The WELL Building Standard v1, Section 18, Continuous Air Quality Monitoring and Feedback

Understanding the connection between buildings and the productivity, health and wellness of the occupants is extremely important. Per the International WELL Building Institute (IWBI™), "personnel costs significantly outweigh the costs for design and construction and maintenance and operations". In 2015, the IWBI created a comprehensive, performance-based certification program, the WELL Building Standard™, to address these issues.

The WELL Building Standard combines design and construction focused on promoting human productivity, health and well-being based on medical and scientific research. The WELL Building Standard is designed to work harmoniously with the energy efficiency focused USGBC LEED Green Building Rating System, among other green building guidelines.

The WELL Building Standard has set criteria for seven concepts of concern in indoor environments; air, water, nourishment, light, fitness, comfort, and mind. Meeting set criteria from WELL for each concept can earn one of three levels of certification: Silver, Gold, or Platinum.

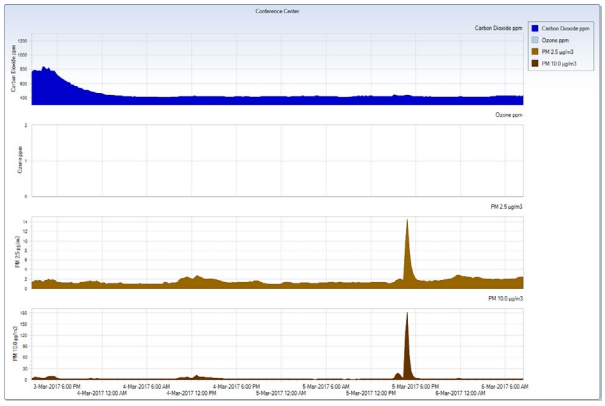
The Air concept contains 29 subsets with specific criteria that must be met, ranging from Smoking Bans to Operable Windows. One of the 29 subsets is section 18: *Air Quality Monitoring and Feedback*[1] which promotes the continuous collection of data to maintain ideal building performance. With more information on aspects such as ventilation rates and infiltration rates, individuals can fix any deviations in indoor air quality metrics. This can lead to better performance and health from the occupants as well as energy savings resulting in reduced operating costs. Ambient outdoor air quality and indoor air quality metrics must be measured and recorded in real time, displayed to the building occupants and reported to the IWBI on an annual basis.

There are three separate sections of the Air Quality Monitoring and Feedback subset. Part 1 defines the monitoring of indoor air within the building in which two of the three pollutants of concern are recorded in a regularly occupied space (minimum one per floor), at intervals no longer than once per hour, with results sent annually to the IWBI. The three parameters of interest are:

a. **Carbon dioxide** (resolution 25 ppm or finer)

b. **Ozone** (resolution 10 ppb or finer)

c. **Particle mass** (resolution 10 µg/m^3 or finer) or **Particle count** (resolution 35,000 counts per m^3 [1,000 counts per ft^3] or finer)



Part 2: Air Data Record Keeping and Response, requires a written policy to ensure that WELL parameters are consistently met. The policy calls for:

[1] The WELL BUILDING STANDARD. V1. February 2016.

a. Detailed enforcement strategies for monitoring and record-keeping of parameters listed in the Air Quality Standards Feature.

b. Records are to be kept for a minimum of 3 years, including full data from field inspectors or laboratory results where appropriate.

c. Detailed plan for action and remediation of unacceptable conditions.

Part 3: Environmental Measures Display, states that a real-time display of the following indoor environmental parameters are made available per every 930 m^2 [10,000 ft^2] of regularly occupied space on a local display screen*

a. Temperature

b. Humidity

c. Carbon dioxide concentration

*Currently defined as no smaller than 15 cm (5.9 in.) by 13 cm (5.1 in.). This display size can be satisfied by GrayWolf with an interfaced tablet PC, or via optional output to an external display.

GrayWolf offers equipment that can be utilized to monitor all the necessary parameters listed. As an industry leader in IAQ instrumentation, GrayWolf excels at monitoring carbon dioxide (CO_2), ozone (O_3), particulate, temperature, humidity and other parameters, such as formaldehyde (CH_2O), CO, NH_3, NO, NO_2, ΔP, etc. GrayWolf equipment can be deployed for long-term monitoring for the annual basis, and/or may be used to calibrate and to check alternative fixed sensor performance. More information can be found on the GrayWolf Application Note; "**Ensure That Fixed CO_2 Sensors Utilized for Demand Controlled Ventilation (DCV) are Providing Accurate Front-end Data**."

Example of a wall-mounted GrayWolf Probe

GrayWolf meters can meet the required resolution demands for the ozone, carbon dioxide, temperature, relative humidity, and particulate parameters as specified by The WELL Building Standard. Refer to the "**WELL Performance Verification Guidebook**" and to the GrayWolf Tech Note, "**WELL Standard Methodology Compared to GrayWolf Sensors**" for more technical details.

GrayWolf's intuitive user interface enables detailed file names and the ability to store years of data. Data can even be accessed remotely via the cloud with a GrayWolfLive™ subscription.

GrayWolf kits can also be used for additional WELL applications, such as **Subset 01: Air Quality Standards**. More information on that application can be found in the GrayWolf Application Note; "**The WELL Building Standard v1, for Air Quality Screening**."

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