

Finished Basement Climate Control

(A special request from a blog reader)

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The DIY FYI

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I recently received the following from a Marlboro, N.J. family:

I am planning to finish my basement this summer over vacation and holidays and read your article with great interest. I now have a new perspective of how to plan it and I want to thank you for that insight. I will probably need professional help later, but for now, I'm doing my research. One of the topics that was not covered was heating and air conditioning. We have a 2400 square foot house with a full basement and a one zone HVAC system. The basement foundation has three feet exposed above ground with a total height of eight and one-half feet. How do I decide about heating and air conditioning the finished space?

This sounds like a simple question, but it's not. The first things you have ask yourself is: What will this remodeled space be used for? How much time will you spend using the area? How much do you want to spend? What comfort level you want to achieve? Will it include bathrooms and kitchen or beverage area? Will any of the finished basement need direct ventilation?

There are many ways to develop interior climate control for a remodeling project. I'm only going to touch several examples so that you can begin researching the subject.

The simplest solution for heating and cooling is the one I use in my basement shop. (If you would like to see my shop go to our web site www.thediycouchusa.com, click on About Us, then More About The Founder.) I cut into the forced air feed and installed grills that can be manually closed. I also have a portable dehumidifier with its own pump to control humidity. I do not have any return grills because I do not want to draw saw dust into the heating ducts. However, I do have a commercial air filtering unit to cleanse the air and an exhaust fan if I need it. Because I'm involved in the physical activity of woodworking, I'm quite comfortable all year long, but must operate the grills manually to adjust the temperature. My shop is not finished or



insulated, but comfortable for my purpose in summer and winter. For a remodeling project with a tight budget, this can be a valid solution. There are even thermostatically operated grills. In most cases, this low cost solution is not what my clients are looking for.

Basements, because they are for the most part underground, are the coolest place in a house. Normally they do not have a high cooling load. Also because cold air is heavier than warm air, if the door to the basement is left open, the cooler air will fall into the basement in an air conditioned house. Additional air conditioning for normal family activities may not be needed. Perhaps the only thing to add would be a dehumidifier as mentioned above. However if heat is generated from lights, equipment, and heavy use by a large number of people, you may have to reconsider your air conditioning needs. These are some of the various types of climate control systems that you can use for your basement:

If your HVAC system is adequate to meet the demands of your finished basement area, you can create a two zone system with the addition of motorized baffles and duct work for the basement. The thermostat in the basement or first floor will

open or close the baffles upon demand and turn the furnace or air conditioner on or off at the same time. This is a very cost effective solution. You will have to develop a place for the feed and return trunk lines, but good planning should solve that problem. In the summer you may need a dehumidifier to eliminate a cold clammy condition from too much moisture in the air.

If heating is your only concern and you have a hot water baseboard system, the solution can be as simple as adding a zone for the finished basement. However, you do have additional choices depending on the type of floor covering you use and how the subfloor is constructed. The use of hot water radiant heating systems within the floor are becoming very popular. The reason for this is that many people do not like the look of baseboard radiators, which also limits how furnishings and cabinetry are arranged. With radiant floor heat, both problems are solved.

Both baseboard and radiant floor heat are available using electricity without the need for a boiler or furnace. This installation, which generates heat by resistance, may be less expensive to install, but is expensive to run compared to natural gas or oil. They are sometimes a very good solution for a small area that may be difficult to reach such as a bathroom. You may have to increase the size of your electrical service or panel which will add to the cost.

There are also through-the-wall units that can include air conditioning that are heat pump based unit. Very often these run on electricity, but are much more efficient to run than resistance based systems.

Tip: In order to decide what is the best climate control system for your finished basement, consider your use of the space, the level of development (utilitarian to luxury), the amount of use, how the space will be used, and the degree of comfort you desire. When you are considering the cost for climate control, don't forget to assess the cost of energy for your new living space over the time that you plan to remain in the house.

