Recent Tests Reveal Reducing Duct Leakage Means Savings In Monthly Energy Costs

Every aspect of designing a central cooling and heating system for a home is important to the overall performance of the system. Conscientious heating, ventilation and air conditioning (HVAC) contractors take care to perform all necessary calculations to determine cooling and heating loads, equipment size, and air flow so that the system can be designed for maximum efficiency.

Although ductwork may seem to be the least important aspect of the system, recent tests reveal that over 70 percent of the air leaks in a home occur in the HVAC distribution system. And since these leaks are under pressure, they can account for an increase of up to 300 percent of house infiltration when the air handler in operation.

To reduce this air leakage to three percent or less, Duke Power now requires the use of a permanent sealant, like mastic, in its Maximum Value Homes program. Mastic is a flexible sealant that varies in consistency from that of mashed potatoes to yogurt. It can be applied with a caulking gun, brush, trowel or with your gloved hand. Because it never fully hardens, mastic stretches as the duct expands and contracts allowing for year-round temperature changes.

A good duct sealant has high solids content—at least 50 percent. In general this means less shrinkage as the material cures. Excellent adhesion is also important—the sealant should stick to metal, drywall, plastic, concrete or other materials used in home building. Good duct sealant must also "stick to itself" so it resists cracking as the surface moves.

One method for testing the airtightness of forced air distribution systems is the Duct Blaster, a calibrated air flow measurement system. The Duct Blaster consists of a powerful variable speed fan which can be connected directly to the duct system in a house. Duct leakage is measured by using the fan to either pressurize or depressurize the distribution system to a desired reference pressure. The equipment provides an accurate measurement of duct leakage.

By using permanent sealant, the builder provides the homebuyer with an additional comfort factor, usually improving the home's indoor environment along with saving on monthly energy costs.

For additional information on Duke Power's Maximum Value Homes program, call your local Duke Power Company office at 727-4300.

Permanent sealant, like mastic, is now required in Duke Power's MAX homes.