CRITICAL REVIEW OF A WHOLE BUILDING AIR LEAKAGE TESTING REQUIREMENT

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EXTENDED ABSTRACT

Over the past decades, energy codes have brought a number of changes with respect to improving the performance of the building envelope both in design and construction. With respect to the building enclosure, the most debatable is the increasing importance placed on air-leakage and how this often unknown value affects many of the energy efficiency metrics that define the performance of the building. Throughout the world, there are multiple codes and standards requiring varying levels of air tightness as well as varying performance levels and methods of verification. As the requirements and performance implications become better understood, common design and construction practices will experience shifts toward improved performance, as was experienced in the early years of the USACE requirements on which the private sector codes are based. However, variations between these standards and performance testing requirements have also brought about questions as to whether the testing is warranted and truly beneficial. Through a review of multiple case studies of past and current enclosure consulting and whole building air leakage testing, including high-rise, multi-family, and other commercial new and renovation construction, this presentation will provide a critical review of these codes and standards for validity, impact, and relevance.

Learning Objectives

1) Review the theory and historical progression of air tightness requirements and understand the metrics that provide the baseline for levels of air tightness.

2) Understand the basic phases of holistic enclosure consulting related to air barriers.

3) Understand validity, impact, and relevance of the wide range of air tightness codes and standards.

4) Understand air leakage performance verification testing.