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What Were They Thinking?

Here are a couple of those situations where, as home performance professionals, we scratch our heads and ask, What were they thinking?

Rocket Scientist Not Required

It doesn't take a rocket scientist, or an HVAC engineer, to figure out one problem with the HVAC forced-air duct installation in the Phoenix, Arizona, home shown in the diagram (see Figure). The owner complained about high cooling bills and uncomfortable conditions in the front rooms. A quick look in the attic revealed a large part of the problem.

Note that one of two trunks runs from the air handler to the northwest area. From there the trunk was split to serve the northwest and west rooms. At the first split, another duct was directed all the way to the front of the home. It's little wonder that losses in the unnecessarily long duct run reduced air flow in the home's front rooms. A better alternative would have been to run a third trunk from the air handler to serve the front rooms.

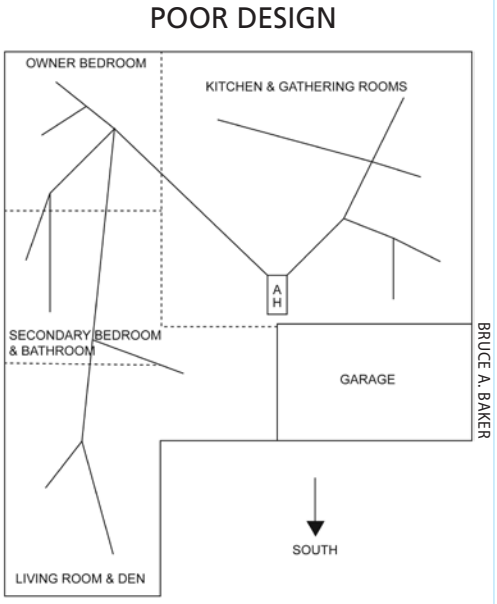

Figure. Proper design and installation of the HVAC duct system is critical to energy-efficient performance and occupant comfort. While this is an extreme case, poor design and installation of forced-air ducts cause significant unnecessary energy use.

Proper design and installation of the HVAC duct system is critical to energy-efficient performance and occupant comfort. While this is an extreme case, poor design and installation of forced-air ducts cause significant unnecessary energy use.

The International Residential Code, in Section 1601.1, requires design of forced-air duct systems according to ACCA *Manual D*, and installation of those duct systems according to the manufacturer's recommendations.

Not That Kind of Blanket

The owners of a home in the Phoenix, Arizona, area heard that you could reduce a gas water heater's energy consumption by wrapping it in a blanket. So they took a blanket off the shelf and wrapped it around the tank, including the combustion air ports at the bottom and the vent at the top (see photo). I explained to the owners about the danger of fire because the combustible blanket was covering the hot gas vent, and about the danger of CO poisoning because covering the combustion air ports could cause incomplete fuel combustion. I decided not to explain that the air gap between the blanket and the water heater made the blanket virtually useless. We removed the blanket.

We should not forget safety in the quest for energy efficiency. Always read manufacturer's instructions, and always use components that are designed for the intended application.

We should also take a moment to determine if an energy efficiency improvement makes sense in a particular situation. In the Phoenix area, people sometimes turn off their water heater in the summer. They do this because the water entering the home can be quite warm, and because the temperature in the garage, where many of our water heaters are located, can help heat the water in the water heater without using any energy. In the Phoenix area, the money and effort required to install a water heater blanket might be better invested in other energy efficiency improvements.

—Bruce A. Barker


BRUCE A. BARKER

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Bruce A. Barker is president of Dream Home Consultants, LLC, a Phoenix, Arizona, based building inspection and consulting firm. He is the author of ***Everybody's Building Code****, a book for homeowners, contractors, real estate agents, home inspectors, and anybody else who wants to understand the International Residential Code without wading through the dry and often confusing language of the code itself.*

For more information:

You can find guidelines for flexible duct installation at www.flexibleduct.org. For more on *Everybody's Building Code*, go to www.everybodysbuildingcode.com.