

Green Building Design – How to Incorporate Daylighting

Let the light shine in! It's a great way to protect the environment, reduce utility bills, and lighten and brighten your living environment by maximizing light and heat from the sun!

Daylighting is the practice of designing a building structure to use as much sunlight for illumination as possible. Natural light is the best light possible, as it makes minds and bodies healthier; helps to relieve seasonal depression, and requires no burning of fossil fuels for energy consumption.

Most homes are not built to use sunlight efficiently despite all of the known benefits of natural light. Traditional design has resulted in homes that are too cold and dark in winter and too bright and warm in summer. We've had to compensate for the lack of daylighting by relying on heating and air conditioning as well as electric lights, all of which increase our carbon footprint and consume energy paid for in higher utility bills.

Passive solar design uses the sun's natural light to regulate temperatures in a home, helping to keep it warmer in cold weather and cooler in hot weather. The best part is that it requires no mechanical systems or extra energy. Passive solar design methods to incorporate daylighting have become much more efficient and advanced in recent years than more awkward earlier versions.

If your home is already built, it's not too late to utilize daylighting. By strategically planting deciduous trees to shade your home in summer and allow more light in winter, you can get better utilization of natural light. Trellises with vines can be used the same way. Another helpful tool is the installation of a retractable awning or interior blinds. Although these are not completely efficient, any daylighting efforts make a difference.

When passive solar design is planned for new construction, it should be effective for every season. Examples of daylighting design techniques include having most windows placed on the home's south side, as well as including an overhang to shade excessive sun in the summer.

Window placement, size, and orientation are important no matter where your home is located. Efficiency can be lost just by using too many or too few windows or by putting them in the wrong place. The right window planning can help to keep a home at a comfortable temperature with an optimal amount of natural light all year round. There are many options to compliment any décor and work in almost any climate. Strategic planning of window placement can even prevent overheating and cut down on glare.

Thermal mass is also used for heating and cooling in passive solar design. Thermal mass materials can store heat or cold and distribute it when needed due to temperature fluctuations. Thermal mass can be built into partition walls, ceilings, and masonry fireplaces.

Darker homes can improve light exposure by using solar tubes or skylights. The right skylight can even keep excess heat from building up or escaping and prevent leaks. For commercial buildings, solar lighting can channel sunlight into the structure through optical fibers.

Daylighting is a principal element in passive solar design. Whether through window placement planning, thermal mass or solar lighting, any method of incorporating more natural light into your built environment is better for the planet, your health, and comfortable green living.