

OSRAM Opto Semiconductors: Leading in technology and quality

For several decades, OSRAM Opto Semiconductors has been investing in technology and quality, continuously expanding its competencies and resources and now sets the highest standards internationally in the fields of illumination, visualization and sensing. Its products range from high performance light-emitting diodes (LED) and infrared diodes (IRED) to semiconductor lasers and detectors. At OSRAM Opto Semiconductors, the future of light is LED technology, and the company has an extensive portfolio of high performance LEDs for diverse applications.

The LED market is showing highly dynamic development, particularly in the areas of general lighting and display backlighting. Leading market researchers continue to predict double-figure growth rates for the various industry segments. With its patented technologies, established marketing structures and, most importantly, its strong innovative force, OSRAM Opto Semiconductors is well equipped for these developments.

The company works closely with customers and partners on product development and lighting solutions. These collaborative efforts have contributed greatly to building a broad portfolio of products and applications in televisions, displays and laptops, which OSRAM Opto Semiconductors presented to the market in fiscal year 2010. Projectors are becoming ever smaller, and will soon be more than just centimeter-sized add-ons for computers, cameras and mobile phones: in the next step, they will be integrated into these devices, with high-efficiency light sources, such as LEDs or lasers, providing extremely sharp, bright and richly colored images. New developments include small projectors in mobile phones and MP4 players, high performance projection systems, e.g. for the home cinema sector with screen diagonals exceeding 70 inches, and office projectors. All of these devices depend on very small and highly efficient light sources. The semiconductor specialist's portfolio now covers the entire projection system output range from 1 W to 300 W. OSRAM Opto Semiconductors is also working on laser light sources for use in projection, and was able to report advancements in direct-emitting, green laser diodes in 2010.

Extensive progress has been made since 2004 in LED technology for the backlighting of large-size LCDs. In this area, as well as in the notebook and display segments, cold cathode tubes are increasingly being replaced by LED backlighting. The diodes have clear advantages: not only do they offer brilliant colors, they also are small, highly efficient and robust. What's more, they emit hardly any heat into the light guide, and achieve the fast reaction times required for use in LCD backlighting applications, such as scanning or blinking backlights that support even more brilliant images. Infrared-emitting diodes give off light invisible to the human eye and are likewise gaining significance. Without them, today's shutter glasses for 3D-TV would be an impossibility. The built-in IR-LEDs synchronize the glasses with the television picture. The television communicates via infrared light with the glasses to darken the lenses at the right moment.

With their high-powered properties, LEDs have also hit the automotive headlamp segment. In addition to serving as functional light sources in standard vehicle daytime running light and taillight systems, LEDs are now proving they have what it takes to fulfill all the remaining lighting functions. In the Audi A8, for instance, they power not only the low and high beams, but also the all-weather lights and highway beams. LEDs have been playing an active role in automobiles for many years. Up to 300 are installed in the interior alone, where they can be found in controls, instruments and switches, in roof liners, navigation system displays, reading lights and entertainment systems. On the vehicle exterior, they are firmly established in tail- and brake-lights, blinkers and, as mentioned, in daytime running lights. The automotive industry has long since discovered the advantages of these all-rounders in "invisible" applications: semiconductor lasers and high power infrared diodes, for example, enhance safety in pedestrian protection and driver assistance systems.

General lighting is one of the most promising future fields. The energy efficiency of the latest light technologies is impressive to say the least: while an incandescent lamp converts only three to five percent of the energy input into light, LED components reach 35 percent and LED lamps 25 percent. When it comes to colored light, the incandescent lamp's negligible 0.5 percent cannot compete with the LED's remarkable 40 percent. The decisive factor: thanks to the high efficiency of the LEDs, the final LED lamp can also achieve a high level of efficiency and thus save energy. And LEDs still hold a great deal of potential in terms of efficiency. LED technology is still young; efficiency records are continuously being broken. In the process, LEDs are steadily becoming the standard lamp solution in numerous fields of application.

LEDs already are used in home and workplace lighting. The ban on incandescent lamps is spurring the use of light-emitting diodes in LED retrofit lamps. LED technology already boasts a pleasing color appearance and increasing light quality. The rapid advance in brightness makes way for numerous other innovations in entirely new applications. Even designers and architects are using these lamps to make bold statements in lighting design.

In the public sector, more and more municipalities are deciding in favor of long-lasting and eco-friendly LED lighting systems for streets and buildings. From Asia to North America and Europe, more and more streets, tunnels and town squares are illuminated by LEDs. Government policies are supporting this development with directives requiring more energy efficient lighting. OSRAM Opto Semiconductors has a wide range of products that are tailored to the needs of the general lighting sector and meet all demands imposed on light quality, color stability, high color rendering and diverse white tones.

Continuous investments in research and development give OSRAM Opto Semiconductors the firm foundation it needs to achieve consistently high performance in product engineering and manufacturing. The company has turned out groundbreaking technologies over the last 30 years and holds thousands of patents, thanks in part to special programs that promote a culture of innovation throughout the company. For instance, scientific work and studies receive financial, structural and professional support. In addition, new technologies emerge from interdisciplinary project partnerships in national and international incentive programs, or are based on innovative teamwork in close cooperation with customers and partners. Milestones in connection with the numerous standards set in LED light technology include the development of the first surface-mounted LEDs (TOPLED), the first LEDs with a white color appearance and the OSTAR platform, a highly versatile housing design. The company has received awards for many of these developments.

OSRAM Opto Semiconductors is headquartered in Regensburg (Germany), where it develops and produces its highly complex semiconductor chips and designs new products for new applications. LED production and global distribution have been based in Penang (Malaysia) for over 30 years. A chip production facility was additionally opened there in 2009. Together with the plant in Regensburg, OSRAM Opto Semiconductors now has the two most modern LED chip production facilities in the world. Its North American headquarters are located in Sunnyvale (USA), its Asian headquarters in Hong Kong. Having formerly been part the Semiconductors Division of Siemens, the company has many years of experience in the development and manufacturing of LED light solutions. Today it is a wholly owned subsidiary of light manufacturer OSRAM and thus part of the Siemens Industry sector.

More at: www.osram-os.com