

# The New Standard in Energy Efficiency White Paper



Presented By



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## **Introduction**

According to the U.S. Department of Energy, we spend hundreds of dollars on energy efficient features for our homes, but overlook the biggest energy waste----leaks in the ductwork for forced air heating and air conditioning systems. The old axiom "out of sight, out of mind" applies to most aspects of your home especially the duct system. As long as you are keeping cool or staying warm you don't give it much thought. But what you don't see could be costing you a lot of money each year. Studies



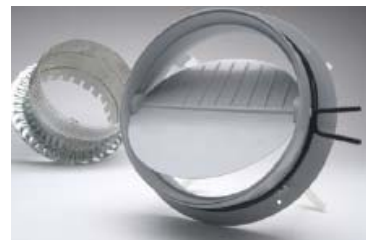
indicate leaky ductwork often accounts for 10-30% of total heating and cooling costs and for an average home, leaky ducts can waste hundreds of dollars each year. Since most duct systems are installed in attics, basements or other building cavities that are rarely seen, therefore you may be unaware of fittings coming loose, disconnected duct runs or even a poorly sealed duct system to begin with. If duct leakage is 20% of the total airflow, the efficiency of the cooling system can drop by 50%. Heating efficiency is similarly affected. Duct leakage also lowers the heating and cooling capacity and ultimately lessens the equipment life. Properly sized, installed and sealed ductwork will make your heating and cooling systems significantly more efficient.

## **Duct Leaks**

The Energy Division of the Idaho Water Resource Department New Construction Section Manager, Ken Baker, points out several research studies that indicate the extent of the duct leakage problem. In one study, the cracks and openings in ductwork represented 13% of the house leakage area. But when the furnace blower operated, duct losses accounted for 70% of the air leakage. In fact, duct leakage commonly reaches 350 cubic feet per minute during blower operation. As a result of duct leaks, dust, automobile emissions, pollen and other contaminants can be drawn directly into your HVAC system and spread throughout your home. Leaks in these ducts allow conditioned air to escape or unconditioned air to slip in and this misguided air upsets the house's pressure balance.

## **Energy Savings**

About 50% of a homeowner's annual electric bill is spent on running their heating and cooling system. With the current energy crisis the value of energy saving products is a much needed find in today's HVAC marketplace. DuraTite Systems, LLC, has developed a patent protected system of polypropylene duct connectors and takeoffs for the Heating, Ventilation and Air Conditioning industry that simply and affordably solves a well-documented problem of conductive losses and system leakage.



In the field of energy efficient building construction, commercial and residential HVAC ductwork is the 'delivery system of comfort' in all climates. Ductwork is as necessary to the HVAC system as the furnace or air conditioner itself. Efficient delivery (cubic feet per minute in = cubic feet per minute out) of conditioned air is essential for both comfort and energy efficiency. Leakage also translates into the over-sizing of many systems to overcome the problems of inefficient delivery (one ton of air conditioning produces about

400 CFM). Results have shown that ducts leak an average of 25-30%, which means that a four-ton, conditioning unit would lose that 100 CFM, or 25% of its capacity.

### **Airtight Connections**

The DuraTite Duct System provides airtight connections, greatly reducing air leakage while saving up to 50% in installation time. Compared to metal connectors, DuraTite's advantages are clear: faster installation, quicker connections, dent proof, light weight, non conductive, rust proof, finished, smooth edges and no sealants required. DuraTite's take-off features a new Clip and Zip™ fastening system that secures the take-off in seconds. DuraTite's self sealing trunk line takeoff eliminates the need for extra sealants and thus saves the installer considerable time. In a time study trial conducted in May versus a metal takeoff installation using mastic, the DuraTite CEO installed four polypropylene takeoffs in under 32 seconds. DuraTite Systems' products will be available for distribution early this summer. Additional products including the 6", 8" and 10" dampers, register boots, elbows and plastic duct are in development and will begin release by the end of the year. The DuraTite fittings are not easily susceptible to damage and will actually help the flexible duct work perform better by creating a better seal, smoothing out the bends and creating a faster and tighter connection to trunk lines.



DuraTite products install quickly. An HVAC installer can save 3 to 5 minutes per take-off which translates to a minimum of 30 minutes of labor savings for the average house install. This is especially significant when installing an air conditioning system in an attic, where the ambient temperatures can approach 150 degrees. If the installer has to install a metal trunk-line take-off and then mastic seal each takeoff, they would be exposed to these temperatures longer. With the DuraTite components, its just clip and zip and the quick spring clamp completes the connection in less than 30 seconds. The DuraTite Duct System provides airtight connections, greatly reducing air/heat loss and saving up to 50% in installation time.

Currently the duct component market is comprised of 100% metal parts and according to National Association of Home Builders 1.9 million new home starts are expected in 2006. With an average of 10 take-offs installed per home approximately 11,900,000 take-offs will be needed to satisfy the market in 2006. Plastics are already in use in HVAC systems and Underwriters Laboratories has written a new section to allow plastic connectors into the system (Standard UL 2043, "Fire Test for Heat and Visible Smoke Release for Discrete Products and their Accessories Installed in Air Handling Spaces).

DuraTite Duct Systems is an alternative that is not only cost-effective, but adds the ease of installation and eliminates the problems of the current technology.

### **Tax Credits**

The current energy crisis situation also creates a more apparent need for conservation. In addition, the current housing market inspection process will reward tighter ducts with tax credits and energy-efficient trade-offs which will facilitate quick penetration and acceptance of the DuraTite System into the housing market. In California, there was a standard imposed in 2005 that required duct systems to comply with minimum duct leakage rates in order to meet code. Some states, such as Oregon and Washington, have been giving tax credits for airtight duct construction for years. Clearly, the potential savings from using the DuraTite sealed duct system and the ease of installation will be significant not only for the HVAC contractor, but also for the weekend do-it-yourselfer.

For more information on DuraTite Systems you can contact us at 1-866-217-3872 or [info@duratite.com](mailto:info@duratite.com).