

Achieving Low Energy Performance and Satisfactory Indoor Air Quality



Indoor Environmental Quality is a broad area that covers four main issues: air quality, thermal comfort, lighting quality and noise control. The first two issues are the primary focus of HVAC systems. However, from these two, Indoor Air Quality (IAQ) is of main concern: on the one hand, thermal discomfort is never unnoticed and forces occupants to act on it; on the other hand, occupants adapt to poor air quality, and therefore operators have no incentives to improve it. The burden is therefore on the proper design, and reliable operation of the HVAC systems to maintain acceptable levels of IAQ in buildings.

The course covers the following topics:

1. Introduce IAQ topics, such as: sources of indoor pollutants, ASHRAE Standard 62.1-2016, ventilation rate calculation methods, source control methods, and directional flow control.
2. Introduce low-E topics, such as: energy performance metrics, ASHRAE Standard 100-2015, and benchmark energy performance data from actual buildings.
3. Introduce main air distribution and terminal systems with applicable outdoor air delivery and energy recovery options for outdoor air ventilation, and methods for resetting temperature, ventilation, and CO2 Set points, as well as air pressures and flows, and outdoor air delivery. HVAC systems reviewed are: recirculation CV, multi-zone VAV AHU, VAV terminals, DOAS, and HRV/ERV.
4. Discuss air filtration and cleaning topics, including: relationship between indoor air quality and outdoor air quality and how HVAC designs influence this interaction, types of filters and air cleaning, bypass leakage, flow resistance, microbial growth.
5. Study implementation methods of low-E and IAQ based HVAC control strategies and sequences of operation, such as: free-cooling (economizer) control, ventilation reset control, night pre-cooling, outdoor air (OA) scheduling based on occupancy, and demand-controlled ventilation. Cover ASHRAE proposed Guideline GPC-36P and ASHRAE RP-1455.
6. Discuss measurement, testing, adjusting, and balancing of HVAC systems following ASHRAE Standard 111-2008.
7. Building analytics on real buildings will be used to demonstrate the value of building analytics as an energy management and indoor environment quality diagnosis tool.



Rodrigo Mora is a faculty of the Building Science Graduate Program at the British Columbia Institute of Technology (BCIT) in Canada. Throughout his professional career, involving research and development for the

planning and design of large residential developments and hospitals, as well as his academic research, he has been keen on developing tools and methods to help engineer built environments that are healthy, welcoming and pleasant.

Logistics

Regular public fee: USD 150/part.

CEUs: 0.15

CSEP Points: 0.25

Duration: 1.5 h

Mode: Online

[See our website](#) for more information on our training programs.

Please contact

Mathieu Côte if you are interested in training your staff on Achieving Low Energy Performance and Satisfactory Indoor Air Quality.

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