



TEACH Passiv

REGISTERED
PRACTICE

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RIAI



**CERTIFIED
PASSIVE HOUSE
DESIGNER**

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FACT SHEET No. 7

Why MHVR?

This Fact Sheet (No. 7) asks the question why Mechanical Ventilation with heat recovery (or MHVR) is essential in a Passivhaus.

In order to achieve Passivhaus certification you will need to achieve the airtightness of 0.6ac. Remember that it is through airtightness that draughty houses (and money disappearing) are eliminated. You will however still need to ventilate the house to provide regular, fresh air to the property. The only realistic way of achieving adequate ventilation in an airtight house is through a MHVR.

Essentially an MHVR system extracts the air from the wetter rooms such as bathrooms and delivers it fresh to the habitable rooms. The heat recovery aspect of the MHVR essentially preheats the incoming air with the heat 'recovered' from the extracted air. The two airflows are not mixed. By implementing an MHVR system you will achieve:

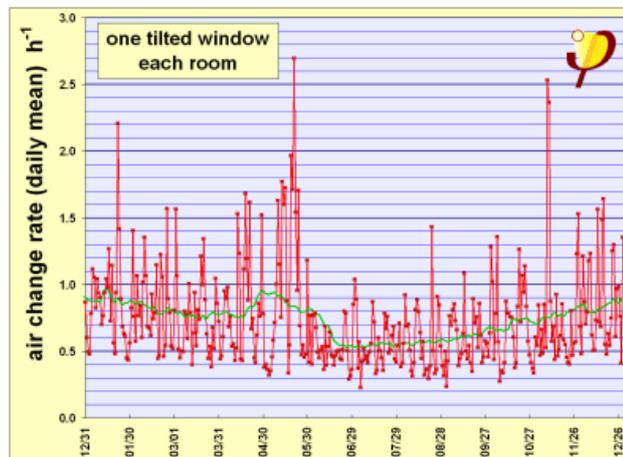
- Better ventilation
- Heat recovery and fewer cold draughts (with airtightness)
- Better air quality (through controlled CO2 concentration)
- Zero mould growth due to poor ventilation and condensation issues

The optimum Passivhaus airflow rate of an MHVR system to achieve these benefits is 30m³/hr. Could you achieve this by just opening the windows?:

To achieve an air exchange of about 0.33 ach (air change per hour), you would have to open the windows fully for 5 to 10 minutes every three hours throughout the day AND night. Impossible to achieve.

The outdoor air when windows are opened is uncontrolled in that wind and airflow can fluctuate greatly on a constant basis.

The graph below shows the huge variation in air change rates when you are only relying on open windows. Similar surges appear when analysing CO2 concentration (the main variable for Indoor Air Quality (IAQ))



One of the less advertised benefits of MHVR (especially in Ireland) is the reduction of Radon gas down to safe levels via fresh air introduced through mechanical ventilation.

Graph, data and more information from:

http://passipedia.passiv.de/passipedia_en/planning/building_services/ventilation/basics/types_of_ventilation#purge_ventilation_through_windows