

# FENESTRATION FOR VILLAS

In contemporary villa architecture, the use of new-age materials in windows and fenestration is driven by the need for durability, sustainability, and sleek design.

Bindu Gopal Rao



PHOTO COURTESY: ALUK INDIA



Windows and fenestration are integral to the aesthetic, emotional, and practical aspects of a space, shaping how it is experienced and enjoyed. Photo courtesy: Oria Fenestrations



Large-format windows like floor-to-ceiling sliders are becoming the hallmark of contemporary villas, offering unobstructed views and an abundance of natural light.

Fenestration is a crucial element of any new age architecture, shaping both the interior atmosphere and the exterior aesthetics. Homeowners and architects are favouring larger, uninterrupted glass panes to blur the boundaries between indoor and outdoor spaces. This not only maximises natural light but also creates a seamless connection with nature, offering panoramic views. Clean lines and minimal framing (example, frameless glass systems) are favoured to create a sleek, modern look that emphasises views rather than the window structure. Most of the architects today are looking at minimalistic flushed window systems in which all the frames of the windows are concealed and flushed with the interiors of the houses. “There’s a growing preference for oversized windows that maximise natural light and create seamless connections between indoor and outdoor spaces. Clients have been looking out for 6 metre-7 metre openings of a single panel of glass which can be motorised and connected to the home automation of the house so the windows can be operated with remote systems. To enhance comfort and control light, integrated shading devices like louvres, external screens, or operable shading systems are being designed alongside windows. Currently using blinds in between the DGU glasses and having larger size mosquito meshes and blinds are the common requirements in every project,” says Amit Jawahar Hemrajani, Director, ORIA Fenestrations.



PHOTO COURTESY: GEETA ALUMINIUM COMPANY

Innovations in aluminium fenestration are transforming modern architecture, with sleek, minimalistic frames, vertical sliding windows, and other contemporary designs that enhance both functionality and visual appeal.

**THE RIGHT CHOICE**

Architects consider factors such as max size available, section thickness (sleek), functionality, aesthetics and design style, thermal break, high DB reduction, security and privacy, higher wind load capacity, cost and budget, air/water tightness to avoid leakages, and choice of materials with focus on sustainability when choosing fenestration. Amit explains, "We have executed a facade system for a high-end residence which is completely bullet proof where the client's safety had to be taken at utmost priority. In one of the projects, the client wanted the glass to change its opacity depending on the timings of the day to make it comfortable for the people inside. For a luxurious penthouse owned by a top industrialist, we have designed a system for accommodating a single glass panel of 8.5 metre in width and 3.5 metre height, with a weight of 2,500 Kgs. It is a one-of-a-kind glass to be ever manufactured and executed globally. It was a challenging project for ORIA as we had to use 74 mm thick glasses."

**MATERIAL MIX**

Aluminium is the material of choice in contemporary villa design due to its durability, lightweight nature, and the ability to create ultra-slim frames for larger



Amit Jawahar Hemrajani, Director, ORIA Fenestrations.

glass panes. "The glazing itself plays a critical role — double or triple-glazed windows with low-E coatings, laminated glass for safety, and acoustic insulation are highly preferred in high-end villas. Good quality glazing also helps reduce heat gain, cutting down on energy consumption while maintaining indoor comfort. Furthermore, we see greater interest in



PHOTO COURTESY: ALUK INDIA



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High-performance glazing options, such as triple glazing and low-E coatings, are being used to improve thermal performance and reduce energy consumption.



The role of glazing has expanded from merely providing views and ventilation to actively contributing to energy conservation through innovations in glass technology.



Subhendu Ganguly, Managing Director, AluK India.

using composite materials and eco-friendly products that align with green building practices,” says Subhendu Ganguly, Managing Director, AluK India.

**SUSTAINABLE MATTERS**

There is a growing interest in using sustainable and durable materials, like aluminium which are eco-



PHOTO COURTESY: ALUK INDIA

Aluminum is the material of choice in contemporary villa design due to its durability, lightweight nature, and the ability to create ultra-slim frames for larger glass panes.



Kushal Bajaj, Executive Director, Geeta Aluminium Company .

friendly. These materials are often preferred over traditional wood or uPVC due to their longevity and recyclability. In villa architecture, there is a clear trend toward expansive glazing, minimalistic frames, and seamless transitions between indoor and outdoor spaces. Large-format windows like floor-to-ceiling sliders are becoming the hallmark of contemporary villas, offering unobstructed views and an abundance of natural light. Minimalistic designs, with slim sightlines, are becoming popular, emphasising clean, uninterrupted aesthetics. “Moreover, with growing awareness of climate change, homeowners are seeking fenestration systems that enhance energy efficiency and reduce the carbon footprint of their homes. Smart windows with integrated shading systems and dynamic glass that adjusts the tint based on sunlight are examples of cutting-edge solutions being adopted in luxury villas. Importantly, people are now looking for customisable options to suit their unique lifestyle, combining aesthetics with functionality and sustainability,” says Subhendu. Minimalistic designs with slim profiles are in demand, not just for their aesthetic appeal but for the modern, open feel they provide to spaces.



PHOTO COURTESY: GEETA ALUMINIUM COMPANY

A major advantage of aluminum windows with high-performance thermal barriers is their longevity, requiring little to no maintenance over their lifespan.

**VILLA VIBES**

The Indian fenestration industry is evolving rapidly, driven by a new generation of homeowners who prioritise aesthetics, sustainability, and energy efficiency. For contemporary villas, windows and doors now serve not only as functional elements but also as integral parts of the architectural experience. “One notable trend is the increasing use of large-span glass with slim profiles, which reduces the visual divide between the indoors and outdoors. High-performance glass, including double-glazed units (DGUs) with lamination, is also gaining popularity for its ability to regulate thermal and sound conditions while maximising natural light. Innovations in aluminium fenestration are transforming modern architecture, with sleek, minimalistic frames, vertical

sliding windows, and other contemporary designs that enhance both functionality and visual appeal. Aluminium’s endless recyclability, durability, and resistance to harsh weather make it a preferred material for sustainable construction,” says Kushal Bajaj, Executive Director, Geeta Aluminium Company Pvt Ltd. In terms of security, the integration of multi-point locking systems and tamper-proof hardware has become essential, reflecting an increased emphasis on protection in high-end villas.

**DESIGN DETAIL**

A strategically placed opening or window can increase natural ventilation and day lighting, reduce the need for indoor lighting and lower the need for mechanical systems for cooling. Windows and fenestration play a pivotal role in defining the architectural ethos of a space, both functionally and aesthetically. Beyond their technical performance, windows serve as a bridge between the indoors and outdoors, creating visual continuity while also providing comfort, security, and an enhanced living experience. “Careful consideration of the size, style, and placement of windows is essential, as they directly affect a building’s energy performance. High-performance fenestration can significantly reduce energy consumption by lowering lighting and HVAC loads, especially in non-residential and high-rise residential buildings. The choice of glazing and orientation of windows can dramatically impact the overall thermal efficiency and sustainability of a structure,” says Kushal. Windows and doors also contribute to the spatial dynamics and interior ambiance of a home. Whether they represent 15 to 20 per cent of the wall area or more, their design can shape how a space is experienced. Sleek, minimal profiles are now favoured in contemporary design, as they align with modern architectural languages and styles. Ultimately, window design is key to creating spaces that balance form, function, and emotional connection. **AS&**



PHOTO COURTESY: GEETA ALUMINIUM COMPANY

The advent of innovative window designs has expanded the range of operating mechanisms available, from traditional operable windows to tilt-and-turn, sliding, folding, and motorized systems.