NoGap Screens

Screens of state-of-art rear projection video walls, are of critical importance to determine the overall viewing experience for enhanced situational awareness in mission critical applications. Screens define the visible seams in the overall image, and have a huge impact on image quality and stability. In real operational conditions, video wall installations need to take into account variations in temperature and humidity, hence resulting in larger seams between the different screens.

As the rear projection technology excels in the above characteristics for video walls, Barco takes the lead in taking screen technology to the next level and further optimizing the video wall viewing experience.

Barco's Patented NoGap Screen Technology

Several years of experience and focused development have enabled Barco to develop the ultimate video wall technology for control room environments. The NoGap Screens are not only designed to improve performance, but long-term reliability and ease of installation and maintenance.

Barco's NoGap Screens provide for

- **Seamless Appearance**: No mechanical gaps and no changes in optical gaps due to variations in ambient temperature and humidity
- **Stable and Robust Uniformity & Homogeneity**: No occurrences of separation, bowing or bulging leading to smooth uniform images. The screens are flat and rigid with significantly lesser geometrical distortions and no occurrences of element separation.
- **Earthquake proof :** In addition, the NoGap Screen offers more resistance against vibration, ensuring availability of standard 1G accelerationsThe 1 g-force on an object sitting on the Earth's surface is caused by mechanical force exerted in the upward direction by the ground, keeping the object from going into free-fall). in all directions for rear projection cubes with NoGap series.
- **Easy Installation and Maintenance**: Single screen alignment reference and scratch proof easy to clean surface that is resistant to water, cleaning agents and alcohol, in addition to board markers and tapes
- **Suitable for Multi-Touch use cases** : resistance to touch marks allows for enhanced applicability.

NoGap Screen Components

The NoGap screen is an optical screen consisting of a Fresnel lens for collimating the projector light and a front end element (seen from the viewer) for distributing the light usually realized by a lens-like micro structure. These 2 optical screen components of the NoGap screen are realized on glass. This is either done by replicating the optical functionality on thin polymer foils and laminating these foils to a 2mm thick glass carrier or by etching the optical structure into the glass surface.

In the first case, the gluing system used for lamination and the foil thickness are carefully chosen so that the final sandwich acts like a pure glass in spite of changes in temperature and humidity. Thereby leading to a compensation for thermal and moisture stress on the foils, so that the resulting sandwich is stable as a pure glass plate. Any variation in the form of extension or shrinkage for the screen is now in the order of the mechanical structure carrying them.

The **Fresnel lens** is now a sandwich of the glass carrier with one side being an etched surface and on other side being a foil with the Fresnel grooves. The functionality of the etched surface is **to reduce the Moiré and similar effects to a minimum**. The Front Element is a similar sandwich, but the foil contains optical structures similar to the plastic screen versions and the etched surface facing the observer is responsible **for Anti-Glare**.

The designing of the etching is done to obtain same levels of ambient light reflection as in the case of plastic screen variants. A very important functionality of the sandwich is to acts as laminated **safety glass**. In case the glass is damaged by external forces, the glass splitter will stick to the foil, and will not fly around, ensuring security of operators, viewers and end users.

NoGap Screen Assembly and Installation

The screen frame and assembly process has been carefully tuned to allow a fast & easy but accurate installation. Great attention was paid to the gluing process and the glass cutting process of the screen module which yields a physical dimension accuracy of ±0,05mm being a factor of 4 more stringent compared to usual glass cutting technology. This accuracy is mandatory for ensuring no mechanical gaps. It also allows for a unique installation and alignment technique ensuring a mechanical gap-less video wall. A reference screen is installed at the center of the bottom row and the next screens to be installed are aligned in touch with the reference. Further screens are aligned to the already installed screens in the same way. The advantage of using a stable carrier for the screen element is that no mechanisms for moving are required, which reduces the complexity and the costs of the screen module.

The NoGap screen technology is being offered on the market leading O-series HD (we don't use the term FHD) cubes in the OL and OLS models and can also be installed as an upgrade on existing installations. Please contact your Barco representative to discuss your specific case for upgrades.

Alternative Glass Screen Solutions

The majority of alternative glass screen solutions available on the market today, comprise of standard acryl screens components with a thin front element being put in between 2 float glass plates and sealed or glued around the border and at the same time to the metal screen frame, with a thickness range of 3mm to 5 mm. The 2 glass plates guarantee that the screen stays flat but remain sensitive to the :

- Risk due to Temperature Variation:
  Image deformation with increasing temperature and significantly increasing optical gaps in between the screens (a wider black “gap line” behind the glass) with decreasing temperatures
- Less Secure : The glass has no safety functionality and can cause accidents.
- Drop in optical performance such as brightness, contrast and ambient light reflections

End User Benefits

A customer using the NoGap Screen can accrue the following benefits:

1. Deployment of a highly stable and robust solution not impacted by variations in temperature and humidity, hence leading to true life-like visualization free of any distortions, hence making the experience **totally seamless** enabling undistracted attention to mission critical visual overview information.
2. Ease of deployment along-with backward compatibility of the screen with existing cube structures ensure a better **Return on Investment (RoI)** Continuous High performance through optimal reproduction of brightness and color levels with optimal viewing angles for optimal deployment. Additionally, the customer can be assured of **flawless operation in “force majeure” cases** like earthquakes as the screens are seismic certified to withstand 1G accelerations.
3. Peace of mind as the screen is resistant to scratches, water, solvents and alcohols making it easier to **clean and maintain**.
4. Safety being an important and key feature, the customer can ensure **accident free working environments** in the event of screen damage or breakage.