

# Find right balance to install glazed windows

Glass is damned for its property to allow heat but loved for its transparency. Its usage depends on the where it fits in



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**The beauty of this material is its transparency. So let's continue glazing – because it's beautiful, and with smart usage and new material development, we can definitely do so sustainably!**

**T**o glaze or not to glaze? This is not about donuts! Glass will remain the go-to item in any architects' material palette, yet its usage comes under harsh criticism. It is not safe, it lets in too much heat, it is hard to maintain and it is not sustainable!

We yearn to look outside our homes, to see nature beyond our walls and be connected to the environment. Glass permits visual connect, but it also transmits heat inside. The window wall ratio (WWR) measures wall vs window areas to balance the aesthetics with internal heat gain. It is an important measure while designing facades.

My sense of good architecture is defined by the use of glazing and openings – both as windows and as walls. However it has to be applied in such a way that it does not render the project 'unsustainable'. If the heat load on the air conditioning system crosses the acceptable norms of power con-



Glazed walls add to the beauty of the facade

sumption in a 'standard building', then the extent of glass in the facade gets flagged. In general, using glass on the side where we get

maximum heat gain through solar radiation is a bad idea — meaning, avoid the material on the SW to enhance passive architectural

characteristics. Using glass on the north and partially on the eastern side is not too much of a problem in the tropics. If design entails

the inclusion of glass in the south or western façades, extra care to shade sunlight is necessary to minimize direct solar radiation or resort to high performance glass.

Insulated glazing (IG), more commonly known as double glazing or triple glazing is double or triple glass window panes separated by a vacuum or gas filled space to reduce sound and heat transfer across a part of the building envelope. Low-e glass has a microscopically thin, transparent coating — thinner than a human hair — that reflects long-wave infrared energy (or heat).

Permanent patterns of ceramic frits are silk-screened on the glass incorporates any design which affords privacy or increases energy efficiency/reduces solar heat gain. A particularly good way to make glass highly visible to birds, while remaining transparent to the human eye, is to incorporate ultraviolet (UV)-reflective patterns into the glass. Thousands of birds crash into skyscrapers in the US alone as plain glass is in-

distinguishable.

Glass has so far been damned for its property to allow heat but loved for its transparency and malleability. Architectural usage had to balance the visual transparency against heat gain. But in August 2014, researchers at Michigan State University created a fully transparent solar concentrator, which could turn any window or sheet of glass into a photovoltaic solar cell.

A spectrum of sunlight is converted into electrical energy but the visible spectrum passes through. In other words glass facades can soon become energy generators while retaining its transparent property too!

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*(The writer is an architect, urban designer, dancer and chief designer at Shilpa Architects)*