



VAC Film

Viewing Angle Correcting Film

Correcting the color inversion and image washout at off-angles in LCDs

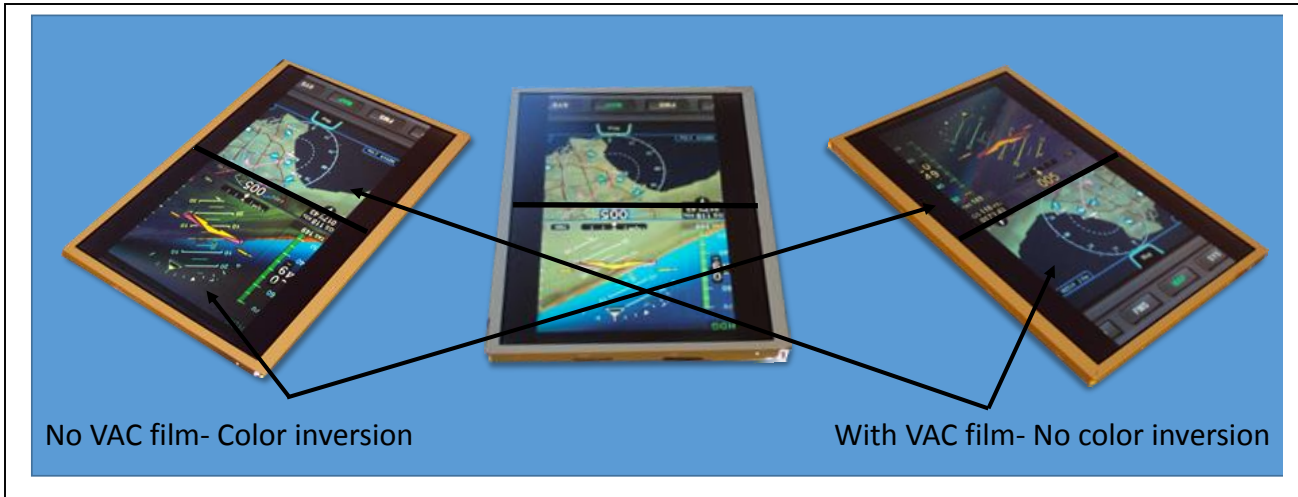
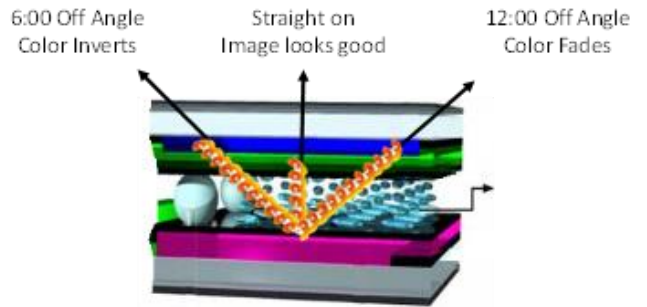
Features:

- Increases both color and brightness viewing angle
- Corrects viewing cone issues for display set to Portrait Mode
- Increases minimum CR from 10:1 to 30:1
- Increases effectiveness of active and passive brightness techniques
- Improves color saturation at off angles
- Corrects Birefringence
- Gives TN and WVA-TN LCD cells the view angle of IPS type displays

Birefringence- You may not know what it is but you know when you don't like it. Birefringence is the function of refracting light in two directions. It is cause of LCD producing poor imagine quality at off-angles. LCDs produce good looking images at a straight on or perpendicular angle but at off angles, particularly above or below the display, the image is either washed out or appears to be in reverse-video mode. The corruption of the image is the fact that as light moves through the cell gap of the liquid crystal, the actual speed of various light frequencies change (refraction). On a black and white image, black is where all frequencies of light are absorbed and white is where all frequencies are passing through. At oblique angles, as light is now passing through a much longer path through the liquid crystal, various light frequencies fall out of phase with the other frequencies. This phase shift causes images to appear either color inverted (reverse video) or with a loss of contrast (pale images). This is especially an issue for displays being placed in the portrait mode.

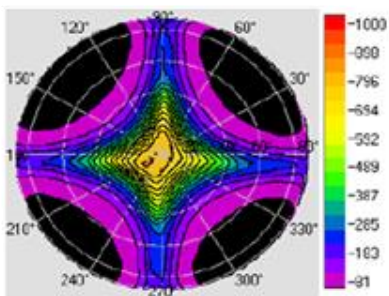
Display OEMs have fixed the left/right view cone issue by using compensated polarizers, but up/down viewing is still very poor. WVA displays use "dual domain" to correct up/down viewing but these displays cannot fully correct the problem. IPS displays are the best but since they have two internal transistor per sub-pixel, they cost more to make and have lower tranmissivity. Luminary Optics VAC film uniquely reconstructs the phase differences after the light exits the display. Added to the front of the display's polarizer, the image is corrected, bring all of the color into their proper phase, thus correcting the visual anomalies.

Long light paths at off angles causes certain light frequencies to fall out of phase from the other frequencies. This causes objectionable shifts in colors and contrast. VAC film corrects and compensates these differences as light exits the display



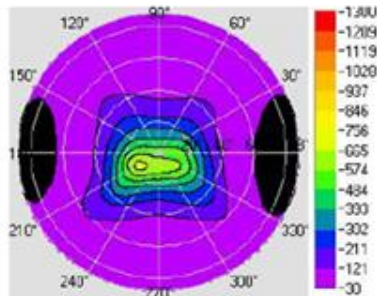
In the above untouched photo, a display's 6:00 view angle reveals serious color inversion. In the half screen with VAC film, the color inversion is gone. VAC Film compensates or corrects the phase change in the exiting light at all angles, which greatly broadens the functional viewing cone of a display. It corrects color inversion at one extreme while it increases contrast at the other extreme. It also increases the brightness of the display from a normal viewing angle.

IPS- In Plane Switched



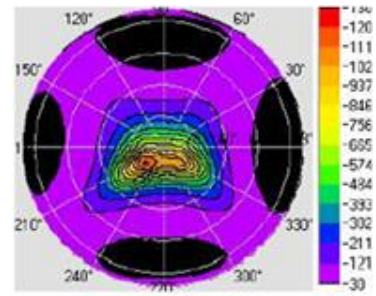
Broad left and right
Fall off at off angles

VAC Film



Corrected 12:00 /6:00
Compared to standard TN

TN Cell



Narrow 12:00/6:00
Limited L/R contrast ratio