

*application ideas*

# **WHY BUILDING INSIGHTS MATTER: AIR QUALITY**

# AIR QUALITY MONITORING SOLUTION

POE-AQM

- ▶ **RELATIVE HUMIDITY,  
CO2 & TEMPERATURE**
- ▶ **REAL-TIME GAUGES &  
HISTORICAL TRENDS**
- ▶ **DASHBOARDS, ALERTS  
& REPORTS**



While invisible and often unmeasured, CO2 is deadly to occupant productivity and alertness. Given that roughly 90% of our time is spent indoors, optimizing these environments is imperative.

In a 2016 Harvard School of Public Health study,\* a group of professional-grade employees spent six full work days in an environmentally controlled office space and were blinded to test conditions. Over the course of those days, the concentration of volatile organic compounds and CO2 in the room was manipulated. Participants were tested using an objective measure of cognitive function and the results were staggering.

The study found statistically significant declines in cognitive function scores when CO2 concentrations were increased to levels that are common in indoor spaces (approx. 950 ppm). Average scores declined 15% on moderate CO2 days (~ 945 ppm) and 50% on days with CO2 concentrations of ~ 1,400 ppm. The effect that CO2 has on cognitive performance when compared to 'Green+', or optimal building conditions, is illustrated in the diagrams below.

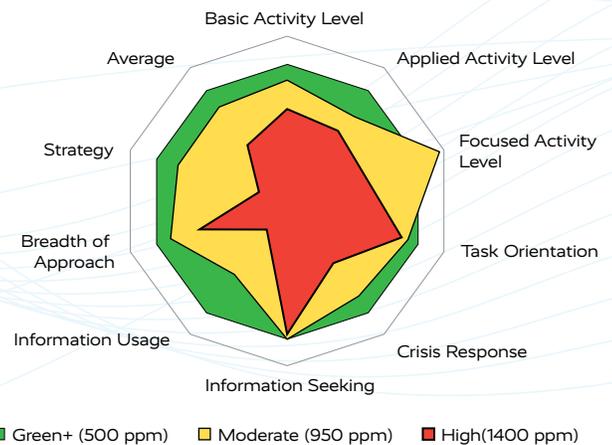
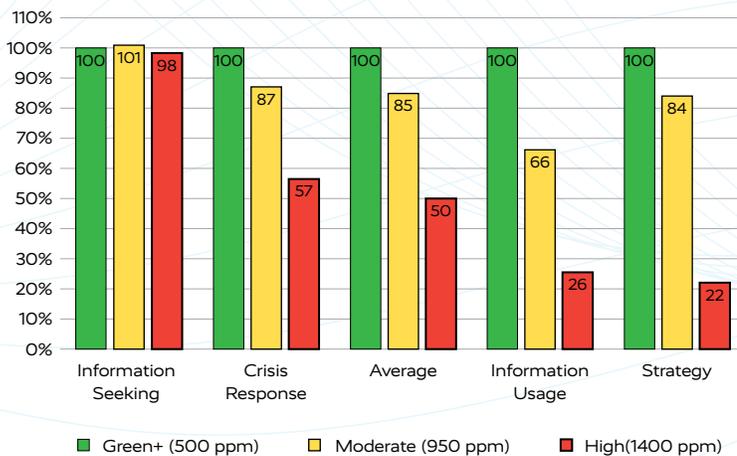
The reduction in cognitive function as a result of CO2 is staggering. Most troubling, the 'Information Seeking' activity was almost identical across all levels of CO2. This means that even in a high CO2 environment, occupants appear to be functioning as usual.

When it comes to actually using the information and strategizing, occupants are almost 75% less effective in high CO2 spaces.

Platformatics' managed service offering makes collecting and responding to CO2 data easy. After deploying CO2 sensors throughout a building, important data is securely collected, time-stamped and stored. When CO2 levels rise beyond certain thresholds, alerts can be sent to appropriate personnel. With HVAC integration, crossing thresholds can trigger ventilation of the space. This demand-based response allows for much better control over fixed air quantity refreshing. Further, CO2 sensor integration triggering ventilation is accepted by ASHRAE Standards and adds LEED points.

Beyond alerting and demand-based response, the data collection enables graphs and gauges for display both historically and in real-time. With insight into your building, you can be confident your facility enables occupants to maximize their productivity, comfort and health?

\* Allen JG, MacNaughton P, Satish U, Santanam S, Vallarino J, Spengler JD. 2016. Associations of cognitive function scores with carbon dioxide, ventilation, and volatile organic compound exposures in office workers: a controlled exposure study of green and conventional office environments. Environ Health Perspect 124:805-812; <http://dx.doi.org/10.1289/ehp.1510037>





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4338 East 142<sup>nd</sup> Street, Grandview, MO 64030

*Platformatics Inc. is an H.E. Williams, Inc. company. Rev. 12/16/21.JL*