be wasting a considerable amount of money. Operator error can cause considerable damage to your equipment and waste thousands in energy. **Sometimes there's no incentive to reduce the HVAC costs by the operator**, because there's no way of knowing if the operator is operating the system inefficiently or not. You need an accountant or bookkeeper to manage your energy costs. Analytical software and the correct data can provide you with this information automatically.



Keep it simple stupid. My suggestion is to install a low-cost Gateway with battery operated/24V sensors that wirelessly communicate to the Gateway that is connected to the cloud and Internet of things. Do this before you even try to tap in to the old DDC control system. See the **ecMech** (Invisible Maintenance Man System)

ecMech would allow you to evaluate the existing control system, and provide HVAC Costs and predictive equipment alarms. **There's a big market to upgrade the old DDC system, good data, provide improved comfort and energy savings with a 2017, state-of-the-art system.**



Remember garbage in = garbage out. It may be wise to start with a wireless data logging system (**ecMech**) then advanced to pulling data out of your existing DDC control systems. Your existing system doesn't have all the data and what it has may be garbage.

The wireless industry has opened up out-of-the-box marketing opportunities. Because there are limited labor costs, wireless provides for monthly payments. You could even provide money back guarantees because you get your hardware back ready to use in another facility. Check equipment leasing opportunities and make it work.

