The Best Practice Examples Towards Carbon Neutrality Goals In the Building Sector

China Quality Certification Centre (CQC)
中国质量认证中心

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Policies on Energy Conservation and Low-Carbon Buildings

China regards energy conservation and low-carbon development in building sector as a vital content for carbon peaking and neutrality.

1.China's "Carbon Peaking and Carbon Neutrality" Goals

- When? Carbon Peaking before 2030, Carbon Neutrality by 2060
- How? Implementation plans, Policy framework, Supporting measures ……

2.China's central and local governments encourage the development of energy conservation and low-carbon buildings

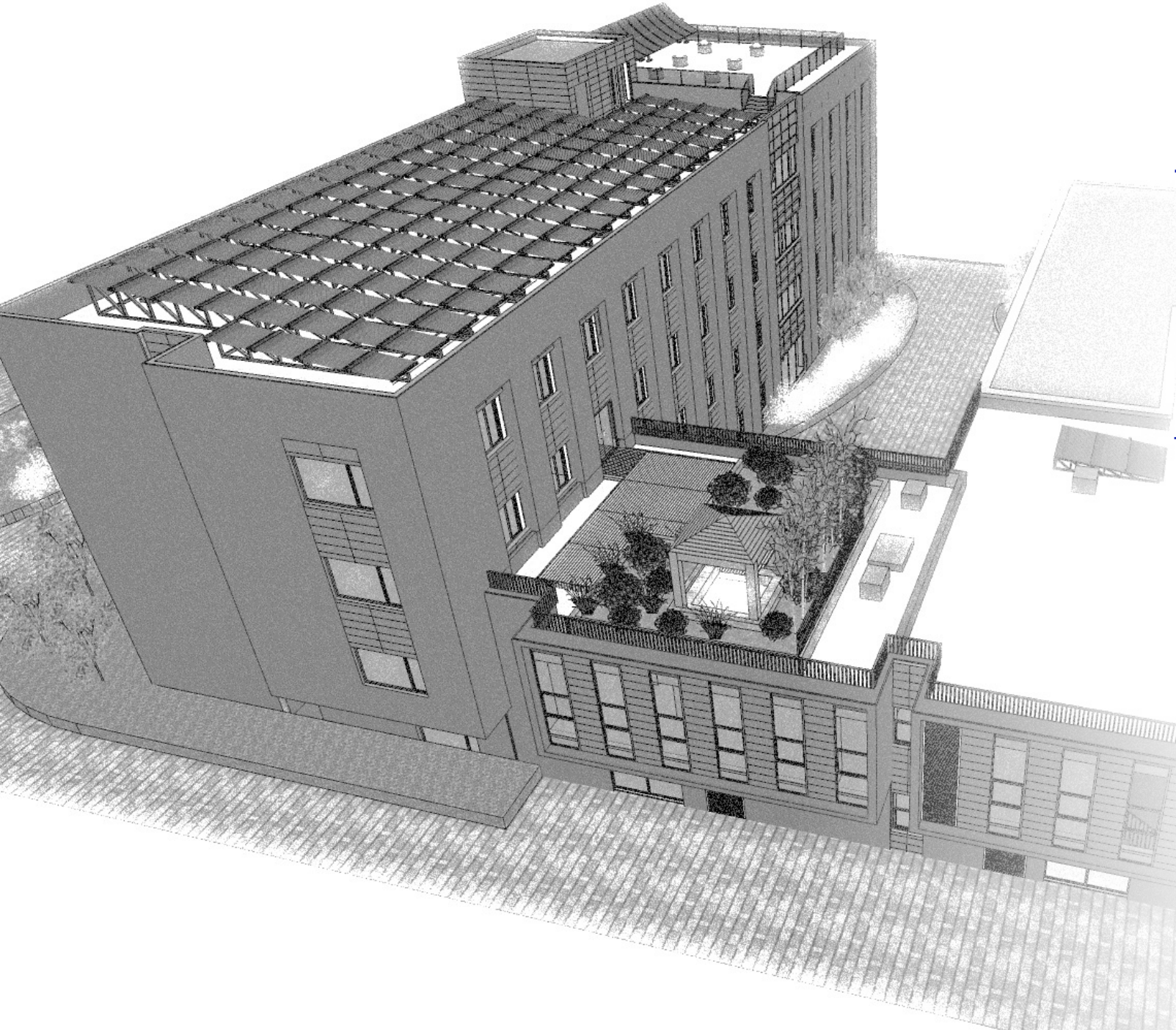
- On September 22, 2021, the Central Committee of the Communist Party of China and the State Council issued a working guidance for carbon dioxide peaking and carbon neutrality in full and faithful implementation of the new development philosophy.
  (关于完整准确全面贯彻新发展理念做好碳达峰碳中和工作的意见)
- On October 24, 2021, the State Council issued an Action Plan for Carbon Dioxide Peaking before 2030.
  (2030年前碳达峰行动方案)
- On December 28, 2021, the State Council issued a "14th Five-Year" Work Plan for Energy Conservation and Emission Reduction.
  (十四五节能减排综合工作方案)

2.China's central and local governments encourage the development of energy conservation and low-carbon buildings

- 1-On March 1, 2022, the Ministry of Housing and Urban-Rural Development issued **the "14th Five-Year" Development Plan for Building Energy efficiency and Green Buildings .**
  (十四五建筑节能与绿色建筑发展规划)
- On June 30, 2022, the Ministry of Housing and Urban-Rural Development and the National Development and Reform Commission jointly issued **the Implementation Plan for Carbon Peaking in Urban and Rural Construction.**
  (城乡建设领域碳达峰实施方案)
- The General Office of the CPC Central Committee and the General Office of the State Council issued **the Opinions on Promoting Green Development in Urban and Rural Construction.**
  (关于推动城乡建设绿色发展的意见)

(II)
the Cases of the Best Practice in Energy Conservation and Low-carbon Buildings

Two cases (from “Top Tens”) will be introduced in this section



1. Demonstration Building with Near-zero Energy Consumption

(1) Basic Information

- Location: Beijing
- Gross area: 4000㎡+
- Design Principle: “Passive Priority, Active Optimization, Economic & Practical"
- 28 world-leading energy conservation and intelligent control technologies
- achieve near-zero energy consumption

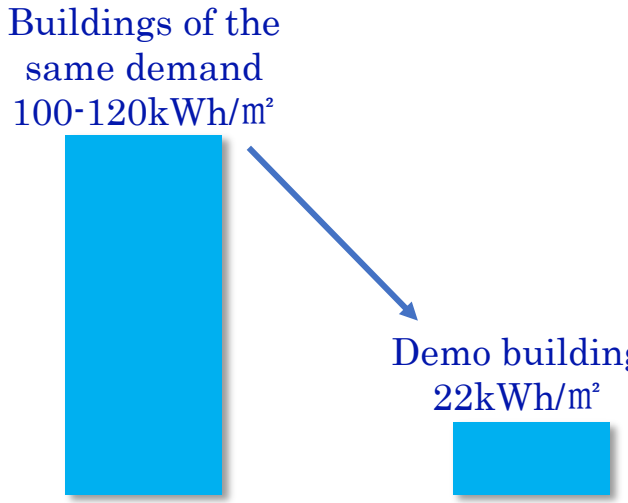
1. Demonstration Building with Near-zero Energy Consumption

(2) Energy Conservation Path

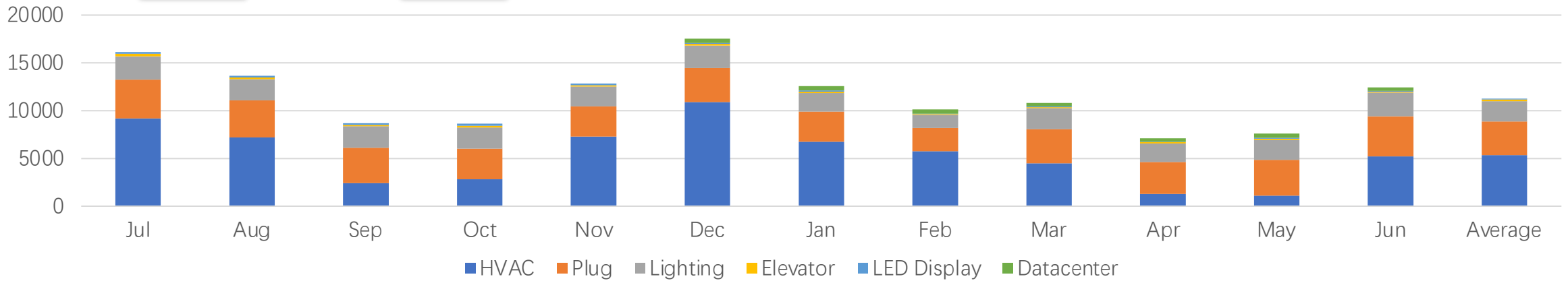
- 1-Building Enclosure Components
- 2-Heating & Refrigeration Technology
- 3-End-of-pipe Technology
- 4-Renewable Energy Application
- 5-Intelligent Control System

1. Demonstration Building with Near-zero Energy Consumption

(3) Benefits of Energy Conservation and Carbon Reduction



- Assumption: 34.2kWh/㎡
- Save more than 80% energy
- The payback period of its incremental cost is estimated: < 10 years.



1. Demonstration Building with Near-zero Energy Consumption

(4) The significance of demonstration building

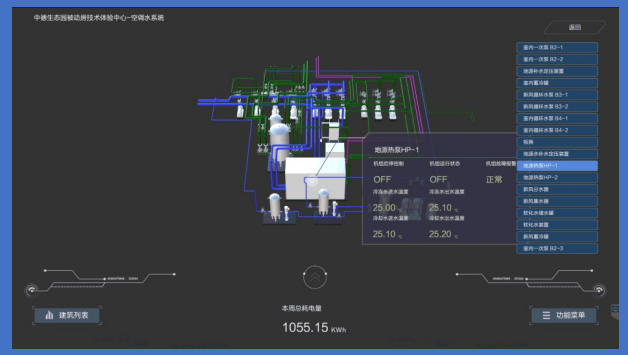
- achieves the transformation of energy consumption control of buildings from "**path constraint**" to "**effect constraint**".
- the establishment of ***Technical Standard for Buildings with Near-Zero Energy Consumption.***

2. Passive House Technology Experience Center

(1) Basic Information

- Location: Shandong Province
- Functions: meetings, exhibition halls, offices and experiential apartments
- Gross area: 10000㎡+
- Technology + Operation + Management

2. Passive House Technology Experience Center



(2) Energy Conservation Path

-Technical aspects:

- 1- thermal performance of the enclosure
- 2- renewable energy technology
- 3- air-conditioning optimization
- 4- building air flow organization

-Management aspects

- 1- intelligent control
- 2- 4-level management system
- 3- key energy-using equipment monitor
- 4- operation management system

2. Passive House Technology Experience Center

- (3) Benefits of Energy Conservation and Carbon Reduction

- Consumption: 30kWh/㎡
- 85% more efficient than that of similar buildings.
- 55% of energy consumption of similar buildings.
- 720,000 kWh electricity is saved, and 250 tons of CO2 is reduced annually

2. Passive House Technology Experience Center

(4) The significance of the case

- the architectural award of passive buildings with ultra-low energy consumption
- Samsung certification of green buildings in China.
- the single passive building with the largest volume and the most complicated function in Asia and certified by the German PHI authority.
- an active role in the demonstration and promotion of buildings with ultra-low energy consumption in China.

(III)
The Prospect of Future Work

1. Future Prospect

- Implement “carbon peaking and neutrality” action in the building sector.
- Promote Energy Conservation & Low-Carbon Buildings.

2."TOP TENs" Selection

- Selection of best technology and best practice.
- The third batch of “TOP TENs” international selection will carry out in this year, the work group will focus on industry, building, transportation, keeping consensus on international trend of energy efficiency, which Japan is welcome to actively engage.
- EMARK is welcome to have opinion exchange in “TOP TENs” international seminar.

谢谢

THANKS