

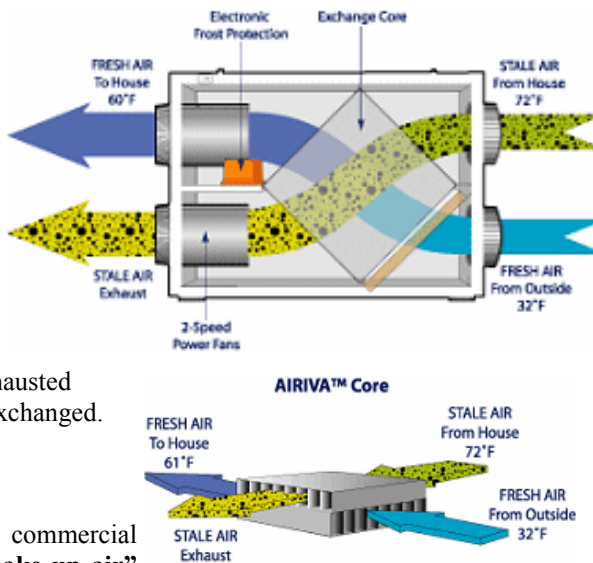
**Certified Testing Services**  
 Indoor Air Quality (IAQ), Particulate Matter (PM)  
 Mold, Asbestos, Carbon Dioxide (CO<sub>2</sub>)  
 Hydrogen Sulfide (H<sub>2</sub>S), Carbon Monoxide (CO)  
 Radon, Radiation, EMF (electric magnetic field)  
 Remediation & Mitigation Consultation  
**Commercial and Residential**



**Air Exchanger, HRV and Ventilation Basics**

With the modern emphasis on energy conservation and efficiency, new home and building construction can create environments for indoor air pollution. Vapor barriers, thermal windows, weather-stripping, and caulking have all reduced or stopped fresh air from infiltrating and replacing indoor stale air. Entering and exiting through doors is often not enough air flow for proper air changes. Cooking, aerosol sprays, cleaning agents, paints, and excess humidity, all can create undesirable indoor environments. Keeping windows or doors open helps but does not conserve energy. Accordingly, devices known as an air-to-air heat exchangers, and heat recovery ventilation (HRV) units have become a common solution used to recover heating or cooling and improve air quality.

There are many different designs of **air exchangers**, and **HRVs**, but the principle is the same. Fresh air is drawn in from a vent open to the outside, and passed through a chamber (the exchanger) that is surrounded by indoor air. Highly conductive metal or other materials removes the heat energy from the warmer air and gives it to the cooler air. The fresh outdoor air is then dispersed into the home or building, and the indoor air is exhausted outside. Up to 80% of the energy can be exchanged.



Air exchange and ventilation units for commercial buildings are commonly referred to as **“make up air”** units, and generally do not have a heat exchange system. A separate heat exchange unit may be added to reduce lost energy. For residential buildings and homes, smaller versions of make up air units are currently most commonly referred to as **“Heat Recovery Ventilation (HRV)”** units. Both residential and commercial versions can also include filtration technology for cleaning the air.

**The ultimate solution for homes is a HRV unit with HEPA filtration.**

Example of HRV or Air-to-Air Heat Exchanger Unit:



Example of HRV unit with HEPA Filtration Unit:



EPA-Environmental Protection Agency  
 Radon Protocol  
 EPA IAQ



Health Canada  
 Radon - IAQ  
 Its Your Health



NEHA  
 National Environmental Health Association  
 NRPP  
 National Radon Proficiency Program



WHO  
 IRP-International Radon Project  
 WHO International EMF Project  
 IAQ Guidelines

