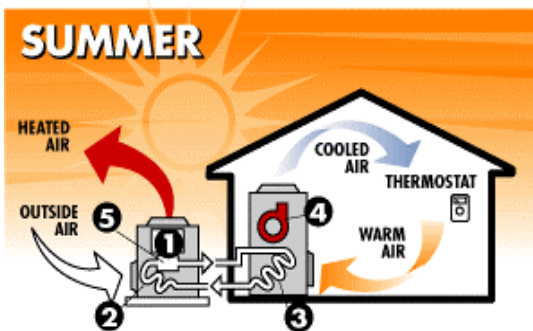
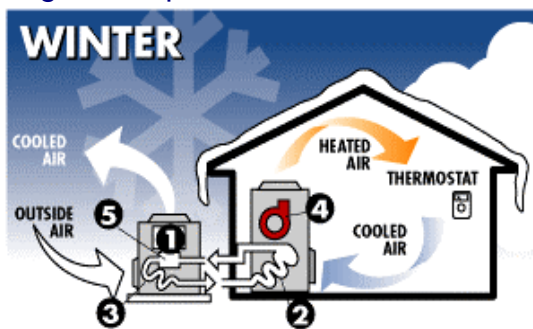




How does an air-source heat pump work?

So what exactly is an air-source heat pump??? I have asked the same question, “How can the same unit that sits outside my house both heat and cool the house??? How is that possible?” The air-source heat pump is an amazing piece of equipment, which uses the indoor and outdoor air to both heat and cool a home. In the summer time, an air-source heat pump works the same as a condensing unit by removing the heat and humidity from inside the house and dispersing the heat outside. (To see how a condensing unit operates read our Spring 2010 Newsletter at www.whmlc.com.Newsletter.html.)

Both the condensing unit and heat pump look the same and use the same components to operate: the compressor (1), the indoor evaporator coil (2), the condenser coil (3), and the indoor blower on the furnace or air handler (4). However, the difference is that a heat pump has a reversing valve (5). When there is a call for heat the reversing valve reverses the flow of refrigerant so it flows in the opposite direction. Instead of removing the heat from the indoor air, a heat pump uses the heat from the outdoor air to heat your home. Yes, even in below 50-degree temperatures, there is heat in outdoor air.



Just how does this work, you ask? The refrigerant in a heat pump is compressed by the compressor in the condensing unit from a low-temperature, low-pressure gas into a high-temperature, high-pressure gas. The gas then enters the evaporator coil. The indoor air blowing across the hot evaporator coil is heated and then circulated throughout the house. As the heat is extracted from the hot gas, the gas is cooled converting the gas into a liquid. The liquid flows outside and through the outdoor condensing coil. The heat in the outdoor air being drawn across the coil by the condenser fan causes the liquid to “boil” back into a low temperature, low-pressure gas before re-entering the compressor to begin the process all over again.

In our area of the Northern Midwest, a typical winter consists of several months with below freezing temperatures. A heat pump is designed to operate at outdoor temperatures above 32-degrees, so a heat pump system does not replace the need for a gas furnace or electric air handler.

The benefit of having a heat pump is that it uses less energy to operate, saving you money on utility bills to heat your home in the spring and fall. Heat pumps are rated in Heating Seasonal Performance Factor or HSPF. Today's heat pumps are rated at 6.8 HSPF or higher. Because a heat pump also provides air conditioning, the unit will have both the HSPF for the heating and the SEER (Season Energy Efficiency Ratio) for the air conditioning. The higher the HSPF and SEER number, the more efficient the system - saving you money on your utility bills.