

MODULAR FUTURES

Modular walls are assembled out of prefabricated panels and elements designed to be snapped, clipped, or screwed together on-site.

By Bindu Gopal Rao



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Sudhir Thorat, Managing Director of APICES Studio



Punam Kalra, Interior Designer and Creative Director



Manoj Lohia, Director, Merino Industries



Modular walls are changing the way we approach sustainability by using eco-friendly raw materials and minimising waste while still falling within the budget.

MATERIAL MATTERS

Core materials for modular walls differ: gypsum or mineral wool provides stiffness and fire resistance, MDF or lightweight plywood provides a millwork-friendly surface, and metal or composite frames ensure structural rigidity. “The exterior surface may be high-pressure laminate (HPL), veneer, painted gypsum board, or other decorative panels. Gaskets or seals are typically used to attain acoustic performance and moisture resistance for the system. Since modules are made off-site, tolerances are always very tight, making for the exact fit. They are compatible with electrical, data, and lighting channels, for a clean plug-and-play installation with minimal disruption to the site,” says Sudhir Thorat, Managing Director of APICES Studio Pvt Ltd.

Contemporary materials which are being used in modular walls emphasise performance, sustainability, and design. Composites and foams

of the high-performance type minimise mass and still offer structural and acoustic functionality. For an eco-friendly choice, there are engineered woods and bamboo, or you can go for panels with recycled content. Transparent or translucent polycarbonate and glass-infused laminates enable light transmission and visual connection between spaces. “For fire-rated insulation, one could go for aerated concrete cores, mineral wool cores and wraps that breathe. The integration of sensors within smart membranes can easily monitor humidity, temperature or even vibration. Hygiene/durability challenges are solved with recycled metals, nano-textured laminates, and antimicrobial coatings. These innovations increase design flexibility while achieving modern building energy codes and LEED- or a WELL-type certification,” adds Sudhir.

INSTALL RIGHT

The installation has, in general, three stages, including preparation of the site, assembly of the panels and installation finishing. Wall modules with alignment clips, interlocking edges and service channels are prefabricated off-site and



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transported to the site. Subframes are pinned to the floor, ceiling, and existing structure with plumb and level checks. Panels snap or screw into the subframe, with gasket seals for sound and moisture control. Dedicated wall channels are used for running electrical, data and lighting. Final stages involve doors, trim, and other surface treatments. A supervisor organises trades to ensure minimum downtime during these changes as QA checks tolerances, alignments, and performance specs. "Modular walls are made of prefabricated modules, with interlocking panels and frames that make them quick and easy to install on site. Their practical assembly makes them adapt and evolve with home layouts, bringing several permutations and combinations in the spatial configurations. They can also be manufactured efficiently, using recycled or low-impact materials while still offering an aesthetic edge with their selections in colours and finishes," says Punam Kalra, Interior Designer and Creative Director of I'm the Centre for Applied Arts.

LIGHT INTEGRATION

There are a few different approaches that can be taken to keep lighting clean and functional while still maximising its potential. Wall cores can also be used to house recessed linear LED troughs or panels that are used to provide illumination; drivers and cabling can be concealed within the cores. Manoj Lohia, Director, Merino Industries Ltd, says, "Modern modular systems allow designers to seamlessly integrate lighting. Recessed strips, backlit panels, or accent fixtures can be embedded during installation, with concealed wiring enhancing the clean look. Large-format finishes like the Grande Collection complement integrated lighting particularly well, as their scale minimises joints and creates smooth, reflective surfaces that amplify the design effect."



A cordless drill is used to install a modular house panel on a busy construction site, ensuring precision and quality.

DOING THE MATHS

The modular wall system has a wide price range depending on the material choices, customisation requests and more. While the basic laminate-covered modules start as low as ₹65 per sq ft, they can go as high as ₹700 and ₹1,100 per sq ft with premium finishes. Cost depends on panel material, core, and finish, as well as panel performance in terms of acoustics, fire rating, and moisture resistance. A typical estimate includes panels, framing, fasteners, and labour for installation. "The cost varies with material choice, finishes, and customisation. Using marine board as a substrate may be more cost-effective compared to standard engineered panels while ensuring longevity, especially in wet or humid

zones, reducing lifecycle costs. Similarly, Grande laminates are positioned as a premium surface finish, competitively priced within the premium segment, yet distinguished by their superior aesthetics and long-term durability that minimises the need for frequent refurbishments," says Manoj.

ADORNING WALLS

Slats or screen infills are commonly installed as proprietary inserts or as modular infill panels that simply clip into specific wall frame cavities or rails. Vertical or horizontal slats are used in different thicknesses and materials (wood, metal, or composite) in the system design. Infills are either permanent or movable and let you redress aesthetics while largely skipping the demolition phase. Solutions range from a clean surface secured by hidden fasteners to visible profile rails that can be used as an impressive design motif. Carefully chosen infill densities and gap patterns maintain enclosure ratings without compromising acoustic performance," says Sudhir. Replacing infill panels is usually a short procedure and means you can change the facade more often with little or no downtime.

MAKING ADDITIONS

Modular wall systems are made to be scalable and flexible. By lengthening the subframe, introducing service channels and resealing connections, more panels or infills can be introduced. "Some modular wall manufacturers include a pre-designed feature or a flexible integration system that helps us change or upgrade at any time. "Although it must be ensured that the existing structural system can withstand the increased load without disturbing its shell," says Punam. Modular walls are essentially low-maintenance given that they have smooth, non-porous and easy-to-clean surfaces, as vinyl or HPL. In the case of integrated systems with electrical and electronic elements like lights and infills, periodic maintenance is called for to ensure a seamless performance and unhindered safety.

MAINTENANCE CUES

Maintenance focuses on surface treatment, fittings, and service accessibility. Surfaces (HPL, laminates, veneers) are cleaned with manufacturer-recommended cleaners and soft cloths, as they can appear embossed and become damaged when over-cleaned. "Seals, gaskets, connection points for looseness or wear, occasional re-tightening of fasteners, and refreshing of coatings, if necessary, etc. Acoustic performance, throughout the life of the project, should be checked again after major reconfiguration of the space or a change of occupants. Lighting and electrical elements need to be tested every year at a minimum, or every six months at best, by certified personnel who replace drivers or failing LEDs during it. These services are a light maintenance plan; they reduce downtime and increase the equipment lifespan, with documented service intervals for the client's records," says Sudhir.

Modular walls are practical both by cost and use, with their flexibility and uncompromised style making them an ideal choice in smart, urban homes. **A&I**