

Climate Control

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Climate Control Overview

Build a bigger home, deal with drastic temperature swings. Owners of new homes have come to expect that the temperature upstairs will be several degrees higher than the temperature downstairs. But it doesn't have to be this way. You can live in a home that's comfortable on every floor by installing a zoned heating/cooling system while your new home is under construction. A zoned heating/cooling system treats each area of the house independently, based on its distinct needs. The temperature of each area is monitored by its own thermostat so that the readings are accurate and can be adjusted independently of thermostats in the rest of the house. In a nutshell, this means that the stat in the living areas of the house can be set at 70 degrees, while the upstairs bedrooms can be set at 65 degrees, for example.

The system that makes this all happen attaches to just about any type of furnace/air conditioning unit. What is different from the normal heating/cooling system is the topology and the construction of the air ducts. A zoned heating/cooling system consists of more than one main trunk line (traditional heating/cooling systems utilize only one trunk line). Plus, inside many of the ducts are dampers that control the flow of air into each zone (usually consists of more than one room).

Planning Issues

What You Need to Consider

- Compatibility Manufacturers of programmable thermostats (a necessary part of a zoned heating/cooling system) design their products to work with particular types of heating/cooling systems. For example, thermostat A might work with only electric and gas systems; thermostat B might also cover heat pumps.

You'll also want to determine a thermostat's compatibility with the cabling in your house. Old-fashioned mechanical thermostats were commonly connected to heating/cooling systems via four wires. Some programmable thermostats, however, require a fifth wire for power. If no fifth wire exists, you or a heating/cooling contractor (check local codes) will need to route another piece of low-voltage cabling from the heating/cooling system to the thermostat location. Alternatively, you can use a battery-powered programmable thermostat, which requires no additional wire.

- Types of Thermostats Program options vary by thermostat. Some might invite you to create two different temperature schedules: one for weekdays and another for weekends (called a 5/2). Others might let you arrange different scenarios for Saturday and Sunday (called a 5/1/1).

Also, for the ultimate in convenience, choose a thermostat (called a communicating thermostat) which can be managed from a home control system or a security system.

In rooms where appearance is important, but control is not, opt for a temperature-sensing disc. About the size of a quarter, it can be installed on the surface of a wall and painted to nearly disappear from sight.

- Outdoor Thermostat When it's cold outside, a home usually needs a bigger dose of warm air. It's just the reverse in the summer. If a home's thermostat is able to react to readings from an outdoor thermostat, your home might be headed towards greater comfort and energy savings.

- Telephone Access Schedules change, so consider using thermostats that can be adjusted remotely via the telephone or the Web.

Installation Issues

Your heating/cooling contractor should know this, but in order for a thermostat to obtain an accurate reading, it should be mounted five feet above the floor, away from direct sunlight and on an inside wall near a return air duct.

Also, placing the heating/cooling unit in the center of the basement reduces the overall duct length to each register. The shorter the duct, the better the heating/cooling system performs.

A zoned heating/cooling system and a security system work great together, so it's a good idea to have the heating/cooling contractor and the security installer work together too. When integrated with a security system, the thermostats of a zoned heating/cooling system can adjust automatically according to security conditions. For example, when a security system is disarmed, they can adjust accordingly.

Smart Thermostats

Setting back a thermostat 10 degrees for an 8-hour period can yield between 5 percent and 15 percent reduction in energy usage. So why trust yourself to remember to adjust the thermostat? Built with timers and microprocessors, a thermostat can modify its settings automatically based on your family's schedule and other parameters like the temperature outdoors. A programmable thermostat is installed in place of a conventional thermostat. After it's installed, you establish the schedule. A programmable thermostat can pay for itself in energy usage within four years.

Smarter still are communicating thermostats. They differ from programmable thermostats in their ability to respond to specific events. A communicating thermostat can raise or lower the temperature whenever the security system is armed, for example. A programmable thermostat raises and lowers the heat or AC based only on the time of day. Manufacturers of programmable and communicating thermostats design their products to work with particular types of heating/cooling systems. Naturally, you'll want to select a thermostat that's compatible with the type of heating/cooling system chosen for your new home.

Finally, query your energy utility about any communicating thermostats they might offer as part of an energy management program. Progressive utilities are now starting to offer thermostats that can receive setback instructions and other energy-saving tips directly from the utility.

Radiant Floor Heating

You can save as much as 30 percent on your utility bills by using a radiant floor heating system in your new home as a complement to its forced-air heating/cooling system. Another terrific benefit of radiant heat: tile, stone, and other surfaces feel warm to the touch. Because heat travels up into a room from the floor, tiles feel a comfortable 85 degrees, compared to tiles that register around 60 degrees when heated only by a traditional heating/cooling system.

Hands down, the best time to have a heating/cooling installer lay in a radiant floor heating system is while your home is under construction. With the floors exposed, you have the liberty to plant down any type of under-floor heating system you like. Choice 1: A hydronic floor heating system that delivers warmth in the form of heated water. Sturdy tubing, which may be buried into a concrete slab or covered with concrete on a wooden sub-floor, circulates warm water beneath the floor surface. Any energy source-gas, oil, wood, solar or electricity-can be used to power the boiler that heats the water.

The boiler, pumps, valves, tubing and concrete overlay that make up a hydronic system all add up to a fairly costly and labor-intensive project-one that you wouldn't want to take on for only one room.

Less expensive (\$2 to \$15 per square foot of treated space), but costlier to operate, are systems that heat the floor through electric cables. EH 5 Things to Consider with Climate Control Hot stuff! Here are 5 things to consider when installing HVAC...

- Programmable thermostats
- Communicating thermostats
- Zoned heating/cooling
- Fan control
- Motorized window/shade treatments

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Climate Control FAQs

- How can window shades help my energy bills?

Ever notice that some rooms are really hot in the summer? We all know that some rooms tend to catch more light than others, but did you know that your air conditioning unit is reacting to that heat? Motorized window shades can be programmed to open and close at certain times of day, as well as based on the conditions in the room. So before your air can react, the shades attempt to cool down the area first, and may save you a few bucks in the process.

- What is a communicating thermostat?

This is a type of "smart" thermostat, which allows for temperature scheduling. It can also be controlled by other systems in your home, such as the security or lighting systems.

