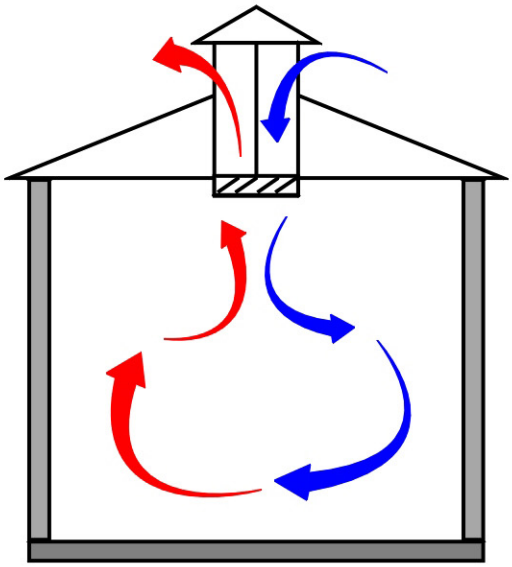
Natural Ventilation Types

Natural Ventilation Schemes

Natural Ventilation Schemes are both clean and energy efficient. This document explains briefly the main types of Natural Ventilation Schemes that are available through various manufactures and suppliers. The ventilation products can be towers, motorised roof windows, wall mounted windows, multi-vane dampers or a mixture of these options. The ventilation damper actuators can be 0-10V proportional control using a separate 24V AC/DC supply or they can be 24VDC with reverse polarity positional control. It is therefore important that all the information relating to the type of ventilation scheme being proposed is made available to enable the control system to be designed.

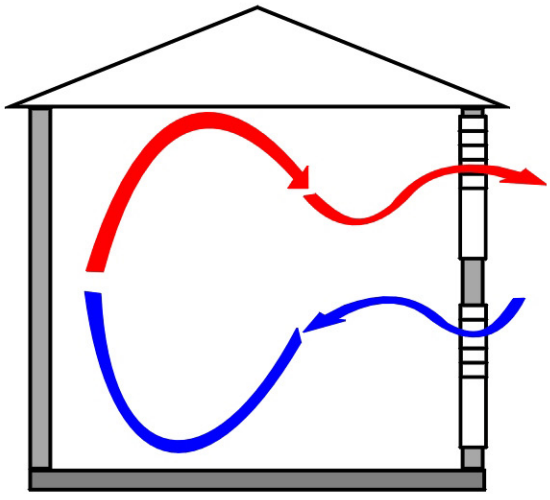
Displacement Vent:

Using a roof mounted ventilation terminal with separate chambers air is channelled down the roof vents on the wind side displacing the lighter air which is drawn out on the lee side chamber of the terminal



Single Side Vent:

Works on the principle of air turbulence with air entering at low level. This system achieves relatively low ventilation rates and only works up to a certain depth of room.



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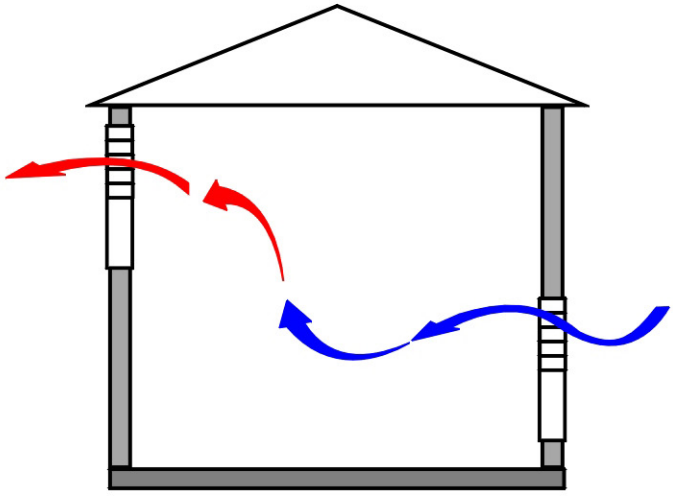
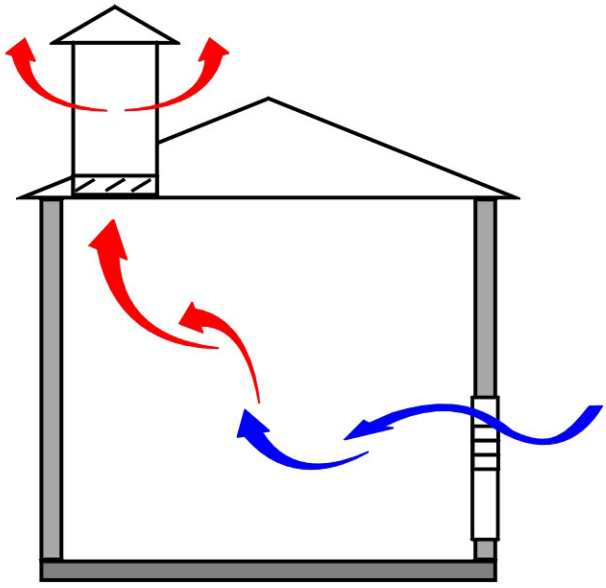
Cross Flow Ventilation:
With vent openings on both sides of the building this uses the pressure difference across the space to create air movement through the space. The vents can be at low and high levels or at the same level



Side Vent with Stack:
The most effective natural ventilation using the cross flow pressure difference and suction / convection created by the stack



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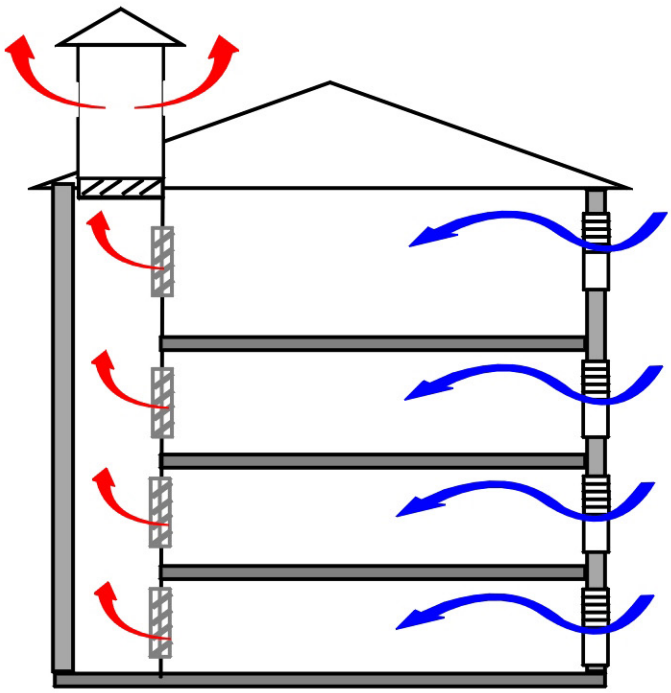
Multi - Cross Flow Ventilation:
The natural buoyancy of the air allows the stack/convection effect on the main ventilation. In a multi zone system a plenum chamber, corridors or ceiling voids could be used for the common extract channel.



Vent Boost:
Natural ventilation alone may not be sufficient for some applications and in these cases some fan boost assistance may be required. In these instances it is important to use a control system that maximises the low energy of the natural ventilation and controls the fan boost only when required.

Night Cooling:
Automatic Night Cooling control uses the low external temperatures to reduce the internal space temperatures and the building fabric. The night ventilation cools the thermal mass of the building which is used at the next occupancy period to efficiently maintain comfort conditions and delay the use of any energy consuming cooling equipment

Automatic Controls:
To maximise the energy efficiency of natural ventilation systems an automatic control system should be used which takes into account occupancy patterns, internal and external temperatures, background heating levels, CO2 or Air Quality levels and rain detection. For multiple zones the system should use master/slave connectivity and options for BMS integration and remote viewing/access.

All the different schemes outlined in this document can be catered for through the use of Titan Products Natural Ventilation Controls and Sensors.

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