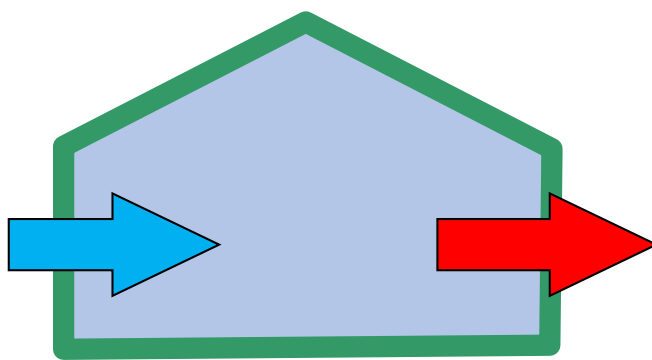


ASHRAE Standard 62.1

Air Quality Control with Living Wall Biofilters

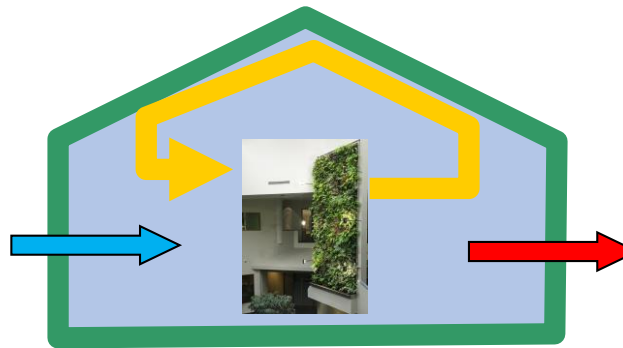
There are 3 procedures described in ASHRAE Standard 62.1: Ventilation for Acceptable Indoor Air Quality - Ventilation Rate Procedure (VRP), the Indoor Air Quality Procedure (IAQP) and the Natural Ventilation Procedure (NVP).



VRP

Ventilation Rate Procedure

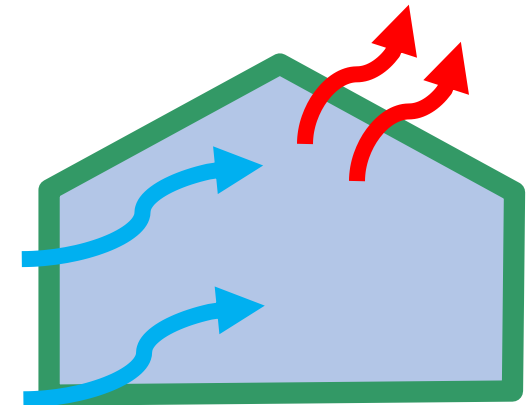
Indoor air quality is maintained by bringing in outdoor air only. VRP prescribes minimum outdoor air ventilation rates.



IAQP

Indoor Air Quality Procedure

Indoor air quality is maintained by alternative means. IAQP may also include some ventilation with outdoor air.



NVP

Natural Ventilation Procedure

Indoor air quality is maintained by passive ventilation of outdoor air. NVP must be used in conjunction with VRP or IAQP.

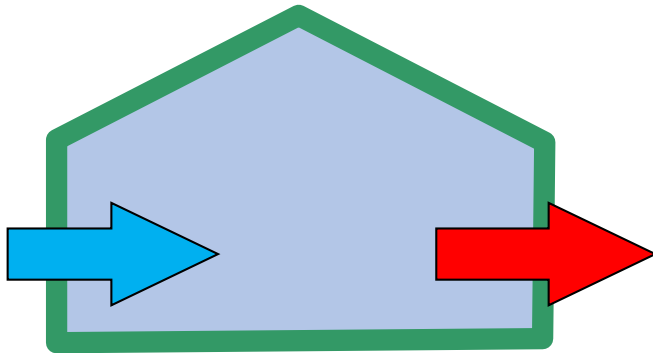
Ashrae 62.1 IAQP Case Study: Adlai E. Stevenson High School

Living wall biofilters were used to meet ASHRAE 62.1 using the Indoor Air Quality Procedure (IAQP) for Adlai E. Stevenson High School in Lincolnshire, Illinois. Two biofilters will deliver 3,000 cfm to the 2nd floor which houses eight classrooms and 220 occupants.



The living wall biofilter method will increase indoor air quality by 17% and reduce outdoor air intake by 35%. This helped the building achieve LEED Gold certification. By reducing intake air, the building avoids the cost of heating and cooling that air. The following slide compares the ASHRAE 62.1 *Ventilation Rate Procedure* outcomes with the *Indoor Air Quality Procedure* outcomes predicted with the living wall biofilter for Adlai E. Stevenson High School.

Ashrae 62.1 IAQP Results: Adlai E. Stevenson High School

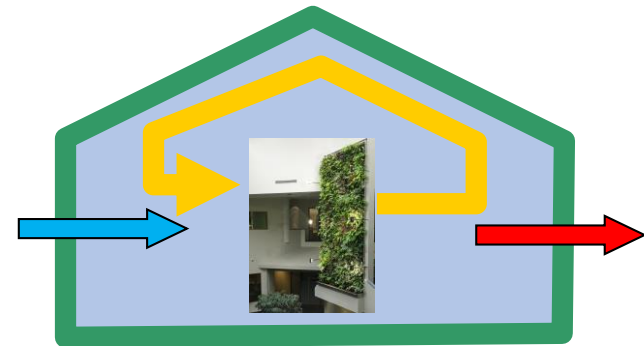


VRP
Ventilation Rate Procedure

Outdoor Air Intake
13 cfm per person
Total = 3,382 cfm

Supply
Total = 11,837 cfm
Return = 8,455 cfm
Contaminant_{outdoor} = 1.2 $\mu\text{g}/\text{m}^3$

Contaminant_{indoor} = 0.67 $\mu\text{g}/\text{litre}$



IAQP
Indoor Air Quality Procedure

Outdoor Air Intake
10 cfm per person
Total = 2,200 cfm

Supply
Total = 11,837 cfm
Return = 9,637 cfm
Contaminant_{outdoor} = 1.2 $\mu\text{g}/\text{m}^3$
Biofilter capacity = 3,000 cfm
Biofilter removal efficiency = 50%

Contaminant_{indoor} = 0.58 $\mu\text{g}/\text{litre}$

17% improvement in air quality
35% reduction in outdoor air