

## **Content Creation Guide for FogScreen**

[www.fogscreen.com](http://www.fogscreen.com)

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## **I. Issues on Equipment and Environment**

Before designing the content it is essential to know the ambient lighting, background color and the FogScreen's and audience's relative position. These will have a crucial role in the viewing experience and will have an impact on the design of colors, graphical elements etc. of the presentation. The best viewing experience can be gained if the projector can be placed about 6-7 meters (20-23 ft.) from the viewers, but shorter distances can also be used. The best viewing experience results if you can control ambient light, the overall environment and can direct the audience to the best positions (= in front of the screen).

### **I.1. Ambient Lighting**

As with any screen, the ambient lighting has a big impact on the visibility of a presentation. Bright ambient lighting can be compensated with a brighter projector. Even more important (and more cost effective) is to arrange in certain limits a dark background wall or drapes for the screen. Note that what is behind can be seen through the screen. If there is a window or bright lights behind the screen, that may ruin your show.

Remember that the FogScreen also passes some of the projected light, so you will need a bit brighter projector than usually. 5000 ANSI lumen projector is usually enough for typical environments like trade shows, if the background is dark. In dark rooms even less lumens will do.

Also the colors and brightness of the presentation have a big impact on visibility. Section 2 tells more about the ideal color design.

### **I.2. Viewing Angle**

Because the FogScreen is a living surface, and because it is not infinitesimally thin, the viewing angle has a strong impact on the experience. The image quality is the best, when the presentation is viewed towards the projector. The more oblique the viewing (or projection) angle, the more blurry the image becomes, as pixels increasingly mix with the neighboring pixels.

When viewed from the right side, especially the left edge of the screen becomes blurry. On the sides, narrow visual elements may even disappear, or their color may change. When viewed from the sides, the bright areas may blend into darker areas, as the neighboring pixels get mixed. If the ambient lighting is low or nearly dark, this effect does not take place as strongly as in brighter environments.

### **I.3. The Position of the Projector**

It is recommended to use rear projector to the screen, because only rear projection works well. The FogScreen produces good image with rear projection, but reflects hardly anything back towards the projector side. This feature can also be used to create a two-sided screen. With one as bright projector on each side of the screen, you can show the same image, or totally different images on the different sides, and the images will not interfere each other. You could e.g., say "Welcome" on one side, and "Good bye" on the other!

The position of the projector depends on which direction and on which height the audience is viewing the show. For maximal experience, try to prevent the hot spot hitting the eyes by placing the projectors so high that the device itself hides the hot spot. This will also reduce the nearby viewers to block the projector light.

If the audience is standing on the floor, put the projector high up. The height of the projector depends on how far is the audience from the screen. If the audience is sitting down, put the projector down on the floor.

An example of placing the FogScreen:

A) The position of projector

- height 2.5 m (8 ft. 3")
- distance from the screen 3.7 m (12 ft. 2")

B) FogScreen height 2.2 m (7 ft. 3")

In this example the lamp of the projector (hot spot) does not blindfold the viewers who stand over 3.5 m (11 ft. 6") away from the screen, assuming most of the viewers are over 165 cm (5 ft. 5") tall. You can place the projector higher into more oblique angle, to hide the hot spot even more, but then you need more keystone correction and the image may get slightly more blurry. If you design a show e.g., for kids, or place the screen higher or the audience lower than usual, you should consider and compensate this by placing the projector accordingly. Remember that FogScreen company usually takes care of the installation of the screen and the projection. This guidance is for you to help planning it right from the start.

#### **1.4. Projector Keystoning**

The higher the projector is placed, the more important is projector's sufficient Keystone correction. Keystone correction enables to improve image quality, which is distorted due to big projection angle. Please ensure that your projector's Keystone correction has a wide range.

Also wide zooming range or interchangeable projector lenses may be useful, if you install the screen to various places. High contrast of the projector (1:800 or more) is also a useful property, if you intend to show bright objects floating in thin air (with a black image background).

#### **1.5. The Fog Flow Adjustment**

The speed of the fog flow on FogScreen can be adjusted. A faster flow gives smoother but faster influence but also the noise of the device increases. An important point is to make the air and fog flows roughly uniform, so there is no speed difference between them. The differences in image quality are however relatively small.

### **2. Visual Issues on Presentations**

Animations, still images, videos, 3D graphics and any other types of content can be used. Most images look excellent on the FogScreen. However, there are some guidelines for the imagery to ensure it looks good.

Loudspeakers are usually needed, as most video materials etc. have sounds. A proper sound space makes the images look even better. The FogScreen device itself is rather silent.

## 2.1. Special Features

FogScreen is a unique projection screen for presentations. You can create stunning experiences for your audience. However, some special properties of the FogScreen need to be taken into account when designing the presentation.

The recommended aspect ratio is 16:9 (widescreen format). The lower part of the screen is more turbulent, and image quality is not as high as on the upper part. It is thus not recommended to place small visual elements (like text and buttons) onto the lower part of the screen. If the projection area is about 185 x 104 cm (6 ft. x 3 ft. 5"), the precise area is over half of the screen height. The lower part still produces an acceptable image for most applications. Please note that also other content than images can be used. When using for example only color lightning to the screen, the "picture area" can be much bigger!

## 2.2. The Background Color of the Presentation

As a general rule, the background color of the presentation should be dark, and the contrast of the graphical elements high. Various color hues may look different on the screen. E.g., blue background color seems to visually smoothen the screen. Also dark red looks better than many other background colors.

White and bright shades (as light yellow or light green) emphasize the movement and turbulence of the fog. This can be used to create 3D-like illusions for the viewers.

## 2.3. FogScreen's Impact on Colors

FogScreen, or rather the ambient light and environmental issues like projector properties, back wall color, etc., have an effect on how colors look like on the screen. If there is too much ambient light, brown and other dark colors may not reproduce very well. The environmental issues may slightly alter or lighten any color. In general, bright colors reproduce better than dark ones. High contrast of the graphical elements is also recommended.

## 2.4. Texts

In general, grotesque fonts look better on the screen than roman types, and are thus more legible. However, a paramount issue on legibility is the contrast between text and background, which should be high.

Good color combinations are for example:

- White text on dark red background
- White text on black background
- Yellow text on blue background
- Yellow text on black background
- Yellow text on red background
- Black text on red background
- Black text with white shadows (e.g., inner bowl) on red background

Bad color combinations are for example:

- Green text on yellow background
- Yellow text on white background

The image quality is the best on the upper part of the screen, where the fog plane is the most uniform (the quality also depends on if the projector is placed up or down). The image quality reduces further down. So place any small text or elements only near the top area of the screen. Especially any thin vertical lines tend to disappear easily. Please note that FogScreen is not meant for showing PPT-show or such content. Text is only recommended in small amounts among the pictures shown.

## 2.5. Font Size on the FogScreen

An example:

Position of the projector

- Height 2.5 m (8 ft. 3")
- Distance from the screen 3.7 m (12 ft. 2")

FogScreen

- The height of the FogScreen unit 2.20 m (7 ft. 3") from floor
- The screen distance 30 cm (1 ft.) from the edge of the FogScreen unit
- Top edge of the image 4 cm (1-2") below the unit

The environment

- Low ambient light
- The presentation has black background and white text
- Viewing distance about 3-4 meters (10-13 ft.)

Font size	Size on the screen (about)
7	2 cm (0.8")
10	3 cm (1.2")
15	5 cm (2")
20	8 cm (3.2")
40	15 cm (6")
60	21 cm (8.2")

In this example the smallest font size (7) is legible only on the area where the beamer is right behind the text. Elsewhere the text is blurred. Font size 10 makes the text a little more legible, but not very clear. Font size 15 is legible from many viewing angles except on the very sides and on the lower parts of the screen. Font sizes above that are clear in most cases.

## 3. Interactive FogScreen

The FogScreen can also be made interactive with the interactivity add-on, reacting to the touch of the viewers. This turns the passive projection screen into immaterial touch screen, and extends greatly the application possibilities. Only imagination sets the limits.

The interactivity is an easy-to-use and relatively low-cost option. The hand becomes a mouse! The interactive system interprets the viewer's touch near the screen plane as a mouse left click. This means that you can design and try your content initially on your computer, and use any Windows-compatible software to create your web pages, Flash animations, and any other format presenta-

tions. With the interactive option, you could e.g., make sounds or music by touching the objects on the fog.

There are separate instructions on installing and using the interactive option. It is available from us or from our distributors.

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