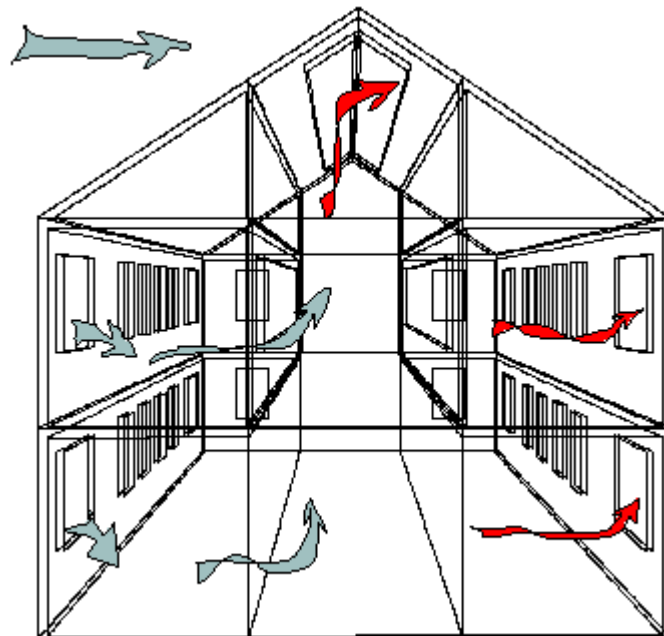


Evaluating Ventilation Regimes

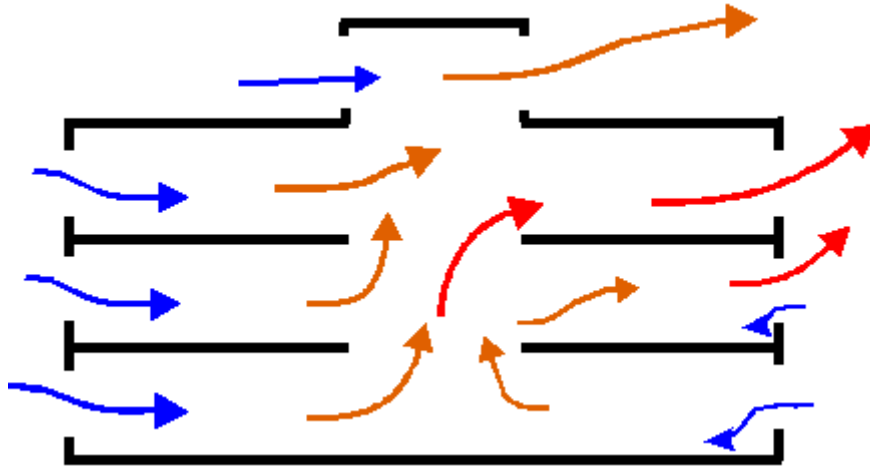
TAS - A Comprehensive and Flexible Modelling Tool for Evaluating a Wide Range of Design Scenarios

Cross ventilation and single sided ventilation



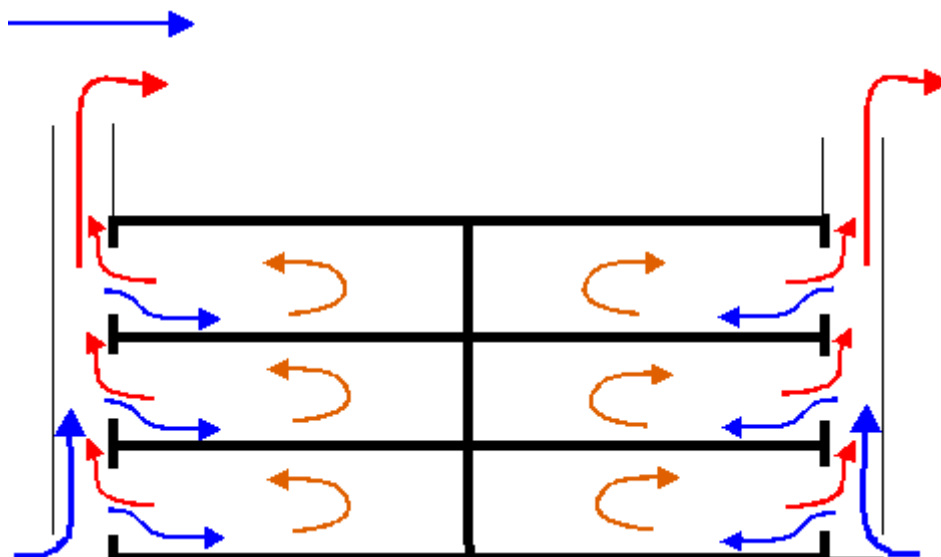
Using recorded hourly weather data containing solar radiation, air temperature and wind speed and direction, an energy and air flow balance is calculated at hourly time steps. Simple cross ventilation is evaluated on wind speed and direction, modified by the relative height of openings and surrounding buildings. Single sided ventilation is based on the internal to external temperature difference and the physical height of the openings.

Combined wind and stack driven ventilation



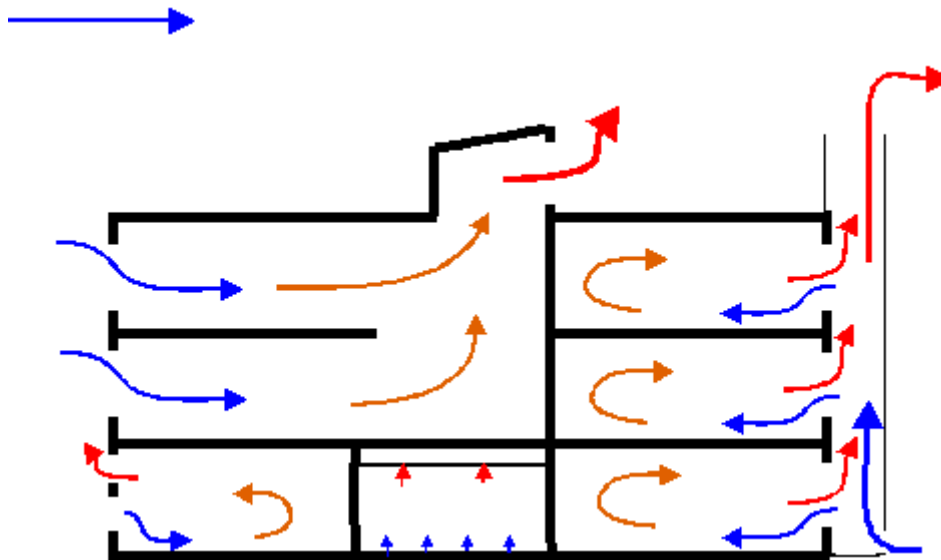
Both wind and stack pressure driven air movement can be calculated simultaneously. The rate of air flow is determined for each opening in conjunction with flow between internal spaces. The balance of energy and air flow is performed for all spaces at each hourly time step, allowing the effects of internal gains to accumulate as the air travels through the building. An office area on the leeward side of a building may, therefore, receive air which has been raised in temperature by its passage through other office areas and an atrium space.

Single sided ventilation via a double façade



Where external noise presents a problem, natural ventilation may be achieved using a double facade. Wind and stack pressure drive the air flow up through the void created by the double facade. The flow rate is determined by a number of factors including wind speed and the height of the top of the facade void, or, in still conditions, the temperature generated inside the void. Single sided ventilation occurs between the occupied spaces and the facade void. The higher floors will receive air from the void which has, at least in part, already been through other spaces with the consequent rise in temperature.

Multiple regime ventilation in the same building



Any combination of ventilation regimes can be included in the same building model. Control of open area for windows etc can be placed under the influence of a range of internal variables and in addition linked to climate parameters. Aperture opening can be controlled individually or in groups from the performance of any space or group of spaces. Solar control devices may also be operated with the same level of flexibility in combination with the modulation of openings.