

Passive Cooling:

Reviving Ancient Wisdom for Modern Skyscrapers



Long before air-conditioners became the default response to heat, Indian architecture had already mastered the art of staying cool. From the thick stone walls of Rajasthan's havelis to the intricately carved jaalis of Mughal buildings, passive cooling was not a feature - it was a way of building. Today, as our cities grapple with rising temperatures and energy consumption, this age-old wisdom is finding new relevance, even in the glass-and-steel world of modern skyscrapers.

At its heart, passive cooling is about working with the climate rather than against it. It relies on orientation, shading, materiality, and airflow to maintain comfortable indoor temperatures. Traditional Indian homes used courtyards to

create pressure differentials that encouraged air movement, while shaded verandahs acted as buffers against harsh sunlight. Water bodies, vegetation, and porous materials further helped in cooling the microclimate.

The challenge today is scale. How do these principles translate into high-rise buildings that define contemporary urban skylines? Encouragingly, architects are beginning to reinterpret these strategies in innovative ways. Double-skin facades, for instance, act like modern-day jaalis - filtering sunlight while allowing ventilation. Vertical gardens and sky courts introduce pockets of greenery and shade at multiple levels, breaking the monotony of

sealed glass towers.

Orientation remains a critical factor. Even in dense cities, aligning buildings to minimise heat gain and maximise natural ventilation can make a significant difference. Similarly, the use of high-performance materials with better thermal properties reduces the dependence on mechanical cooling systems. These are not radical ideas; they are thoughtful adaptations of principles that have existed for centuries.

What makes passive cooling particularly relevant today is its impact on both energy consumption and human comfort. Air-conditioning may provide instant relief, but it often creates sealed environments disconnected from the outdoors. Passive strategies, on the other hand, foster a

more gradual, natural comfort - one that feels less artificial and more in tune with the environment.

Of course, integrating these approaches into high-rise construction is not without its challenges. Market expectations, glass-heavy aesthetics, and regulatory frameworks often push developers toward conventional solutions. But as energy costs rise and sustainability becomes a priority, there is a growing case for rethinking these defaults.

In the context of Sustainable Futures: People. Place. Planet., passive cooling offers a compelling bridge between tradition and innovation. It respects place by responding to climate, prioritises people by enhancing comfort, and protects the planet by reducing energy demand.

