

NEOVERSE

What to Know When Investing in a Premium LED Wall

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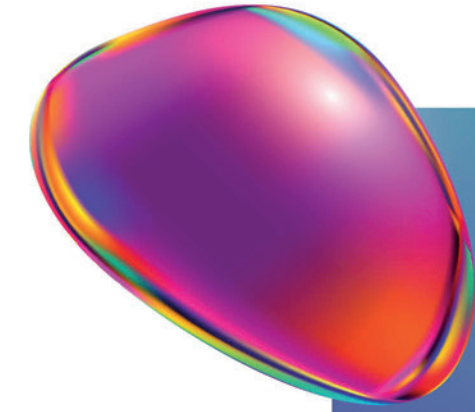
The Challenge

LED walls are becoming increasingly popular as proprietors are looking for ways to differentiate the in-center bowling experience, WOW their customers and compete with other entertainment options, such as movies, amusement parks and others.

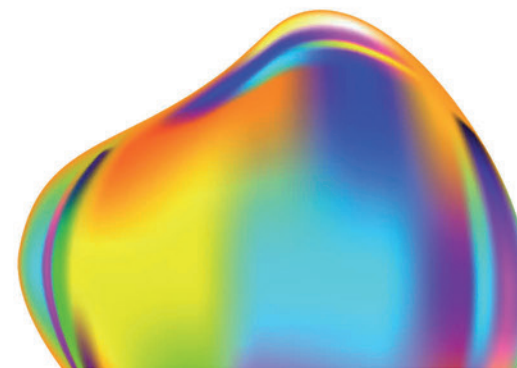
However, not all LED walls are equal.

They come with different resolutions and viewing angles, different levels of certification, safety and support, could be based on outdated software rather than more modern applications, can be built on a modern platform that can be easily upgraded or one that presents challenges every time a new version or new content is required.

To make the right choice, all of these factors plus many more, should be considered as LED walls are a meaningful capital investment that should deliver value long term for proprietors and present no operating issues.

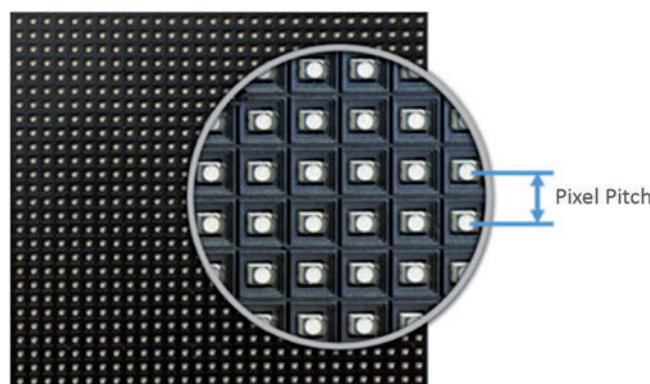


THE CHALLENGE



TECHNOLOGY & FEATURES

Today's centers are complex, with varying sizes, configurations and setups with lighting conditions that can affect and influence the guests' enjoyment. Bowlers may be multiple lanes away attempting to view the on-screen action or events happening out of direct line of sight. LED technology and the features of a video wall can vary greatly and affect the guest experience. Here's what you should consider when shopping for a premium LED video wall.



Pixel Pitch

Pixel pitch defines the distance in millimeters between pixels (LEDs) of the wall. The lower the distance between pixels (LEDs) the higher the resolution. This enhances the maximum viewing angle, and the overall quality of the wall.

Lower pixel pitch is better and is important for larger applications, such as at bowling centers, where guests are not always directly in front of the content and may be looking several lanes away at a baseball game on screen or the bowling action going on next door. The proper pixel pitch also ensures the optimal resolution and visual quality to guarantee the immersive effect of the video wall stands out in relation to all of the other elements in the center.

The optimal pixel pitch for an LED wall is P3.9 and is one where guests can see high quality, vivid content on-screen from anywhere in the center and from a variety of viewing angles (up to 155 degrees). Alternately, LED walls with outdated technology have a pitch of P5 or greater, which decreases resolution and distorts the image outside of direct line of sight lowering the overall WOW factor of the product.

LED Walls: Number of Pixels (LEDs) per Square Meter

	# of LEDs per M ²
LED Walls with Pixel Pitch of 3.9mm	65,536
LED Walls with Pixel Pitch of 5mm	40,000
Difference (LEDs)	(25,536)
Difference (%)	48.4% fewer LEDs

Pixel Pitch is an indicator of the number of millimeters between each pixel. To keep it simple, less is more when it comes to pixel pitch. A P3.9 wall has 25,536 more pixels per square meter than a P5 wall, providing higher resolution and high-quality content on-screen from anywhere in the center.

Flexibility & Fit

Bowling centers come in many shapes and sizes, some with unique layouts and spacing. Customization is important and allows for centers to build walls to fit any design. New or old, big or small, tall ceilings or short, split house or straight across – independent elements are catered to the unique layouts of bowling centers worldwide. Whether 2 or 72 lanes, the flexibility of LED video wall sizes is important. A quality wall is one that can be customized in a smart, easy way, with different sized LED cabinets that fit any application, including different heights in different areas of the center such as bays of lanes or VIP areas. Depending on ceiling height, an LED wall can range from 2 meters (6.56 ft.) high to 4 meters (13.12 ft.) high.

FLEXIBILITY OF LED TECHNOLOGY

The LED wall can be split into multiple sections and can accommodate breaks between lanes if required

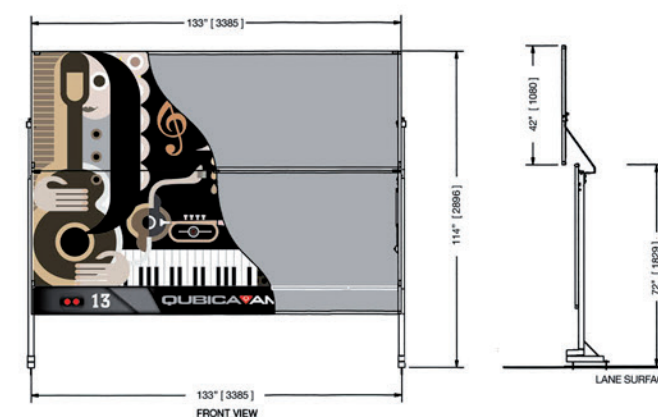
The LED wall can be create to account for multiple "bays" of lanes or rooms (such as VIP areas and split houses)

The LED wall can be create to account for different heights in different areas of the center

Panels

Centers invest heavily in products that set their guest experience apart from other entertainment options, and in turn, proprietors expect high quality products that will last. For a video wall, top tiered LED panels should provide a 100,000+ hour expected product lifespan. They need to be easy to maintain as well. For example, the ideal panel can be 'hot swapped', meaning any panel can be removed and replaced with a spare without the need for long set-up and configuration times. Plug and play LED components are simple to test, use and replace if necessary. Fully enclosed LED video panels ensure that heat output is minimized, reducing power consumption, lowering the environmental impact, and increasing product safety. Some panels are not fully enclosed, leaving exposed wiring on the backside of the wall and closest to the machines and working mechanics, opening up opportunities for failure or damage.

Height of Traditional Masking - Lower & Upper Tier



CONTENT LIBRARY & FEATURES

Research shows that guests demand a new, fresh experience when they enter the bowling center. Consumers have evolved and now want an ever-changing variety of content in order to be entertained and to capture their attention (and drive repeat visits). With an LED video wall, content is king.

Operators want the ability to mix and match new, fresh content with existing custom content, while maintaining the ability to choose from any of the pre-set playlists curated for every business type or upload new content in real time. A quality software should be simple for staff to use and automatically updated. Here's what's important to know.

Sources

There's no end to the potential video sources that centers might want to display for their guests. From video streaming services to sports and live events, it's important to have the flexibility to show several things at once across the LED wall. Some of the newer LED systems on the market offer up to eight streaming inputs, while others offer as few as five or less. The available number of high-resolution inputs is indicative of professional, quality processing hardware behind the scenes. Look for systems with many inputs to ensure guests don't miss any of the action.

In talking with proprietors who have installed video walls and projection, one element strongly resonates: Content is the key to success. It has long been the challenge in the modern entertainment center to keep guests engaged. To be successful, a video wall must do more than just display and repeat the same videos over and over again. Premium LED video walls should be backed by cloud technology that automatically drives new, relevant content to the center. Some walls just display stitched videos on screen. Quality content consists of 3D generated content and may even include other lighting effects from other sources (such as the pindeck lights or ambient lighting) to create a true multi-dimensional effect. When researching an LED wall, be sure that it contains content in these four categories:

Interactive & Dynamic Content

One of the challenges of operators is keeping guests engaged. Look for an integrated system that connects to a growing library of dynamic content, that includes interactive environments and engages guests. Reactive content can show what's happening on the lanes. On-screen, a premium LED wall should feature live and 3D generated content with outstanding lighting effects, animations and more.

True Landscape Video

Video content should be in landscape format—widescreen, covering the entire wall to provide the ideal effect. High-resolution 3D rendered content works best for this format, pulling guests into the environment and capturing their attention. Videos mirrored and stitched together do not create the same effect.

Content for All Dayparts

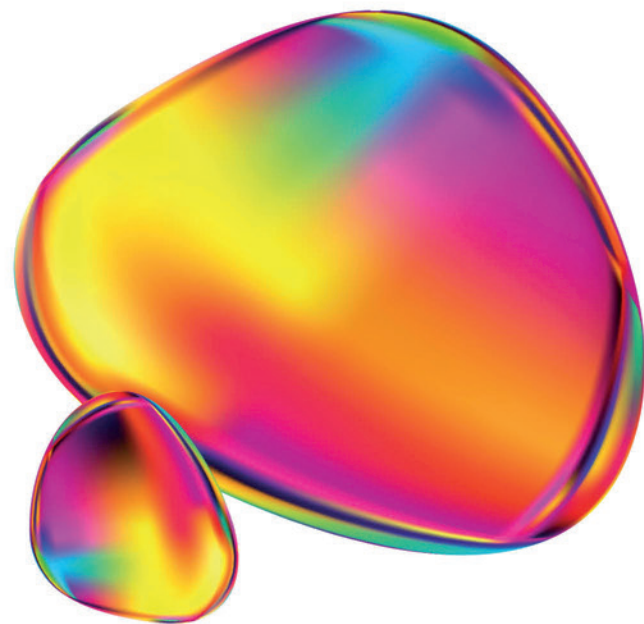
For slower dayparts and league play, a video wall content library should include smooth, high-resolution content with subtle movements (or no movement at all). This allows the video wall to be used for all customer segments throughout the day, regardless of the level of energy and excitement in the center.

Scoring & Competition

Since rebounding from the pandemic lows of 2020 and 2021, league and competitive bowling across the world has enjoyed a steady increase. For the true competitive segment in a center, an LED wall can be a welcome addition. Teams and players enjoy seeing their names and scores on the big screen with competitive scoring grids.

CONTROL & USER INTERFACE

Operators juggle multiple applications and pieces of technology to run a bowling center – from accounting and payroll programs to daily operations software. It is important that a video wall is easy to configure and simple to operate, all without interrupting the other multiple tasks being done by all staff. Here's what you need to take into consideration.



Set-Up & Configuration

User management and profiles should allow managers to perform all necessary setup and configuration, while isolating these functions as needed and providing only necessary permissions to bowling center staff.

Customizable Content

Operators should be able to easily customize what is on the big screen, upload new content, visit the content library, and drag and drop their selections on-screen in real time. Simplicity is key – with the ability to use the software without the requirement to understand codes or count pixels on the screen to align content. Premium walls contain very user-friendly interfaces with 'drag and drop' technology – while other walls require more complex means to align content on the screen.

Custom Playlists

Software should allow operators to define custom playlists and play them on the wall at any given time. Also, an ever-changing content library helps to keep things fresh. A quality user interface will define and categorize pre-set playlists that can be played and are updated based on time of year, holidays, or desired theme (school groups, late night, etc...).

Playlist Scheduling

Managers and supervisors are not always in the center 24/7, and they need to have confidence that the right information and experiences are available to guests at the right time. Proper software should be able to schedule playlists on a calendar, which can define in advance what is displayed on the screen or allow skilled operators to override this schedule at any time to immediately display desired content.

STANDARDS IN INSTALLATION & SAFETY



When making large capital equipment purchases, centers are looking for a quality, no-hassle experience delivered by a partner they can trust. Safety is of the utmost concern for any center operator to avoid future liabilities. Here's what you need to keep in mind.



Installation

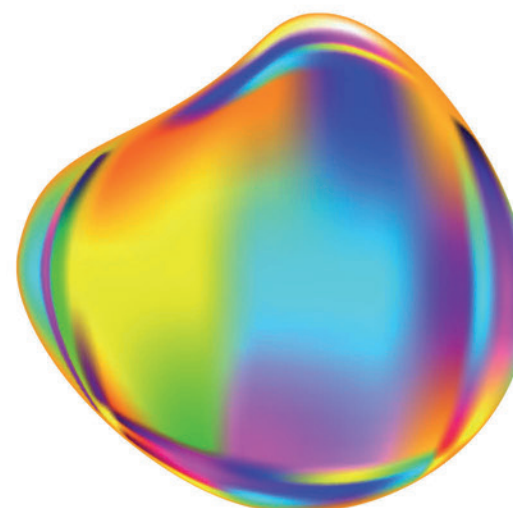
Installers should be professionally licensed to ensure the job is done right. Custom framing built strictly for the bowling industry by engineers that know bowling is critical. Using existing masking unit frames creates a less stable product as some older frames were designed to hold five to ten pounds of printed graphics, not LED panels.

Safety

Safety is of the utmost concern for any center operator and all LED walls should be fully compliant with electrical requirements in the US (UL) and International markets with EU certification (CE). Be aware that some manufacturers may attempt to slip past safety regulations in the US, leaving you with a safety liability.

Electrical requirements can be complex depending on local regulations, but a quality electrical installation ultimately ensures that a video wall is safe to use and protects your building and staff. Centers should employ locally certified technicians to complete any installations, following proper local and state standards, permitting and safety guidelines.

For an additional layer of safety, LED video wall panels should be completely enclosed, wires properly secured, with proper cooling and ventilation to enhance the lifespan of the product and ensure safety. Be mindful of products that are not wired with this attention to safety, as they're easily damaged and can produce significant heat.



INDUSTRY LEADING WARRANTY, MAINTENANCE & LONG-TERM PROFESSIONAL SUPPORT

Capital equipment purchases are a major investment often involving complex products. Centers need peace of mind knowing that these purchases are protected—for the long-term. When there's a problem you need someone to talk to, a resource to answer questions or help fix issues. Here are the items that matter over the long-term.

Warranty

Installing an LED video wall is a major commitment for centers – and a product that is backed by a concrete warranty on hardware and infrastructure can help to provide peace of mind for long term success. Not every LED wall manufacturer is created equal when it comes to this support. Be sure that your purchase is protected by an industry-leading warranty with support both from the distributor and the manufacturer.

Maintenance

The complexity of maintaining a video wall can be dependent on the quality of the product itself. Premium panels that are fully enclosed are less prone to issues and are easier to maintain and repair when needed, while cheap alternatives leave wires and important hardware exposed. Be sure that your LED video wall can be accessed for maintenance both from the front as well as the rear – this will save both time and energy when addressing issues. A quality installation team will be able to train center staff on recommended maintenance procedures during the install process.

Long-Term Professional Support

A quality product is installed and set up for long-term success, but operators deserve peace of mind that someone will readily be there to answer questions, help fix issues, and provide assistance when needed. From hardware and software to the user interfaces, help needs to be an email or phone call away, with the ability for professional, local teams to provide quick turnaround on any questions or hardware issues. Don't settle for providers who have smaller teams or who only communicate via text messaging.

TOP 10 THINGS to Look for in a Premium LED Wall:

- ✓ UL Certified Products
- ✓ Dedicated Tech Support Team
- ✓ Hardware & Infrastructure Warranty
- ✓ Superior Content
- ✓ High Quality Panels
- ✓ Licensed Installers
- ✓ Training for Center Staff
- ✓ High-Definition Resolution
- ✓ Ease of Use
- ✓ Scoring Integration



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