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Press Release
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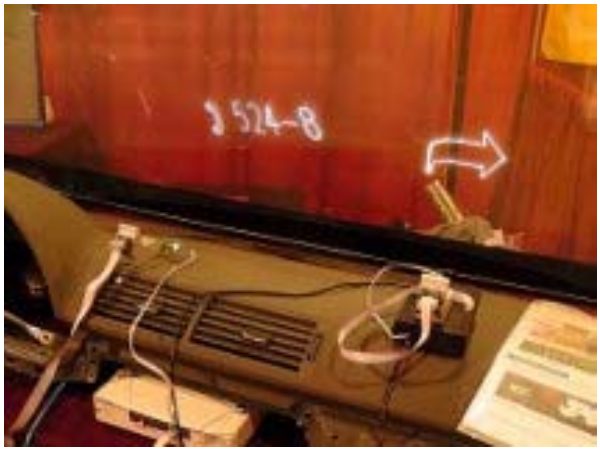
Mirrorcle Technologies' focus-free MEMS-based Head-Up Display solution at SEMA 2011

Mirrorcle Technologies, Inc (MTI), a California-based manufacturer of patented, gimbal-less MEMS micromirror devices demonstrated a Head-Up Display (HUD) prototype at the SEMA 2011 trade show in Las Vegas. The company showcased its compact HUD system at the booth of Sun Innovations, a provider of advanced super-transparent, unlimited-angle specialty-foils. These can be integrated in windshields, windows, glass doors, etc. and allow for safe, bright and clearly visible laser-generated image displays. At the core of this state-of-the-art HUD unit lies MTI's low-power beam steering MEMS (Micro-Electro Mechanical Systems) technology.

Head-Up Displays (HUD)



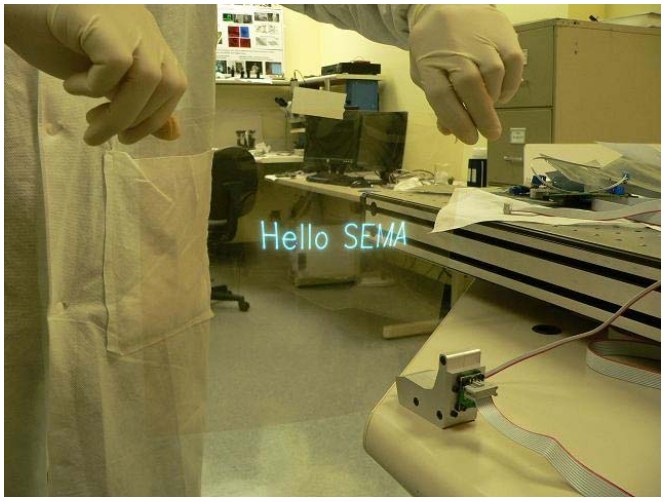
Head-up displays have widely been used in avionic applications, where representations of crucial flight data, and safety-enhancing information is projected on aircraft windshields, in the immediate field of view (FOV) of their operators. In the automotive field, HUD technology is slowly gaining traction and has become interesting for a broader customer base. These displays can convey standard information, such as speed, RPM, fuel level and turn signal indicators. More importantly, though, they can contain directions from navigation systems, warning signals about hazardous road conditions or enhanced-vision images. The integration of a variety of sensors in the front and/or rear of a car allow for a data base that, when communicated efficiently to the driver, can greatly increase vehicle safety. For instance, infrared sensors can detect and warn about obstacles that may be invisible to the human eye due to fog or darkness. Drivers can also be alarmed about imminent collisions and other threats that can cause serious accidents. HUDs can also be used to depict enhanced night vision images and a variety of other data.

Laser-based, brightness-controlled display technology

The Mirrorcle Technologies HUD solution displayed at the SEMA 2011 occupies only a few cubic centimeters of space and can easily be integrated into any dashboard. The scan module combines a low-cost laser diode with Mirrorcle Technologies' gimbal-less two-axis MEMS mirror and optical lenses. A credit-card size printed circuit board (PCB) is equipped

with firmware that controls the precise movement of the mirror’s X- and Y-axes, deflecting the laser beam onto the windshield where it is safely absorbed by Sun Innovations' award-winning display film. Without having to look down on various devices, the driver has access to all the standard and also novel safety-enhancing information while keeping the eyes on the road. Sun Innovation’s super-transparent, water-clear fluorescent emissive projective display film allows for a clearly visible depiction of data on the windshield, both at night as well as during bright daylight. The lasers' brightness is adjustable and can be auto-controlled based on ambient lighting conditions.

Reliable, compact and low-power HUD solution



MTI’s compact display unit is robust and requires very low power, typically less than 2.5W at maximum laser brightness. This minimal power requirement is in part due to a vector graphics approach, allowing the efficient use of laser power rather than spreading it over an image area such as when using LCD, DLP, and similar projection technologies. For another application, MTI has successfully developed MEMS image projection technology with the capability to display focus-free color images in HD quality. With cameras placed on the front and rear of a vehicle, images could ultimately be displayed on the windshield in real-time, thereby greatly facilitating maneuverability and improving operating security. MTI MEMS mirrors are highly flexible, high-performance optical-scanning devices, and can also be used to track objects in 3D space in driver-to-computer input interface applications. Similarly they are perfect tools for laser-based collision-avoidance sensors and other long-range safety applications.

SEMA show perfect platform to demonstrate HUD prototype

Dr. Veljko Milanovic, CEO of Mirrorcle Technologies, was happy with the outcome of the SEMA show: “Sun’s booth was strategically located right next to the ‘New Products’ showcase, and I believe a lot of our visitors were prepared to see our innovative product.” Most of the visitors were impressed by the clear images and the compact design of MTI’s HUD solution. Some were eager to integrate it in design studies and showed interest in offering it to customers who are looking to distinguish themselves by equipping their vehicles with the latest technology. “We had quite a few visitors from a variety of shops that specialize in customizing high-end vehicles. Our HUD-technology is very interesting to them, not only because it can enhance driver safety, but it also looks cool and will undoubtedly turn some heads,” Dr. Milanovic concluded.

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About Mirrorcle Technologies, Inc.

Mirrorcle Technologies, Inc. (MTI), founded in 2005, is a California corporation that commercially provides products and services based on its proprietary optical microelectromechanical system (MEMS) technology. Since its founding, and supported by its continuous investment in R&D, MTI has offered the world's fastest point-to-point two-axis beam-steering mirrors, as well as resonating-type micromirror devices with rates up to HD video. MTI is globally the only provider of tip-tilt MEMS actuators in combination with mirrors from 0.8mm to several mm in diameter, offering customers a wide selection of specifications to optimize their paths to successful commercialization. In addition to a variety of existing designs and in-stock products, MTI also contracts to create specialty designs and fabricate custom units for its customers.

In addition to the laboratory at its headquarters, MTI has year-round, 24-7 access to wafer-based CMOS and MEMS fabrication facilities. Micromirror fabrication and wafer-level testing are performed in a clean-room environment. In 2010, MTI established a manufacturing service cooperation with a leading MEMS wafer foundry, allowing the company to ramp up volume-production while maintaining highest quality standards.

As a privately held company, MTI is able to act efficiently, offering creative and highly responsive service to its customers. The motivated staff is dedicated to provide highest-quality products and support to facilitate customers’ product development and successful commercialization. It draws on several decades of staff’s combined experience in MEMS design, fabrication, and testing.

About Sun Innovations, Inc.

Located in prime Silicon Valley region, Sun Innovations have dedicated long years in developing market persuasive product range with a global team of scholar PhDs. In the opening year of product deployment, Sun Innovations has more than 100 customers operating approximately 1,000 installations worldwide.

Sun Innovations also adds custom built MediaGlass TM and TransPlay TM Display technology with key customers in Media, Advertising, Entertainment, Aeronautic, Hospitality, Banking, Financial and Retail industries. MediaGlass products are employed to generate dynamic digital display portals with transparent, scalable, 2 side viewing angles and superior quality video projection systems available in 2 single color screens. The TransPlay product is designed to create massive, vibrant 3D, transparent, 2 side viewing angles with high quality UV single/dual color line art display solutions. Sun has also developed a complete array of emissive projection films.

The company has its Global Headquarters in Fremont, California, with two development branch offices in China employing more than 50 personnel worldwide. Sun Innovations’s rapid distributorship growth has brought tremendous exposure not only in United States but also in the countries like Canada, United Kingdom, New Zealand, Australia, China, India, Japan and Taiwan.