



HEAT RECOVERY VENTILATION SYSTEMS

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Two For The Price of One

When designing a Heat Recovery Ventilation system, one of the first questions that comes up is which unit and how many of them. The answers to these questions lie in the size of the house. Like how many HRV units on the market, the PA600LI is in its comfort zone serving a house of 200m². Due to the nature of the electronically commutated direct current fan motors used, it is possible to accurately control the speed at any point between zero and one hundred per cent. Because of this, theoretically, the unit can serve anything from a one bed apartment of 40m² up to a large villa of 500m² in floor area. Neither of these is practical. The small flat won't have the space available for a large unit and it won't be cost effective in such a small housing unit. Conversely the very large house will be better served by two PA600LI units for the many reasons as follows;

1. One unit serving this size house will run continuously at full speed.
2. There will be no boost facility available to deal with higher than normal water use such as showers.
3. Noise levels in the vicinity of the unit will be excessive.
4. Maintenance will be higher due to the high throughput of air dirtying the filters quicker.
5. The thermal efficiency will be down due to the velocity of the air through the exchanger.
6. Life expectancy of the unit will be much reduced.
7. The power consumed will be disproportional to the amount of work done.

Obviously, one unit is not appropriate for this size house. The question arises, what size should be the maximum that one PA600LI will serve? 300m² floor area is a rough rule of thumb. What happens when a house slightly larger than this comes along? A recent case of a house 327m² occurred and when analysed, the following conclusion was arrived at. It was computed that the unit would consume 100watts when running at normal speed compared with two units using a combined power of less than 30watts. This is because the graph of power versus air moved is not linear. The extra 70watts of electrical power used adds up to, at today's prices, around €2/week. In addition to this, the temperature of the supplied air is almost 2° lower with one unit. This can be computed to be around €1/week when the average external temperatures are taken into consideration.

As the ducting infrastructure required for one unit is going to be greater than that required for two smaller systems, the difference between the two prices will be less than the price of one unit. Allowing for a small discount for two units, the extra capital cost will be recouped in less than five years and at that stage the two units will be still performing almost as new.

There may be an argument for using only one unit but not a very strong argument.

