High Power and High Reliability Laser Phosphor Light Source for Projectors

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ABSTRACT

Projectors with blue laser phosphor illumination have been available in the market for 5 years . Some other illumination techniques including hybrid methods combining laser phosphor and LEDs have been available for some time. But pure blue laser phosphor illumination combined with 3LCD imaging devices has been available since 2013 on general purpose projectors. The light output of those projectors is 4000 lumens. And in 2014, a new projector model upgraded the light output to 7000 lumens. Also in 2014, a projector with blue laser phosphor illumination and 4K SXRD technology became commercially available, delivering 2000 lumens.

Achieving higher brightness levels, while maintaining reliability and durability of the blue laser phosphor illumination engine presents many challenges, mainly due to the degradation that the material suffers when exposed laser energy.

This paper will discuss some of the challenges in the design of brighter illumination engines utilizing blue laser phosphor technology, among them provision of adequate cooling both of the phosphor area
and laser diodes, as well as proper bonding of the phosphor material to the surface of the phosphor wheel.

This paper will also present the development of a new phosphor module that achieves higher brightness levels, wider color gamut, and longer durability, that will become available in next generation of 4K SXRD projectors.

BIO

Tsuneharu Nomura is a Senior Manager, Optical Mechanical Technology Dept. of the Visual Presentation Solution Business Division Professional Solutions Group at Sony Cooperation. From1992-2004 he was a Design Engineer of CRT for Projectors, then from 2004-2013, a Light Source Design Engineer and Manager of Projectors (3LCDs, SXRD) all at Sony. Recently he productized several Laser Phosphor projectors in professional and consumer market. He is also the Chief of WG, New Light Projector

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