Pros and Cons of Solid State Illuminated, Lamp-free Hybrid Projectors

By James Chan, VP Marketing, Mitsubishi Electric Visual Solutions America, Inc. January 25, 2013

Projector manufacturers use many types of technologies to create bright, vibrant images that can give teachers and presenters a special edge in engaging an audience's attention. Most projectors use a lamp to help create that image, but the newest technological innovation comes from solid state illumination (SSI) using lasers, LEDs, or a combination of both, often called "hybrid". It's the wave of the future, and during this transitional time, it's important to recognize that there are pros and cons to both lamp and lampless projectors.

What are the differences between lamp-based and SSI, lamp-less projectors?

Depending on the type of imaging technology used, a projector is built with a light source that produces illumination, which then passes through LCD panels or is reflected from an imaging device such as a DLP® chip. The illumination is made possible using phosphors, color wheels, mirrors or prisms, combining red, blue and green light and forming an image from the imaging device. The imagine is then projected through the lens onto a screen.

Sources of the early illumination used by portable projectors include halogen and metal halide lamps, but most recently, ultra-high-performance mercury lamps are in vogue. In the past two years, technology has improved the brightness level of LEDs and lasers such that they are now powerful enough to use in projection as well.

What's wrong with traditional lamp technology when they have a predictable lifespan and are easy and relatively inexpensive to replace?

Lamp-based projectors certainly are commonly used today and there's really nothing wrong with them. But it's important to research and investigate the newest technologies and compare how effective they will be over the long-tem. Hybrid projectors tend to offer a better total cost of ownership and have higher durability, reliability, predictability, and longevity. With the right model from the right manufacturer who builds their hybrids with better light engine components, you will also get deeper, richer colors that enhance your display performance.

Hybrid projectors use no lamps, so there are no lamps to replace, thus, no extra costs over its operating life time. Depending on usage, a lamp could burn out every year, and with lamp prices as high as $500 a pop, it can get pretty expensive over time.

Isn't hybrid solid state lighting an unproven technology?

Hybrid projectors have been in the market for more than three years, and demand for them is increasing dramatically in America and worldwide. The U.S. Department of Energy states that LED lights use less power than traditional bulbs, they have an ultra-long useful life, they require low maintenance, they are

very durable and they contain no mercury. Hybrid projectors, then, can lead to fewer costs and greater ecological benefits over time. Mitsubishi Electric, a pioneering company in the use of lasers in display devices such as televisions and monitors, recently introduced a line of LaserVue® hybrid SSI projectors that contain a patent-pending light engine. Mitsubishi improves on previous designs by using more laser diodes with varying strengths and wavelengths, and a high density solid phosphor disk with a longer lifespan. These new projectors will shine bright with vivid, accurate colors for as long as 20,000 hours. We believe our LaserVue line of projectors will help move the projection industry forward into greener, ecologically-friendlier designs.

Will the hybrid projector's phosphor disk degrade over time? Aren't replacements and the downtime associated with a trip to the repair depot expensive?

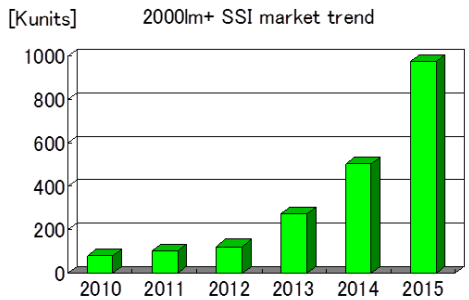
It's true that earlier models of hybrid lamp-free projectors were designed with a finite-life phosphor wheel or phosphor disk. This is much like early LCD projectors, where the panel life was sometimes as short as the lamp itself. Or for that matter, lamps in the early models of projectors only lasted 500 to 1,000 hours. But nowadays, lamps can last as long as five to six thousand hours between replacements.

In 2013, Mitsubishi Electric uses a new advanced phosphor wheel in LaserVue projectors with its patent-pending light engine design that allows its light source to last as long as 20,000 hours based on normal usage. To back up its commitment to its light engine longevity, Mitsubishi is offering a five-year limited warranty on its light engine. This is in addition to Mitsubishi's already generous three-years of parts and labor warranty with next-day replacement for all its projectors, based on your location, so you won't be without a projector for very long.

I've heard that hybrid projectors aren't bright enough.

Mitsubishi's hybrid lamp-free projectors start at 2500 lumens and go up from there. That is plenty of brightness in classrooms or meeting rooms with windows or the lights turned on. Our lamp-based projectors designed for auditoriums and larger spaces can project up to 8500 lumens. Our customers can also consider LED flat panel monitors up to 70" with a great design, thin bezels, and very slim, ADA-compliant depth for rooms with more ambient light.

How many SSI projectors are being sold?



According to Pacific Media Associates, a renowned research company specializing in the projector market, worldwide demand for lamp-free projectors will reach almost a million units by 2015. In 2010 and 2011 US market alone, consumers bought 25,276 and 28,863 units respectively in the 5-20 lbs. weight range with brightness of 1000 to 4999 lumens.

Market	2010	2011	2012*	2013	2014	2015	2016
US Only	25,276	28,863	27,724	43,316	64,324	147,900	268,050
Americas	28,972	33,902	32,546	51,184	83,955	199,959	389,562

In 2013, the US market is forecasting a demand of 43,316 units, all of America's forecast is 51,184. Then from 2014-2016, US market demand grows to almost half a million units while all of America's demand for these hybrid, lamp-free projectors will be almost 700,000 units. With 81,863 units already installed in the US, and close to 100,000 units already in use all over the American continent, this technology is far beyond a beta testing stage, but still in its early growth stage. With the kind of demand projected, and others unable to produce a commercially-viable projector without the use of conventional mercury-based lamps, Mitsubishi is poised to be a market leader.

* Q1-Q3 are actual numbers and Q4 are estimated.

A few final thoughts…

Each projector installation is unique, and it's important to find the right technology, brightness, size, weight, contrast ratio, connectivity options, lens options, price and warranty that's best for you and your audience's needs. Mitsubishi is leading the way in new hybrid non-lamp technologies and offers a wide range of possibilities; here you can find a great projector at a great price, no matter what.

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