



Mini-Split Heat Pumps

Source: Gerald Hash

The HVAC industry and consumer market are embracing the advantages of one central outdoor compressor serving multiple mini-air handlers. In the home this gives ultimate room by room zoning, thus micro-managing comfort and efficiency. Usually there is one indoor unit per room or two for a larger room, widely spaced for uniform air distribution.



Ductwork is eliminated! Floor register location issues are erased as it is favorable to mount air handlers at least six feet up on the wall. They are about one-half the size

of thru-wall package units, often used in motel rooms. Average size runs 40"W x 13"H x 10"D.

The outdoor unit has variable speed compressor and fan components offered at efficiencies meeting ENERGY STAR[®] standards. Typical residential capacities run up to three tons (36,000 Btuh) and serve up to four indoor units. Larger homes may require dual compressor outdoor units serving eight indoor units or multiple systems.



Each indoor unit has its own refrigerant line set, coil, fan, power circuit, drain line, cleanable fil-

ter, top-side air intake, bottom feed supply register, programmable remote and optional wall mounted thermostats, auxiliary resistance heat strip, and white or designer color casing.

The seasonal energy efficiency ratio (SEER) ranges up to a very efficient 22.0 with average installed cost commensurate to that of a 14.0 SEER standard heat pump. In fact, the mini-split SEER efficiency rivals that of the geothermal heat pump whose installed cost is considerably higher than most all HVAC options. In all fairness, the mini-split installed cost advantage is slightly tempered by the long-term optional geothermal advantage of cutting domestic water heater energy use by up to 50% annually.

Room by room comfort control diversity was the main marketing feature of the old ceiling cable and baseboard heater methods. Mini-splits have revived that vintage efficiency/comfort concept and coupled it with high heat pump SEER at very reasonable installed cost. There are two negatives: 1) the in-room air handlers, though relatively small, are mounted high on the wall with their downward supply vent. This avoids air flow blockage by furniture, drapes, etc., focused air blasts, and child tampering. However, its high visibility may be considered incompatible with ascetic room décor and 2) having to periodically clean and reinstall a filter for each modular air-handler instead of just one on a central air handler. One new filter change-out versus six or more filter procedures (removal, cleaning, resetting) is worth considering.