

## **The Oil Drum: Campfire**

### **Discussions about Energy and Our Future**

#### **Home Energy Projects that Did / Didn't Work Out**

Posted by [Gail the Actuary](#) on September 2, 2009 - 7:08pm in [The Oil Drum: Campfire](#)

Topic: [Environment/Sustainability](#)

Home energy-saving projects can be tricky. Some of us have even tried some on our own.

Tonight we would like to know what experiences readers have had, that they would like to share with others.

I don't do much along this line on my own, but will share some experiences that were related in a Linked-In group called [RESNET BPI - Energy Audit and Home Performance](#). Most of the participants make a business of fixing up homes and other building to make them more energy efficient.

---

The question the group was asked was

#### **Drawbacks of a project-specific approach**

Does anyone know of or have had an experience where you focused on a very specific energy project within a residence or small commercial building that later came back to haunt you because a larger feedback loop was missed?

I'm interested in hearing your take on what drawbacks and/or benefits there may be to taking a narrow project-specific approach vs. a whole-building approach.

Best,  
Patricia

The answers received were as follows:

#### **Example 1 - Sealed Ducts**

In the air-conditioning world, one notable example comes to mind. If you seal a leaky duct system without verifying the impact on airflow and sensible ratio, you can cause system performance to drop off a cliff and increase the risk of coil freeze-ups.

Manclark and others have written about this. But in my experience, many home performance practitioners don't understand this problem. Here's a brief explanation:

The indoor coil temperature (as well as system efficiency and performance) is strongly related to the amount of air that flows across the coil. If the duct system is significantly

undersized (a common problem), the only thing that may be keeping the coil from freezing up is the leakage. From the blower's perspective, leaky ducts look like a larger duct system. When leaks are sealed, static pressure increases, which in turn suppresses blower output and lowers the coil temperature. Even if coil doesn't freeze, a colder coil will remove more moisture, thus lowering the system's sensible capacity. It takes a lot more energy to condense moisture from the air than to cool the air, so a colder-than-necessary coil increases operating costs.

Anyone who seals duct systems needs to know how to test system airflow. Mitigation usually involves duct system modification, which requires a mechanical license in many jurisdictions.

Sealing leaky ducts will also change house-to-outside pressure dynamics, which can be a serious problem if the home has a fireplace or open combustion appliances inside the envelope. I think most practitioners understand this issue.

This is a related magazine article, called [Of Mastic and Mistakes](#) by Bruce Manclark from a 2001 Issue of Home Energy.

### **Example 2 - Attic Insulation without Air Sealing**

Another unintended consequence is adding attic insulation without air sealing in a cold climate. The insulation may slow heat loss to an extent that the temperature of the underside of the roof is often below the dew point; the lack of air sealing allows warm, moist air to enter the attic space and condense on the cool roof; the combination of bulk water and unfinished OSB or plywood is a road to serious problems.

### **Example 3 - Unvented gas logs and home sealing /insulation**

And another: a lady who turned out to be a residential energy person for a local utility called one winter for an evaluation of the insulation in her older home. The first thing I noticed from the outside was the sparkling new windows of good quality. The second thing I noticed upon going in the door was two unvented gas logs flickering cheerfully. The first question is for me is always to inquire about the homeowner's concerns.

"Well," she said, "I'm always cozy because I run the gas fireplaces whenever I'm home, but I had a terrible problem with condensation on the windows. Fortunately, that problem went away when the new windows were installed. Now I'd like to know what else I can do to improve my home."

The red lights went on like an eight alarm fire. She had no air sealing, of course. When I explained that the old windows were actually protecting her by dehumidifying the house, that the new windows were a meretricious improvement, and that the moisture from the unvented gas logs was still there and being driven into wall and attic spaces, she became angry.

When I explained that the gas logs would have to be removed before air sealing and insulation could be installed she threw me out of the house.

You can lead a horse to water . . .

P.S. In case the word "meretricious" is not familiar, it means basically that something looks like a really good thing, but in fact it is not. I'm an English major after all, so I often sound a little weird.

Now, with fall approaching, I am sure some readers are consider undertaking projects of their own. What experiences do you have to share? Do these examples remind you of any experiences of your own?



This work is licensed under a [Creative Commons Attribution-Share Alike 3.0 United States License](http://creativecommons.org/licenses/by-sa/3.0/).