

MechSE *WELLness*

A06 Enhanced Ventilation

Intent: Expel internally generated pollutants and improve air quality in the breathing zone through an increased supply of outdoor air or increased ventilation efficiency.

Many ventilation standards specify ventilation rates intended to provide indoor air quality that is “acceptable” and reduces the risk of adverse health effects. Since carbon dioxide (CO₂) is easy to detect, it is used as a proxy for other indoor air pollutants. A number of studies indicate that the risk of sick building syndrome effects is reduced when CO₂ concentrations are lower than 800 parts per million.

Impact: Enhancing ventilation positively impacts human health, well-being, and performance.

Requirements for the Sidney Lu Mechanical Engineering Building:

1. Increase outdoor air supply rates by 30% to 60%.
2. Implement demand-controlled ventilation strategies.

How do we accomplish these requirements? Within the air handling system’s operational instructions, a program variable was introduced to allow the continuous calculation performed for the required ventilation rate to be increased. Initially, the value has been set to 1.3, enabling an increased outdoor air supply rate of 30%. Throughout the facility, CO₂ sensors were deployed, including in every classroom, innovation studio, MechSE hub, and other areas. These are set to increase the outdoor air supply whenever to meet a maximum value of 800 ppm when spaces are occupied, thus delivering increased ventilation while optimizing energy usage. All values are continuously calculated and reported in the building’s energy management system for review and confirmation of enhanced ventilation.



UNIVERSITY OF
ILLINOIS
URBANA - CHAMPAIGN