Recent Applications and Practices of Large-Span Steel Structure in China

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Summary
A number of outstanding buildings featuring aesthetic look and reasonable structure have emerged in recent years as China witnessed multiple waves of rapid development of large-span steel structure. This paper introduces the application of large-span steel structure in certain fields and attaches importance to describe the system selection and design analysis and similar aspects of large-span steel structure in the hope of revealing the application and development of large-span steel structure to readers to certain extent.

Keywords: large-span steel structure, application field, structural system, structural innovation

1. Introduction

1.1 Development process and application field of large-span steel structure

The constant development and exploration of large-span steel structure is accompanied by the innovation of building material, advancement of social economy and upgrade of public aesthetics. Looking back the application of large-span spatial structure in modern and contemporary China, one can observe especially two characteristics: one is the extending range of application fields from original industrial storage, auditorium for gathering, and traffic facility to modern gymnasium, culture exhibition building, theatre, airport terminal, and new railway station, etc. and the other is the growing complicity of building typology, constant integration and innovation of structural system, and great breakthroughs in respect of technical index, economic index and aesthetics.

The development of large-span spatial structure in China is roughly comprised of stages as follows:

1.1.1 From 1950s to 1960s, concrete shell construction was widely applied to building of warehouse, auditorium, station and others with typical projects including Beijing Railway Station Concourse and Tongji University Auditorium. As restrained by the forming capacity of concrete, large-span buildings during this period present relatively regular images.

1.1.2 From 1970s to 1980s, building steel material had been extensively used along with the beginning of opening up so that spatial grid, lattice shell, truss structure and other rigid structure systems witnessed rapid development. Given the stronger spanning capacity, reasonable stress

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