



LEED Pilot Credit Library

Pilot Credit 4: Innovative Ventilation

This credit is available for pilot testing by the following LEED project types:

- New Construction
- Core and Shell
- Schools
- Commercial Interiors

Intent

To provide mechanical or natural ventilation systems that result in improved occupant comfort over conventional designs, increasing occupants' well-being and productivity while reducing energy consumption of ventilation systems.

Requirements

- Where allowed by relevant building code requirements AND where air distribution design is not mandated and/or restricted by process requirements (such as operating rooms, negative and positive pressure isolation rooms, burn rooms, and certain other critical care rooms), design systems that utilize innovative ventilation strategies (including but not limited to displacement ventilation, under-floor air delivery systems, and natural ventilation). Design natural ventilation systems for occupied spaces in the building in accordance with the strategies and design calculations set forth in the Chartered Institution of Building Services Engineers (CIBSE) Applications Manual AM10, "Natural Ventilation in Non-Domestic Buildings, March 2005.
- Determine that natural ventilation is an effective strategy for the project by following the flow diagram process shown in Figure 2.8 of the CIBSE Applications Manual AM10, March 2005.

Potential Technologies and Strategies

Design HVAC systems to optimize air change effectiveness. Air change effectiveness can be optimized using a variety of ventilation strategies including:

- Displacement ventilation systems
- Low-velocity ventilation systems
- UFAD (Under-Floor Air Delivery) systems
- Operable windows

Test the air change effectiveness of the building after construction.

Follow eight design steps: 1) Develop design requirements (ventilation, solar control, internal gains, comfort parameters, acoustical performance, etc.), 2) Identify building uses and features that might require special attention, 3) Estimate driving forces (stack effect and wind), 4) Select a natural ventilation concept, plan airflow paths, and develop strategies, 5) Select types of ventilation devices, 6) Size ventilation devices, 7) Develop control systems 8) Plan the installation and commissioning. Perform preliminary design calculations as outlined in Chapter 4 of the CIBSE Applications Manual AM10. Use public domain software such as NIST's CONTAM, Multizone Modeling Software, along with LoopDA, Natural Ventilation Sizing Tool, to analytically predict room-by-room airflows.