

# Analysis of Lighting Designing in Clothing Display

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**Abstract:** There is no doubt that lighting is the most effective way in shaping the environment of clothing stores. Through designing human-directed lighting, the total atmosphere of the clothing market could be improved in just a second, creating a charming space to attract customers. According to the function of the clothing display lighting, it could be classified into three forms, which is overall lighting, accent lighting, mood lighting. Each form has its own function and advantage. The color temperature of the display lighting exerts a direct influence on the presence of the clothing color.

**Key words:** lighting design; lighting form; function; color temperature; glare control

Lighting design affects and guides customers' sight, vitalizing the space, environment, and clothing. It is also be an essential part in the display of clothing store. Clothing display, as an effective way to improve clothing brand, plays an increasingly important role in the terminals of clothing sales. There is no doubt that lighting is the most effective way in shaping the environment of clothing stores. Through designing human-directed lighting, the total atmosphere of the clothing market could be improved in just a second, creating a charming space to attract customers.

In the first place, the aim of lighting design is to objectively meet customers' needs to see the goods, which should be in compatible with the physical needs of visual, neither too dim nor too bright, avoiding the glare to stimulate eyes. Secondly, utilizing lighting design to create and present art atmosphere. Last but not least, the color of the display clothes should be guaranteed to present in the most appropriate way. Goods like clothes have a relatively higher requirement for the presence of the lighting color; the light should be selected in light of the color of the display clothes, avoiding distorting the clothes inherent color.

## 1. Clothing display lighting has three forms

Clothing display lighting has three forms as follow: natural lighting, artificial lighting and the combination of the above two forms. Generally artificial lighting is the dominant part, which has the advantage of being convenient to design and use, and having good control over its illumination, color, and direction. But it consumes a large amount of resources and produces extra heat in the summer day, which is not environmental friendly. Natural lighting could not be adopted by itself under normal circumstance, because it changes all the time and not easy to control. It advocates to combine the natural lighting and artificial lighting in modern design field. During the day, the natural light could be utilized efficiently. The shop window should be transparent, not using closed back lighting, to let the natural light shine in the room, im-

proving the illumination of the store and saving resources.

## 2. The lighting type of the light

The lighting type of the light could be classified into three forms that is direct lighting, indirect lighting, diffusing lighting.

### 2.1 Direct lighting

The light injects from the lamp and 90% of it reaches the assuming working space, which is called direct lighting. Because most light of this type shines in the working place, so it could be utilized the most effectively and attracts others' attention. Direct lighting could establish dramatic comparison between bright and dark, but at the same time make people feel a sense of fatigue, and produce glare as well. It could make people excited in a short time, such as the stage strobe in entertainment place.

### 2.2 Indirect lighting

Using reflected light to illuminate, choosing opaque material as illuminator, or making the illuminator hide inside lamp tank, only about 10% of the light or below is emitted directly to the assuming working place, more than 90% of the light is emitted through the ceiling or the wall to illuminate the assuming working place, called the indirect lighting. Indirect lighting has soft light, not easy to appear glare. But light energy consumption is huge, usually integrated with other illumination methods to be used together to achieve the ideal artistic effect.

### 2.3 Half direct lighting

Using translucent materials or opaque materials with hollow to make light housing, making 60% ~ 90% of light directly irradiate the assuming working place, the rest of the light through translucent materials or opaque materials with hollow to irradiate the non-working place, this kind of lighting is often called half direct lighting. Because half direct lighting not only meet the illumination of the working place, but also can effect on top where is not working, thus making the brightness of the interior

space appropriate and soft, enlarging the space at the same time.

### 3. The forms of the clothing display lighting by function

According to the function of the clothing display lighting, it could be classified into three forms, which is overall lighting, accent lighting, mood lighting. Each form has its own function and advantage.

#### 3.1 Overall lighting

Overall lighting, which lights the entire clothing store, usually adopts floodlight and indirect lighting. It can also adopt the natural lighting as the resource; the total illumination should not be too strong. In the place where has TVs or display devices, the blocks should be made to reduce their impact to the minimum level. In artificial lighting environment, the overall lighting could be enhanced or decreased consciously according to the requirements and the flow of customers, to create a full of artistic appeal environment. Under normal circumstance, in order to give prominence to the lighting effect of the exhibits, excepting consciously guide audiences and ease the flows of people and use the intensity of the light to work as indicative lighting, the lighting of other parts should not be stronger than that of the clothing display areas. As the resource lighting of the entire clothing market, luminous ceiling, chandelier, or lighting ceiling made up of LED components are often adopted. Floodlight light can also be used to irradiate the ceiling to obtain the soft reflected light.

#### 3.2 Accent lighting

Accent lighting is utilized to emphasize the exhibits. It includes clothing display rack and booth lighting, promotional photos and text lighting, and brand logo lighting. Reflector and condenser are the best option, but sometimes track lights above the booth and racks can also be used. The lighting should not be too even, it should have the stress in the different direction, using the side-backlight to emphasize the three-dimensional feeling of the exhibits. Some objects need balance lighting, such as text, pictures, etc, so soft lighting light and light with grid are the most appropriate one. The exhibits which require a relatively high requirement for color resolution, it is better to use the light with good presence of color, such as the mix lighting of fluorescent lamp and incandescent.

#### 3.3 Mood lighting

Mood lighting is to render the atmosphere, create specific sentiment. In the clothing display area, floodlight, neon light, laser light, LED light and other facilities could be used, with careful design, to create an extraordinary artistic atmosphere. Through using mood lighting, the shadow could be eliminated, and create different ef-

fect in the special clothing display. The light with color filter could be installed in the gallery and showcase, to create a variety colors and dramatic effect. The color processing is another element of art lighting. Designers can use the cool colors of light to imitate the natural effect of the moonlight, warm colors can also be used to create the hot sun or hot fire effect. The lighting techniques are often used for clothing window display to create a beautiful artistic atmosphere.

### 4. The type of display lighting

According to its type, the commonly used display lighting includes ceiling lamps, chandeliers, downlights, spot lights, tracking lights and other lights with different types and specifications.

#### 4.1 Chandeliers

Chandeliers is derricks, pendant lighting. Decorative chain connecting object such as the light source fixed on the ceiling lights on the suspension hanging in the room, with a wide scope and a general illumination of light, in general, mainly used for indoor general lighting, also called the overall lighting. The chandeliers are usually installed in the center of the ceiling and suspended in the air, which is so eye-catching and plays an important role in decoration. Therefore, choosing a different styling, size, color, texture, will affect the artistic effect of the space environment, reflecting the different grades of decoration. Of great note is that the lower indoor space is not suitable for the use of chandeliers, as with a chandelier will make the space appear shorter.

#### 4.2 Ceiling lamp

Ceiling lamp is a direct adsorption, fixing on the ceiling lamps.

#### 4.3 Grid lights

Grid lights and downlights are all embedded lamps, usually used for general lighting with higher lighting levels, such as commercial stores and so on. In general, grid lamps installed in the ceiling inside, the light port is as high as the ceiling. In the absence of ceiling cases, the light could be directly installed in the ceiling according to the design requirements. Grid has several specifications of 600mmX600mm, 1200mmX600mm, 1200mmX400mm. The underside of the light is a stainless steel or aluminum lamps made mask, the surface with is a stainless steel or aluminum grille cover, fluorescent works as the main light resource.

#### 4.4 Circular lamps

According to the design effect needs, there are half-embedded in the ceiling downlight and mounted on the ceiling surface downlight. Circular lamps are the mostly used form which equipped with energy saving light tubes, LED lamps, halogen lamps, incandescent

lamps, etc.

#### 4.5 Spotlight

Spotlight includes ordinary chandelier lighting, ceiling spotlights, track lighting, spotlights and other types of grid. Ordinary ceiling lighting, grid lighting are installed in the ceiling or embedded within the cabinet. Ceiling spotlights, track lighting are directly installed in the ceiling or wall. The resource of the light is equipped with energy saving light tubes, LED lamps, halogen lamps.

#### 4.6 table lamps and floor lamp

Using something to support the light source, putting on the coffee table, tables, which called Spotlight, the one putting on the ground is floor lamp. Not only do table lamps have the function of lighting, but also play an important role in decoration and the creation of atmosphere.

#### 4.7 luminous ceiling

All or part of the ceiling is equipped with white glass, frosted glass, painting glass, optical grating and transparent materials to shape, installing fluorescent lamp inside, which is usually called luminous ceiling. Luminous ceiling have the advantage of emitting a large area, illuminating evenly, making the space more open and spacious, it is often used in commercial stores, hotels, catering, entertainment and other public place. It can also be used for walls and floors to create the lighting-emitting walls and floors. The difference is that light-emitting ground requires more solid materials, such as making the structure with copper, making translucent materials with tempered glass.

#### 4.8 LED lights

LED lights capitalize on building structure or interior design to block the light source. They are used as decoration or auxiliary light resource, which can increase the level of a sense of space.

### 5. The influence of color temperature

The color temperature of light source using for exhibiting has the direct influence on the representative of the color in fashion. The color rendering of light source has the direct connection with the color reproductively about fashion display. The color rendering of light source is representation by the rendering index, it means the departure between the color when the object under the light and the color under the benchmark light (sunshine), which can reflect the color characteristic of the light source in detail. When the color of emitted light from the light source and the blackbody under a certain temperature are equal, the temperature is called the color. The different temperature of the light source means the different color of light, when the temperature is below 3300K, people will feel steady and warm. The middle color temperature is between 3000 and 5000k, which

make people feel cool. When the temperature is above 5000k, people will feel cold. Using the lower color temperature's light source to shine, can make red garment more bright-colored. The moderate can make blue felt clear and cool. The high can make the body feel cold.

### 6. The control of the glare in the clothes shop show is also one of the problems needs to be solved.

In human angle, the inappropriate brightness distribution will hurt the function of our vision. If there is a serious brightness situation in angle, the exceeded brightness comparison will cause intensive stimulation to people's vision, which is existing glare. Glare is defined the direct flare and reflect glare. The direct glare is caused by the exceeded brightness from the lamp enter person's sight directly. The severity of glare is based on the brightness and the size of light source, the position of light source in the view, the direction of observer's sight line, the level of luminance and the reflectivity of surface in house and so on. In which the brightness of light source is the most important. Besides, direct lighting is easier to cause flare. So it needs to avoid using large-area direct lighting, instead of indirect lighting or diffuse lighting, the light through the material which has the ability to weaken flare, and then diffuse to the edges, in order to make the brightness of clothes shop show area has difference in strength, and felt soft in whole. this kind of lighting, light is soft, and no glare.

Light can highlight images, and can also conceal it. The things that can not be removed or zoomed, lighting designers can use lighting to strengthen or weaken them. Distinctive lighting designers have the ability to attract people's attention and make them stay long in the clothing store and even take part in the environment of the display. Dynamic light can make room full of dynamics, the changing light can enrich the space level, changing the spatial scale, making a clear space-oriented direction, emphasizing the focus and center display, to produce special visual effects, create a unique atmosphere. Using the contrast of the shadow and light shades can reduce the sense of thin objects, emphasizing the three-dimensional objects, increasing the overall attractiveness of the space. By arranging the lighting and accent lighting, a clearly space could be divided into different regions, which will convey the center and focus.

In summary, lighting is a very important visual communication media in the display design in clothing store. Designers can use special lighting combinations, different shade lighting, and dynamic lighting project to render a different space atmosphere, create a rich spatial variation, vitalize the atmosphere of the clothing store, and create a particular mood.

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