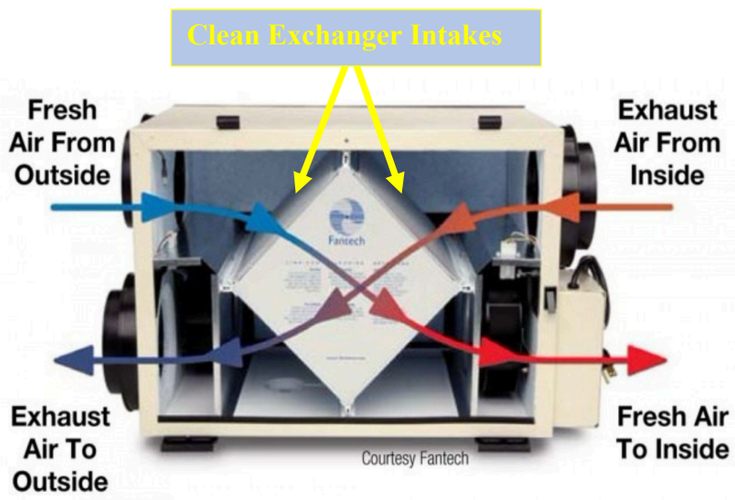
HRVs & ERVs By Finn Home Inspections

Heat Recovery Ventilation systems (HRVs) are used to bring fresh air into the home while recovering some of the heat or cooling from the air exiting the house.
Energy Recovery Ventilation systems (ERVs) do the same as HRVs, but also transfer moisture.
They are both used in Tight homes, where the air can become stale (buildup of CO2, moisture, odors, etc.) To have fresh air inside we traditionally open a window, but during the winter this causes you to lose much heat and moisture, during the summer unwanted heat and humidity comes in through open windows.

How an HRV works: During winter, the air is drawn from inside, transfers through a heat exchanger, where outside fresh air on the other side of the heat exchanger gets warmed up before passing into the house. During summer, the opposite happens - the fresh air is cooled when it is drawn into the house.

An ERV works the same way as the HRV but it also transfers moisture. Moisture transfer is very important during hot and humid weather to keep moisture from getting in the house, which would increase your air conditioning costs. This is why ERVs are often used in Tight homes in hot and humid areas with a long A/C cooling season. The efficiency of heat and moisture transfer is reported to be around 60-70%.



(configurations of different units vary from drawing above, some have all ports on one side, the function is the same)

Maintenance

Dust, pollen and other debris can obstruct air flow through the units.

It is recommended that the heat exchanger is cleaned very gently once a year with a soft vacuum brush.

Air inlet filters from house and from outside need to be cleaned or replaced every 3 months, some filters are plastic and can be washed.
If the outside filter is obstructed it could reduce house pressure and draw hazardous radon gas out of the ground and into the house. So be sure to keep the filters cleaned!

Operation

The units are designed to run continuously at a set speed. The speed depends on characteristics of the specific house. While some houses will be laid out differently, the exhaust from the house typically draws heat/cooling (and moisture if the unit is an ERV) from the heavier load areas of the home. Most commonly from a bathroom or/and kitchen. A home with a room such as a designated gym may also have an exhaust vent and a fresh air inlet installed in the room.

Since heat and moisture loads vary depending on time of use, the vent system may have switches to increase the ventilation system's air flow and time it runs. They may be simply boost speed (low, medium and high settings). Some are timers: 20/40/60-minute timers that boost the air flow for that long, these are more commonly used in rooms with temporarily-high moisture levels like bathrooms. There are also control units that can be added to most HRV/ERV systems that are programmable hourly and daily, so you can set it and forget it.