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What is Green Architecture?

Green architecture, also referred to as sustainable architecture, encompasses the concept of designing & constructing buildings with a primary focus on reducing their adverse ecological effects. This approach emphasizes enhancing energy efficiency, conserving resources, and fostering human welfare.

According to data from the United Nations (UN), projections indicate that by 2050, roughly 68% of the world's population will be living in urban regions. These urban areas are expected to account for 78% of total energy consumption and contribute to 60% of greenhouse gas emissions. This highlights the need to prioritize sustainable materials & technologies in construction, essential for creating an environmentally conscious future.

Innovative
Green Building Materials

Rammed Earth

Rammed earth stands as a construction method where a blend of soil, gravel, sand, chalk, and additional components is densely compressed. When this mixture is tightly pressed into wooden forms, it creates walls that are as durable as concrete. Recognized for its sustainability and eco-friendliness, this approach capitalizes on materials found nearby and limited energy usage. It has been employed for decades and boasts a long-lasting nature.

HempCrete

HempCrete is a concrete-like material that is created from the woody inner fibers of a hemp plant. The fibers are bound with lime to create concrete shapes that are durable and lightweight. As the lime binder carbonates and hardens, it binds with the hemp fibers, creating a solid and durable composite material. The curing process can take several weeks to months, during which the material gains strength. It absorbs carbon dioxide during its growth, making it a carbon-negative material.

Innovative
Green Building Materials

Mycelium

Mycelium is a natural building material composed of unicellular organisms. It consists of a network of branching, thread-like structures called hyphae. It can be cultivated on various natural materials, including molds, ground-up straws, or forms. After cultivation, it is air-dried to create bricks that are both strong and lightweight. Mycelium exhibits the ability to withstand extreme temperatures, making it a viable organic substitute for home insulation.

Ferrock

Ferrock is created by blending leftover industrial materials like steel dust and slag, which are byproducts of iron and steel manufacturing. These discarded elements are fused using a blend of naturally occurring minerals and carbon dioxide. Once solidified, Ferrock surpasses the strength of concrete. As it cures and solidifies, it also captures and absorbs carbon dioxide. As a result, when compared to traditional concrete, Ferrock is both carbon-neutral and less CO2-intensive.

Green Buildings
Around the World

Museum of Tomorrow
Rio de Janeiro, Brazil

Designed by Santiago Calatrava, the Museum of Tomorrow garnered the esteemed "Best Innovative Green Building" accolade at the Le Marché International des Professionnels de L'immobilier (MIPIM) Awards, which recognizes visionary sustainability projects since 1991. This institution epitomizes sustainability, primarily using local materials. The features include solar panels that track the sun for energy, a rainwater collection system for reuse, and an innovative air conditioning system using water from Guanabara Bay. The water is carefully purified and returned to the bay through a gentle waterfall.

Every drop of water from washbasins, sinks, and showers is meticulously treated and recycled, alongside the copious amounts used to dehumidify the air, amounting to an impressive 4,000 liters daily. These endeavors result in an estimated annual savings of 9.6 million liters of water and a staggering 2,400 megawatt-hours (MWh) of electricity. Furthermore, the Museum of Tomorrow is the first museum in Brazil to achieve the LEED Gold certification.

Shanghai Tower

Shanghai, China

Designed by the international design firm Gensler, the Shanghai Tower stands tall at 632 meters with 128 stories, located in the Lujiazui finance and trade zone. Throughout its construction, environmental sustainability took precedence. In fact, the developers proudly tout it as the greenest super-tall building. The tower's unique triangular shape, twisting 120 degrees as it ascends, significantly reduces wind loads by up to 24% compared to buildings of similar height, allowing for a mere 75% usage of structural steel compared to traditional structures. Additionally, its rounded corners enhance its resilience against rainstorms.

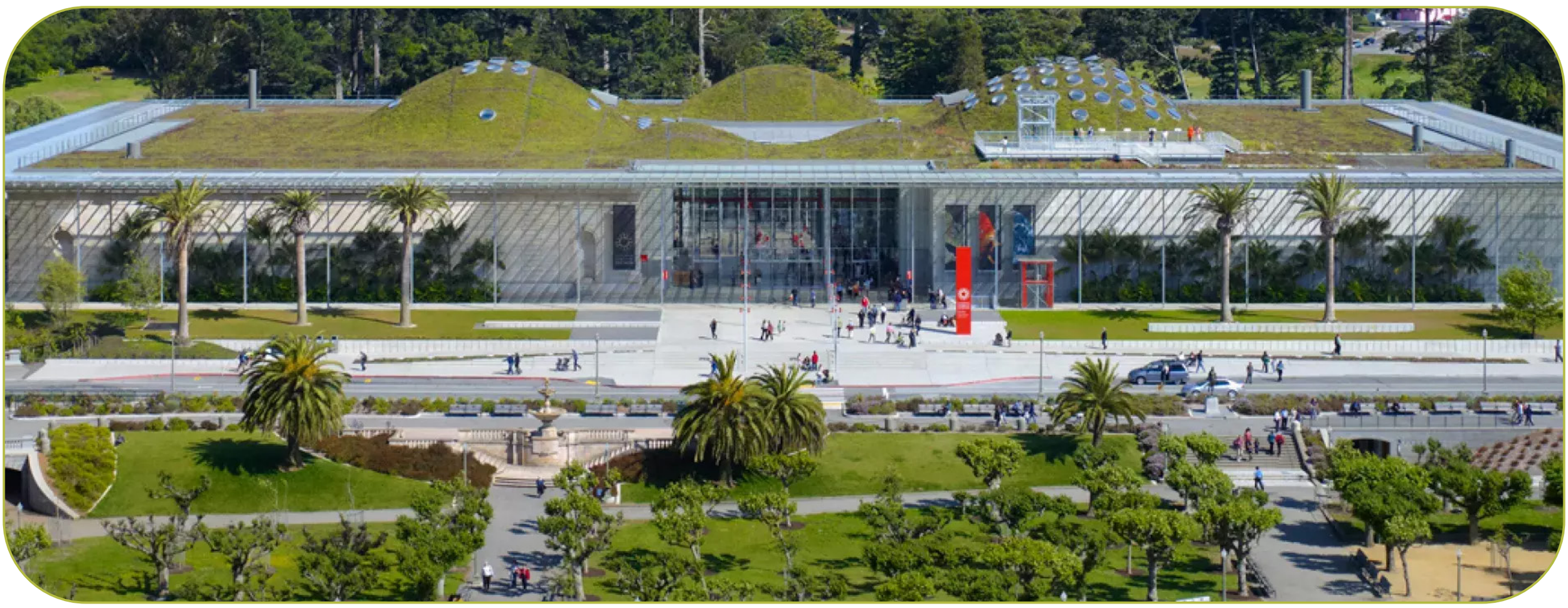
The Shanghai Tower's facade comprises two layers of glass, with the outer layer fully laminated to maximize natural light while minimizing heat, thereby reducing cooling costs. On top of that, over 200 wind turbines grace the tower's roof, capitalizing on the abundant winds at 1,900 feet to generate more than 1 gigawatt-hour of electricity annually.

California Academy of Sciences

San Francisco, USA

Designed by architect Renzo Piano, the California Academy of Sciences stands as both a research institute and a natural history museum, having undergone complete reconstruction in 2008. Its eco-friendly design and operations earned it the highest accolades from the U.S. Green Building Council. The design prioritized water and energy efficiency while minimizing environmental impact by incorporating sustainable materials. The structure incorporates rainwater recycling, photovoltaic panels, natural light, and a vast green roof with native plants.

Within the museum's main public area, an automated ventilation system harnesses the park's natural air currents, expertly regulating indoor temperatures. Around the clock, louvers on all sides of the Academy seamlessly open and close, ushering in fresh air and cooling the building ingeniously. This approach reduces reliance on conventional HVAC systems and chemical coolants, showcasing a commitment to progressive, eco-conscious practices.



World Trade Center

Manama, Bahrain

Designed by Atkins and Architect, Shaun Killa, this remarkable architectural feat comprises twin towers soaring to a height of 240 meters in Manama, Bahrain. Distinguished as a pioneering endeavor, it stands as the globe's inaugural skyscraper ingeniously integrating wind turbines within its structure. Drawing inspiration from classical Arabian wind towers, the design ingeniously taps into the ocean breeze, not only curbing power consumption but also generating its own energy.

The World Trade Center's sustainability is amplified by an array of renewable energy solutions, including district cooling, water recycling, thermal insulation, and reflective pools facilitating evaporative cooling. Additionally, its eco-friendly features encompass low-leakage windows and thermal glass with minimal solar heat absorption. These innovations make the World Trade Center a symbol of sustainable architecture, seamlessly combining modern creativity and environmental awareness.

FINU*Shots*

Green architecture orchestrates design and nature in harmony click here to learn more about its origins.

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We held a meme-making contest and received some hilarious memes from our team. Sangam Mali was our winner!

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