

Exhibition Design Engineering Manual

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By

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BRIEF INTRODUCTION

The Exhibition Design Engineering Manual is the latest monograph by the author Wang Xinsheng, with 31 chapters and 7 practical appendices. The content is the summary and extraction of the author's 35 years of exhibition engineering practice and decades of lecture experience, and the photos in the book are almost all photographed and organized in person. Specifically, the book mainly introduces the scope of the exhibition engineering, exhibition and exhibition booth, floor platform, freestanding pole, truss ceiling, background, overhead structures, auxiliary exhibition fittings, booth interaction area, booth equipment configuration, as well as the design, layout, structure, materials, production and construction of the booth, illustrating the whole picture of the exhibition project in an illustrated way. Also, the 7 appendices contain the evolution and development of a large-scale enterprise booth for 19 years, the development trend of the exhibition design in the world, the summary of the main components of the special booth, the engineering design case, the common websites of the relevant standards of the exhibition project and the price summary of the commonly used materials for the booth.

The book provides originality, practicability, comprehensiveness, richness, modernity and operability.

This book can be used as a tool for practitioners to display engineering design. It can also be used as a teaching book for exhibitions, installation arts management and design in college and university, and can also be used as a training book for exhibition companies.

FOREWORD

I am pleased to learn that the "The Exhibition Design Engineering Manual" by Professor Wang Xinsheng has been reprinted recently, and I'm glad to preface for the book. Professor Wang has been engaged in exhibition engineering practice for more than 30 years and has been teaching for several decades. He has hosted hundreds of engineering design, production, construction and management projects, and is a senior combat expert in the field of engineering. He is extremely familiar with exhibition design, exhibition materials, construction, operation process and project management, and was awarded the "Exhibition Outstanding Contribution Award" by the China Automotive Engineering Society. Moreover, he is a member of the Academic Steering Committee of the China Conference and Exhibition Economics Research Association. He is also a Distinguished Professor or Visiting Professor at many universities across the country. He teaches and trains institutions and enterprises throughout the country, and is fully committed to China's exhibition and education. He was awarded the title of "Chutian Skilled Master" who enjoys government subsidies. I learned from Professor Wang that "The Exhibition Design Engineering Manual" was originally collected in 1983. In 2006, the teaching method was used to organize and form the courseware. In 2012, the book was written on the basis of the courseware. In three years, in September 2015, the textbook version of "The Exhibition Design Engineering Manual" was completed. After the book was published, it was popular among teachers, students and corporate readers, and the second and third editions were released in January 2017 and January 2018 respectively. "The Exhibition Design Engineering Manual" is written at the request of the corporate readers. The main readers are the exhibitors, and the school can choose as well. This book is the hard work of Professor Wang Xinsheng for more than 30 years' exhibition engineering practice and decades of teaching experience.

The contribution of the book: The book comprehensively and systematically classifies and summarizes relevant knowledge in the field of engineering, and forms a system for exhibition projects initially, and also determines a variety of modeling terminologies and the definitions. It fills the gap in the field of exhibition engineering in China attributing to the shortage of such books.

The role of the book: It can specifically guide the design, production, construction and management of the project. Also, it can effectively improve the quality and level of China's exhibition projects.

The creativity of the book: It uses typical cases as a point of entry to enhance the theory and expand the content, so it has the outlining practicality.

In short, "The Exhibition Design Engineering Manual (Second Edition)" is a reference book with informative, illustrated, practical and operative content. I'm glad to introduce it to a wide audience. I hope that the book will play an active role in the practitioners and will greatly benefit the practical work of guiding readers.

Vice President of China Conference and
Exhibition Economy Research Association

Chu Xiangyin
May 28, 2019

OVERVIEW OF EXHIBITION ENGINEERING

As a kind of creation of the exhibition space environment, exhibition engineering design artistically presents a wide range of information and contents to the visitor with the help of certain visual interpolation means, lighting methods and exhibition fittings, in order to have a significant impact on the psychology, thought and behavior of the visitor.

Exhibition engineering design includes overall designs, specific designs in terms of space, color, lighting, exhibition equipment, display and layout of exhibits etc.

1.1 Category of Exhibition Engineering

There are currently many ways to categorize exhibition design, among which the more commonly used is to divide it into cultural exhibition design and commercial exhibition design. However, this division is still abstract and very vague when it comes to actual operation.

According to over 30 years of practical experience in exhibition design and many years of researching, the author summarizes that it is more scientific and proper to divide the exhibition projects according to the shape design, production method, material technology and construction method of the projects. Therefore, the scope of exhibition engineering is divided into 8 categories: booth, showroom, retail store, brand fixture, window display, staging, signage, and installation art (including indoor and outdoor installation art).

Except for outdoor installation art, all categories are different only in shaping, but identical in design method, engineering structure, material technology, production and construction. Among the eight categories, the most representative one is the booth, whose design can be used for reference by other types of design.

The category of the exhibition engineering is shown in Figure 1-1.

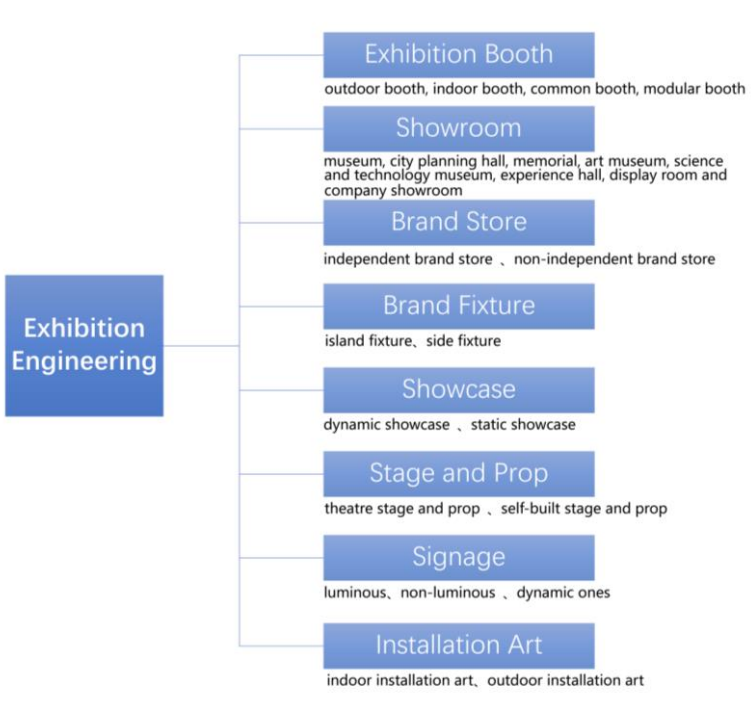


Figure 1-1 Category of the exhibition engineering

1. Booth

The exhibition is shown in Figure 1-2 and Figure 1-3, mainly composed of the following two parts.

- (1) Previous period: Organizer's work such as exhibition initialization, exhibitor invitation and booth arrangement of the whole exhibition, known as the organization of the exhibition.
- (2) Later period: the design, production, construction, exhibition and teardown of exhibition booths, known as booth engineering.

The exhibition is a comprehensive project, of which only the booths involved in late stage belong to the category of the exhibition engineering. The booth refers to the structural unit used for display activities at the exhibition, usually including outdoor booths, indoor booths, common booths, and modular booths for roadshow.

The outdoor booth is built outside the exhibition hall while the indoor booth is built inside. The common booth is usually used for once. The modular booths for roadshow can be used in exhibition halls in different places.

The booth is a mobile showroom, whose design is shown in Figure 1-4 to Figure 1-7.



Figure 1-2 Exhibition I



Figure 1-3 Exhibition II



Figure 1-4 Outdoor booth



Figure 1-5 Indoor booth



Figure 1-6 Common booth



Figure 1-7 Modular booth for roadshow

2. Showroom

Showroom is a key part of the exhibition project. It involves museums, city planning halls, memorials, art museums, science and technology museums, experience halls, display rooms and company showrooms. They belong to the scope of showroom, with different scales but the same functions.

Compared with the booth, the exhibition hall has no floor platform and functional area, but other aspects are completely consistent. In fact, the showroom is a fixed long-term booth. The design of the showroom is shown in Figure 1-8 to Figure 1-13.



Figure 1-8 City planning hall



Figure 1-10 Art museum



Figure 1-12 Science and technology museum

3. Retail store

Some big products or products with special needs are required to be displayed and sold in certain buildings, such as automobiles, real estate, etc. There are two kinds of retail stores, namely independent retail stores and non-independent retail stores.

The independent retail store is an independent building, whose display design includes two parts: the external shape design of the building and the interior showroom design; the non-independent retail store only takes up several rooms of a building, and its display design only includes interior showroom design.



Figure 1-9 Memorial

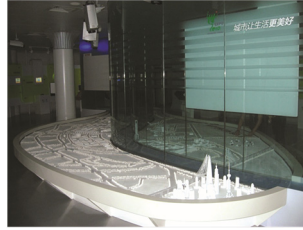


Figure 1-11 Experience hall



Figure 1-13 Company showroom /Ling Tong Company

In addition to shape design, the interior display design of the retail store is almost the same as the booth design.

The design of the retail store is shown in Figure 1-14 and 1-15.



Figure 1-14 Independent retail store



Figure 1-15 Non-independent retail store

4. Brand fixture

The shopping malls and other stores are actually the exhibition halls of the merchants. The counters are the booths of various commodities. Its design is almost the same as that of the booth, but it only has display areas but no functional areas.

The brand fixture is used for displaying goods and selling goods at the same time. In fact, it is a booth for a B to C exhibition. There are two kinds of brand fixtures, namely island fixture and side fixture.

Island fixture refers to the independent counters in the middle of the store, which is not connected with any other counters; side fixture refers to the counters connected with other counters and generally arranged by the wall.

The design of the brand fixture is shown in Figure 1-16 and 1-17.



Figure 1-16 Island fixture



Figure 1-17 Side fixture

5. Window display

With the improvement of people's living and material standards, there are more and more kinds of daily consumption with higher levels. Therefore, in recent years, the design of window display is no longer for a simple display, but like the booth, it has backdrops, exhibits, lighting, shaping, etc. In fact, it is a mini booth.

There are two kinds of window display, dynamic window displays and static one. The former refers to those whose parts of goods are movable while the latter is used for static display of goods.

The design of the window display is shown in Figure 1-18 and 1-19.



Figure 1-18 Dynamic window display

Figure 1-19 Static window display

6. Staging

With the enrichment of cultural life and the increase of various activities, people need a stage to show and perform.

To complete the show and performance, there must be a stage and props, such as the design of the overall stage, backdrop, fireworks, lighting and videos, all of which are basically consistent with the design of the booth.

There are two kinds of staging: theatre staging and self-built staging. The former refers to the design in a fixed theatre while the latter is a temporary design in a non-theatre venue.

The staging is shown in Figure 1-20 and 1-21.



Figure 1-20 Theatre staging / Theatre



Figure 1-21 Self-built staging /Gymnasium

7. Signage

With the rapid advancement of global urbanization and the development of large-scale architectural complexes and individual buildings, the signage has gradually highlighted its importance.

The modern signage is completely different from the previous one consisting of simple words and arrows. At present, the signage has a variety of style designs, even with various functions.

The signage design is consistent with the booth design except for the indicative words and symbols. Signage can be simply divided into three types: luminous, non-luminous and dynamic ones.

Luminous signage can emit light inside; non-luminous signage gives out light by reflecting the outside light; dynamic signage can move or even interact with humans.

The signage design is shown in Figure 1-22 to Figure 1-24.



Figure 1-22 Luminous signage



Figure1-23 Non-luminous signage

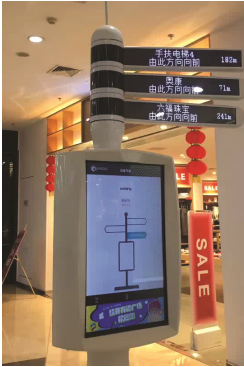


Figure 1-24 Dynamic signage

8. Installation art

Installation art is divided into indoor and outdoor installation art. The indoor installation art is basically the same as the booth, i.e. home decoration and project decoration.

The one partly the same as the booth is the outdoor installation art. Installation art is similar to the booth, but each has its own characteristics and can serve as the reference for the other.

The exhibition of installation art is shown in figure 1-25 to 1-27.



Figure1-25 Indoor installation art/
Home decoration



Figure 1-26 Indoor installation
art/Project decoration



Figure 1-27 Outdoor installation art

In summary, the exhibition project includes eight categories, of which the booth is the most representative, so this book only introduces the booth design, production, crafts, materials and installation, to which other types can refer.

1.2 The Basic Situation of the Exhibition in China

As a combination of the exhibition industry and the convention industry, the convention and exhibition industry is independent in the Chinese economic service industry and belongs to the productive services. The World Trade Organization (WTO) classifies the convention and exhibition industry as a kind of service trade.

In December 2011, the Ministry of Commerce pointed out in *The Guiding Opinions on Promoting the Development of the Convention and Exhibition Industry during the Twelfth Five-Year Plan Period* that "The convention and exhibition industry is an important part of modern service industry, with wide influence, high correlation and great development potential. Its development reflects the comprehensive strength of a country's culture, economy and society."

What's more, it can bring together people, goods, capital and technology, directly and indirectly driving the development of related industries and other supporting industries, guiding industrial upgrading and transfer, promoting employment and consumption, optimizing resource allocation and motivating innovation for development.

It is in *the Outline of the Eleventh Five-Year Plan for National Economic and Social Development of the People's Republic of China* (published in

March 2006) that the Chinese government first officially regards convention and exhibition industry as an independent industry.

Industrial Classification for National Economic Activities (GB/T 4754-2011) lists conference and exhibition services in the category of business services and determines the code of its organizations as 7292, which marks the official recognition of the independent status of the convention and exhibition industry in the national economic service industry.

There are many versions about the definition of an exhibition. In *Xinhua Dictionary*, an exhibition is a "gathering or organization for people to see and appreciate the exhibits".

In *Cihai Dictionary*, an exhibition is a temporary organization that publicly exhibits industrial and agricultural products, handicraft products, works of art, books, pictures, various important objects, specimens and models in a fixed or itinerant way for visits and appreciation.

The industry defines the concept of exhibition as a group activity in which organizers gathers exhibits, providers and visitors in a fixed or itinerant way to achieve the purpose of information exchange.

The exhibits at the exhibition include products, technology and services. Exhibitors and visitors can achieve negotiation or transaction through the display of various exhibits.

On January 14, 2011, the General Administration of Quality Supervision, Inspection and Quarantine of the PRC (AQSIQ) and Standardization Administration of China (SAC) issued *Trade exhibition -Terminology* (GB/T 26165-2010), which is the first national standard for exhibition industry in China. The standard defines "exhibition" and "trade exhibition" as follows:

"Exhibition" is a mass activity held in a certain geographical space and limited time span, whose main objective is to exhibit products, technology and services to visitors and promote a negotiation between exhibitors and visitors.

"The Trade Exhibition" is an exhibition with trade, investment and economic cooperation as its main functions.

In China, all exhibitions serving economic and trade activities can be classified as a trade show, no matter its name is "exhibition", "exposition",

classified as a trade show, no matter its name is “exhibition”, “exposition”, “trade fair”, “commodities fair”, “order-placing meeting”, “procurement conference” or “economic trade and investment fair”. Exhibitions are generally divided into the following types.

1. Classification by the Character of Exhibitions

1) B to B Exhibition (Trade Exhibition)

B to B shows are mainly for different kinds of industries. The German FKM Association defines a B to B show as an event with a certain time limit in which exhibitors display products from one or more industries and sell samples to wholesalers, commercial buyers, or other major buyers.

The IAEE (International Association of Exhibitions and Events) defines B to B show as an exhibition of products or services for industry members, which are not open to the public.

2) B to C Exhibition

B to C shows are for the public, aiming at direct sales. There are two characteristics of B to C show ① The exhibition focuses on selling goods on the spot, unlike professional exhibitions that mainly engages in business activities such as information exchange and trade negotiation;

② The visitors to the exhibition are basically ordinary consumers, and most of them are locals, coming mainly for seeing or buying the exhibits.

For example, "Hong Kong Brands and Products Expo" or "HKBPE" is the oldest B to C show in Hong Kong. Since 2000, automobiles (passenger vehicles), house properties (houses), home decoration and food have become the four popular exhibition themes in consumer exhibitions all over the country.

After 2010, several new themes appeared: wedding supplies and services, baby supplies, jewelries, tea and wine products.

2. Classification by the Content of Exhibitions

1) Comprehensive Exhibition

The scope of a comprehensive exhibition is relatively broad, for it is composed of many industries and various products, of which industrial exhibition and agricultural exhibition are two examples.

China Council for the Promotion of International Trade (CCPIT) issued “Exhibition and Booth-Terminology (T/CCPITCSC 023-2019) in 2019, which clearly stipulates the terminology of booths.

"The China Import and Export Trade Fair", known as “The Canton Fair”, is a typical comprehensive exhibition. It is held in spring and autumn and each is divided into three phases because of the limited space of the exhibition hall. Each phase has three days for exhibitors to set up their booths and five consecutive show days to display their products.

The first phase of the exhibition covers industrial products such as electronics and household appliances, lighting, vehicles and accessories, machinery, hardware tools, building materials and chemicals. The second phase includes consumer goods, gifts and household decorations, etc. The third phase covers textile shoes and fabrics, office supplies, bag, leisure goods, medical and health care, food and other industrial products. Separate exhibition areas for imported products are also set up for the first and the third phase.

2) Professional Exhibition

A professional exhibition is the one composed of an industry and its products or a group of industrial chains, such as an automobile exhibition, a real estate exhibition and a telecommunication exhibition. The categories of professional exhibitions are as follows.

- (1) Brand exhibition: It mainly shows the brand image of the enterprise, and then the products, as shown in Figure 1-28. Automobile exhibitions of this kind are mainly held in Beijing, Shanghai and Guangzhou. (tier 1 cities)
- (2) Sales exhibition: Products are sold mainly through display, as shown in Figure 1-29. Automobile exhibitions of this kind are mainly held in places like Fuzhou, Suzhou, Wuhu, Ningbo, Yangzhou, Dongguan, Wenzhou, and Wuxi. (tier 3 cities)
- (3) Brand & Sales exhibition: It is the combination of an image exhibition and a sales exhibition, as shown in Figure 1-30. The comprehensive automobile exhibitions are mainly held in places such as Chengdu, Shenzhen, Qingdao, Hangzhou, Wuhan, Changchun, Nanjing, Changsha, Nanchang, Hefei and Guiyang etc. (tier 2 cities)

Mastering the characteristics of the above professional exhibitions is very important for the design, layout and expense control of the booth.



Figure 1-28 Brand exhibition/Shanghai



Figure 1-29 Sales exhibition/Wuhu



Figure 1-30 Brand & Sales exhibition/Wuhan

3. Classification by the scale of exhibitions

According to the scale of exhibitions, they can be divided into four types: international exhibitions, national exhibitions, regional exhibitions and independent exhibitions run by local enterprises.

4. Classification by the time of exhibitions

- (1) Regular exhibition: It has a fixed exhibition time, once a year or every several years.
- (2) Non-regular exhibition: It can be held irregularly according to conditions and needs.

5. Classification by the exhibition venue

- (1) Indoor exhibition: It is held in the exhibition hall, as shown in Figure 1-31.
- (2) Outdoor exhibition: It is held outside the exhibition hall, as shown in Figure 1-32.



Figure 1-31 Indoor exhibition



Figure 1-32 Outdoor exhibition

6. Rating of the professional exhibition

In 2013, the standard for Domestic Trade Industry of the People's Republic of China-*Rating standard for professional exhibition* (SB/T 10358-2012) was promulgated, which was implemented on July 1, 2013, as shown in Table 1-1.

Table 1-1 Rating standard for professional exhibition

1 Rating Description	
1.1 Full Score: 720 points	
1.2 Minimum Score for Each Grade	
AAA: 650 points	
AA: 530 points	
A: 430 points	
2 Scoring Standard	Full score for each major item
2.1 The Ratio of Net Exhibition Area to Special Decoration Area	100 points
2.2 Exhibitors	70 points
2.3 Visitors	150 points
2.4 Continuity of Exhibitions	50 points
2.5 Satisfactory Rate of Exhibitors	150 points

2.6 Related Activities	80 points
2.7 Additional Assessment Items	120 points

1.3 The Basic Situation of the Booth

The structural units used for exhibition activities are called booths, which are of great importance as the main part of exhibitions. With the development of the convention and exhibition industry, there are many types of booths. The following is the classification only by the common methods.

1. Classification by venues

- (1) Outdoor booth: a booth designed and built on an outdoor venue (see Figure 1-4).
- (2) Indoor booth: a booth designed and built on an indoor venue (see Figure 1-5).

2. Classification by mobility

- (1) Common booth: It uses a set of exhibition fittings in one exhibitions (see Figure 1-6).
- (2) Modular booth for roadshow: It uses one or more sets of modular booths in itinerant exhibitions (see Figure 1-7).

3. Classification by size

- (1) Super-large booth: over 2000 m².
- (2) Large booth: 500-2000 m².
- (3) Medium-sized booth: 55-499 m².
- (4) Small booth: 9-54 m².

4. Classification by design

- (1) Standard booth: It is built with uniform materials system in accordance with uniform styles and sizes. It has the same basic equipment with the specification of 9 m², 12 m² or 15 m², as shown in Figure 1-33.
- (2) Special design booth: Different from the standard booth, it is a unique booth designed and built by the exhibition construction company. The special design booth is shown in Figure 1-34.



Figure 1-33 Standard booth



Figure 1-34 Special design booth

5. The status of the booth

Any exhibition is composed of booths, exhibits, on-site activities, exhibitors and visitors. Among the 5 parts, the design, production and installation of the booths are particularly important, for it determines the quality and level of the exhibition, and also shows the strength of the exhibitors and the quality of the exhibits. Therefore, the booth plays a vital role in promoting companies and their products.

6. The functions of the booth

- (1) It can build corporate image and brand. The scene of visiting the booth is shown in Figure 1-35.
- (2) It can promote company products. The product display is shown in Figure 1-36.
- (3) It can serve as the platform for holding various activities, as is shown in Figure 1-37.



Figure 1-35 The scene of visiting the booth



Figure 1-36 The product display



Figure 1-37 The activity platform

2.

STANDARD BOOTH

Exhibitions generally have two types of booths, standard booth and special design booth. The booth installed in uniform style, size and materials system is called standard booth (see T/CCPITCSC 023-2019), commonly known as shell scheme.

2.1 Types of Standard Booths

Standard booths are widely used and easily classified.

According to the styling, the standard booths can be divided into two categories, the basic standard booth and the upgraded standard booth or upgraded shell scheme.

1. Basic Standard Booth

The basic standard booth is constructed with aluminum framing system, polyester plywood partitions, etc. into $3\text{ m} \times 3\text{ m}$ or $3\text{ m} \times 6\text{ m}$ specifications. It is simple and can be disassembled and assembled by connecting lock connection.



Figure 2-1 shows the basic standard booth that is not decorated.

Advantages: fast installation, reusable, low cost.

Disadvantages: single shape and simple structure.

Application: small exhibits.