

WHITE PAPER

PROJECTION SCREENS

By Bob Mathes, AV/Video Sales & Marketing Manager

NEW TECHNOLOGIES SOLVING AN OLD PROBLEM



Up close and under projection, from only 19 inches away: On the left, flexible matte white with a tear seam; in the middle, flexible matte white with an ironed seam; and on the right, Optically Seamless TecVision XH700X Grey. Notice a difference?

- A seam in a projection screen viewing surface has been a fact of life for virtually every screen manufacturer (and their customers) for decades.

A seam in a projection screen viewing surface has never been a popular subject, but it has been a fact of life for virtually every screen manufacturer (and their customers) for decades. Although Draper has improved on our seaming techniques over the years, we decided to solve this issue once and for all. This has brought us to the point where we have some exciting news to share. But first, we need to give an overview of seams and what has been done to improve upon them.

TRADITIONAL SEAMING TECHNOLOGIES

Projection screens fall into two general classifications: self supporting that does not require tensioning to lay flat, and unsupported (flexible) that requires some tensioning method to ensure flatness. This report is focused on flexible, unsupported vinyl surfaces.

It is safe to say that all quality screen manufacturers utilize radio frequency (RF) heat sealing (AKA dielectric sealing) to create their seams. In this process, two pieces of screen fabric are placed between two dies (electrodes). The RF produces heat by exciting the molecules to the point that they melt and create the seam. The generic term for this method is called “tear seam.” The strength of the seal is determined by three factors:

1. Sealing current (radio frequency power)
2. Sealing time
3. Pressure

While the entire procedure is much more complicated than described above, this is a basic snapshot of how screen manufacturers have seamed their viewing surfaces together.

A few years ago, Draper developed proprietary processes that have two important benefits. First, we reduced the valley created when the fabrics are seamed (tear seam). Second, we could hide the shiny line created when the fabrics melt together. We believe we provide the best and least conspicuous traditional seams on the market today. Only under the most demanding critical viewing applications will the seam be a factor.

A DIFFERENT APPROACH

We acknowledge that there are applications and customers for whom seams in the viewing surface may be undesirable. Our approach to solving this problem was to consider all possible methods, including making the vinyl substrate seamless. One manufacturer currently uses this method, but, as is reflected in their prices, the costs for such a solution are prohibitive. We decided that we should leverage our seaming expertise along with our state-of-the-art TecVision® technology. Rather than using traditional tear seaming methods, we decided to fuse a base substrate which resulted in a flatter base material with a stronger weld (100% stronger than traditional seams discussed above), and eliminated the valley issue. With the ideal substrate perfected, we could then use our TecVision® formulation process to create a perfect and optically seamless viewing surface—at an affordable price!

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Optically Seamless TecVision XH700X Grey under projection, viewed from 19 inches away. If you can't see anything now, you won't see anything from normal viewing distances on these very large screens!



Proof that the photos in this white paper were indeed taken only 19 inches away from the viewing surface. Impressed yet?



Optically Seamless TecVision XH700X Grey from 19 inches away. Even up close and personal, can you see anything? (The ruler is there to show that the picture is in focus.)

TECVISION® OPTICALLY SEAMLESS TECHNOLOGY-HOW GOOD IS IT?

If you're already familiar with our TecVision® Engineered Screen Technology you know it offers unparalleled quality, uniformity and consistency. We have the same confidence in our new Optically Seamless Technology, and because of this, Draper makes an unprecedented offer. If there is a visible* defect, including anything resulting from the fusion process, visible to the naked eye or under projection more than five feet away from the audience side of any TecVision® screen, we'll take back the surface.

TECVISION® TECHNOLOGY: ALWAYS OPTICALLY SEAMLESS

When TecVision® was introduced, we limited the sizes to 15 feet in viewing height. We did so because of our goal to provide only the best in projection screens, and 15 feet was the largest we could provide without traditional seams. As we have outlined above, we have truly developed Optically Seamless Technology and with the release of this white paper we are pleased to announce that TecVision® Screens are now available up to 23 feet in viewing height.

*Does not apply to Perforated or NanoPerf screens, as the perforation holes may not line up exactly and the fusion line will be obvious because of the lack of perforations. However, at a distance where the perforations cannot be seen, we guarantee that you will not see any defects resulting from the fusion process.

For more information, visit the TecVision® web page: draperinc.com/go/tecvision.htm.

draperinc.com/whitepapers_casestudies.aspx