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Is Your Building Ventilated Like It's 1978?

Ensuring healthy air in your campus facilities contributes to the well being of your students and staff. Here's how to breathe easy.

By Tom Kolsun | 05/02/19

Did you know that humans breathe more than 11,000 liters of air a day? Your staff and students will likely spend around 2,000 hours per year breathing the air in campus buildings. Would you drink 900,000 liters of water if I said, "I actually have no idea what's in it or how long it has been sitting in this room... but it's fairly clear and doesn't really smell too bad."

Here are some interesting facts to consider about indoor air quality:

- Indoor air often contains 4X to 10X the amount of pollutants of outdoor air.
- Many studies have linked exposure to small particles (PM2.5—defined as airborne particles smaller than 2.5 microns) with heart attacks, cardiac arrhythmias, strokes, chronic obstructive pulmonary disease, worsened symptoms of asthma, and an increased risk of respiratory illness.
- The World Health Organization says that particulate matter contributes to about 800,000 premature deaths each year, making it the 13th leading cause of death worldwide.

Your Bottom Line and Student Performance

Employee wellness programs are great for employees and the university. The ability to reduce absenteeism and pre-absenteeism (working while sick) is the right thing to do and it goes directly to your bottom line. A study by Dominion Systems concluded that unscheduled absenteeism cost roughly \$3,600 annually for an hourly worker and \$2,650 for a salaried worker. Seems like a very compelling case for incorporating ventilation performance into your employee wellness program.

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How about requiring proof that the small particle levels in that shiny new building are measured and controlled? Have it defined in your project; require Verified Ventilation Performance—VVP.

Now consider how verified ventilation performance (VVP) will increase productivity with your healthy employees and the positives effects it could have on student learning. **United Technologies** and The Harvard School of Public Health conducted a study on the effects of indoor air quality on productivity. It demonstrated that:

- Lowering the levels of CO₂ and VOCs resulted in their participants scoring 61 percent higher on cognitive function tests compared with those in conventional offices.
- There was a 101 percent improvement on their cognitive function tests when the ventilation levels were doubled above the standard ASHRAE prescribed levels.
- Information usage scores were 299 percent higher than conventional offices when the ventilation rates were doubled.

The conclusion of this study couldn't be clearer: verified ventilation performance will increase employee and student performance.

Consider VVP in lectures halls, libraries, and classrooms across campus. Better cognitive function means improving information retention, critical thinking, and recall during exams.

How about attracting/retaining top talent—students, researchers, professors, and staff—and how that affects you bottom line?

It is a fact that employees are paying more attention to the healthy conditions of their work environment. This is especially the case for researchers and their lab environments. We see surging growth in universities adopting lab design programs such as Smart Labs which places an emphasis in the indoor environment quality of the lab and through certification programs as:

- [Green Globes](#)
- [WELL Building](#)
- [WELCOA](#)

If your building design mandates verified ventilation performance, you are already contributing significantly to points required to attain these programs certifications. Use the VVP as a recruiting tool!

What Should You Include?

Bottom line...make your inside air like outside air.

Let's look back a few decades and see how we got to where we are with building ventilation. Most buildings design the core and shell with a set-it-and-forget-it strategy, which has been completed long before occupants ever arrive. I call this the 1970s Standard. Typically, this means that 80 percent of the indoor air is recycled. The percentage of

ventilation air allowed in the facility is usually designed when the building is built and based on standard ASHRAE formulas. The amount of ventilation air that comes in is frequently dependent on the position of a damper on the air handler. Ask anyone you know in the building automation business how often they have experienced the actuators which control these dampers being broken. Oftentimes a building engineer has clamped the damper at a set position because the building was unable to maintain heating or cooling loads.

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