Compact and high-efficient Laser light source optical system for projectors

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ABSTRACT

Projectors utilizing laser light sources are increasing in the market due to the long life expectancy of the light source device, flexibility of installation, and ease of maintenance. We need white light to utilize the Laser light as a primary light source of the 3 plate-type projector. It is a general method to mix the blue Laser and fluorescence light generated by a phosphor substance excited by other blue Laser, and to use this as a white light source. However, it's also a disadvantage because the size of the projector housing must be increased in order to accommodate the larger size of the Laser light and its complicated role, as opposed to a conventional high-pressure mercury lamp system. So, it is a technical problem designing the optical system to lead blue laser on the phosphor substance and to generate white light, while making the whole system small, and efficient (using less number of Lasers) to generate the same brightness. Canon has recently developed a new unique optical system, named "Partial dichroic system", for Laser light source unit that accomplishes small system size and high efficiency, thus resulting in product achieving high brightness, the smallest size and the lightest weight in its class. Canon's latest 4K Laser projector, the 4K600STZ/4K600Z is equipped with this advanced Laser light optical system.

BIO

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Takehito Kawasumi is an optical engineer at Image Communication Business Optical Products Development Center at CANON INC. He has designed various illumination optical systems for projectors in consumer as well as professional industries and, thus, has contributed to the improvement in brightness and performance in this field. He also designed the Laser light source optical system for "4K600STZ/4K600Z".

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Gregory Scalco is a Senior Technical Specialist in the Imaging Technologies & Communications Group at Canon USA, Inc. He has developed deep technical industry knowledge over the last 12 years and has been at the forefront of Canon's projector business. Embracing the core values of integrity, innovation and growth he was a recipient of a Canon Employee Recognition award in 2017.