The Presentation of Virtual Holographic Projection in the Modern Cultural Exhibition Halls

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Abstract: Virtual holographic projection is a new generation of innovative rear- projection screen through holographic technology. It fully realizes the display of exhibits in a more lifelike dynamic way presented in the air. In the antique museums and cultural relics exhibitions, holographic projection technology is commonly used, which is not only suitable for the display of cultural relics through the windows of the cultural exhibition halls, but also can publicize historical and cultural knowledge. Through the change of light to satisfy the appearance vogue, novelty and retro dynamics, and from the display effect to allow a more three-dimensional presentation, so it can meet the needs of the viewer's appreciation, which is very valuable for the cultural exhibition halls because the screen becomes an integral part of the overall interior decoration.

1. Introduction

Holographic projection is a kind of virtual imaging technology through dynamic and static combination. The requirements of the cultural exhibition halls for virtual holographic projection are relatively high. It should meet the historical and cultural value and rich era language contained in cultural relics, and at the same time, it should be presented in a three-dimensional and all-round way. Therefore, the virtual holographic projection system is a very good half-space imaging system that can suspend the three-dimensional image in the actual scene of the cabinet. Of course, this system can realize the display of some large, super large and hard to be visited cultural relics, which is very valuable. It is achieved through some equipments of the system, which is mainly composed of cabinet, track, spectroscope, lamps of various angles and video player. Through the principle of spectral imaging, we can make a real simulation effect, which can display the real object perfectly from certain points of view and construct a perfect three-dimensional model. This gives more space for the exhibition halls to solve the problem of insufficient space and large collections unable to collect, forming a panoramic and systematic display of cultural relics. Virtual holographic projection is now well used in exhibition design industry, so the question is whether virtual holographic projection is suitable for the exhibition halls, the answer is yes. At present, virtual holography technology is used in 60% of the public museums in China.

2. Overview of Holographic Projection in the Cultural Exhibition Halls

In terms of holographic projection in the cultural exhibition halls, the reason why virtual holography is popular is that holographic rear-projection screen and transparent rear- projection screen can provide dynamic display in the air. This is a new and stunning transparent interactive touch media solution. It can attract potential customers to visit the museum. After the cultural relics are unearthed, they will be greatly damaged by the external conditions such as air oxidation. In order to protect cultural relics, virtual holography is used. The suspended stereo image can rotate 360 degrees continuously. In the culture exhibition halls, virtual holographic projection is convenient for customers to display some large, complex or valuable items, such as tripod, large stone statues, large wood carving, etc., to achieve the purpose of not damaging items and simplifying complex items. Virtual space pseudo-holography projection is suitable for the exhibition halls of enterprises in these industries. Through using holographic projection in the open history exhibition halls, without wearing any other polarizing glasses, you can watch the 3D phantom stereoscopic display effect without restriction, giving people a visual impact and a strong

sense of depth. This kind of exhibition form is suitable for the exhibition halls full of experience and feeling for the influence of culture and the past of the World Expo.

3. Advantages of Holographic Projection in the Design of the Cultural Exhibition Halls

With the continuous development of multimedia display technology, virtual holographic projection has become the “facade” in the digital exhibition halls, especially in the cultural exhibition halls, art museums and other exhibition halls. In real space, through the ability to apply digital technology to space, the 3D image visualization achieved is a very realistic effect, reaching the effect of the naked eye 3D display. Therefore, it can meet the needs of most visitors. Compared with the traditional display mode, it highlights the sense of space and can achieve panoramic, 360 ° presentation, which is impossible for the traditional display, so it has prominent advantages.

A. Novel display form: So, what's the difference between the traditional 3D display technology that we are familiar with and holographic projection technology, or what's the advantage of holographic imaging technology? Its main novelty lies in the great advantage of not wearing 3D glasses, which is a breakthrough to some extent. It can display illusion 3D effect and naked eye 3D effect in 360 ° without dead angle, so that the audience can feel the stunning effect.

B. Rich display content: High definition and color, strong three-dimensional sense, lifelike; digital content can be changed at any time according to the requirements, truly recyclable, and Shenzhen Guangyu digital professional technology are excellent without worry.

C. Flexible projection size and high imaging resolution: There are many imaging media and flexible imaging area. The number of optical languages can be selected according to different needs of customers.

D. Convenient equipment installation: Holographic projection makes a good use of space. It can adjust the location of hardware according to the existing building space structure and take a higher level in the reasonable layout of the space structure. For the existing building space, it must be conducive to the permanent preservation and use of each building space.

E. Great efficiency and money saving: Control the cost to the maximum extent, avoid the extravagance and waste caused by decoration, use it all the time once installed, ensure the quality, facilitate maintenance and reduce the maintenance cost in the later stage.

F. The possibility achieved by system integration engineer and display designer

Engineers and designers mainly optimize the layout of the exhibition halls from the perspective of vision, hearing and touch. In view of the existing situation of the space, especially the disruptive optical digital experience, multimedia technology can also be used to integrate the digital multimedia display technology perfectly. For this multimedia technology and video technology, it is very important that holographic projection can be introduced into the cultural museum industry, which injects vitality into the innovation of traditional culture and museum industry.

4. Characteristics and Application of Virtual Holographic Projection

4.1 Characteristics

In terms of characteristics, it mainly includes the following aspects:

(1) The single-chip penetration screen, as a feature of holographic projection, is also a highlight.

It has a precise optical structure from the inside, which can effectively filter and resist the surrounding light, so that the image is very clear, especially the picture quality is bright. Moreover, the single-chip screen is super light, which is its feature.

(2)It has high transparency, which is the characteristic of holographic projection. Unlike the past projection, holography is also reflected in the characteristics of high brightness and high contrast, that is to say, it can achieve the image quality above HD, and it can further double-sided imaging, which can satisfy different objects and can also be presented in different perspectives or achieved under the condition of general environmental effect.

(3)It has the function of presenting the real scene and image at the same time, which is a very

special place. That is to say, you can not only present the content of the real scene, but also make the image cooperate with the real scene so as to achieve a variety of aesthetic possibilities, especially this variety of transparency options that can achieve the effects of transparency, translucency and opacity.

(4)For the cultural exhibition halls, it is usually indoors, so it needs good light and shadow to show indoors, and for the outdoor exhibition, it also needs light and shadow, which is usually presented in the way of window, to achieve a kind of light and shadow effect similar to that of shop window advertisement. Of course, the light intensity outside will vary, but for the holographic projection, another feature is that it isn't affected by the original space. It is easy to install in any shape and will not damage the original decoration and design.

4.2 Application of Virtual Holographic Projection in the Cultural Exhibition Halls

4.2.1 Imaging

Imaging can be said to be a very important result. Holographic projection is mainly used to suspend the three-dimensional image in the half air of the real scene, creating an illusory and real atmosphere. It is suitable for the cultural exhibition halls to show individual items with rich details or internal structure, such as carving, gem, Hetian jade, figure stone carving and so on, giving the audience a feeling of complete three-dimensional effect and visual enjoyment.

4.2.2 Technology

The application of holographic projection technology in the window of the museum can not only produce the three-dimensional illusion in the air, but also make the illusion interact with the visitors, complete the interaction together, producing a stunning performance effect. From the application of holographic projection technology at home and abroad, the beautiful holographic projection picture brings the audience to another world with the change of cultural relic color, which seems to make the audience experience a dual world of virtual and reality. In the same space, there is an extraordinary fusion, which arouses the desire of visitors to watch.

4.2.3 Value

The exhibition of cultural relics is a special industry, so the original value and aesthetics of cultural relics are presented by holographic projection. From this point of view, the importance of virtual holographic projection can be seen, and its ultimate purpose is to reflect the original value and modern value of cultural relics.

4.2.4 Highlight

Holographic projection technology is the reverse display of holography. Holographic projection technology is a real 3D image, which can view different sides of the image from any angle of 360 °.

5. Conclusion

At present, the virtual projection equipment has not been universal in the domestic cultural exhibition halls, which needs us to further guide workers in the exhibition halls to seriously study the application value of holographic projection and from different perspectives to look at holographic projection-a kind of multimedia technology that has been widely used in foreign countries.

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