PING AN

Expertise Creates Value

Green Technologies and Environment Protection Building

June, 2022

1. Green certifications

(1) In August 2021, Shenzhen Ping An Financial Center won the highest-level certifications both in China and abroad for green building operation and maintenance. It received Platinum certification for LEED (Leadership in Energy and Environmental Design) v4.1 O+M (Operation and Maintenance): Existing Buildings, and the three-star green building certificate issued by the Ministry of Housing and Urban-Rural Development of the People's Republic of China. The building was designed, constructed and is operated by Ping An Real Estate.

The LEED certification recognizes Shenzhen Ping An Financial Center as the benchmark of world-class green skyscrapers. It represents excellence in energy conservation, environmental protection and sustainability, and outstanding performance in operation and maintenance. As early as 2017, Shenzhen Ping An Financial Center obtained Gold certification for LEED BD+C (Building Design and Construction): Core and Shell Development, and three-star green building certification for design from the Ministry of Housing and Urban-Rural Development of the People's Republic of China. Now it has obtained the highest-level double certifications for operation and maintenance, confirming that Ping An Real Estate has integrated the concept of sustainable development into the whole life cycle of building design, construction, operation and maintenance. Ping An Real Estate will continue to support the national strategic goals for reaching a carbon peak and carbon neutrality, strive to practice sustainable development, protect the environment, reduce pollution, and set a benchmark for green super high-rise buildings.

(2) In April 2021, the project of Building No. 3 of the National Support Management Center of Ping An Group received the national two-star green building certificate for design. The project is in Zhangjiang, Pudong New Area, Shanghai, and is a model office building for Ping An Group. The building was designed, constructed and is operated by Ping An Real Estate.

After completion, it will complement Buildings No. 1 and 2. With innovations in architectural structure and graphic design, Building No. 3 has addressed the functional needs of Zhangjiang workplace at present, and reflects the characteristics and temperament of Ping An Group. The two-star certification of green building from the Ministry of Housing and Urban-Rural Development recognizes Ping An Real Estate's emphasis on saving resources, reducing pollution and emphasizing sustainability in the design and construction of office buildings by Ping An Group.

(3) In December 2021, Changsha Ping An Fortune Center received the one-star certification for green building in Hunan Province from the Ministry of Housing and Urban-Rural Development. The building was designed, constructed and is

operated by Ping An Real Estate. Ping An Fortune Center in Changsha is adjacent to the Xiangjiang River Scenic Belt, facing Orange Island, Yuelu Mountain, and the beautiful scenery of Changsha. The project covers high-end apartments, Grade-A offices and a boutique commercial building. When completed, it will become a landmark in Changsha and a name synonymous with urban living.

(4) In 2021, Nanchang Ping An Financial Center received the Gold certification from LEED for BD+C (Building Design and Construction): Core and Shell Development and the two-star green building certification for design from the Ministry of Housing and Urban-Rural Development of the People's Republic of China. The building was designed, constructed and is operated by Ping An Real Estate. After the project is completed, it will become the tallest building in Jiangxi province and another green super-high-rise landmark.

Self-built commercial and office projects: Ping An Real Estate has 18 self-built commercial and office projects, of which 14 have earned green building certification.

2. Design and green building technology in Shenzhen Ping An Financial Center

(1) High-altitude air intake: As the temperature drops by 0.6C for every 100 meters of height, the low-temperature dry air is sucked into the fresh air unit from the height of 600 meters, then transmitted to each floor through the fan and shaft of the core tube, which can reduce the indoor temperature. This reduces the working hours and energy consumption of air conditioners.

(2) Heat recovery system: In winter, indoor hot air flows through the heat accumulator when it is discharged and the heat is absorbed. Then, in reverse ventilation, the outdoor cold air flows in through the heat accumulator, taking the absorbed heat with it. As a result, the temperature of the fresh air entering the room is warmed, achieving comfortable and energy-saving warm air.

(3) Variable air volume (VAV) air conditioning system: This air conditioning system maintains a constant indoor temperature by adjusting the air volume. As the desired air temperature is reached, the system automatically lowers the air flow to reduce the power used. This way, it not only ensures precise control of indoor temperature, but also saves energy.

(4) High-performance building surface: The curtain wall is made of integrated glass with low-e coating, which can maximize sunlight penetration while limiting heat radiation and reducing energy use for indoor lighting and air conditioning. The glass curtain wall has a flat or curved design, which minimizes diffuse reflection and light pollution.

(5) Self-adaptive control system for curtains: Curtains are automatically adjusted according to the position of the sun and solar illuminance, helping the building to make full use of natural light to achieve the best balance of shading and lighting.

(6) Renewable energy elevator: The design of the renewable energy drive system can store and reuse the potential energy when the elevator descends, thus significantly reducing electricity use.

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(8) Ice-storage cooling system: The cooling system is operated on a peak-shifting basis, and a large amount of off-peak electricity is used. It makes ice during the night and melts ice in the daytime to cool, thus reducing energy consumption and environmental pollution.

(9) Advanced assembly and construction technology: Pre-fabricated buildings are sent to the construction site, and then are assembled like building blocks with reinforced concrete. This method not only improves the integrity and seismic capacity of the building, but also reduces the dust and minimizes the impact of construction on the surrounding neighborhood.

3. Environmental protection impact of Shenzhen Ping An Financial Center

(1) Compared with buildings built to the standard of the American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE) buildings, energy consumption is 46% lower per year.

(2) Self-adaptive shading of curtains and LED lighting save 60% of energy consumption for lighting every year.

(3) The rainwater recovery system saves 16,000 m^3 of water every year, and the cooling tower wastewater can reduce the water used by toilets by 50% every year.

(4) Three-layer Low-e coated insulating glass in curtain walls can reduce thermal radiation by 24%.

(5) The ice storage cooling system can save 14% of energy consumption from air conditioning and RMB5 million of operating costs every year.

(6) Advanced prefabricated construction technology in the industry can reduce construction dust and garbage by 70%, water consumption by 55% and building materials such as cement and mortar by 25%.

4. Green building technology and environmental protection impact of Tianjin Ping An TEDA Financial Center

(1) Rainwater recycling and storage solutions allow natural infiltration of some rainwater through greenfield and permeable surfaces to reduce municipal drainage pressure. There are two rainwater storage pools with a total volume of 130 m^3.

(2) An ice storage system for cooling for the office and commercial buildings enables the buildings to take advantage of lower electricity prices in off-peak hours. At the same time, it can reduce the electricity load of air-conditioning in peak hours.

(3) In summer, outdoor fresh air is used as a preferred free cooling source to save energy.

(4) Energy-saving control measures, such as induction, zoning, timing and smart lighting are used for lighting in garages, public corridors, elevator halls, staircases and other places.

(5) When more than two elevators are used, the building uses centralized control to save energy.

(6) Energy recovery: The fresh air unit has the functions of filtering, energy recovery, heating, cooling and humidifying. The fresh air unit is equipped with a heat recovery device to reduce fresh air energy consumption in winter and summer.

(7) Air quality optimization: Open office and conference rooms are equipped with carbon dioxide monitors, which are linked to fresh air fans and exhaust fans. The monitor is installed at the height of 1.5m.

(8) Variable frequency water supply: A relief valve is installed on the water supply pipe with the pressure exceeding 0.45 MPa to save water.

(9) Water metering devices are equipped according to the usage and management unit, and the remote water meters are also connected to the energy management system for water and energy savings.

5. Green building technology and environmental impact of Changsha Ping An Fortune Center

(1) Energy saving and utilization

Energy-saving design of building envelope: The energy-saving factors of the building envelope include the residential orientation, the shape coefficient of building, the window-wall area ratio and the thermal performance index of the building envelope. These factors have great impact on ventilation, lighting and energy conservation of residential buildings.

Pre-arranged location of outdoor air conditioners: The office and commercial buildings are equipped with central air-conditioning systems, and the apartment-style office uses multi-split air conditioners. The outdoor air-conditioning system is installed in a position which avoids the short-circuit area of airflow, and there are measures to shelter the units from rain.

Efficient lighting: The building uses high-efficiency energy-saving lamps and LED lamps. All fluorescent lamps (all high-efficiency energy-saving lamps) in the building are equipped with electronic ballasts. The efficiency of lamps is over 75% for open lamps and not less than 70% for those with protective covers and grilles.

Vegetation roof: The roofs of building podiums with a height of 18 meters or less in this project are all planted, which can reduce the amount of solar radiation on the roof surface, improve indoor thermal comfort and help to lower the indoor temperature in summer. In winter, the insulated roof top protects the indoor temperature.

(2) Water saving and water resources utilization

Water-saving measures: This project mainly uses high-performance valves, zero-leakage valves, graded water meters and other measures to avoid leaks in the pipe network. The water level of the pool and water tank is equipped with alerting devices to prevent overflowing and draining for a long time when the valve of the water inlet pipe fails.

Sanitary ware: All sanitary ware is equipped with water-saving features, such as low-flow toilets, automatic urinal induction flushers, and sink induction faucets. The water efficiency level is Grade III, which meets the requirements of Water-saving Domestic Water Supply Appliances CJ164-2014 and General Rules for Technical Conditions and Management of Water-saving Products GB18870-2016. The floor drain panel is chrome plated with copper, and the water seal depth of the floor drain trap is greater than 5cm.

Water-saving irrigation: This project includes water-saving and high-efficiency irrigation methods such as sprinklers. Pumps and pipes are used to pressurize the water to the irrigation area, and the water is sprayed evenly by nozzles into the air as tiny water droplets, which can avoid loss from surface runoff and leakage, greatly improving the utilization rate of water. Generally, it can save 30% to 50% more water than ground irrigation