

# ARPHOS<sup>®</sup>: high-end LCD backlight technology



**Advanced Remote  
Phosphor Technology**

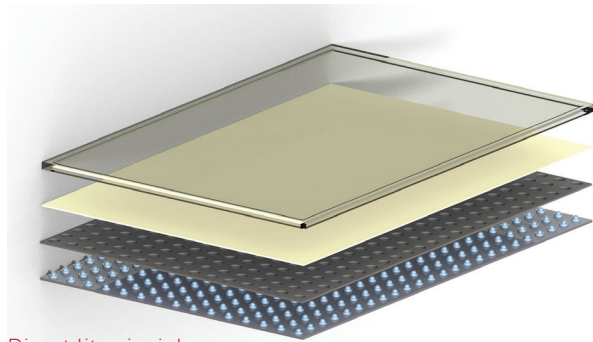
**Highest reliability,  
best serviceability!**

# ARPHOS® Technology

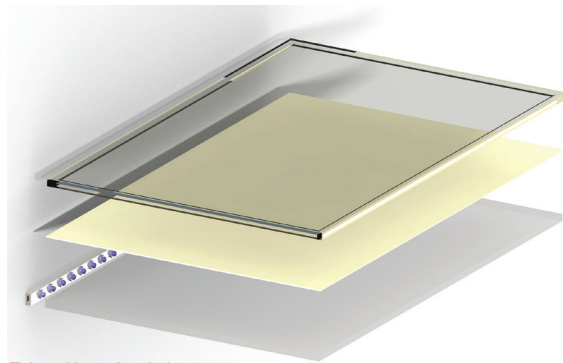
ARPHOS® technology is a proven concept and therefore ready and available.

## Features and benefits

1. Highest efficiency
2. Limited lumen depreciation
3. High color consistency over lifetime
4. No LED binning issues
5. Customized colors



Direct lit principle



Edge lit principle

## Remote phosphor – how it works

The NDF advanced backlight technology is based on color conversion by remote phosphor. ARPHOS® uses a blue-pump LED as a basic light source. The advantage of this very stable blue LED is, that its wavelength can be converted to visible light in almost every color that you wish – we are able to customize the color to your specific needs. Furthermore, the stable phosphors are hardly stressed; lumen depreciation and color shift are therefore no issue! ARPHOS® technology is applicable in both direct lit and edge lit panels.

### Direct lit

Within this principle a limited intermediate cavity between the blue pump LED and the Remote Phosphor Film (RPF) works as a mixing chamber. The multiple function of the RPF converts the mixed blue light into white light and also works as a diffuser.

### Edge lit

A major advantage is that the edge lit principle does not need significant changes compared to existing edge lit systems. The light guide will bring the blue light homogeneously to the RPF which replaces the function of the diffuser and converts the blue light into white light.

## ARPHOS® advantages versus LED

- The low temperature of the phosphor generates a higher quantum efficiency (>50 %).
- Hardly any lumen depreciation nor color shift over lifetime.
- Better uniformity, because the Remote Phosphor Film (RPF) acts as a diffuser.
- No white LED binning issues.
- Custom-made white point with single LED technology.
- No complex and expensive color control needed.
- The technology is independent of the specific LED manufacturer, because of the custom-made fluorescent layer.



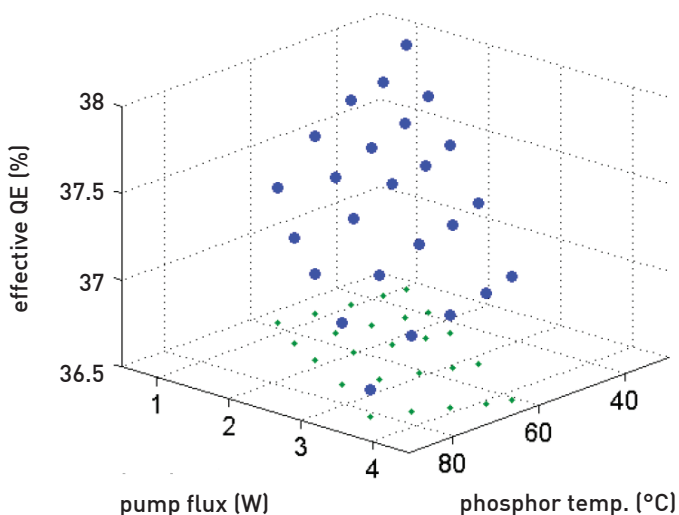
Phosphor carrier: Remote Phosphor Film (RPF) or other substrates

# ARPHOS® Performance

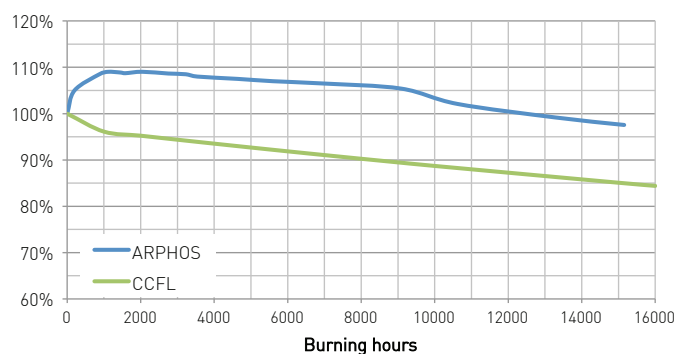


## Significant higher efficiency

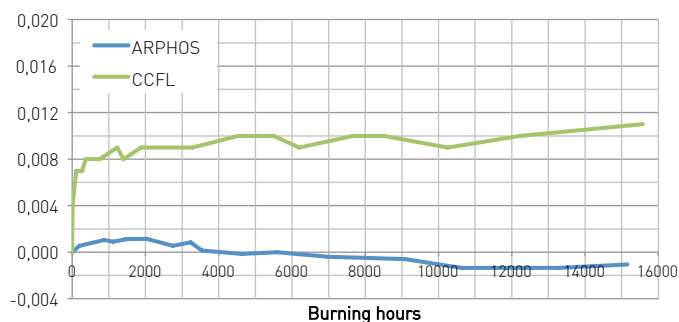
Due to the lower operating temperature of the phosphor, the effective Quantum Efficiency (QE) becomes higher. In the graph below you can see the effective QE as a function of phosphor temperature and initial pump flux (large blue dots) and its projection in the horizontal axis (small green dots).



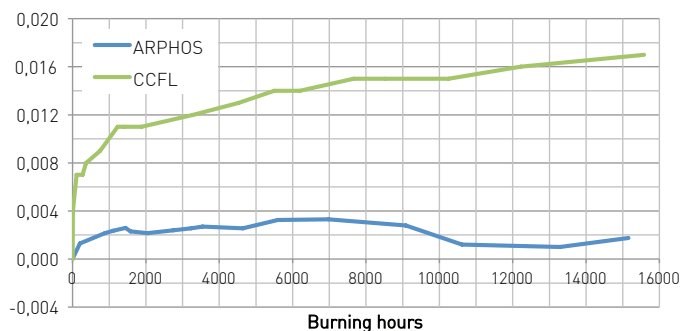
## Relative light output ARPHOS® vs CCFL



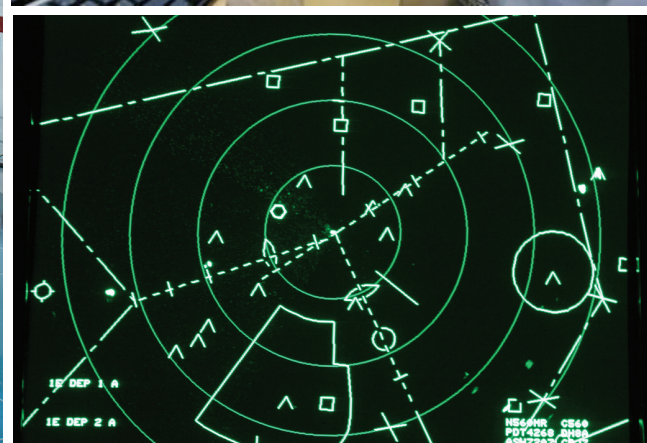
## Color shift x-coordinate ARPHOS® vs CCFL



## Color shift y-coordinate ARPHOS® vs CCFL







**NDF**  
SPECIAL LIGHT PRODUCTS

NDF Special Light Products B.V.  
Leemstraat 40 - 44  
4705 RH Roosendaal  
The Netherlands

T +31 (0)165 - 538 630  
F +31 (0)165 - 539 053

[www.ndf.eu](http://www.ndf.eu)  
[sales@ndf.eu](mailto:sales@ndf.eu)