

ProAir

HEAT RECOVERY VENTILATION SYSTEMS

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ProAir is well established Irish company with many years experience in the Heat Recovery Ventilation (HRV) business. As well as manufacturing the ProAir air handling units, we design, supply and install complete Heat Recovery Ventilation Systems for one off and scheme houses throughout Ireland.

We work with individuals who are building their own houses and developers/builders who are building large numbers of houses. Our nationwide network of installers have installed systems in small and large houses of different construction types – block, ICF, timber etc. We install ProAir systems in existing houses where refurbishment work is being done. We cooperate with architects, designers, engineers etc. so as to deliver more energy efficient and more comfortable homes.

Customer satisfaction is our main goal. Service and maintenance, although minimal, can be tailored to your requirements.

The energy performance and thermal efficiency of the ProAir Units have been independently tested by the Building Research Establishment (BRE) in Watford. The results, listed on SAP Appendix Q, indicate that the ProAir units are very efficient and compare very well with the best in class.

How does it work?

The principle behind whole house ventilation is to change the air continuously in the house and use the recovered heat to warm the incoming air. Extract points are located in wet areas such as bathrooms, kitchen, utility and WC. Supply points are in areas such as bedrooms, living and dining rooms. The fundamental part of the entire system is a high efficiency counter-flow heat exchanger. This heat exchanger transfers up to 90% of the heat from the extracted “wet” air to the incoming fresh air

What is involved in installing the system

An air handling unit (AHU) is located generally in the attic. A ducting system is installed to extract air from ‘wet’ areas. This extract system is connected to the AHU. Similarly a system of ducts for the supply of air to bedrooms and living rooms is also connected to the AHU. A main control switch is located in the utility/kitchen and boost/ over-ride switches are installed outside each bathroom. An ordinary socket is required in the attic beside the unit.

What is the difference between HRV and normal house ventilation

A house fitted with a Heat Recovery Ventilation System will have no background ventilation holes in the walls to the exterior of the building. No trickle vents will be necessary in the windows. Bathrooms will not require mechanical extract fans.

Comfort levels are superior in a house fitted with a HRV system. Irrespective of weather conditions draught free balanced ventilation is provided all the time. The right amount of fresh air is available 24/7. Energy costs are lower. Water vapour will be removed as it is

produced. Therefore there is no moisture condensation which causes rot, damp, condensation and mould growth. These can have a high allergic potential leading to health problems. A HRV house is more secure because there is no need to have windows open.

Why should I install HRV?

Your home will have a constant supply of fresh air, lower heating bills, no condensation and increased comfort levels.

Can I do part of a house?

It is recommended that the whole house is covered by the system.

Will it work with all heating systems?

Yes. It is independent of the heating system in the house.

In the course of building what steps should be taken to ensure that a HRV system will work well?

The house should be well insulated and well sealed. This means that there will be minimum heat loss and that the air flow through the house can be controlled. (A well insulated house may not necessarily be airtight. Air can easily pass through insulation made from coconut, mineral or glass wool. An airtight house may not necessarily be well insulated: e.g. excellent air tightness can be achieved with a single aluminium foil but it is not an insulating material).

Does insulation and U values of doors and windows have any influence on the operation of a ProAir Heat Recovery Ventilation System.

In order for a ProAir system to work efficiently a house should be well insulated. Good insulation will prevent heat loss through the walls, floor and attic. Windows and doors are generally the weak point in the building envelope as regards heat loss. Even the good triple glazed versions lose around three times more heat per square meter than the walls. So size and orientation of glazing is important. The less heat you lose, the more there is to recover.

Are the results of any independent tests of the ProAir units available when doing Energy Rating calculations?

The units have been independently tested at the Building Research Establishment (B.R.E.) at Watford UK, to the relevant EN standards. The test results can be input directly into the DEAP software used by Energy Assessors etc.

What are the Health Benefits?

On average most people spend over 80% of their time indoors. 50% of all illnesses are either caused by, or aggravated by poor indoor air quality. The ProAir HRV System will continuously remove stale moist air from your home creating a more suitable and healthy place to live.

Can I buy the unit and materials and self install?

We do advise that the ProAir HRV units should be installed by one of our trained installers. However if you wish to self install we will give any guidance that is required.

WHY PROAIR

Why should I have ProAir supply my H.R.V. System?

- We are professionals - H.R.V. is our only business.
- ProAir has a proven track record - we are 14 years in the business.
- We are innovative - we research and deliver only the most up to date high quality products.
- Ours is the only Irish made H.R.V. System.
- We provide a complete end to end service. ProAir designs, manufactures, installs and commissions the system.
- ProAir Systems are designed with Irish climatic conditions in mind
- We have Appendix Q Listing- our units are independently tested at the Building Research Establishment (B.R.E.) at Watford in Hertfordshire.
- ProAir has a nationwide network of professional installation teams. We have installed units throughout Ireland.
- We service what we sell.
- 5 year guarantee.
- At ProAir, we will ensure that your system is sized correctly. We will not sell you a unit which is not able for the job in hand.

What size of air handling unit will suit my house?

Generally the ProAir 300 unit will be suitable for houses up to 160m². The ProAir 600 unit will serve houses up to 310m² approx. Houses bigger than 310m² will be served with a combination of ProAir 300 and ProAir 600 units. See back of brochure for more detail.

How do I get an estimate?

Contact our office in Tuam or one of our representatives. Forward a set of drawings and you will be contacted within a few days.

Where have ProAir installed systems?

ProAir has installed units for individuals in all counties in the Republic of Ireland. We are working/have worked with builders/ developers in many towns throughout the country. ProAir has installed HRV units in housing schemes in Coolaney and Collooney Co. Sligo, Ennis Sixmilebridge and Killaloe Co. Clare, Newcastle Co. Dublin, Westport and Ballina Co. Mayo, Tralee Co Kerry, Longford, Cavan and Kingscourt Co Cavan, Drumshanbo Co. Leitrim, Killeagh Co. Cork, Tramore Co. Waterford and Williamstown and Galway City Co. Galway.

INSTALLATION

At what stage in my build should the HRV system be installed?

The ideal stage to install a ProAir system is at 1st Fix. We like to be the first 'first' fixer.

Where is the unit located?

It is generally located in the attic space.

Where are the controls located?

The main control is located normally in the kitchen or utility room with boost switches outside the wet areas

What sort of duct is used?

Rigid plastic duct is used. This is more robust than flexible duct and ensures that less power is required to move the required volume of air. Rigid ducting offers less resistance than flexible duct. This contributes to the overall efficiency of the system.

Can a HRV System be installed with flexible ducting?

No! We strongly recommend that rigid ducting be installed at all times. Flexible ducting creates too much resistance to air flow and will lower the efficiency of any HRV unit. It will also be impossible to clean if the situation arises.

Can the system have automatic humidity sensors?

Humidity sensors respond to changes in the humidity of the air. Many HRV systems have sensors located in the air handling units. These therefore can only respond to changes in the average humidity of the air coming into them from wet rooms. They do not respond to individual changes in wet rooms. (Having individual sensors in rooms would be very expensive). The ProAir unit uses a maintenance free boost switch. It is controlled by the user. Once the boost switch is pressed the unit will work at high speed for a period of 20 minutes to clear moisture from wet areas and then revert to normal.

Are the ducts insulated in the attic?

All ducts in the attic are thermally insulated in order to (i) eliminate the possibility of condensation happening inside or outside of the ducts and (ii) avoid heat losses in the attic. All exposed ducts running in attics will be insulated. Normally the insulation being provided as part of the attic insulation will suffice. There is no need to insulate ducts that are within partitions, under first floor etc.

Do I need wall and window vents?

No. The house should be as airtight as possible. This will ensure that all the air is taken in and out through the Air Handling Unit only.

What will I see in each room?

In each room you will find a delivery or extract terminal. These fittings have an adjustable centre disc which is used to balance the system. The system is tested and balanced by our technicians and will need no further adjustment.

What size ducts are used?

We generally use 100mm round rigid ducts. Under hollowcore/concrete floors if space does not permit this we use 200X60 channel. 110X54 channel may be used in timber partitions.

Where in the house will the fresh air be supplied from and exhausted?

The supply and exhaust vents should be located at 3 m apart. This is to ensure that the exhausted air is not reutilised. There are 3 options (i) use roof vents and have the roofer install them. They are G5 (150mm) roof vents. (ii) Have the extract and supply come through grilles on the soffit (iii) Go through holes in the gable again using grilles on the outside. The most common setup is to use roof vents generally on the rear of the house. Contact us before roofing starts and we will arrange delivery of roof vents.

We will have an extractor fan over the cooker in the kitchen. Can this be plumbed into the heat recovery system?

This fan will not be connected to our system. It could lead to an accumulation of grease etc throughout the system.

Can the air loss through the cooker hood be minimised in any way?

A mains operated damper can be installed. It is open when cooking is in progress and at all other times it is closed. ProAir can supply this as part of the system installation.

Can the system be connected to my fire alarm system?

Yes, as a safety feature we can connect your fire alarm system to the HRV unit. We will require a two core cable from the fire alarm panel to our unit. Our unit will cut out in the event of the alarm going off.

AIR-TIGHTNESS

What is air-tightness?

Air-tightness is the control of airflow through the external envelope of the building. In an airtight building air leaks do not occur at ceiling or wall junctions, plaster board joints, doors, windows, service entry points etc. Leaks create discomfort and heat is lost. The result is that the heating system has to operate at a greater capacity to compensate for the losses. Air-tightness is essential in maximising the effectiveness and longevity of thermal insulation, ensuring vast savings over a lifetime.

Why should air tightness be looked at in the context of HRV installation and operation?

A HRV system relies on warm air from the interior of the house returning to the unit and exchanging its heat to incoming air. If that air is taken in part from leaks and openings in the building shell then that will be cold air having no heat to recover.

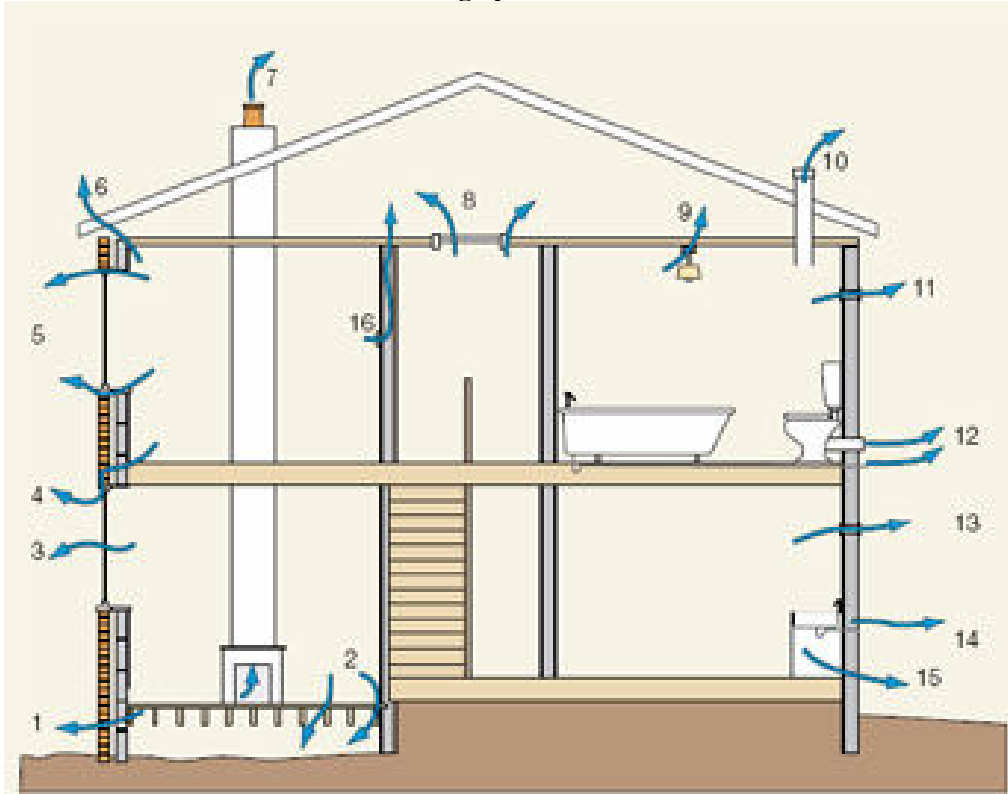
How should the air-tightness of an existing house be approached?

Air tightness testing highlights areas of infiltration of cold air from the outside and should be minimised by reducing unintentional air paths as far as is practicable by (i) Fitting draught stripping in the frames of the openable parts of windows, doors and roof lights, etc. (ii) Sealing around loft hatches (iii) Ensuring that boxing for concealed services is sealed at floor and ceiling levels (iv) Sealing piped services where they penetrate or project into hollow constructions, cavities, or voids. (v) Sealing around underfloor ventilator grilles, gaps in and around suspended timber floors, extractor fans, etc. Open chimneys are a major source of air leakage.

What level of airtightness should be achieved so that a HRV system will be beneficial?

The current Building Regulations require that houses will achieve a result of below 10 m³/hr/m² of building envelope. We suggest that all buildings should attempt to meet the best practice of 3 m³/hr/m². with a level of 5 m³/hr/m² being roughly the point where the benefit of HRV becomes questionable

Where are the most common air leakage paths?



Source Energy Saving Trust

1	Under floor ventilator grilles	9	Service penetrations in ceilings
2	Gaps in and around suspended timber floors	10	Vents penetrating the ceiling/roof
3	Leaky windows or doors	11	Bathroom wall vent or extract fan
4	Pathway through floor/ceiling voids into cavity walls and then to outside	12	Gaps around the bathroom waste pipes
5	Gaps around windows	13	Kitchen wall vent or extractor fan
6	Gaps at the ceiling-to wall joints at the eaves	14	Gaps around kitchen waste pipes
7	Open chimney	15	Gaps around wall-to-floor joints (especially with timber frames)
8	Gaps around attic hatches	16	Gaps in and around electrical fittings in hollow walls

OPERATION

Should the ProAir system be on all the time?

It is recommended that the system run continuously. This will help keep the air fresh and avoid the build up of smells, moisture etc.

How efficient is the unit?

The heat exchanger is 96% efficient. When the ducts etc are connected to it the system is up to 90% efficient.

How much electricity will it use?

It is the equivalent of having a 60W bulb on, in an average size house. This works out at EUR 85 approx per annum. This is just a guide, consumption will depend on your house size and usage pattern.

What is the payback period?

This varies depending on how airtight the house is and how the system is used. Payback can be achieved over 7 to 10 years

What are the settings on the switches?

Low speed : At this setting the unit will effect an air change every 3 hours.

Medium speed: An air change will take place about every 2 hours.

Boost: This setting is used to effect an air change approximately once an hour. This is particularly useful when a large amount of water vapour and heat are generated in bathrooms etc. Once any of the Boost switches are turned on the unit will work at high speed for a period of 20 minutes and then revert to normal. The last Boost switch to be activated will determine when the unit will return to normal working. The duration of the 'Boost' can be changed by a ProAir technician.

Is it a completely dry system or is there a water connection?

It is a dry system in that no connection is required to a water supply.

Is there a condensation drip pipe or the like and any overflows?

Any water that condenses is drained off through a condensate drain. This is a 16mm plastic hose from the unit to the outside.

Is the system noisy?

No. The air handling unit is acoustically lined. Further it is generally hung from the rafters as opposed to being left sitting on the joists. A distribution box is used to reduce the duct size coming from the unit. This box is also acoustically lined. Silencers are inserted to reduce whatever noise there is. At the end of the installation process the system is balanced. The result is that customers will not be aware that the system is working in the background.

The system does not have a summer bypass. What can I do to keep the house cool in summer?

A HRV system is not a cooling system and can never be, despite what some suppliers might claim. A thermostat can be fitted to turn off the supply fan in summer, thereby giving an energy saving and leaving you with an extract system to deal with moisture. At this time of the year, thermal efficiency will not be an issue and windows can be opened.

MAINTENANCE**What maintenance is required?**

In order for the system to work correctly and effectively it is important that approved maintenance procedures are followed. Full details are in the manual supplied. The main component of maintenance is filter changing. The frequency of this will depend on the following (i) Your geographical location. (ii) The number of people in the house and (iii) System usage. Filters are generally cheaper to replace than clean.

Is it easy to clean and replace the filters?

It is a DIY job, no tools are needed and full directions are given in the operator manual supplied.

What guarantee comes with the system?

A 5 year warranty starts from the day of commissioning. It includes parts and labour for the first year. A spare set of replacement filters will be provided to facilitate the change of filters at the end of the first year's operation. The warranty covers parts only (excluding filters) for the remaining 4 years. Replacement filters should be ordered from ProAir for the end of Year changes. This warranty is conditional on planned maintenance being undertaken as scheduled in the Maintenance manual.

Is it possible to clean the ducting installed by ProAir?

Yes, because we use solid ducting that can be cleaned. During installation we install a distribution box with access to all ducts runs.

FIREPLACES AND STOVES**What should I do about a fire place?**

In the current regulations guidance document Part L it is recommended that any fuel burning appliance should be in excess of 86% efficiency. An open fire is estimated to be c20% efficient. An open fire will reduce the efficiency of a HRV installation by up to 10%. When the fire is burning air is being taken from the room and by convection goes up the chimney. This causes negative pressure in the house. As a result, cold air will be sucked in as soon as a door is opened.

The availability of suitable fuel for an open fire in the future is also an issue. If it is proposed to burn timber we suggest using a wood burning stove. These can be sourced with a pre-designed combustion air inlet. This combustion air must come from the outside, via a duct that has a minimum diameter of 100mm, is suitably insulated and controlled by a damper. This duct can travel under the floor, directly through a wall (if fire is on an outside wall) or is now available down through a specially built balance flue chimney.

What effect will a free standing stove have on the HRV system?

If it has an independent external air supply as described above the effect will be nil.

How should a gas fire be connected up?

Gas fires should be of the enclosed type (they look much like a flat screen TV). These can be fitted with a balanced flue down through the chimney.

Section J of the Building Regs state that any fuel burning appliance must have a permanent external air supply available to it. By this, they mean a hole in the wall or a balanced flue as described above.

Flame effect fires are not usually suitable for a balanced flue.