

FORGING SUSTAINABILITY WITH GREEN ARCHITECTURE AND STEEL

“By harnessing the power of innovation, sustainability, and collaboration, we can create buildings that not only symbolise progress but also serve as beacons of hope for a more sustainable future.”

The way forward is the convergence of green building practices and steel technology. Once viewed as an improbable ally in sustainability efforts due to its historically substantial carbon footprint, recent innovations challenge conventional wisdom and broaden the scope of possibilities. This symbiotic relationship promises eco-friendly structures and enhanced durability, flexibility, and aesthetic appeal.

Engineers and architects are harnessing steel's inherent strength and malleability to create structures that minimise environmental impact without compromising structural integrity. Advanced steel alloys, coupled with innovative design techniques, are enabling the construction of high-rise buildings that consume fewer resources, produce less waste, and offer superior energy efficiency.

The Sunshine Tower, standing at 180 metres in Mumbai, once held the title of the tallest commercial steel-framed building in India. It showcases the viability of steel in constructing high-rise structures. The tower uses steel beams supported by square, hollow steel columns to demonstrate the effectiveness of steel-based construction. The long spans ensured by steel-based construction facilitate enhanced daylighting features, a critical aspect of sustainability.

Green building rating systems primarily emphasise sustainable site planning, construction management, energy efficiency, occupant well-being, water conservation, waste management, the use of sustainable materials, and sometimes even life cycle cost analysis. In qualitative assessments, whole and composite steel-based construction emerge as preferred materials for incorporating green building features.



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One of the key pillars of sustainable building design is energy efficiency. With its ability to span large distances and support significant loads, Steel facilitates the creation of open, light-filled spaces that reduce the need for artificial lighting and heating. Additionally, steel's thermal conductivity allows for efficient temperature regulation, further enhancing energy performance and reducing operational costs over the lifespan of the building.



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Furthermore, steel's durability makes it ideal for long-lasting structures requiring minimal maintenance. Unlike traditional building materials, steel is resistant to corrosion, pests, and fire, ensuring the longevity of green buildings and reducing the need for frequent repairs or replacements. This durability contributes to the built environment's sustainability and translates into significant cost savings for building owners and developers.

In addition to its environmental and economic benefits, the versatility of steel offers architects unparalleled design freedom. From soaring skyscrapers to intricate facades, steel allows for realising ambitious architectural visions while maintaining sustainable principles. Its inherent strength-to-weight ratio enables the construction of slender, lightweight structures that maximise usable

space and minimise material usage, further reducing environmental impact. One prime example of this is the iconic Biswa Bangla Gate, which marks the face of Newtown in Kolkata. The circular viewing gallery spans 60 meters in diameter, and the structure is upheld by two parabolic arches originating from the four corners of the intersection. The iconic structure is a central figure and is visible from the plane on a clear day when landing in Kolkata. The capacity for design flexibility and the aesthetic allure are key factors driving steel to be the optimal selection for such architectural endeavours as the iconic gate.

