I’ve heard that “ECM” motors (electronically commutated motors) can help home appliances save energy. What are they are, and are they worth the extra expense?

There are many ways that manufacturers are increasing the energy efficiency of their products. You’ve probably seen the Energy Star rating on new appliances. Since 1992, the federal government has been giving tax incentives and rebates to manufacturers and/or consumers for making improvements like reducing the amount of water needed to wash a load of towels or the electric load of your refrigerator.

One way to reduce energy use is by using electronically commutated motors (ECM). This is a high-efficiency motor that can work in home systems like air handling and heat distribution (or cooling). ECMs allow the motor to run at different speeds, depending on the demand from the appliance, rather than maintaining one speed constantly. This type of motor has been in use in the U.S. since 1985 and uses as much as 67% less power than that used by standard motors (PSC). That’s because sensors in the motor determine the system’s need and provide just the amount of energy needed. ECM motors are also quieter and cooler than standard motors.

Radiant floors are one example. The ECM runs the pump that distributes hot water to heat your floors. A sensor in the system measures the temperature of the fluid in your system and tells the pump to run only as fast as it needs to to heat your rooms. When running most efficiently, a system using an ECM could use less power than a standard light bulb.

HRVs (heat recovery ventilation systems) are also now made with ECMs. Just as with the hot water circulator pump, the HRV’s motor will vary its speed (and therefore energy use) based on the demands from the building. When you push your “booster” button in the kitchen, the motor will run the fan at a faster rate and exchange more air for a set period of time. When the HRV is operating at its normal (lower) level, it will use less power and run less forcefully.

While it is possible to have a professional retrofit your existing furnace, HRV or other appliance with an ECM motor, it is generally more cost-effective in the long run to purchase a new appliance. Some appliances are not configured to allow the conversion at all – the older it is, the more this is likely.