

ProAir

HEAT RECOVERY VENTILATION SYSTEMS

OUR
EXPERIENCE
IS YOUR
PEACE OF
MIND



**Fresh air is
not an option
- it is essential!**

www.proair.ie

www.proair-systems.co.uk

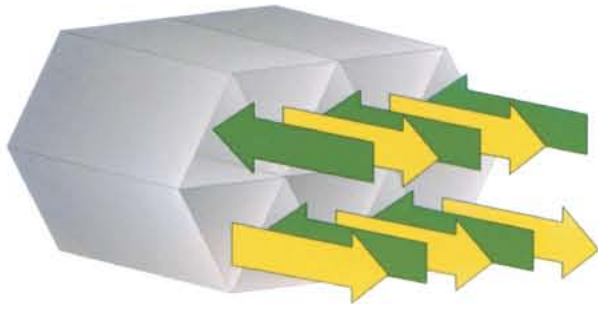


Figure 1. Counter-flow heat exchanger
 ■ Incoming fresh air
 ■ Outgoing exhaust air

The ProAir Whole House Ventilation System will provide you with a comfortable, fresh and healthy indoor environment, while saving you money constantly. Heat recovery ventilation technology **recovers** the heat energy in the exhaust air as it leaves the building and transfers it to the fresh air as it enters the building.

Heat Recovery Ventilation

People breathe by taking in air, using the oxygen and exhaling the waste. Buildings need to operate in a similar fashion, in order that they remain fresh and habitable. A certain volume of air needs to be continually taken in and an equivalent volume exhausted to outside. The problem with this is that outside air is usually at the wrong temperature for consumption, and can prove costly to heat. The solution to this problem is to use the heat of the air being exhausted to warm the air being drawn in. As this is a process whereby heat is being recovered from the outgoing air, it is termed **Heat Recovery Ventilation (HRV)**.

How does it work?

It works by enabling the two air streams (in and out) to move through one another without actually mixing. In this way, one air stream warms the other. This is done inside a counter-flow heat exchanger which is made up of hundreds of individual air channels. A tiny

section of the internal workings of the heat exchanger is shown above in Figure 1. This ingenious design is such that each incoming fresh air channel is surrounded by three outgoing exhaust air channels and vice versa.

The exchanger is a cleverly arranged collection of pure polystyrene sheets chemically welded together and installed within a casing called an Air Handling Unit (AHU). This AHU also contains fans to drive the air in and out and filters to clean it. The ProAir series of AHUs have been specially designed for this technology and can be sized to suit any residence, from the one bedroom apartment to your villa in the hills.

Why HRV

In these days of global warming and serious environmental issues we are urged to conserve energy in all aspects of our lives. We can contribute by making our homes as energy efficient as possible by ensuring that insulation and airtightness levels are as high as possible and heat loss is minimised. This can only achieve so much because, as a practical unit, a house and its occupants will need to breathe as we can't live in a sealed box. Without some ventilation the many water sources within a home will cause condensation and the air people breathe can become stale and carbon dioxide laden. The answer to this is to have the air in your house regularly changed in a controlled, energy efficient manner, using a heat recovery ventilation system. So, if you are planning to go green and either build new or renovate/refurbish you should first think of investing in the building envelope and everything else will look after itself. What is meant by this is that if you adopt a strategy of (a) high levels of insulation, (b) extra care in draught proofing and (c) HRV, then a much reduced heating system will be required. This will result in not just a lower initial capital outlay but will keep those irritating utility bills at bay no matter how high the price of a barrel of oil.



Figure 2



Why ProAir?

- **A proven track record in the field of HRV since 1995, with well over 2000 installations completed in Ireland the UK and a number of other countries.**
- **Turnkey approach from design to installation to after-sales.**
- **The network of installation teams is constantly being built up using a strict training and up-skilling regime.**
- **With our active R&D department, the aim is not just to keep up with the technology, but to be ahead of it.**

The ethos at ProAir is to provide the complete HRV solution. By this, we mean that it is equally as important to install correctly using suitable materials with the lowest resistance to airflow as it is to use the best unit for the application. Without proper installation the promised high efficiencies cannot be achieved.

ProAir's trained installation teams ensure that there is no disruption to the build process and magically make ducts disappear inside walls and ceiling spaces with nothing visible except a small disc in the ceiling of each room as shown in Fig 2.

Like all technology, improvements are being made to the design all the time and efficiencies have almost doubled in recent years. The ProAir System has efficiencies in excess of 90%. This means that the fresh air being supplied to a building is virtually at the same temperature as that being exhausted, irrespective of outside temperature.

The fans in the ProAir HRV units are powered by the new generation, high efficiency, electronically commutated (EC) motors, ensuring extraordinary low running costs.

Benefits

Economy

Reduces home heating costs

Health

Clean fresh air benefits everybody

Comfort

Draught free ventilation and ultra-silent operation

Energy Efficiency

Collects heat from the air leaving the building

Condensation Control

Continuous extraction from wet rooms

Security

Constantly locked windows mean security





Product Selection

Now that you have made the decision to adopt the high insulation – airtight – HRV strategy you will need to select your equipment with the following in mind:

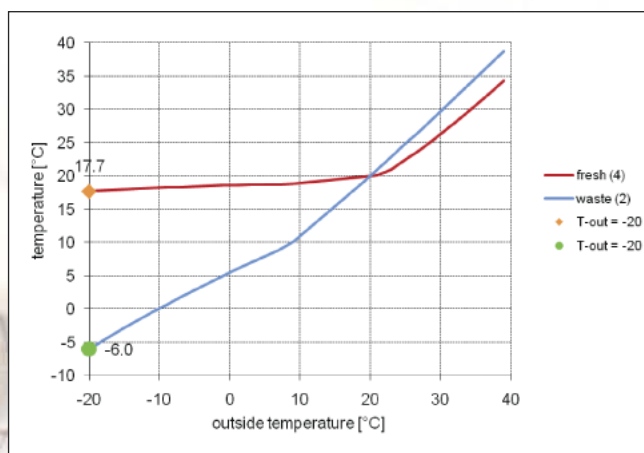
- The volume of your house in cubic meters.
- Your targeted air-tightness level.
- The planned number of occupants

Our experience at ProAir is that one size will not fit all and as a result we have developed a family of HRV units to satisfy all situations. The unit numbers are indicative of the size of the area they are designed to service in cubic meters.

Unit	Area Served M ²	Unit Dimensions MM	Power Consumption
PA300i	40 - 120	L 770 H 670 W 350	10W - 150W
PA600i	120 - 300	L 1015 H 680 W 470	15W - 200W

The building regulations regarding ventilation stipulate a minimum flow rate of 0.3 litres/sec/m² floor area, plus 4 litres/sec. for each extra person above a typical family of four. We at ProAir systems will design your system with this minimum rate in mind and will select the correct ProAir model or combination of models to provide you with the most cost effective and efficient solution for **you** and **your family's** needs.

Good counter-flow heat exchangers are nowadays capable of phenomenal efficiency under correct conditions. The graph shows that even at -20°C outside, the fresh air in can still be over 17°C. Tests on the exchangers at Eindhoven University have verified the calculations. Tests on the overall system at the Building Research Establishment (BRE) in England have demonstrated that efficiencies in excess of 90% are easily achievable



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