

What is the scientific basis for passive solar building design?

The scientific basis for passive solar building design has been developed from a combination of climatology, thermodynamics, particularly heat transfer, and human thermal comfort. Specific attention is directed to the site and location of the dwelling, the prevailing climate, design and construction, solar orientation, placement of glazing...

What is passive solar design?

Passive solar design refers to the use of the sun's energy for the heating and cooling of living spaces. In this approach, the building itself or some element of it takes advantage of natural energy characteristics in materials and air created by exposure to the sun.

What is the difference between a passive solar building and a conventional building?

The difference between a passive solar building and a conventional building is its design, and the key is designing a passive solar building to take the best advantage of the local climate. Elements of design include window location and glazing type, insulation, air sealing, thermal mass, shading, and sometimes, auxiliary heat.

What are the main aims & objectives of solar passive Architecture?

The main aims & objectives of this complex are to demonstrate the Solar Passive Architecture concepts, to educate architects, engineers & builders for replication of concepts, and to generate awareness among general public, teachers, students of school and colleges.

What are the elements of a passive solar building?

Every passive solar building includes five distinct elements: the aperture, absorber, thermal mass, the distribution and the control, as shown in Figure 1. This is the large glass (window) area through which sunlight enters the building.

What are active and passive solar technologies?

Technologies that use a significant amount of conventional energy to power pumps or fans are active solar technologies. Some passive systems use a small amount of conventional energy to control dampers, shutters, night insulation, and other devices that enhance solar energy collection, storage, use, and reduce undesirable heat transfer.

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Passive solar technologies include direct and indirect solar gain for space heating, solar water heating systems based on the thermo-siphon, use of thermal mass and phase-change materials for slowing indoor air temperature swings, solar cookers, the solar chimney for enhancing natural ventilation, and earth sheltering.

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