Green Despite Glass



Asahi India Glass Limited







Institutional





Residential

Sustainable Habitat

Site selection and planning Water efficiency Energy efficiency Material and resources Indoor environment quality



Amenities

What Matters



Changing trends



Claims without substance dominate the architectural press

Fashion is the driving force :transparent architecture and all glass buildings , not environmentalist

Performance rationalizations are given after the fact, such as environmental architecture, improved performance, sustainability, green building rating, or occupant amenity.

Problem: if fashion is dictating this all glass trend, then motivation to high performance is low

In India there are two things which are the drivers for trends in glass building-

- aesthetics
- rating system

which creates a **Brand value** for the building.







Selection process & appropriateness

- Effective Aperture Approach-Keep EA between 0.2 and 0.3. Larger windows will permit more light hence low-VLT glazing will do.
- Bigger windows require better glazing.
- Choose a spectral selective glazing.
- Choose products with least SHGC and U value and optimum VLT.
- Vary glazing selection by façade



Clichéd assumptions

Glass with selectivity of 2 is considered best.

Reality far removed from Assumptions



Visual Light Transmission



Location : Kochi Typology: Residential

Clichéd assumptions

High VLT glasses are preferred for Residential Buildings

Reality

For Residential spaces, VLT will not matter due to following reasons

- Complex of building Mutually shaded
- Shading devices or balconies are part of fenestration.



Optimum Orientation

Location : Hyderabad Typology: Commercial 24 x 7



Clichéd assumptions

Optimum orientation matters .



Reality

For Commercial spaces, the buildings are completely on artificial ventilation.

Due to site limitations, the buildings was less optimally oriented, but right choice of glazing with partial shading helps to save energy.



Double Skin Facade

Location : Mumbai Typology: Institutional

Clichéd assumptions

High performance glasses are the best choice for energy efficiency in buildings.

Reality

The non-solar heat gets trapped between the perforated aluminium façade and inside skin when using a low-E glass.

Non-solar heat gain is the reason for increase in heat gains.





Double skin facade – Combination of perforated aluminum sheet & glazing

Inclined Facades

Location : Mumbai Typology: Commercial



Clichéd assumptions

High VLT glasses cut downs your lighting loads.

Reality

Both the glasses performed identically in terms of achieving the optimal lux levels because façade was inclined. Clear Glass, in fact, caused glare in certain portions of the building.

VLT 78%

VLT 21%



Exceptional Case

Location : Mumbai Typology: Commercial

Clichéd assumptions

Clear glass is not as good as high performance glass in terms of achieving energy efficiency.



Reality

Right orientation reduces the demand for high performance parameters.

A commercial complex at Navi Mumbai with glazing on the Eastern and Southern façade showed that Clear Glass performed as good as "high-performing glasses" and the choice came down to aesthetics.

Innovative techniques

Retrofitting

"ATTOCH" an Ecoglass product that is ideal for energy-saving window renovations.

Facts and figures

- Installation takes only 30 to 60 minutes per window.
- The existing glass continues to be used, and so does not require disposal.

How is it installed?

This product converts an existing windowpane into Ecoglass simply by applying Low-E glass to the inside of the window.





After installation



Before installation

Energy savings by retrofitting



This Innovative technique of Retrofitting helps to reduce air-conditioning energy use by about 30% a year

Smart glasses

Electro-chromic glass



Liquid crystal device



Suspended particle device



Micro Blinds



Application of smart glasses



Skylights



partitions

façade systems



Reducing air infiltration

Going with larger panel sizes reduces air infiltration

Daylight redirection

Using Patterned glasses in façade helps in getting diffused light.

Daylight refraction

Using prismed pattered film on the glass helps in daylight enhancement.



Thank you