

Ask Jon Eakes

HRV - both supply and exhaust ducted to furnace. Is this a good idea?

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I have occasionally been asked my opinion about a particular way to install a ventilation system (HRV - Heat Recovery Ventilator) that is considered acceptable in Ontario: Ducting both the supply and the exhaust runs of an HRV into the return air plenum of a forced air furnace. To understand this arrangement, understand that the "officially best" way is to draw stale air directly from the bathroom, kitchen and any other pollution source, while supplying fresh air directly to every other room in the house. An acceptable compromise is to run the fresh air into the return air duct of the furnace for whole house distribution of fresh air.

But the arrangement that is common in Ontario, because it is quicker and less expensive and inspectors approve it (I don't know why), is to run no ducts around the house, but pull exhaust air out of the furnace plenum and put fresh air back into the furnace plenum.

So I asked around about this arrangement, that appears crazy to me and here is my unnamed (I don't want to get him into trouble for admitting that something approved by inspectors is ridiculous) air quality researcher's answer, which I agree with entirely (I don't mind getting into trouble).

"I answered this question yesterday for somebody else, and they had the same "Is this Nuts?" reaction to the system as you did.

That HRV set-up is common, even if it looks ridiculous. There is some test data on various HRV attachment points ("Field Survey of Heat Recovery Ventilation Systems" available at the Canadian Housing Information Centre). Any system where both ends are joined to the furnace ducting system requires that the furnace circulating fan be on for the system to effectively provide the desired ventilation. Barring the use of an efficient circulating fan (very, very rare), this will cost from \$100-\$250 a year more in electrical costs. However, people notice these costs and the discomfort of moving relatively cool air, and do not activate the furnace fan. Hence, your expensive HRV is now sitting in the basement recirculating air in the return air duct, or it gets turned off as well because it does not seem to do anything in particular.

HRV systems which have either the exhaust or supply being directed to the furnace ducting system, but not both, are more effective than the system mentioned above, but still have less than optimum air distribution when the furnace fan only runs sporadically. If you want designed performance, have a fully ducted HRV. Alternatively, you can use an efficient furnace fan on low speed continuously, with either both HRV supply and exhaust attached to the return air, or just the supply. You can imagine that running HRV exhausts preferentially from the wet rooms is more efficient in getting rid of excess moisture than by mixing the moisture up with the rest of the house air and exhausting a small portion of the house air.

Is this what you need Jon? I have trouble justifying this foolishness."

Keywords:

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