LAMP VERSUS LASER ILLUMINATION IN HIGH PERFORMANCE PROJECTION SYSTEMS

The Visionaries Choice

www.digitalprojection.com
LAMP VERSUS LASER PHOSPHOR PROJECTORS

Filament light bulbs in homes are quickly becoming obsolete because the technology for light sources has evolved to offer higher performing and more reliable products. The same technology benefits apply to digital projectors, which are evolving away from using filament-based light sources (commonly known as lamps) and towards solid state light engines that perform better, last longer and most importantly, are not prone to failure.

WHY LASER PHOSPHOR PROJECTORS ARE SUPERIOR:

- **DP’s Laser Phosphor Illumination is Reliable**
  
  20,000 maintenance-free hours of operation = 10 years at 8 hours/day 250 days/year.

- **Higher Long-term Performance**
  
  Predictable and long lumen maintenance deliver a brighter image to the screen for the long-term.

- **Flexibility**
  
  DP’s Laser Phosphor based projectors can be installed in any orientation with no risk to lumen longevity, system failure or reduced image quality.

- **Lowest Cost of Ownership - Saves Money**
  
  There are no lamps to replace, ever, saving thousands of dollars over the life of the projector.

- **Stable Illumination Over Time**
  
  Actual system illumination is measured by light sensors within the system. When operated below 100% laser power the sensors incrementally increase laser power to produce consistent brightness as the lasers slowly age with time.

- **Color Performance**
  
  The color space produced by DP’s Laser Phosphor projectors matches or exceeds that of lamp based projectors, thereby meeting or exceeding REC709.
WHAT ABOUT SAFETY?

While Laser Phosphor illumination offers numerous advantages over lamp based projectors, there has been some misconception about the safety of laser-phosphor technology in real world applications. For clarity, no actual laser energy (structured light) exits the lens of DP's laser phosphor projectors. The light exiting the projector's lens is produced by a phosphor wheel and/or de-structured with diffusers, resulting in bundled and unstructured red, green, and blue light energy. This means that a passing glance into the lens of a 5,000 lumen laser phosphor projector poses no more risk to eye injury than a passing glance into a 5,000 lumen lamp-based projector.

GIVEN THE BENEFITS OF LASER PHOSPHOR, WHY WOULD ANYONE STILL PURCHASE A LAMP-BASED PROJECTOR?

Lamp technology has been around for a century and many of the lamps and power supplies utilized in lamp-based projectors have become commodity products. Therefore, projectors utilizing lamps generally carry a lower initial purchase cost than those employing the latest laser-phosphor technology. It is important to note, the lower initial cost of a lamp-based projector is often offset by incremental operational costs as the original lamp(s) age and replacement lamps have to be purchased. In addition, there can be costs associated with lost productivity due to down time related to lamp replacement.

RISKS WITH LAMP BASED PROJECTORS

• The Burden of Lamp Replacement Costs
  The lamps utilized in high-performance projectors typically last from 500-1500 hours and are expensive to replace. The cost of a lamp based projector + bulbs + maintenance over time will far exceed the price of a laser-phosphor projector.

• Long-term Performance
  As lamps operate, actual lumen performance and reliability can be unpredictable. Lamps lose lumen performance with every minute they are utilized, finally ending at 50% of their original lumen performance (500 – 1500 hour lamp life), or failing altogether.

• Rapid Lumen Performance Loss
  The lumen performance of some lamps can drastically decrease within the first few hundred hours of use. Projectors employing Xenon lamps are particularly susceptible to this rapid lumen degradation.

• Uncertainty
  Of course, there are also instances of all-out lamp failure. By definition, lamps only fail when projectors are actually operating, so the risk of a live failure is very real. Lamp failures can be caused by excessive use, out-of-spec installation orientation, insufficient cooling, environmental vibration, physical impact, manufacturing flaws and many other factors.

• Noise and Complexity
  The lamps utilized in high performance projectors produce a lot of heat, and that heat must be effectively removed from the projection cabinet with forced air. This means significant fan noise and heat may be introduced to the room where the projector is located. It also means the projector must be installed in a location free from obstacles that restrict heat management.

• Long-term Bulb Availability & Cost
  Bulb replacements always need to be on hand due to potential failure during operation. Lamps will continually become less available and perhaps costlier over the years as the market moves to the superior solid state illumination options such as laser phosphor.