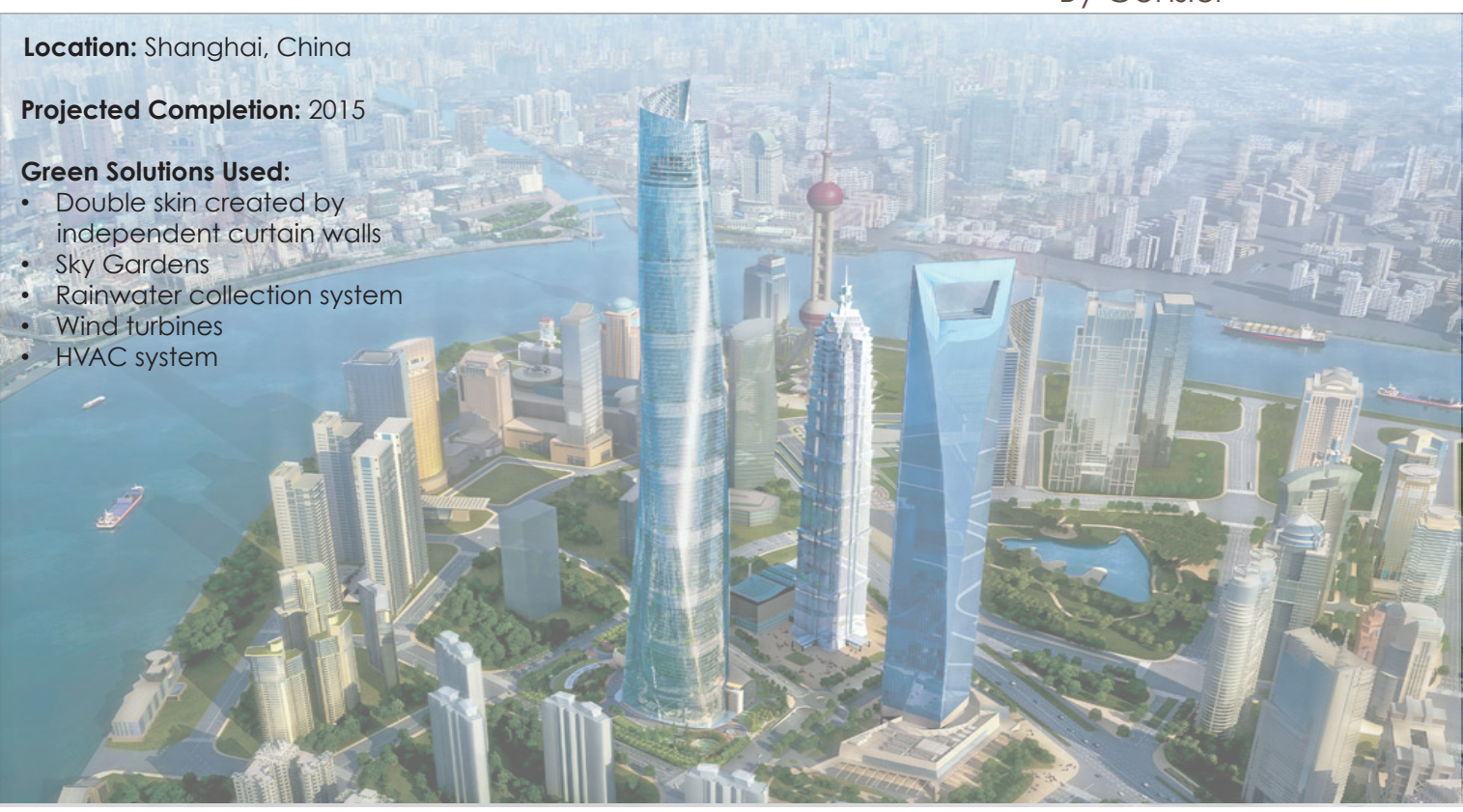
The Shanghai Tower

By Gensler



Location: Shanghai, China

Projected Completion: 2015

Green Solutions Used:

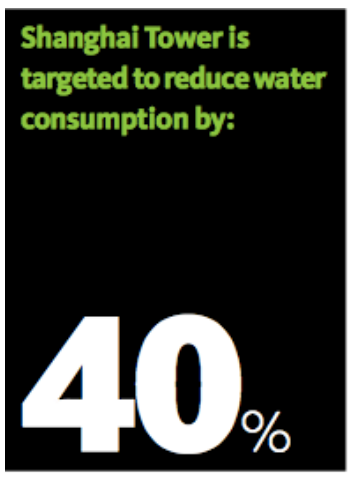
- Double skin created by independent curtain walls
- Sky Gardens
- Rainwater collection system
- Wind turbines
- HVAC system

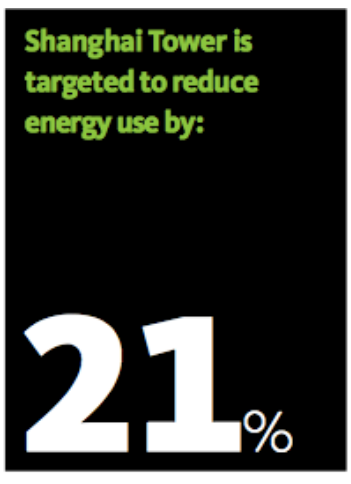
In the design of Shanghai Tower, Gensler has applied the idea of traditional lane houses found in Beijing's hutongs and Shanghai's shikumen, where families live in close-knit dwellings organized around a communal open space. In the case of Shanghai Tower, the neighborhoods are vertical, each with its own "sky garden" to foster interaction and create a sense of community.

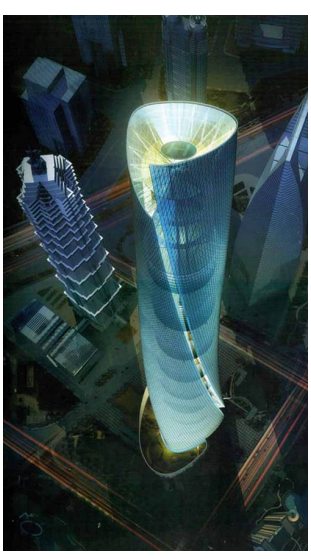
The statistics on the building, which ranks only behind are staggering: 521,000 meters squared of floor space, 106 elevators, a weight of 1,200 metric tons, the ability to hold 30,000 and one-third of the building is dedicated entirely to green space. The park at its base connects architecture to nature, encouraging people's engagement with a variety of outdoor spaces designed for contemplation and simple enjoyment of the landscape. The park will accommodate diverse activities, from large celebrations to intimate conversations. Park paving patterns reflect modern interpreta- tions of Chinese garden details, lending a human scale to the landscape.

Shanghai Tower will be one of the most sustainably-advanced tall buildings in the world. A central aspect of its design is the transparent, second skin that wraps the entire building. The ventilated atriums it encloses conserve energy by modulating the temperature within the void. The space acts as a buffer between inside and outside, warming up the cool outside air in the winter and dissipating heat from the building interior in the summer. Mechanical equipment is spaced strategically throughout each zone of the building to provide optimal flexibility and cost efficiency.

The project also features water treatment plants that recycle grey water and storm water for irrigation and toilet flushing. The system features water treatment plants within the tower, podium, and basement level to reduce pumping energy. Further, the domestic water system utilizes interim water storage tanks within the tower, allowing the water pressure to be maintained by gravity. Low-pressure pumping energy is utilized only to transport the water to each tank in a cascading arrangement. These strategies will result in a 38% source-water consumption reduction.







Additional sustainable strategies include the integration of wind turbines, a spiraling parapet that is integral to a rainwater collection system, and the use of geothermal technology to deliver energy to the building's heating and cooling systems.

The design will perform in the middle range for LEED Indoor Environmental Quality points. The HVAC system features outdoor air delivery monitoring, CO2 monitoring and control, and tobacco smoke control. Operable windows and natural ventilations strategies for the tower were not adopted due to the height of the tower, weather conditions in Shanghai, and the poor quality of the outdoor air.

All pictures are courtesy of Gensler

Owner : Shanghai Tower Construction & Development Co., Ltd.

Local Design Institute: Architectural Design & Research Institute of Tongji University

Architects: Gensler

Mep Engineer: Cosentini Associates

Landscape Architect: SWA

Structural Engineer: Thornton Tomasetti

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