FOR IMMEDIATE RELEASE

Development of Optical Engine for Compact Head Mounted Displays

Achieving High Visibility Even for Outdoor Use

Tokyo, October 14, 2014 – Hitachi, Ltd. (TSE: 6501, "Hitachi") today announced that it has developed a highly efficient optical engine for compact head mounted displays (HMDs) to achieve high visibility even under bright sunlight. The new technology realizes an HMD screen luminance of 8,000cd/m^2 at low power consumption for the light source.

By securing the screen brightness, HMDs incorporation of this optical engine should improve work efficiency and accuracy of on-site workers operating outdoors and using both hands, such as in maintenance checks, by visually providing them with work instructions.

When applied to outdoor operations, HMDs must have long consecutive operation time and screen brightness that is sufficiently visible even under intense natural light. Conventionally, the color and brightness of the screens are made uniform by first diffusing red, blue and green lights emitted from LEDs (the light source) in an optical engine through a diffusion plate, and then mixing the lights. However, this method has an issue that the screens become dim as the lights also diverge in directions other than that of the viewers' eyes.

To address this issue, Hitachi developed an optical engine technology that achieves high visibility by confining and mixing the lights emitted from the LEDs. The optical engine realizes a luminance of 8,000cd/m^2, which represents optical efficiency that is approximately 8 times of conventional technology using a diffusion plate, allowing the screens to be visible even under intense sunlight at low power consumption.

The newly developed technology has the following features.

(1) Use of a tunnel-shaped light guide path and fine particle lenses to reduce light loss and uniform color and brightness

A tunnel-shaped light guide path has been employed to confine lights through total reflection. Moreover, the path has been many fine particle lenses to refract and

diffuse lights for mixing. This has made it possible to provide uniform color and brightness while reducing light loss.

(2) Reduction of light loss through aspheric lens

Hitachi has developed a dedicated, specially-shaped aspheric lens to shift the lights emitted from the light guide path into parallel beams. This has reduced light loss, bringing more lights to viewers' eyes to achieve brighter screens.

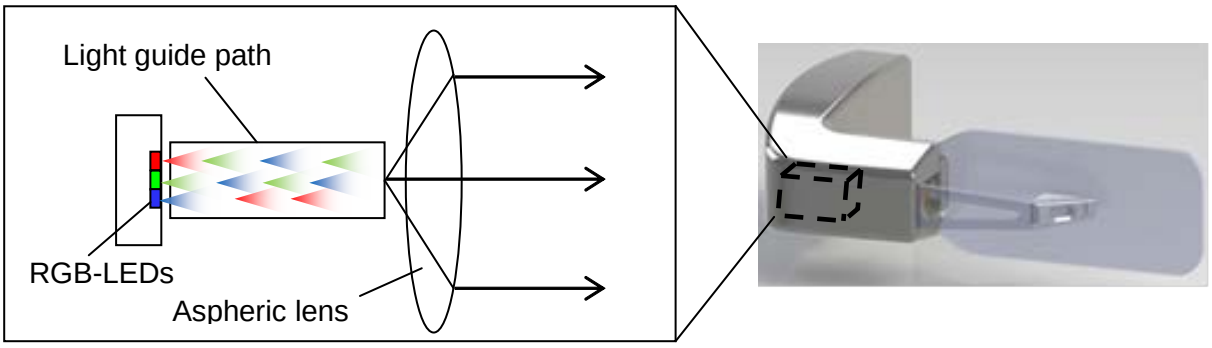

Figure 1: Overview of technology and optical engine (for illustrative purposes)

Going forward, Hitachi will cooperate with Hitachi-LG Data Storage Inc., which is developing HMDs equipped with optical engines incorporating this new technology, for commercialization of such products by further conducting technological development through demonstration experiments with various users. The company plans to exhibit the prototype HMDs utilizing this technology at Hitachi Innovation Forum 2014 TOKYO to be held on October 30-31, 2014 at Tokyo International Forum.

Notes

HMDs are expected to offer a new style of work operations as they allow the wearers to check a variety of information in a hands-free manner. They can also realize real time coordination and sharing of knowledge and information accumulated in respective workplaces by utilizing information technology. Due to these characteristics, HMDs should meet on-site requirements of production lines, maintenance work and logistics services, etc. for higher efficiency and reduced errors and mistakes in increasingly complicated operations. They are also promising for work support and development of human resources for start-ups, especially in emerging countries where securing and fostering engineers and workers is of high importance with the expansion of globalization.

About Hitachi, Ltd.

Hitachi, Ltd. (TSE: 6501), headquartered in Tokyo, Japan, delivers innovations that answer society's challenges with our talented team and proven experience in global markets. The company's consolidated revenues for fiscal 2013 (ended March 31, 2014) totaled 9,616 billion yen ($93.4 billion). Hitachi is focusing more than ever on the Social Innovation Business, which includes infrastructure systems, information & telecommunication systems, power systems, construction machinery, high functional materials & components, automotive systems, healthcare and others. For more information on Hitachi, please visit the company's website at http://www.hitachi.com.

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Information contained in this news release is current as of the date of the press announcement, but may be subject to change without prior notice.
