

Shanghai Tower

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The **Shanghai Tower** (Chinese: 上海中心大厦; pinyin: *Shànghǎi Zhōngxīn Dàshà*; Shanghainese: *Zǎnhe Tsonshin Dasa*; literally: "Shanghai Center Tower") is a 632-metre (2,073 ft), 127-storey megatall skyscraper in Lujiazui, Pudong, Shanghai.^[9] As of 2016, it is the world's tallest building, by height to highest usable floor (Level 127, 587.4m) . It also has the world's highest observation deck within a building or structure (Level 121, 561.25 m),^[10] and the world's fastest elevators at a top speed of 20.5 m/s (74 kph).^{[11][12]} It is the world's second-tallest building by height to architectural top (behind Dubai's Burj Khalifa, 828 m) and the world's third-tallest structure (behind Tokyo Skytree, 634m).

Designed by Gensler and owned by the Shanghai city government,^[2] it is the tallest of the world's first triple-adjacent super-tall buildings in Pudong, the other two being the Jin Mao Tower and the Shanghai World Financial Center. Its tiered construction, designed for high energy efficiency, provides nine separate zones divided between office, retail and leisure use.^{[5][7][13]}

Construction work on the tower began in November 2008^[9] and topped out on 3 August 2013. The exterior was completed in summer 2015.^{[8][13]} Although the building was originally scheduled to open to the public in June 2015, as of October 2016, most of the building is still closed. The observation deck was opened on 1 July 2016.

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Shanghai Tower

上海中心大厦

Shànghǎi Zhōngxīn Dàshà



Former names	Shanghai Center
	General information
Status	Complete
Type	Mixed-use
Location	Lujiazui, PuDong, Shanghai, China
Coordinates	31.2355°N 121.501°E﻿ / ﻿﻿ / ﻿
Construction started	29 November 2008
Completed	6 September 2015 (exterior)
Cost	US\$2.4 billion <p>元15.7 billion (yuan)</p>
Owner	Shanghai Tower Construction and Development

Planning and funding

Planning models for the Lujiazui financial district dating back to 1993 show plans for a close group of three supertall skyscrapers.^[14] The first of these, the Jin Mao Tower, was completed in 1999; the adjacent Shanghai World Financial Center (SWFC) opened in 2008.^[15]

The Shanghai Tower is owned by Yeti Construction and Development, a consortium of state-owned development companies which includes Shanghai Chengtou Corp., Shanghai Lujiazui Finance & Trade Zone Development Co. and Shanghai Construction Group.^{[2][6]} Funding for the tower's construction was obtained from shareholders, bank loans and Shanghai's municipal government.^[16] The tower had an estimated construction cost of US\$2.4 billion.^[7]

Design

The Shanghai Tower was designed by the American architectural firm Gensler, with Chinese architect Jun Xia leading the design team.^{[17][18]}

The tower takes the form of nine cylindrical buildings stacked atop each other, totalling 121 floors, all enclosed by the inner layer of the glass façade.^[5] Between that and the outer layer, which twists as it rises, nine indoor zones provide public space for visitors.^{[5][19]} Each of these nine areas has its own atrium, featuring gardens, cafés, restaurants and retail space, and providing 360-degree views of the city.^[20]

Both layers of the façade are transparent, and retail and event spaces are provided at the tower's base.^[5] The transparent façade is a unique design feature, because most buildings have only a single façade using highly reflective glass to lower heat absorption, but the Shanghai Tower's double layer of glass eliminates the need for either layer to be opaqued.^[21] The tower is able to accommodate as many as 16,000 people on a daily basis.^[22]

The Shanghai Tower joins the Jin Mao Tower and SWFC to form the world's first adjacent grouping of three supertall buildings. Its 258-room hotel, located between the 84th and 110th floors, is to be operated by Jin Jiang International Hotels as the Shanghai Tower J-Hotel, and at the time of its completion it will be the highest hotel in the world.^{[3][23]} The tower will also incorporate a museum.^[24] The tower's sub-levels provide parking spaces for 1,800 vehicles.^[3]

Vertical transportation system

The vertical transportation system for Shanghai Tower was designed by an American consultant, Edgett Williams Consulting Group with principal Steve Edgett as primary consultant. Working closely with Gensler's design and technical teams to create a highly efficient core, Edgett created an elevator system in which office floors are served via four sky lobbies each served by double-deck shuttle elevators. Access to the hotel is through a fifth sky lobby at levels 101/102. Each two-level sky lobby serves as a community center for that zone of the building, with such

	Height
Architectural	632 m (2,073 ft)
Tip	632 m (2,073 ft)
Top floor	587.4 m (1,927 ft) (Level 127) ^[1]
Observatory	561.25 m (1,841 ft) (Level 121)
	Technical details
Floor count	127 above ground 5 under ground
Floor area	380,000 m ² (4,090,300 sq ft) above grade 170 m ² (1,800 sq ft) below grade
Lifts/elevators	106
	Design and construction
Architect	Jun Xia (Gensler) TJAD
Engineer	Thornton Tomasetti Cosentini Associates I.DEA Ecological Solutions
Main contractor	Shanghai Construction Group
	References
	^{[2][3][4][5][6][7][8]}

amenities as food and beverage and conference rooms. Local zones are served by single deck elevators throughout the tower, and the Observation Deck at the top of the tower is served by three ultra-high speed shuttle elevators which travel at 1080 mpm, which is the highest speed ever developed for commercial building use. These three shuttle elevators are supplemented by three fireman's elevators which will significantly increase the visitor throughput to the observation deck at peak usage periods. In the event of a fire or other emergency, the building's shuttle elevators are designed to evacuate occupants from specially-designed refuge floors located at regular intervals throughout the height of the tower.

In September 2011, Mitsubishi Electric Corp. announced that it had won a bid to construct the Shanghai Tower's elevator system. Mitsubishi Electric supplied all of the tower's 149 elevators (108 of which are lifts),^[25] including three high-speed models capable of travelling at 1,080 metres (3,540 ft) per minute – the equivalent of 64.8 kilometres (40.3 mi) per hour, or 18 metres/second. At the time of their installation in 2014, they were the world's fastest single-deck elevators (18 metres/second) and double-deck elevators (10 metres/second).^[26] As of 10 May 2016, a Mitsubishi press release noted that one of the three shuttle elevators had been installed to travel 1230 m per minute - the equivalent of 73.8 kilometres per hour (46 mph), the highest speed ever attained by a passenger elevator installed in a functioning building.^[27] The building also broke the record for the world's furthest-travelling single elevator, at 578.5 metres (1,898 ft), surpassing the record held by the Burj Khalifa.^[28] The Shanghai Tower's tuned mass damper, designed to limit swaying at the top of the structure, was the world's largest at the time of its installation.^[29]

Sustainability

The Shanghai Tower incorporates numerous green architecture elements; its owners received certifications from the China Green Building Committee and the U.S. Green Building Council for the building's sustainable design.^{[5][30]} In 2013, a Gensler spokesman described the tower as "the greenest super high-rise building on earth at this point in time".^[7]

The design of the tower's glass facade, which completes a 120° twist as it rises, is intended to reduce wind loads on the building by 24%.^[7] This reduced the amount of construction materials needed; the Shanghai Tower used 25% less structural steel than a conventional design of a similar height.^[21] As a result, the building's constructors saved an estimated US\$58 million in material costs.^[31] Construction practices were also optimised for sustainability. Though the majority of the tower's energy will be provided by conventional power systems, vertical-axis wind turbines located near the top of the tower are capable of generating up to 350,000 kWh of supplementary electricity per year.^[22] The double-layered insulating glass façade was designed to reduce the need for indoor air conditioning, and is composed of an advanced reinforced glass with a high tolerance for shifts in temperature.^[32] In addition, the building's heating and cooling systems use geothermal energy sources.^[33]



View from Shanghai Tower Observation Deck

Floor plans

The following is a breakdown of floor use in the Shanghai Tower:

Floor	purposes
125-127	Concert Hall ^[34] Exhibition Hall Tuned mass damper display ^[35]
122-124	Mechanical
121	Observation Deck
120	Restaurants
118-119	Observation Deck
116-117	mechanical layer
111-115	boutique Floor
110	VIP business center
105-109	J Hotel Presidential Suite, Super Deluxe Room
104	restaurant, spicy hall, VIP room
103	theme restaurants, luxury boutique wine cellar, banquet hall
102	cafeteria
101	J Hotel Sky Lobby / Lounge, Sky Bar
99-100	mechanical layer
86-98	J standard hotel rooms, deluxe rooms
85	spa, fitness center
84	swimming pool, sky lounge, bar, sky gardens
82-83	mechanical layer
70-81	Floor
68-69	sky lobby
66-67	mechanical layer
54-65	Floor
52-53	sky lobby
50-51	mechanical layer
39-49	Floor
37-38	sky lobby
35-36	mechanical layer
24-34	Floor
22-23	sky lobby
20-21	mechanical layer
8-19	Floor
6-7	mechanical layer
5	Conference Center
3-4	shops and restaurants.
2	Shanghai Centre Grand Ballroom, boutique office lobby, shops and restaurants
1	office lobby, hotel lobbies, shops and restaurants

B1	sightseeing floor entrance, shops and restaurants
B2	subway station entrance, shops and restaurants
B3-B5	parking, cargo handling areas, hotels logistical, mechanical layer

Construction

In 2008, the site – previously a driving range^[36] – was prepared for construction.^{[37][38]} A groundbreaking ceremony was held on 29 November 2008, after the tower had passed an environmental impact study.^[39] The main construction contractor for the project was Shanghai Construction Group, a member of the consortium that owns the tower.^[6]

A repetitive slip-forming process was used to construct the tower's core floor by floor.^[40] By late April 2011, the tower's steel reinforcement had risen to the 18th floor, while its concrete core had reached the 15th floor, and floor framing had been completed up to the fourth floor.^[40] By late December 2011, the tower's foundations had been completed, and its steel construction had risen above the 30th floor.^[41] By early February 2012, the tower's concrete core had risen to a height of 230 metres (750 ft), with around fifty floors completed.^[42] In the first months of 2012, cracks began appearing in the roads near the tower's construction site. These were blamed on ground subsidence, which was likely caused by excessive groundwater extraction in the Shanghai area, rather than by the weight of the Shanghai Tower.^[43]

By May 2012, the tower's core stood 250 metres (820 ft) high, while floors had been framed to a height of 200 metres (660 ft).^[31] By early September 2012, the core had reached a height of 338 metres (1,109 ft).^[44] By the end of 2012, the tower had reached the 90th floor, standing approximately 425 metres (1,394 ft) tall.^[45] By 11 April 2013, the tower had reached 108 stories, standing over 500 metres (1,600 ft) tall and exceeding the heights of its two neighbouring supertall skyscrapers, the Jin Mao Tower and the Shanghai World Financial Center.^[46]

Construction crews laid the final structural beam of the tower on 3 August 2013, thus topping out the tower as China's tallest, and the world's second-tallest, building.^{[47][48]} A topping-out ceremony was held at the site of the last beam.^{[47][49]} During the ceremony, Gensler co-founder Art Gensler stated that:

The Shanghai Tower represents a new way of defining and creating cities. By incorporating best practices in sustainability and high-performance design, by weaving the building into the urban fabric of Shanghai and drawing community life into the building, Shanghai Tower redefines the role of tall buildings in contemporary cities and raises the bar for the next generation of super-highrises.^[50]

The principal architect of the project, Jun Xia, was quoted as saying, “With the topping out of Shanghai Tower, the Lujiazui trio will serve as a stunning representation of our past, our present and China’s boundless future.”^[50] Gu Jianping, general manager of the Shanghai Tower Construction Company, expressed the firm's wish "to provide higher quality office and shopping space, as well as contribute to the completeness of the city skyline's and the entire region's functionality".^[48]

In January 2014, the tower's crown structure passed the 600-metre (2,000 ft) mark, as its construction entered its final phase.^[51] The tower's crown structure was finally completed in August 2014, and its façade was completed shortly after.^[52] The tower's interior construction and electrical fitting-out was completed in late 2014, and it was

originally to have opened to the public in mid-2015.^{[13][24][52]} However, for undisclosed reasons the tower remained unopened in early 2016.

Construction gallery



5 June 2009



29 April 2010



7 January 2011



12 April 2011



28 August 2011

18 December
2011

13 March 2012



11 August 2012



31 August 2012



1 September 2012



5 January 2013



2 March 2013



28 May 2013

3 August
2013

14 March 2014



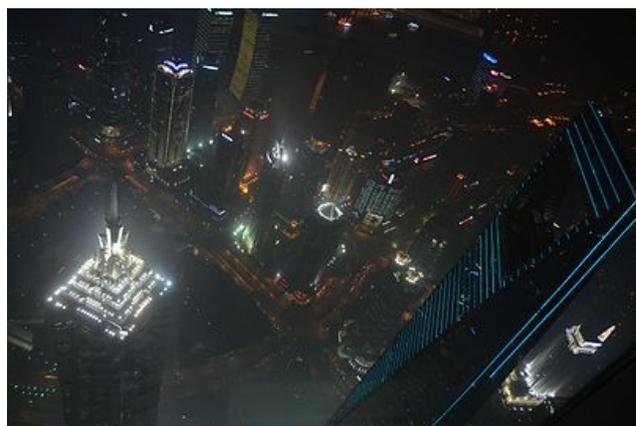
11 June 2014



4 December 2014



16 May 2015



25 May 2016

Urban exploration

In February 2014, two Russian and Ukrainian urban explorers, Vadim Makhorov and Vitaly Raskalov from Ontheroofs, climbed the under-construction Shanghai Tower through stairs and climbed out to a crane on the tower's top. They released video and photos footage taken from the tower's top.^{[53][54][55][56]} In April 2014, a Malaysian photographer, Keow Wee Loong, also scaled the Shanghai Tower to take photographs.^[57]

See also

- List of tallest buildings in Shanghai
- List of tallest buildings in China
- List of tallest buildings in the world
- List of buildings with 100 floors or more

References

1. "Official Weibo Blog (use Google Translate and see status update dated 2013-11-29 14:35:44)".
2. "Shanghai Tower Developer Casts a Wide Net". *Wall Street Journal*. 27 May 2014. Retrieved 18 January 2015.

3. "Shanghai Tower – The Skyscraper Center". Council on Tall Buildings and Urban Habitat. 2015. Retrieved 7 February 2015.
4. "Shanghai defies slump with tallest building plan". Reuters. 27 November 2008. Retrieved 28 November 2008.
5. "Shanghai Tower News Release" (PDF). Gensler. 28 November 2008. Retrieved 28 November 2008.
6. "China's Tallest Skyscraper Marks Big Step Toward Its 2015 Finish". *Forbes*. 3 August 2013. Retrieved 4 February 2015.
7. "Is China's Shanghai Tower the world's greenest super skyscraper?". *Financial Times*. 22 November 2013. Retrieved 25 February 2015.
8. "Shanghai Tower nears completion". *Los Angeles Times*. 12 June 2015. Retrieved 15 July 2015.
9. "Shanghai Tower Breaks Ground" (<http://www.luxist.com/2008/11/29/shanghai-tower-breaks-ground/>). Luxist.com. 29 November 2008. Retrieved 24 July 2013.
10. "'上海中心'多数楼层有望年内逐步投用,"Shanghai Center" " [Most floors are expected to gradually put into use during the year (Google Translate)].
11. "The world's fastest elevator".
12. "CNN: China unveils world's fastest elevator".
13. "Tall towers: Signs in the sky". *The Economist*. 15 January 2014. Retrieved 9 February 2014.
14. 上海浦东拟建世界第一高楼 外形酷似方尖碑 (in Chinese). People.com.cn. 26 October 2007. Archived from the original on 29 October 2007. Retrieved 17 May 2008.
15. "China's tallest tower opens" (<http://news.bbc.co.uk/1/hi/world/asia-pacific/7585913.stm>). BBC. 28 August 2008. Retrieved 31 January 2013.
16. "Shanghai Tower Tops Out as Megatower Construction Presses On in China". *Wall Street Journal*. 2 August 2013. Retrieved 13 February 2015.
17. Ben Ikenson (July 2013). "Gensler's Secret Sauce". *Metropolis Magazine*. Retrieved 3 November 2013.
18. "Taking Education to New Heights: Alum Designs Tallest Building in China". University of Colorado Alumni Spotlight. 2013. Retrieved 3 November 2013.
19. "Tallest Chinese building features indoor gardens". Shanghai Daily. 24 July 2008. Archived from the original on 16 December 2008. Retrieved 9 August 2008.
20. Woo Seung-hyun (2010). "Integrated design of technology and creative imagination on supertall building". *Space Magazine*. pp. 32–33. Retrieved 15 January 2012.
21. CleanTechies (25 March 2010). "The Shanghai Tower: The Beginnings of a Green Revolution in China". Retrieved 19 August 2011.
22. Beaton, Jessica (8 February 2011). "Shanghai Tower: A 'thermos flask' to the sky". CNN. Retrieved 19 August 2011.
23. "Shanghai Tower J Hotel on course to set the world record". 4Hoteliers.com. 20 December 2010. Retrieved 15 January 2012.
24. "'Shanghai Lady' Gets a New Home at the Shanghai Tower". YIBADA News. 22 December 2014. Retrieved 17 January 2015.
25. <https://www.travelchinaguide.com/attraction/shanghai/tower.htm>
26. "World's fastest elevator: in China, but made in Japan". *Wall Street Journal*. 28 September 2011. Retrieved 9 October 2011.
27. "Mitsubishi Electric Improves Speed of World's Fastest Elevators to 1,230 Meters per Minute". *Business Wire*. 10 May 2016.
28. "Mitsubishi Electric to Install World's Fastest Elevators in Shanghai Tower". Mitsubishi Electric. 28 September 2011. Retrieved 15 April 2013.
29. Hefferman, Tim (18 March 2015). "The 121-Story Tower That Never Sways". *Popular Mechanics*. Retrieved 18 March 2015.
30. "The Shanghai Tower: One of World's Most Sustainable Skyscrapers". Parsons Brinckerhoff. January 2014. Retrieved 20 January 2015.
31. "In Progress: Shanghai Tower/Gensler". *Huffington Post*. 4 May 2012. Retrieved 7 May 2012.
32. "Glass walls technological first for new tallest tower". *Shanghai Daily*. 3 August 2012. Retrieved 17 August 2012.
33. "Shanghai Tower – future living today". *Pacific Rim Construction Magazine*. 27 February 2013. Retrieved 9 March 2013.
34. "Spaces Credits".
35. "Shanghai Tower, China's tallest skyscraper, soars into the record books".
36. "上海中心"规划方案曝光 将成上海最高观光平台 (in Chinese). Sina.com. 24 April 2008. Retrieved 17 May 2008.
37. "Shanghai draws up plan for nation's tallest building". China Daily. 19 February 2008. Retrieved 17 May 2008.
38. "Construction of high-rise "Shanghai Center" to start". Chinaview.cn. 17 February 2008. Retrieved 17 May 2008.
39. 上海中心大厦项目环境影响报告书简本公示 (PDF) (in Chinese). Envir.gov.cn. 13 August 2008. Retrieved 14 August 2008.

40. "Construction Update: Shanghai Tower". GenslerOn.com. 25 May 2011. Retrieved 18 October 2011.
41. "Still building, China readies world's second-tallest skyscraper". *Forbes*. 28 December 2011. Retrieved 29 December 2011.
42. "China's Risky Skyscraper Extravaganza". *The Epoch Times*. 1 February 2012. Retrieved 2 February 2012.
43. "Shifting foundations threaten to undermine China's cities". *The Guardian*. 3 April 2012. Retrieved 19 April 2012.
44. "Huge, huger, hugest: Shanghai skyscrapers walking tour". CNNGo.com. 30 August 2012. Retrieved 7 September 2012.
45. "Tallest Lujiazui tower reaches 425m, still growing". *Shanghai Daily*. 27 December 2012. Retrieved 6 January 2013.
46. "Shanghai Tower Construction Continues Despite Rumors of salt in concrete sand". NextBigFuture.com. 25 April 2013. Retrieved 20 May 2013.
47. "China tallest tower gets final beam". BBC. 3 August 2013. Retrieved 4 August 2013.
48. 上海中心大厦结构封顶 [Shanghai Tower topped out] (in Chinese). China News. 3 August 2013. Retrieved 3 August 2013.
49. "Topping-out ceremony held for China's tallest building". Xinhua. 3 August 2013. Retrieved 4 August 2013.
50. "Gensler Tops Out China's Tallest Tower in Shanghai". AZoBuild.com. 3 August 2013. Retrieved 4 August 2013.
51. "Tower passes the 600-meter mark". Eastday.com. 27 January 2014. Retrieved 9 February 2014.
52. "Shanghai Tower Reaches its Full Height of 632 Meters". ShanghaiTower.com.cn. 8 August 2014. Retrieved 20 October 2014.
53. "Climbing Shanghai Tower youtube video". *Ontheroofs*. 12 February 2014.
54. "Climbing Shanghai Tower ontheroofs story with photos". *Ontheroofs*. 12 February 2014. Archived from the original on 21 September 2016.
55. "Russian daredevils scale the Shanghai Tower, China's new tallest building". *The Guardian*. 13 February 2014. Archived from the original on 21 September 2016. Retrieved 16 February 2014.
56. L_103768. "两外籍人士擅自攀爬"上海中心" 上海警方介入调查--上海频道--人民网". *sh.people.com.cn*. Retrieved 10 September 2015.
57. "High on heights: Keow Wee Loong interview". *Time Out*. 2014. Retrieved 23 March 2015.

External links

- Official website (<http://www.shanghaitower.com.cn/enversion/index.asp>)



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Shanghai Tower
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Records		
Preceded by Shanghai World Financial Center	Tallest building in China 2013–Present 632 metres (2,073 ft)	Succeeded by None
Preceded by Shanghai World Financial Center	Tallest building in Shanghai 2013–Present 632 metres (2,073 ft)	Succeeded by None

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