

# No Intelligent buildings or Smart buildings in the nation?



I don't want to hurt anybody's feelings, but there are not any smart or intelligent buildings in the nation or world!

Every year, the nation spends approximately \$200 billion in energy for commercial buildings. Yet, during the workday they are unoccupied average of 50%, wasting a potential \$100 billion dollars a year. **That's not smart or intelligent!**

*The corporate workplace is changing before our eyes. Gone are the days when every employee sat at their desk from 9:00am to 5:00pm. The workforce is increasingly mobile, and as a result, more and more office spaces are unused every day.*

How can anybody say they have a smart or intelligent building if they're not turning off HVAC, lighting and plug loads, when they're not required or when unoccupied?



It's such a waste and it's so simple to just turn off.

## Ambient Intelligence

*"Electronic environments that are sensitive and responsive to the presence of people." — Wikipedia*

"The frequencies of occupants leaving their offices and the corresponding durations of absences can have significant impact on energy use and the operational controls of buildings."

There is no technological reason that prevents us from modifying the HVAC, lighting and plug loads within a building, and conform to the momentary needs of the occupants. We have the capabilities to add sensors and controls to a building. Add local logic and

controls to the point of **individual** control in real-time. Even more than that, we're in a technological position of being able to create a state of individual *comfort* from room to room and desk to desk.

“Work patterns are changing. Companies are offering more flexibility to their workforce. Workers now spend less time at their desks and more time moving between meetings, collaborative breakout spaces and video conferencing suites. Occupancy sensing helps you understand your workers varying work patterns, respond quickly to their changing needs and adjust your strategy to reduce real estate costs.”

“Most businesses assume workspaces are utilized 50-60% of the time. But the reality is often quite different.”



Average office utilization



Average peak office utilization



Average meeting room no-shows

As an inventor you must think about the big three. **Does it solve a problem? Is it unique? Is it cost justified?**

## Is it cost justified?

Wall and ceiling motion detectors costs are high because of mounting and electrical labor. No one wants thousands of batteries throughout the facility. Badges, cell phones track occupants, but still need to commute to a central zone control and lack temperature and light level sensing.



Comfort bands that define the lowest and highest comfortable temperature for any given zone are not able to eliminate the fighting and discomfort that occur when multiple individuals are occupying the condition space.

Wall sensors/thermostats require high labor costs with power wiring and mounting. Constant control and fed back reduces battery life so that's not an appropriate option.

The above items are just not cost justified opportunities for control with ambient intelligence. They don't address accountability for individual plug loads and they do not solve the **individual** temperature comfort problems.

## “What gets measured, gets managed”

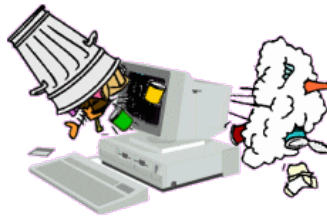
Metering plug loads is a necessary first step to realizing these savings. It's not recommended for the BMS system to simply turn off plug loads when unoccupied. The only answer is the desk occupant must be **held accountable** by metering their individual plug loads when unoccupied and occupied. (\$/Time)



Building owners have been lied to about energy savings since I've been in the industry as early as 1971. Ambient Intelligence can provide the building owners with actual cost justified solutions for purchasing **individual** comfort control (automatic damper of air outlet diffuser) or lighting comfort. Genuine ROI predictions!

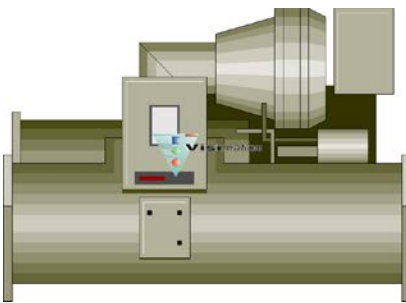


One of the most important wireless sensing opportunities is **amperage**. Yes, amperage tells the story about the workload of the fan, pump and chillers etc. But more important, it can tell us the dollars per time of the operating equipment. (It was never included in building automation systems because of the high cost of wiring.)



Amperage is Good Data

Garbage in = Garbage Out



Simple wireless sensors in the supply, return, flow and amperage can provide BTU/\$/Time.

**Example:** The chiller normally operates 100 tons at \$50 per hour, if it increases to \$60 per hour we have a serious problem with chiller operations. **Simple good data!** That's what the owners want to see!

There's so much more to talk about with ambient intelligence, amperage and the simple solutions that the industry has available. Thanks for reading my article I have additional articles and information on our website.

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