

Requirements and Interactions for Indoor Environmental Quality (IEQ) Parameters



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Abstract:

For design and energy performance prediction of buildings and HVAC systems, it is important to use established requirements for Indoor Environmental Quality parameters. The indoor environmental factors are Thermal Comfort, Indoor Air Quality (IAQ, ventilation), Lighting and Acoustic, where especially Thermal Comfort and IAQ have significant influence on people's health and well-being, and on energy use. A couple of international standards deals with requirements to the indoor environment. Newly published ISO standard, ISO 17772-1/2, and newly published CEN standard EN 16798-1/2 deals with all 4 indoor environmental factors, while ASHRAE Standard 55 deal with Thermal Comfort and Standards 62.1 and 62.2, deals with IAQ/Ventilation. The requirements are however, given without taking into account any interactions between the parameters. ASHRAE Guideline 10 "Interaction Affecting the Achievement of Acceptable Indoor Environments" do give some explanations related to such interactions.

This presentation will focus on the requirements for the indoor thermal environment and indoor air quality; but will give examples of interactions between all 4 indoor environmental parameters. The interactions can be on the perception side, where perception of one parameter is influenced by one or more of the other parameters. Then interactions among physical parameters will also take place; but can in most case be taken into account at design stage. As an example, the benefits of increased daylight indoor can result in increased risk of glare and overheating due to increased sun load.