

Solar Passive- A cynosure for sustainable design

"Civilization is a limitless multiplication of unnecessary necessities."- Mark Twain.

Why is it, that we are attracted more by complexity than simplicity? It's probably safe to say that every man is attracted to the latest new technology more out of sheer curiosity and awe rather than the actual need or utility. Technological advancements in building mechanical systems have led to quick and easy ways of attaining comfortable indoor environments. But these come not only with capital costs but also huge environmental costs. Somewhere we leave aside our common sense and forget one of our oldest legacies- simple, clean, low cost and long term "solar passive architectural design"

Solar passive architecture is simply, the designing of architectural spaces based on the principles of heat gain and transfer due to incident solar energy. Blending architectural principles and solar energy helps to fashion spaces which remain warm in winter and cool in summer leading to a year-round comfortable indoor environment with least reliance on mechanical equipment. Yes, it may be archaic but it still works and works very well.

Unfortunately it has not had many followers in the recent past maybe because it never became an architectural "ism" like expressionism, classicism, and functionalism. It was always taken for granted and was meant to be an integral part of sensible design. Probably another reason that solar passive design is missing from most modern designs is that there is no "one size fits all" for solar passive. In this age of "productization" and standardization for the ease of manufacturing and speedy construction there is never enough time for a personalized, site specific design. Passive design demands that site and topography; building location and orientation; building shape (depth, length, and volume); and space use all be looked afresh each time.

At Milestone Ecofirst our aim is to integrate solar passive design at the core of our sustainable design approach which helps in more contextual and efficient design solutions. Site orientation studies, daylighting hours analysis and detailed shade and shadow analysis are some of the tools that are adopted by us to deliver passive solutions for building design. These studies also lead to the design of active solutions for use of solar power as a renewable energy source.

Experts believe that solar passive design can alleviate the building industry from approximately 30% of operational energy consumption. Integration of passive with active solar design can lower our dependence on fossil fuels even further while ensuring healthy and comfortable spaces.

Contributed by Mansi Agarwal, Senior Manager & LEED AP at Milestone Ecofirst Advisory Services (I) Pvt. Ltd. She has a MS in Sustainable Design, Carnegie Mellon University, Pittsburgh, USA.