



Frequently Asked Questions

What experience does Evans & Sutherland have in computer graphics and digital projection technologies?

- Evans & Sutherland is the world's first computer graphics company and has a four decade history of developing compelling visual images and advanced computer graphics technology. In 1968, University of Utah Professors David Evans, Ph.D., and Ivan Sutherland, Ph.D. founded Evans & Sutherland to explore and develop computer graphics technology and real-time training simulation systems. For almost 40 years, the company has been at the forefront of developing real-time computer graphics systems for training simulators. More than 80 percent of the world's commercial airline pilots have been trained on Evans & Sutherland visual systems which have also been used by the military and Department of Homeland Security. Since the 1980's Evans & Sutherland has applied its simulation technology to offer the latest in high quality digital projection systems for digital planetariums and digital cinemas worldwide. Today Evans & Sutherland focuses solely on digital planetariums, digital theaters, and advanced displays. Evans & Sutherland products have been installed in over 1,300 planetariums worldwide.

What are the advantages to using a laser projection system?

- Lasers eliminate several of the biggest performance and cost of ownership problems that are rooted in the bulb of a conventional projector.
 - Lasers offer consistent performance and will not degrade or lose brightness over time.
 - Lasers give us a much wider color space than any "white bulb" display. The ESLP has a color gamut nearly 200% of NTSC (HDTV).
 - Lasers operate cool, eliminating high cooling costs and noisy cooling fans, and use less energy overall.
 - Lasers last 30 times longer than bulbs eliminating high replacement costs (Bulbs 1000 hours vs. 30,000 hour estimate for lasers).
 - Lasers will not color shift over time.

What type of resolution is offered in E&S Advanced Displays new NanoPixel™ engine?

- The ESLP 8K is the world's highest resolution projector available today.
 - Up to 8192 x 4096 or 33.6 million pixels.
 - Content is displayed at 16 times HD 1080p resolution (33 million pixels vs. 2million).
 - Fastest switching time - zero smear and zero persistence.
 - Stereo capable up to 120hz.
 - Twice the color space of competitive systems.
 - Excellent black state.

What about 3D?

- The ESLP 8K is fully 3D capable, and is the only projector on the market that can create a 4K x 4K 3D (120Hz, left and right eye) image from a single projector. No need to fuss with alignment of multiple projectors.
- The nanopixel engine has an absolutely zero-persistence characteristic. No smearing or “memory” in the display. This means that as the projector switches rapidly between left and right eye views, there is no “bleed” or “crossover”, resulting in the crispest stereo separation with less eye fatigue.

What is the nanopixel™ engine and who makes it?

- The nanopixel engine is a MEMs device that includes unique technology developed by E&S.
- This device contains over 8,000 ribbons that are controlled to create an outstanding display image.
- The underlying technology has also been known as “GLV” (grating light valve), however, the implementation of the 8K nanopixel chip is unique to E&S.
- Silicon Light Machines is the foundry where the current basic semiconductor wafers are made, however, the completed device (packaged, multi-chip module) is made by E&S.

How can I preview Evans & Sutherland’s new ESLP 8K Laser projector?

- The E&S Advanced Displays division will be demonstrating its ESLP 8K Laser projector with a 160” forward projection screen, at the InfoComm 2009 tradeshow in Orlando, Florida on June 17-19, 2009.

Are there any of these projectors currently in use?

- E&S Advanced Displays has over 10 of these systems (1st generation 5K model) currently installed and showing daily to the public worldwide. Installation locations include the US, Japan, China, UK and Europe.

Are there any competitors to the ESLP 8K Laser projector?

- The ESLP is extraordinarily unique today, in that no other projector offers both the extra wide color space and benefits afforded by solid-state laser light sources, together with an industry-leading 8K x 4K resolution.
- Jenoptik/Zeiss/RDE of Germany have in the past offered a laser projector. It was limited to relatively low resolution (1280 x 1024), due to the fact that it operated on the principle of a galvo-driven laser beam (single pixel) driven by spinning horizontal and vertical scan mirrors. It has found limited use in some simulation applications, but none elsewhere as far as we know.
- JVC has pre-announced a future 8K LCoS projector. It will have high resolution, but as with other LCoS displays it uses a white filament bulb light source, which requires periodic replacement and also limits the available displayed color space. It likely will also have similar image persistence characteristics to other LCoS displays.

What markets are E&S targeting for use of its new ESLP Laser Projector?

- The new ESLP 8K Laser Projectors are targeted at the Virtual Reality, Control Room, Exploration, Simulation, Content Creation, Design, and broader Indoor Venue markets.

What is the pricing for the current projector?

- First-generation ESLP projectors previously sold at around U.S. \$1 million each. With the new second-generation ESLP 8K, typical prices are in the \$500K - \$750K range, depending on lens options, lumen rating, and configuration.
- Customized price quotations are available upon request.

Isn't Evans & Sutherland in the flight simulation business?

- Evans & Sutherland completed the sale of its simulation business to Rockwell Collins, Inc., a leader in aviation electronics and communications, in May 2006.
- Evans & Sutherland currently makes planetariums, projection systems, domes, screens, structures and complete theater systems including show content.

Are lasers really ready for commercial display applications? Who is your laser supplier?

- Evans & Sutherland has been developing and producing its own lasers for almost 10 years.
- Evans & Sutherland is also working with NECSEL™ which is a market leader in developing lasers for display applications.

When is the ESLP 8K available? Can I buy one today?

- Production units of the new 8K version will be available starting in the Fall of 2009. Order lead time is typically approx. 3-6 months.
- The various models in the ESLP 8K family are scheduled for release as follows:

Projector	Resolution	Projection	Lumens	Contrast	Available
ESLP	5kx4k	Spherical	2500	2500:1	Now
ESLP8K	8kx4k	Flat	5000	>15000:1	Q3 2009
ESLP8KS	8kx4k	Spherical	5000	>15000:1	Q1 2010
ESLP8KW	8kx4k	Cylindrical	5000	>15000:1	Q2 2010
ESLP8KH	8kx4k	Flat	8000	>15000:1	Q3 2010
ESLP8KHS	8kx4k	Spherical	8000	>15000:1	Q3 2010
ESLP8KHW	8kx4k	Cylindrical	8000	>15000:1	Q3 2010

What about laser safety? Is the product safe to use?

- The ESLP 8K is a Class 3 laser product; the same class as some commercially available pointing devices. It is generally safe to use the ESLP in a public setting. In some cases it may be appropriate to provide site-specific restrictions, so as to prevent anyone from getting very close (e.g. within 1 meter) to the output lens. As with any bright projection system (or the Sun for that matter), it is not recommended to stare directly into the lens during operation.
- All of the dangerous high-power laser "beams" (Class 4 radiation) are kept inside the projector enclosure, and the light sources will automatically shut off with a safety interlock in the event of opening the projector casing.

Who should I contact to buy a new ESLP Laser Projector system or to get more information?

- Jan Bjernfalk, bjernfal@es.com, mobile: +1.801.541.3304