AWAIR

BuroHappold Case Study

Using Awair Omni to Achieve WELL Gold & Balance Sustainability and Human Health Goals

Jewel Changi Airport Lounge, Singapore

Background

BuroHappold is a world-renowned creative engineering and consulting firm known for their performance-driven approach to design. They draw upon a myriad of design and engineering disciplines to create sustainable, integrated, smart, and inspirational spaces that have a positive impact on the environment and communities they touch.

In addition to championing sustainability, BuroHappold is famous for designing structures that harness natural elements and shapes to stunning effect. One of their most renowned projects, the Jewel Changi Airport, features a glass dome exterior, the world's largest indoor waterfall, and a lush indoor forest.

BuroHappold has offices located in major cities around the world. In addition to housing their global workforce, these offices give them the chance to showcase their design acumen and research how their latest solutions and technology perform over time. Their anchor west coast office, located at 800 Wilshire Boulevard in downtown Los Angeles, was the site of their most recent project.

The Project

When BuroHappold moved headquarters from Culver City to downtown Los Angeles in 2014, the penthouse property of 800 Wilshire Boulevard was an obvious choice. The office design, which features an open floor plan and a variety of energy saving improvements, earned LEED v3 Platinum in 2009 and LEED v4 Gold in recognition of sustainable design. Kathleen Hetrick, a Senior Mechanical Engineer based out of BuroHappold's LA office, was excited by the opportunity the move presented to learn from and improve on previous accomplishments.

BuroHappold Office, Los Angeles, California

> "As building engineers and designers, we work in planning and design but we don't usually have access to post-occupancy data, so this is really exciting for us as engineers and people who care about healthy buildings to see how buildings perform over time."

Hetrick wanted to see if it was possible to continue to improve building performance through operational changes rather than structural alterations. Many of her clients were pursuing green building certifications, and BuroHappold's new office would serve as the perfect "living lab" for understanding what it takes to create a healthy and sustainable workspace. To put this idea to the test, she and her team decided to pursue IWBI's WELL Building Standard™ (WELL) certification.

Air Quality Challenge

How do you improve building health and performance without tearing down walls?

While LEED certifications are typically more focused on resource conservation and environmental impacts, WELL is centered around human health and wellbeing. To achieve certification, participants must earn prerequisites and points in eight different "Features" (i.e. categories), including: Air, Water, Nourishment, Light, Movement, Thermal Comfort, Sound, Materials, Mind, Community, and Innovation.

Out of all these features, Hetrick was especially interested in Air. Los Angeles is known for having the worst air quality in the continental United States, so ensuring healthy indoor air quality was paramount to safeguard employee health and performance. Indoor air quality was also beginning to gain more attention in the industry and in the media. As awareness about the health risks associated with indoor air pollution grew, Hetrick noticed that air quality was gaining more significance in WELL and LEED's scoring matrix.

"LEED is moving more and more towards being performance-based by incorporating indoor air quality testing and energy and utility reporting. People are starting to care more about building performance, which will be a big game changer for the industry and something engineers will be thinking about in their projects."

While working through WELL certification requirements, she was also struck by how easily indoor air quality could be impacted by other engineering and design decisions. She spent hours researching to ensure that everything that was added to the new office space was healthy — from the building components down to the furnishings. To limit potential pollution sources, she avoided using high-chemical sealants, paints, fabrics, adhesives, and other common materials that are known to leak volatile organic compounds (VOCs) into the air. After such meticulous planning, Hetrick was curious to see if all these small changes would have a significant effect on indoor air quality.

"You do all this work to create a healthy space...but the data is what makes it actionable and empowers us to improve people's health."

Biophilia and outdoor urban agriculture are key features that impact the health and wellness of employees. Plants can also serve as natural air filters.

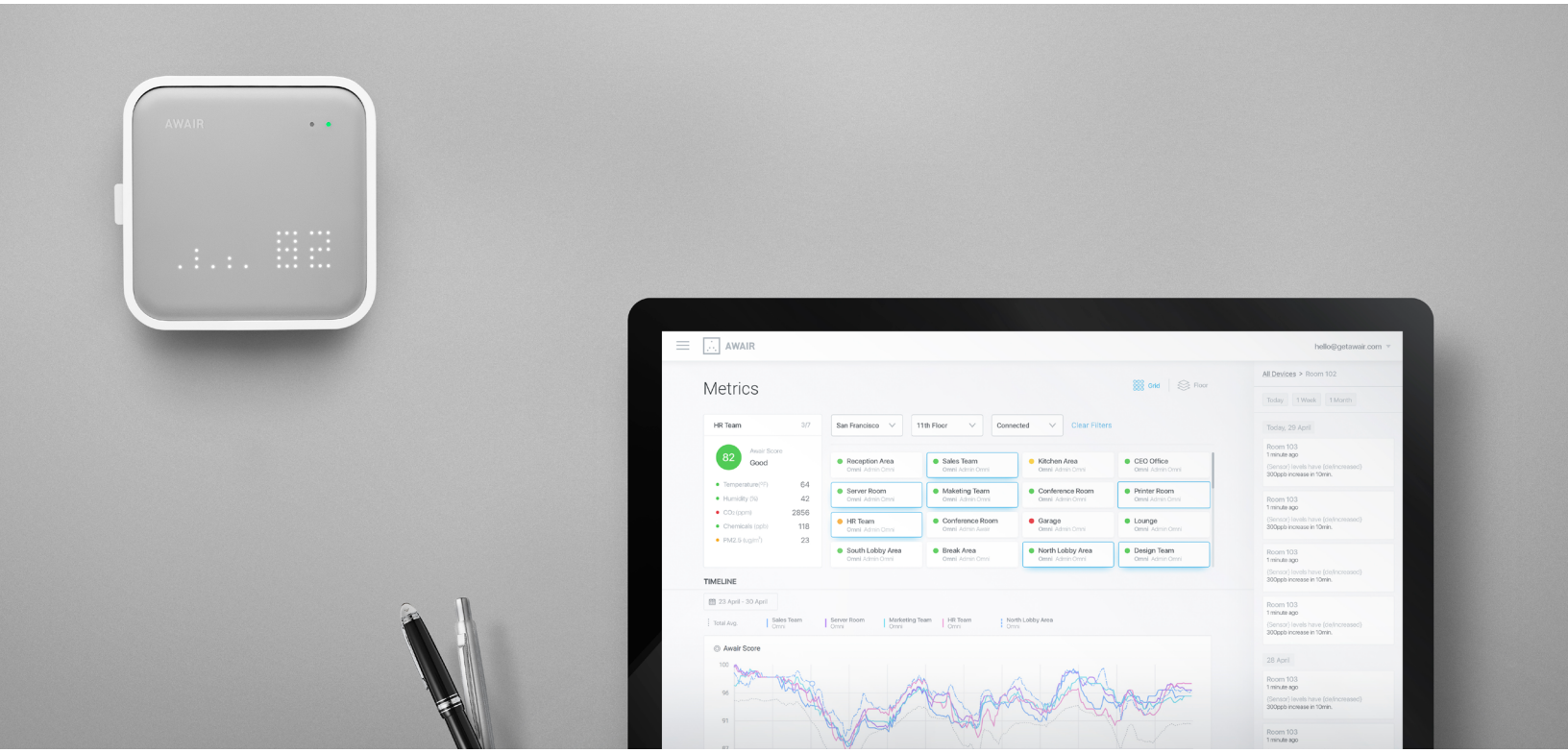
Why Awair Omni?

WELL's Air feature requires participants to implement enhanced ventilation and filtration systems to reduce indoor pollution levels. To measure the impact of these systems and continue to improve building performance, participants must continuously monitor air quality. Additional points are awarded for promoting air quality awareness by visually displaying factors such as temperature, humidity, and CO2 and educating occupants on their impact.

Hetrick knew that meeting these requirements would mean finding a sophisticated yet easy-to-understand monitoring solution. To fulfill WELL's Air feature, she needed a monitor capable of measuring multiple air quality factors (Total VOCs, carbon dioxide, and PM2.5). She was also concerned with calibration requirements and data security. Awair Omni's secure, cloud-based network, and different connectivity options made it an appealing choice to work with BuroHappold's existing IT system and firewall.

On top of those basic requirements, Hetrick wanted a solution that could streamline data collection and analysis. She had rented air quality equipment to perform spot tests in the past, and was aware of how expensive and manual that data collection method was. Results were often delayed, as air quality samples needed to be sent to a lab for testing.

Rather than deal with the hassle of routine spot testing, she wanted a solution that would automatically take air quality measurements and provide real-time results with minimal touches — not only for Burohappold's office, but also for her clients, who had faced similar challenges.



"With all the different green buildings certifications out there, it's really great that we can tell people that a tool like Awair exists. It empowers them to see results and make changes immediately."

Awair Omni was especially appealing to Hetrick because it offered the ability to view data in multiple locations, including the Awair app, the Omni Dashboard (a more robust online platform), and on the device display. From the Dashboard, Hetrick could manage multiple Omni devices from a central location, track changes in air quality factors, download custom data queries to streamline WELL reporting, and invite building occupants to view air quality data (fulfilling Part 2 of Feature A08: Air Quality Awareness).

Lastly, she couldn't ignore aesthetic and practical considerations. To avoid costly renovations, Hetrick was looking for an air quality monitor that could be installed in a non-invasive way, without hard mounting or electrical wiring. With Awair Omni, she was given both in-wall and surface mounting options and was able to choose the best solution for her project. She opted to mount the devices in the office using the included adhesive strips, which allowed her to place the monitors exactly where she wanted them, without making any permanent alterations.

The simple, modern aesthetic of Awair Omni was also a bonus for a firm that prides itself on balancing form and function. The devices blend seamlessly into its surroundings rather than drawing attention.

Using Awair Omni to Empower Positive Changes

In addition to helping BuroHappold achieve a WELL Gold™ certification for their LA office, Awair Omni has helped Hetrick and her team gain valuable insight and make daily improvements. For instance, after noticing a spike in VOCs after routine office cleanings, they tackled VOC pollution at the source by making a simple operational switch to green cleaning products. Hetrick has also carried these insights over into her personal life and has grown more mindful about her product choices in her own home.

Although Awair's light and noise sensors weren't originally on Hetrick's wish list, they've become two of her favorite features. After realizing that natural light levels were a bit low at certain times of the day, she added additional lighting to the office and used Awair Omni's measurements to optimize lighting as daylight levels changed. Having access to quantitative light data helped her learn about the interplay between energy efficient design and circadian rhythm requirements.

Blinds and lighting controls allow employees to control levels of light in the space. In addition, all windows are equipped with a solar film which reduces UV exposure without limiting natural light.

In their conference rooms, Omni has helped to drive office awareness about the importance of good ventilation — and the effects of poor air quality on cognitive function and alertness.

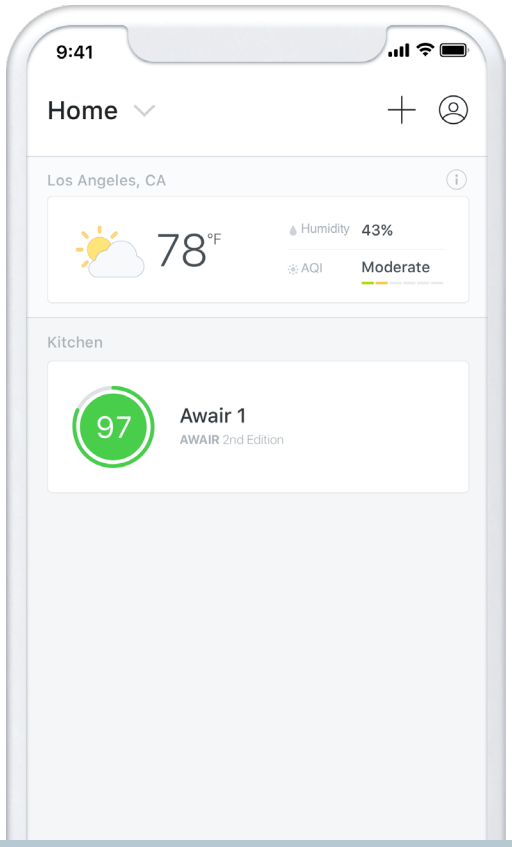
"If you're in a conference room and you can see the CO_2 rise, you're learning best practices...when you physically start to feel the effects, you can see a spike in CO_2 on the device."

These insights have also carried over to other engineering decisions. Being more aware of fluctuations in indoor air quality has helped Hetrick and her colleagues make smarter ventilation decisions that account for health risks as well as energy usage.

"A lot of people in LA live very close to the highway. We want to ventilate naturally, but we also have a lot of Ozone and PM, so if you open the window, you can see your indoor air quality worsen due to outdoor pollution. This data is important for us to understand when we're constructing buildings with natural ventilation. Monitoring indoor and outdoor air quality helps ensure that we're not building efficiency at the cost of human health."

When outdoor air quality is poor, the energy costs of mechanical ventilation and filtration may be worth the expense. In contrast, when outdoor air quality is healthy, natural ventilation will suffice. Knowing when to open a window, run a fan, or turn on a mechanical ventilation system has helped Hetrik determine when to conserve energy and when to take action. She keeps an Awair 2nd Edition in her downtown LA home, and uses the Awair app to compare outdoor Air Quality Index (AQI) readings to indoor conditions before cracking a window.

"I think that knowledge is power. When you see the carcinogens you're exposing yourself and your family to, you're empowered to make changes. Whenever I hear someone is having a baby, I buy them an Awair. If you're elderly, have asthma, or have very young children, that knowledge can make a big difference — and it's something we bring up in all sustainability meetings. We have a system that we trust."



Learn More About Awair Omni

Interested in earning your green building certification with Awair Omni? We'd love to learn about your project goals and discuss how Awair Omni can help you reach them. Reach out to us to start a conversation.