

## White Paper

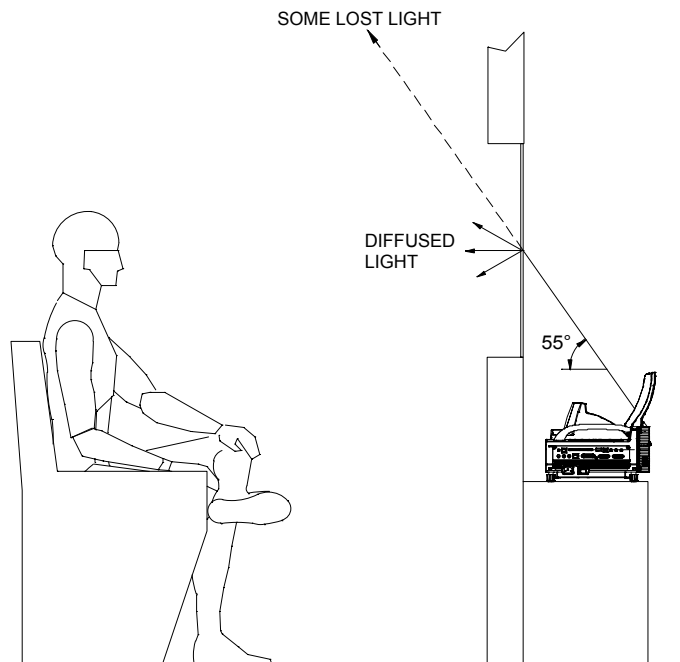
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### WT600 Used In Rear Projection Systems

The WT600 has a very short throw distance that makes it an attractive product to use in a rear projection (RP) system. By using the WT600, the depth of the rear projection system can be reduced by half of a system using a traditional projector. It is possible to design a system with a 100" diagonal screen that has a total depth of approximately 24" (single mirror system).

The key to using the WT600 in a rear projection system is 'screen selection'. The WT600 has a very steep projection angle (55°).

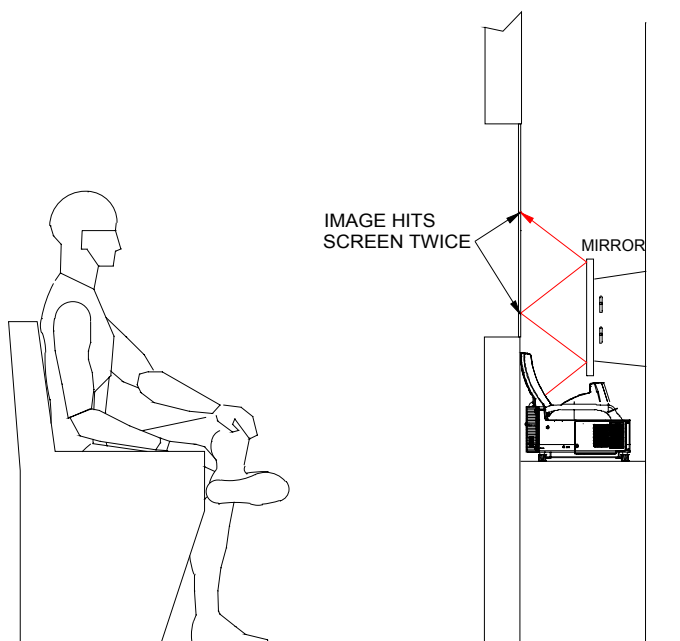
When the WT600 is installed on the opposite side of the screen from the viewer in an RP system, the image path comes through the screen at a very steep angle. When the light path passes through the screen, the screen diffuses much of the light so that the image can be seen from many angles. However some of the light keeps traveling at that steep angle after it passes through the screen and keeps traveling up so that some light may pass over the viewers' head when the projector is installed in desktop orientation. This portion of light is lost to the viewer (see diagram below).



'Hot spotting' can also occur in areas on the screen, usually noticed at the very bottom of the screen in the middle, when the projector is installed in desktop orientation. This is also dependant on the height of the viewer's seating. In testing the WT600 in the environments described, we have found the location of hot spotting and the intensity is not very noticeable compared to a traditional projector with a rear lens where hot spotting tends to happen more around the center of the screen and usually at more intensity.

Designers of RP Systems are also careful to use a screen and system designed to avoid the possibility of 'secondary reflection'. Secondary reflection can occur when an RP system with mirrors is used. Often diffusion screens have a shiny side which when facing the projector can reflect some light back to the mirror which in turn will reflect back onto the screen a second time (see diagram). This can cause a double image to occur. Secondary reflections can be

avoided by mounting the screen with the diffusion side toward the projector and the shiny side toward the viewer. This look has much the same luster as a direct view TV. If a more matt surface is desired, screen manufacturers offer screens with AG (anti-glare) coatings on the viewer side.



A screen that will give the best results should be a 'diffusion type' and it should be installed so that the diffusion side is facing the projector (not the viewer) to minimize the possibility of secondary reflection. Screens with a fresnel or 'etched' rear surface cannot be used since they require a projector with a zero degree offset lens. The WT600 does not have a lens, and as stated earlier, the image is projected at a very steep angle (55°).

A diffusion screen with a low gain of approximately 1.0 should be used. A low gain will help to 'capture' the image within the depth of the screen material and not allow much light to pass through and be lost over the viewer's head, as well as reduce the amount of hot spotting.

The system will not be as bright as when used with some brighter traditional projectors, and there may be some minimal hot spotting at the bottom of the screen. However the pros should far outweigh the cons for many users who need minimal depth in an RP system.

It is also very important that the integrator work with a screen manufacturer who has the expertise in designing an RP system that will give optimum performance when a WT600 is used within the system.