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Single-Sided Natural Ventilation - How Deep an Office?

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SINGLE-SIDED NATURAL VENTILATION - HOW DEEP AN OFFICE?

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ABSTRACT

Concern about the atmospheric greenhouse effect and depletion of the ozone layer has led to growing attention being paid to the gaseous emissions resulting from the use of building services. It is generally acknowledged that, in operation, air conditioned buildings consume more energy, producing more carbon dioxide, and potentially can lead to the release of ozone depleting gases (CFC's and HCFC's) from their refrigeration plant. In addition, the risk of health related problems such as sick building syndrome appear to be greater in air conditioned buildings. As a result, there is renewed interest being shown in designing for natural ventilation, thereby avoiding, or minimising, the need for air conditioning.

Traditional guidance recommends cross-ventilation, but this is often not practicable in many modern designs for office buildings. However, there is relatively little guidance on designing for offices with natural ventilation from one side only.

This report describes tracer gas measurements of the local mean age of air at different locations within an office room. These results are used to assess the distribution of fresh air at different depths, and to give guidance on the depth over which single-sided ventilation is effective.