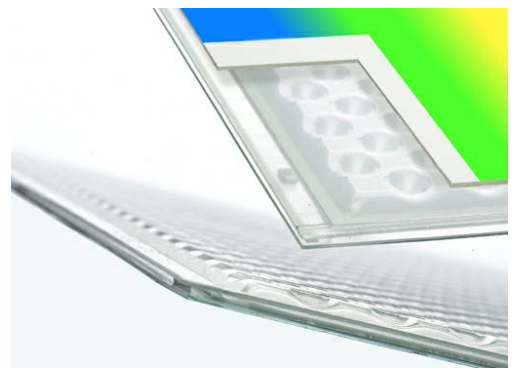


PLANON® Flat Panel Light Source Technology



May 2004

Special Edition SID '04

OSRAM PLANON® as Backlight for Hi-Resolution LCD Displays for Medical Applications

The **OSRAM PLANON® Flat Light Source** gives a brilliant performance in hi-resolution medical LCD monitors

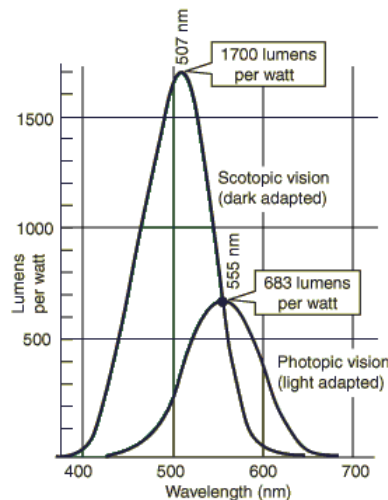
The use of hi-resolution LCD displays for medical applications has become increasingly important. This is especially true for diagnostic medical monitors that need to have high contrast and excellent resolution even at reduced ambient light levels, where the visual perception and sensitivity of the human eye is different from normal lighting conditions.

Under normal lighting conditions, the $V(\lambda)$ -curve of the eye shows maximum sensitivity at 555 nm. This is called "photopic vision". At somewhat reduced light levels (mesopic vision) or at further reduced light levels (scotopic vision), the sensitivity curve of the human eye shifts to lower wavelength values. Medical analysis of X-ray films or digitized X-ray pictures is usually performed at reduced illumination levels.

OSRAM and the Display Technologies division of SIEMENS Automation and Drives (A&D) have partnered to develop a series of improved high-resolution digital gray-scale flat panel displays that meet the requirements for best picture resolution. The LCD monitors feature excellent picture quality, high uniformity, and superior luminance maintenance over their entire service life.



SIEMENS AG, A&D SE DT / 5 Mega-Pixel Digital Gray-Scale Flat-Panel Display SDM 21500D with PLANON Backlight 21.3" (© Siemens A&D)



Sensitivity curves of the human eye.

From: Berman, S.M., Energy Efficiency Consequences of scotopic sensitivity. J.IES Vol. 21, No. 1, Winter 1992

Optimized Phosphor Coating

The main contributor to the excellent performance of the PLANON system is the special phosphor coating of the lamp. It was optimized in order to match the sensitivity curve of the human eye at reduced light levels.

OSRAM PLANON® as Backlight for Hi-Resolution LCD Displays for Medical Applications - continued

True Energy-Saving Mode

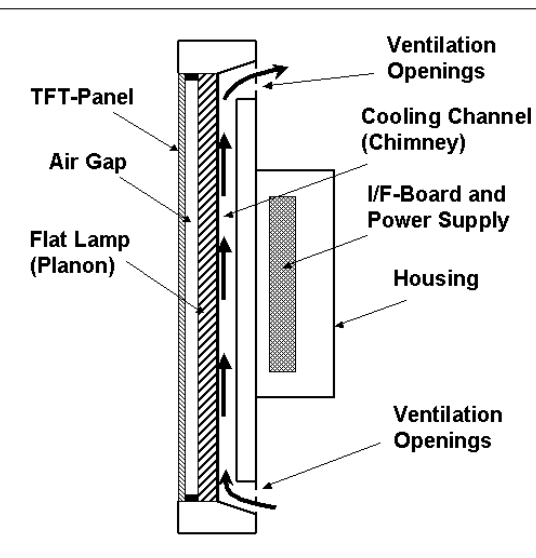
Since the dielectric discharge of the PLANON lamp uses only xenon gas and no mercury, there is no warm-up time when a lamp is switched on for the first time or resumed from energy-saving mode.

Independent of Ambient Temperature

The light output of the mercury-free PLANON lamp is virtually independent from ambient temperatures in the range -30°C to $+85^{\circ}\text{C}$.

Fan-Free Design

The PLANON lamp was integrated into the backlight unit such that a chimney effect was generated between lamp and back-plate. Here, the PLANON lamp acts as a dividing element between airflow and optical components, thus allowing for a very efficient heat management that renders noisy and failure-susceptible fans unnecessary.



Advantages of PLANON Mercury-free Backlight System

- Extremely long service life
- Superior thermal management
- True power-save mode
- Instant-on
- Uniform illumination
- Environmentally friendlier than CCFL
- Temperature-independent light output

With the unique features of the OSRAM PLANON technology, for the first time, a mercury-free flat lamp has been integrated into a high resolution diagnostic LCD monitor

This combination yields many improvements over conventional approaches and therefore represents a tremendous advancement in the technology of medical LCDs.



Gray-Scale Flat Panel Display
(©SIEMENS A&D)

For more information about the SIEMENS digital gray-scale flat-panel display: www.siemens.com/displays

Or contact "SIEMENS Automation and Drives", Infoservice, P.O. Box 23 48, 90713 Fürth, Germany : Fax ++49 911 978-3321 / e-mail: infoserv@scn.de

SIEMENS

Improved thermal management through chimney effect (fan-free design)