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Access XL V., Radisson Blu Aqua Hotel Chicago, IL.
Photographer: Barry Rustin, Evanston, IL.

- Public spaces, multi-purpose areas, and large venues can offer real challenges to a projection system—not least because of ambient light issues and a typical need for wide viewing angles.

One thing these types of installation don't need is a standard 1.0 gain matt white projection screen surface. White screens aren't a good choice for rooms with ambient light conditions; they're very diffusive and spread light in a very wide pattern. Unfortunately, white screens do this with both projection light and room ambient light, so both types of light then compete at the viewer's eyes.

That's why if there is a good amount of ambient light in the room we recommend an ambient light rejecting (ALR) screen.

Because people have been using 1.0 gain white projection screens for so long, however, we still see them in use — even in those multi-purpose rooms with ambient light. Besides habit, cost is a big reason we still see matt white screens being used. This trend is especially prevalent in sectors where budgets are tight, such as K-12 education construction.

One option is to use a higher gain white screen, such as Draper's TecVision® XT1300 White, which has a gain of 1.3. Using a higher gain white screen like this will improve the brightness of the image, but contrast suffers and even higher gain white screens are best used when the ambient light can be controlled.

The usual assumption, when dealing with uncontrolled ambient light in a multi-purpose area, is to handle it with a grey screen. Just going grey isn't necessarily the answer, however. Not all grey screens are ambient light rejecting. While their black tints allow some of them to improve contrast, they are still mostly diffusive surfaces and don't "reject" or "reflect" off-axis ambient light away from the audience. Traditional grey screens also tend to have very low gains. That means that they will eat up your projected light, again forcing you into a brighter projector.

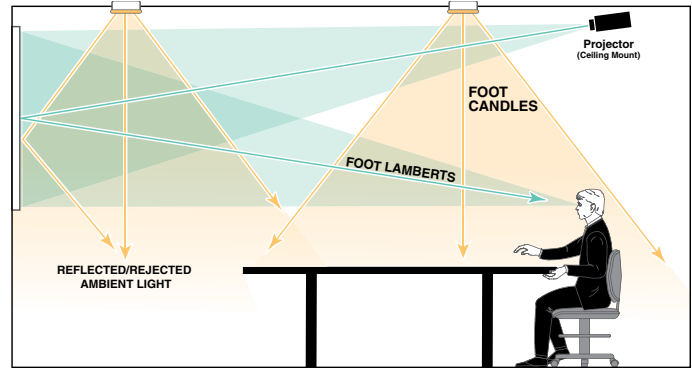
That's why the best choice for a room with a good amount of ambient light is an actual ambient light rejecting material.

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WHITE PAPER: SCREEN CHOICE FOR AMBIENT LIGHT COMMERCIAL SETTINGS



Worship spaces benefit from ALR materials



This illustration shows how angular reflective Ambient Light Rejecting grey screen materials work in rooms with ambient light.

The best ones are typically darker grey, which helps with image contrast, but they are more angular reflective than diffusive. Reflective components in the vinyl surface reflect off-axis ambient light away at the same angle as it is hitting the surface, essentially bouncing it away from the audience.

There is a caveat here. You can take it too far. Materials that are the most ambient light rejecting are so reflective that you can sometimes see hot spotting. They also typically have narrow viewing cones. The best choice is an ALR material with a good balance of angular reflectance and diffusion.

A quick word about color. Remember that grey tints reduce gain in most ALR materials, and they can tend to “muddy” bright colors. This means a brighter projector to sufficiently “light up” those colors, or better ambient light control. Even with that, however, ALR materials provide the best solution in lighted rooms, especially when proper selection tools are used to find the right material.

Not all ALR screens are the same. Go for one that gives you the best of all the characteristics needed for good design — the right grey tint for contrast, the right gain for brightness and wide viewing angles, Imaging Science Foundation certified for true color reproduction, and 8K ready. Don't settle!

As mentioned above, besides habit, cost is another reason we still see matt white screens being used instead of ALR materials. ALR surfaces have traditionally come with a higher price tag, so the cheaper matt white screens get used with a brighter projector. This doesn't really solve the problem. Throwing more brightness at a white screen doesn't enhance the contrast, and no projector can compete with good old

sunlight! Today there are more ALR surfaces on the market, which means less expensive options have become available. You can get better performance by evaluating the lighting conditions and combining the right projector and surface. Plus, the higher cost of an ALR screen is actually less than upgrading to a more powerful projector to handle ambient light.

Draper offers TecVision® solutions for high ambient light situations. TecVision MS1000X ALR has an on-axis gain of 1.0, and superior contrast, and is certified by the Imaging Science Foundation for color accuracy. TecVision XH900X ALR provides high contrast at a gain of 0.9 on-axis. XH900X has a wider viewing cone than MS1000X, is also ISF certified, and resists moderate to high ambient light. CS1200X ALR has a gain of 1.2 and rejects 82% of ambient light..

So how do you know which material to use in your situation? There are a couple of questions you need to ask. Assuming you know the screen type and size, you also need to know ambient light levels and the widest off center seating angle in the room.

At Draper we use an online calculator called the “Projection Planner” (draperinc.com/DraperPro/login.aspx) to calculate system brightness and contrast. Without a tool like this, you are guessing at image quality. To use Draper's Projection Planner you must register, but it is free. We've developed a tutorial on using the Planner:

youtu.be/EdlwFkSKbJE.

To learn more about Draper, check out our website at draperinc.com.

draperinc.com/whitepapers_casestudies.aspx