\Orchestrating a brighter world NEC

Next Gen Projectors

Why choosing laser projection makes sense for churches

Summary

Projection for use during Sunday morning church made its rather quiet debut in the 1980's. Today, projection has grown to become a multimedia staple of the modern worship experience.

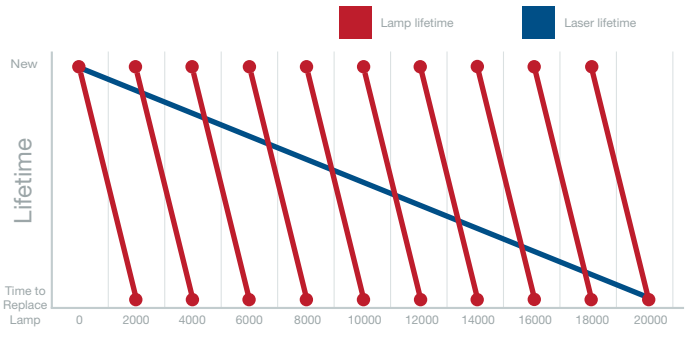
In the eighties, both slide and overhead projectors provided a way for song lyrics to be projected during services. In the nineties the technology graduated to video projection and the use of PowerPoint software, which ruled the presentation landscape.

In the early 2000's data projection and the exponential advances of presentation software have made their mark. Now in the second decade of the 2000's, LED walls and laser projection are coming into the forefront of presentation hardware.

Recently, the church I serve at went through the challenge of purchasing new display equipment.

Constant Color & Brightness Rendition

The laser projectors' color rendition and brightness stays constant throughout the 20,000 hours of laser life.



Our existing lamp based projector was failing and was not really bright enough to serve our needs as we anticipated transitioning to IMAG (image magnification), where a pastor's—or vocalist's—live image can be projected onto a screen to provide an up-close experience for those in more remote seating.

In our research to find the best solution we looked at, and priced, three different options; lamp based projection, LED walls and the latest technology to grace this realm—laser projection.

Our church's screen is 9'x16,' and like many churches, we have ambient light issues to deal with. To make a purchase decision we looked at four areas: life expectancy, maintenance, initial investment and total cost of ownership.

A Bright New Technology

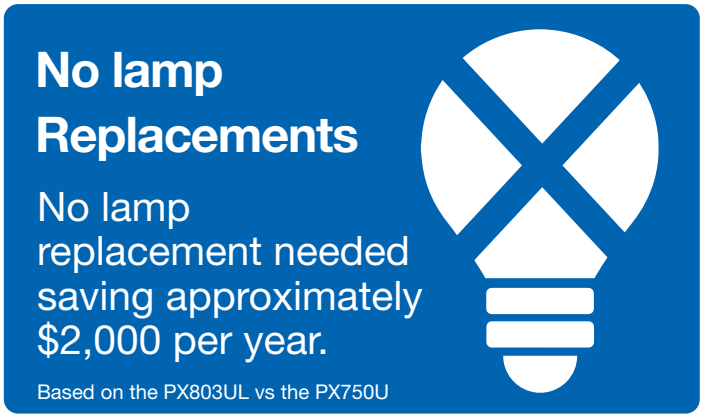
A benefit of recent advancements is that new technologies bring bright, super crisp images which can be displayed even with the lights on, and/or in high ambient light situations. Additionally, these solutions also bring low maintenance and long life as additional benefits.

LED walls seem to be all the rage if you are looking for large scale (bigger than 9' x 16'), but if you require a smaller size, the newer technology of laser projection might be just what you are looking for.

What is a Laser Projector?

In simplest terms a laser projector is the same as a conventional lamp projector with the difference being that the light source is a laser. The same issues of ambient light, screen size and lensing options also apply to laser projectors. And, just like lamp based projectors, how the light is projected—LCD, DLP or some other variant remains the same.

A well-respected systems integrator, who has installed numerous laser projectors, noted that he has a preference for 3 chip DLP and 3LCD projectors for their ability to project all colors continuously. This greatly increases the



lumen output of all colors, compared to the white lumen output. He also shared that laser projection in general is an excellent choice over lamp based projectors, because unlike lamp projectors you do not lose up to 10-15 percent of your brightness in your first 400 hours of operation.

The focus that follows will be on the advantages of laser projection whether it is LCD, 3LCD, Single Chip DLP or 3 Chip DLP.

When choosing a projector the quality of the image is greatly determined by the type of delivery system chosen. What the lamp or laser can do is provide brightness and color quality known as CRI (Color Rendering Index).

Where Laser Truly Shines

An Almost Instantaneous On/Off.

I am sure that like me, you have either caused a projector to shut off by pressing the remote or have had a projector shut off from something like a power failure. Regardless of how it happened, waiting for the lamp to restrike and watching a logo or countdown while the lamp brightens is utter torture.

I am also sure, that like me, you have pulled the plug before the fan has shut off and wondered how many hours that cut from the life of your lamp. Perhaps, you were just happy that the lamp did not explode.

With laser projection those issues are a thing of the past. Rather than endure the minute-plus turn on and turn off, a laser projector is an almost immediate turn on (about 6 seconds) and is an immediate shut off.

Light Quality/CRI and Uniformity

The majority of lamp-based projectors use a UHP type lamp. The UHP (which is mercury vapor) lamp is a lower cost solution that provides decent color rendering. The UHP lamp does, however, struggle with the color red, and over usage time it does degrade in brightness and quality. In contrast the laser projector generally uses 1 or 2 lasers as its source. In the single laser case, the laser is blue and is bounced off a phosphorus surface to produce an image. In the 2 laser scenario the first laser provides the blue of the RGB (red, green, blue) colors that are mixed to create an image. The second laser is bounced off a phosphorus surface to create the red and green needed. This method also offers a great color gamut. Additionally, the laser provides uniformity of color over the life of the projector; at the end of life, remarkably, it looks very similar to the day it was first fired up.

Rich McPherson, senior product manager at NEC Display, talked about the intelligence built into the laser projection system.

He states, “Constant brightness control features [in laser projection] prevents the usual drop in brightness over time that typically happens with lamp-based projectors, while maximizing the life of the laser. Basically, not only will the laser projector system remain consistently bright over the life of the projector, but the lasers will automatically adjust to keep color consistent as well.”

5 Stars For the L’s

The 4 L’s are long life, less maintenance, less heat and low noise. Let’s take a look at each:

Longer Life

A typical UHP projector lamp will last somewhere around 2,000 hours. Different manufacturers rate the life of the laser for different lengths ranging from 10,000-30,000 hours. On the low end, that is 5x longer than a lamp based projector or just over a year of continuous use. On the high side, it’s 15x longer, or 3.5 years of continuous use. Compare that to a lamp based projector, which if running continuously would last a little over a quarter of a year.

Less Maintenance

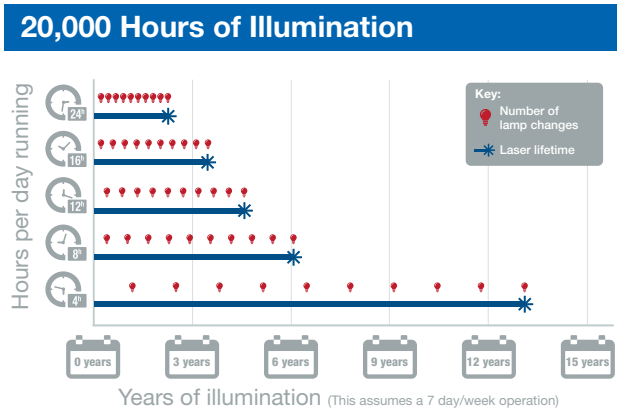
The long life of the laser projector as noted above means no scary climbing of a ladder or renting a dolly to replace lamps. Additionally, as a laser projector runs cooler there is no need for a large fan which means that no filter needs cleaning or replacing.

Less Heat

Because a laser projector produces less heat and needs less ventilation you no longer have to be so concerned about projector location interfering with air recirculation. Additionally, laser projectors do not produce any UV light which means that your LCD panel in the projector will no longer get sun burned from the light source.

Low Noise

I currently attend a bible study of 500 men. We meet in a 1,500 seat sanctuary. There are 3 projectors projecting on 3 different screens. Sitting in the audience, the fan noise is loud and annoying. I have measured it around 65 decibels of sound. With no large fan running the laser projectors, they are stunningly quiet—usually below 32 decibels. For reference, that is whisper level.



Are there special considerations?

The initial or upfront cost of laser projectors can seem high. However, a church must consider the total cost of ownership (when factoring in maintenance and lamp replacement) on a laser projector, which often is less than—sometimes significantly less than—a lamp based projector.

The second consideration is that laser projectors can be heavier and a bit more bulky than their lamp based counterparts.

Personally, I see these as a minor inconvenience compared to the cumulative sum of all of its advantages.

Plus, for those with tight quarters, NEC has introduced the smallest laser projector on the market yet, providing 5,000 lumens of output and weighing in at just 19.2 lbs.

As with most technology the complexity of almost every application has to be individually analyzed. This is where an integrator, one that seeks to educate and guide, can make all the difference in the world.

After considering all of the factors with your leadership at church, together you should be able to make a very informed and educated decision regarding the big ticket item of video display.

Terminology

COLOR RENDERING INDEX (CRI)
is a quantitative measure of the ability of a light source to reveal the colors of various objects faithfully in comparison with an ideal or natural light source.

DATA PROJECTION
A device that projects computer output onto a white or silver fabric screen that is wall, ceiling or tripod mounted. It is widely used in classrooms and auditoriums for instruction and slide presentations.

DIGITAL LIGHT PROCESSING (DLP) PROJECTOR
is a display device based on optical micro-electro-mechanical technology that uses a digital micro mirror device.

LASER PROJECTOR
is a device that projects changing laser beams on a screen to create a moving image for entertainment or professional use. It consists of a housing that contains lasers, mirrors, galvanometer scanners, and other optical components.

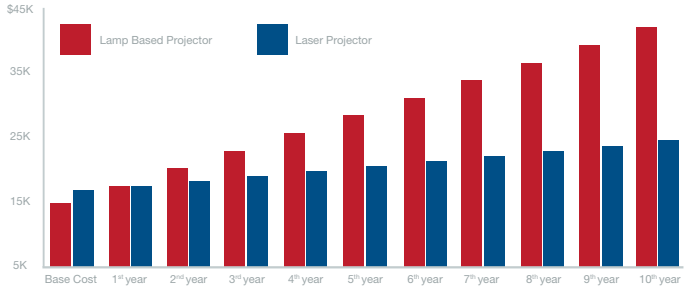
LED WALL OR DISPLAY
is a flat panel display, which uses an array of light-emitting diodes as pixels for a video display. Their brightness allows them to be used outdoors in store signs and billboards.

LIQUID-CRYSTAL DISPLAY (LCD) PROJECTOR
is a type of video projector for displaying video, images or computer data on a screen or other flat surface. It's the modern equivalent of the slide projector or overhead. To display images, LCD (liquid-crystal display) projectors typically send light from a metal-halide lamp through a prism or series of filters

PRESENTATION SOFTWARE
Presentation software (sometimes called "presentation graphics") is a category of application program used to create sequences of words and pictures that tell a story or help support a speech or public presentation of information.

ULTRA-HIGH-PERFORMANCE LAMP (UHP)
is a high-pressure mercury arc lamp. It was developed by Philips in 1995 for use in commercial projection systems, home theatre projectors, MD-PTVs and video walls. These lamps are highly efficient compared to other projection, however Laser Display technology could be the superseding technology due to its increased longevity and display characteristics.

Total Cost of Ownership



Average Cost savings throughout the life of a laser projector far out weighs a lamp based projector

Based on:
NP-PX803UL and NP-PX750U2

By Gary Zandstra
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