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EXTERIOR WALL CLADDING

Options, Solutions & Guidelines

Face to Face
Ar. Tony Joseph
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STAPATI

Applications of BIPV Technology in India
K.R. Harinarayan
CEO & Founder,
U-Solar Clean Energy

Case Study
The 42,
Kolkata
Design & Testing

SHANKHO CHOWDHURY
President, Decoratives Division, CenturyPly

GAURAV SANGHAVI
Co-Founder Principal Architect, Pentaspace Design Studio

Roshan residency at Jaipur - cladding from Greenlam

use and calls for replacement. The replacement does not assure colour matching on all occasions.

2. Terracotta clay tile dry cladding is made with clay tile and the aluminium substructure in isolation or in combination with glass. This is a more expensive option than ACP and the colour options are limited. The material is brittle and carries the perils of being so.

On the other hand, metal cladding like zinc & copper is quite expensive than any other material available. However, aesthetically it looks good and different types of surface finish can be achieved with limited colour options, adds Joseph.

Shankho Chowdhury, President, Decoratives Division, CenturyPly notes that digitally printed HPL panels, which can be customised according to the need of the customer, is one of the key trends. With this option, one can simulate any image or impression on the panels which suits the requirement. Different kinds of new and pioneering installations like under-cut or hinged applications are also in trend. The other key trends are customised perforations with a background LED lighting scheme, and non-linear, sloped & tilted installations, adds Chowdhury.

Gaurav Sanghavi (Co- Founder) Pentaspace Design Studio, spoke about the 4 key trends:

1. Perforated, parametric designs are the trends in façade panelling. Taking into account sun paths, wind directions, shading coefficients, etc.; Façades are screens, which can be shaped with multiple algorithms to make it more sustainable and efficient. Vibrant colours are the new norms of expressive façades.
2. Fibre-reinforced materials exhibit high thermal insulation and corrosion resistance, making them cutting edge over the traditional materials. These properties of the fibre-reinforced polymer are gaining huge traction in the façade material market.
3. Vegetation - Vegetated walls, landscape walls, and vertical gardens are few of the green façade techniques that are gaining huge prominence in the façades market.
4. Solar cells - Photovoltaic cells or solar cells are quite prominent in building energy-efficient building façade.

Cost and scalability are the two primary factors of new façade technology to be successful and accepted commercially.

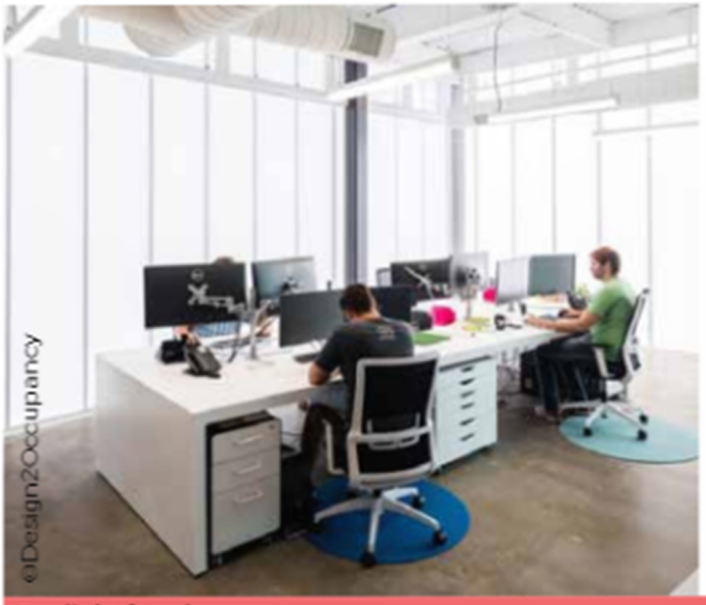
USE OF CLADDING TECHNOLOGIES & MATERIALS TO REGULATE DAYLIGHT & VENTILATION

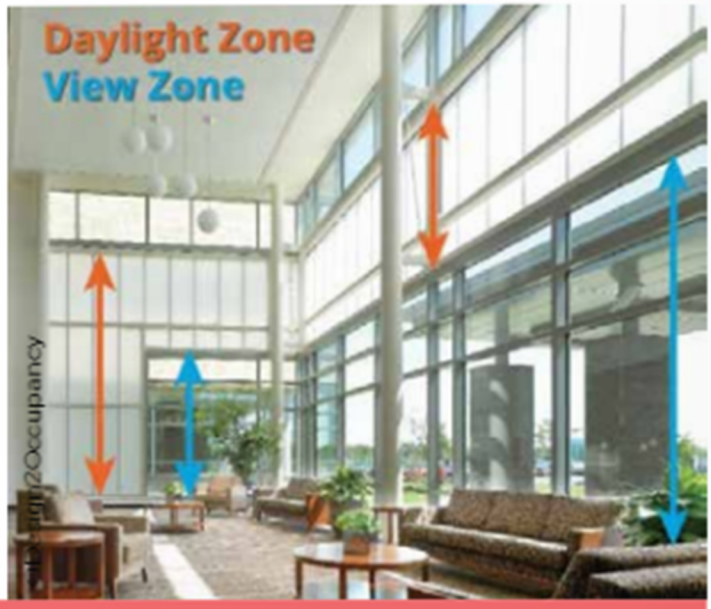
Exterior façades allow natural daylight indoors. The daylight needs to be controlled so that it is useful, without creating glare or other unwanted outcomes for occupants, notes Ar. Lal. Smooth, even, glare-controlled daylight passing through translucent glazing provides numerous benefits to people, from energy conservation to reduced reliance on electric lights.

Only if the cladding is the core or the envelope, it will have an impact on daylight, observes Ar. Gandhi. If the cladding is a transparent material, the visual light transmittance (VLT) of the glass will impact the daylight or the privacy. If the building envelope material is porous, it will impact the ventilation. Automation, motorised or movable or interchangeable envelopes can regulate the daylight, ventilation and privacy parameters, he adds.

The façades also contribute towards enhancing a building's thermal performance, says Ar. Lal. Firstly, the ventilated façade panels provide a (small) benefit to the U-value of the wall behind due to the fact that they shield the building from direct wind and sun. Secondly, the large panel format and the resulting shielding effect help to reduce the number of thermal bridges - anything that goes through the wall's outer insulation layer - thus, maximising the performance of the insulation.

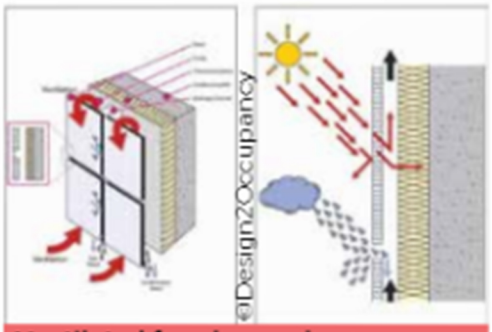
Ventilated cladding system creates a gap in between the wall and cladding product lining, providing a layer of





Daylight façade

HARSH POTE
Co-Founder Principal Architect - Pentaspace Design Studio



Ventilated façade panels

Terracotta façade system

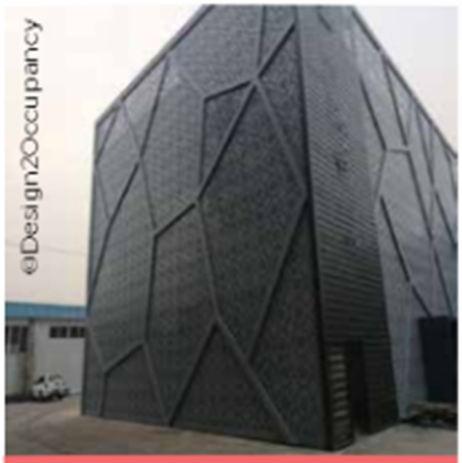
air cushion that acts as a thermal barrier by regulating the sunlight, says Chowdhury, also making the building more energy-efficient.

Terracotta façade System is a kind of new curtain wall system, adorned with terracotta panels as a decorative surface and functions based on the main screen principle. It is a perfect and smart combination of traditional materials and modern architecture, featuring large format panels, functionality and a complete provide privacy.

According to **Ar. Harsh Pote, Co-Founder, Pentaspace Design Studio**, parametric designs are now evolving in 3-dimensions and this gives us the ability to regulate light and ventilation in said space. According to him, the façade is not skin anymore. It is a membrane, which reacts with the outside algorithms, which then translates into design and creates a comfortable interior space.

MOST PREFERRED CLADDING MATERIAL

Demand for the cladding solutions market can be credited to the high growth of the construction industry across the globe. Demand for fire resistance, thermal resistance, and water resistance, soundproof cladding systems are growing in the market. Innovative, eco-friendly cladding materials are preferred in the market as a consumer is becoming more environmentally concerned, observes Ar. Lal. For more than a decade, glass, stone, wood, metal/ACP has always been the traditional choice of material for exterior cladding. Ar. Goel and Ar. Gandhi too agrees with the dominance of the said materials. The reason for choosing these materials is their cost, availability, easy installation and variety of choices in terms of colour and texture to customise a façade. Ar. Gandhi adds that these materials are preferred primarily on account of speed of construction, ease of availability of manpower labour, and maintenance. More importantly, it is the "westernisation" leading to this domination, he



External wall cladding panels as decorative metal screen wall dividers

Protecting buildings with metal cladding systems

adds. According to Ar. Pote, glass, aluminium, zinc, copper, exposed concrete panels, sandwich panels, etc. are most preferred since they are cost-effective.

In the case of commercial buildings, primarily ACP, clay tile, glass, HPL cladding or a mix and match of these materials are being widely used, adds Joseph. For residential purposes - stone, HPL cladding, ceramic, fibre cement boards, Korean and wood amongst others are usually preferred.

Nowadays architects tend to utilise contemporary moderate material to make a straightforward, uncluttered façade, notes Ar. Lal. With regard to materials, metal cladding offers excellent options. He too agrees that zinc titanium, aluminium, claddings materials are dominating the industries. Apart from standard systems, these offer customised façade options as well. Further, the Zinc-Titanium alloy is a material that can be folded, bent, curved and profiled into customised panels to meet the design intent of the architect.

Days were there when exterior grade HPL was used to be confined within a certain kind of applications, says Chowdhury from CenturyPly. But now more

Why HPL for Cladding?

ACP cladding

- Degradation of the core material (recycled LDPE*) and ultimate failure of the panel
- Delamination
- Paint finish is not durable, comes away from the aluminium substrate
- ACP Product is highly susceptible to dents and torn off corners
- Contributes in of ozone layer depletion & maximum in global warming
- Shade variation is a common phenomenon
- Colour gets faded easily, especially in oceanic climates
- The sealant fluxes out of its place and gives a patchy look on the panels

Stone & ceramic tiles cladding

- Stones are expensive
- Labour-intensive installation process
- Heavy & fragile
- Tiles are prone to crack and drop away
- Prone to algae and fungal attack

HPL Cladding

- No distortion even in extreme climatic
- Highly UV resistant with almost no shade fading even after years of installation
- Resistant to extreme weather conditions
- Suitable for installation as a ventilated façade system
- Colour stable – optimal lightfastness
- Self-supporting
- Impact-resistant – wind and other elements
- Scratch resistant
- Fire retardant
- Easy & rapid installation
- Low-cost maintenance
- Heat insulation and wall protection – protects buildings from excess temperature in summer to excess cold in winter & aiding removal of heat and moisture from rain or condensation
- Lightweight compared to any rocky product
- Suitable for all exterior cladding applications

(Shankho Chowdhury, President, Decoratives Division, CenturyPly)