

LED Technology in XXL Size — Display Measures Two Meters

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Display sizes that were once unthinkable are now possible thanks to Osram Opto Semiconductors' new backlighting system for displays. A prototype measuring two meters contains 1,120 Golden DRAGON light-emitting diodes (LEDs). The display's diagonal measurement is 82 inches, about the size of a door. The ready-to-market system is scalable, which means it can be used to backlight much larger areas.

In terms of its practical applications, the system is suitable for backlighting LCD television screens. With its remarkably low power consumption, it generates a minimum of heat and therefore doesn't require any cooling fans. And that in turn results in lower operating costs. The LEDs from Osram, a Siemens subsidiary, have matured to become nearly on a par with the cold cathode fluorescence technology usually used for LCD backlighting today. According to Osram, only a

20-percent improvement in energy efficiency is needed to close the gap. In addition to using thin-film technology — a reflective coating that ensures minimal scattering within the LED and thus maximum luminosity in only one desired direction — the Golden DRAGON diodes work with an additional special lens, which also originated in the development lab at Osram Opto Semiconductors. And although the system provides an improved display, it requires fewer LEDs for the backlighting.

Work has already begun on the next generation, and when it's completed, these “backlights” are expected to be even thinner and more cost-efficient. With their very fast switching times (less than 100 nanoseconds), LED-based backlights make possible displays without striation. Plans also call for eventually dispensing with the color filter in the displays' LCD surface, because the backlights will be able to control the display with the individual primary colors. The very fast image sequencing of the individual colors ensures that the human eye perceives a picture of outstanding brilliance. And ambient temperatures have even less effect on displays using this light source. Until now, the use of LCD liquid crystals has been restricted to a range between minus 40 degrees and plus 85 degrees Celsius.

LED technology has been especially successful in areas of application where its advantages — including service life, precision, small size and special color properties — can be fully exploited. If the light-emitting chips can be made even brighter, though, and production costs and thus the selling price are reduced, the so far relatively expensive LEDs will largely replace conventional light sources for general lighting use by the end of the decade.

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