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Passive Solar Design - Everything In Balance

Homes work best when all the design features are in balance. Because passive designed buildings rely on natural heating and cooling, it is important that those living in them are sensitive to seasonal and daily weather changes. People soon become accustomed to adjusting the system for comfort. Indeed, many owners of passive design homes liken living in one to sailing a ship - they become more in tune to weather changes and the surrounding environment. That way they operate their home to work with the weather, instead of against it.

Passive systems can be adjusted in many ways to produce the most comfortable temperatures. Window coverings can be positioned to vary the amount of heat gained or lost. During the summer, door and windows can be opened in the evening to cool the building quickly when outside temperatures drop below the interior temperature. Ceiling fans and whole house fans help circulate air.

Speaking of air - it's important to provide fresh air to your home without jeopardizing its thermal integrity. A well-designed and constructed building requires, at minimum, replacing two-thirds of the home's total air volume every hour. Controlled openings, such as operable windows and exterior wall fans or whole house fans, are a better solution than leaks around doors and windows.

A home that properly incorporates passive design features requires a smaller back-up heating and cooling system. You can correctly size your home's system for your day-to-day needs by taking into account the contribution of solar energy, allowing for the benefits of cooling breezes, and by properly shading to control the heating and cooling load. Don't be tempted to oversize! Operating a heating and cooling system based solely on square footage is expensive and wasteful.

James Kachadorian, author of *The Passive Solar House*, sums it up, "A passive solar home, properly designed, sited, and built, will make life a lot easier by working for you, day in and day out, instead of requiring you to constantly be working for it."

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