

# Barco's complete range of stereoscopic technologies

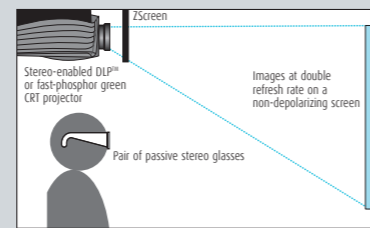
## Passive stereo

Typical stereo separation ratio **100:1**



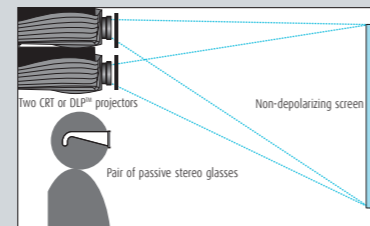
### With a single CRT or DLP™ projector

- separation based on light polarization
- double refresh rate
- 'ZScreen' in the lightpath alternates the L-R polarization
- passive lightweight stereo glasses.



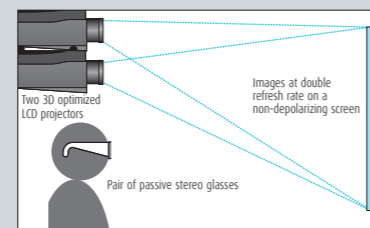
### With two CRT or DLP™ projectors

- separation based on light polarization
- left resp. right polarizing filter in front of each projector
- two projectors mean higher brightness
- passive lightweight stereo glasses

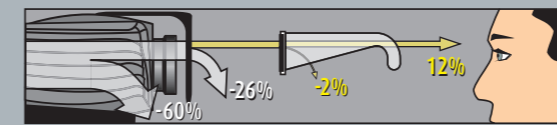


### With two LCD projectors

- separation through internal polarization
- most efficient method for high stereo lumen brightness
- passive lightweight stereo glasses



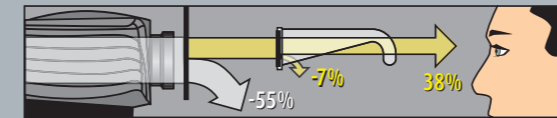
## Light efficiency



**12%**

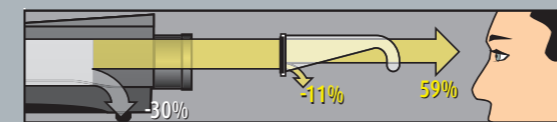
When a **ZScreen** is used to polarize the light, a single projector is driven in active stereo mode. As a ZScreen is slower than active glasses **more blanking** is needed between the left and right signal, resulting in a **duty cycle efficiency of about 40%**.

The ZScreen polarizes light with a brightness efficiency of about **35%**. With the passive stereo eyewear having an efficiency rating of **84%**, the final efficiency rating is about **12%**.



**38%**

The unpolarized light coming from each projector is externally polarized, which diminishes the brightness by more than half and reduces the efficiency to about 45%. Then the polarized image is viewed through **passive stereo glasses** that transmit the polarized light at about **84% efficiency**, resulting in a final **efficiency rate of approximately 38%**.



**59%**

LCD panels polarize the light that passes through them in different directions. Through the use of **internal polarization** Barco is able to maintain about **70%** of the original **light output**. Combined with the **84%** efficiency of the **passive glasses** an overall projection **efficiency of 59%** is reached.

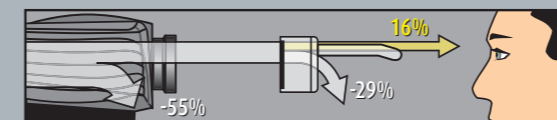
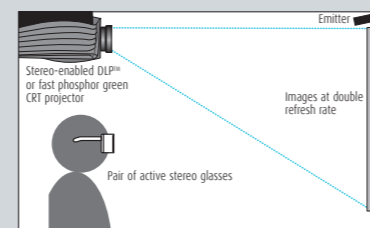
## Active stereo

Typical stereo separation ratio **500:1**



### With a single CRT or DLP™ projector

- double refresh rate
- active stereo glasses with IR controlled LCD light shutters
- high contrast and brightness



**16%**

As the projector sequentially projects the left and right eye images, the duty cycle is 50%. However, the **extra blanking** between the left and the right image that is required to ensure a good stereo separation further **diminishes the light output**, resulting in an efficiency of about **45%**. Due to polarizing filters that are utilized in active stereo eyewear, each eye receives **less than half of the remaining light**. As the shutter glasses do not open and close instantaneously, and due to the light lost from the polarization, efficiency of the active stereo eyewear is rated at about **35%**.

The **overall efficiency** of the **active stereo** process therefore equals about 45% x 35%, or approximately **16%**.

## Infitec+ stereo

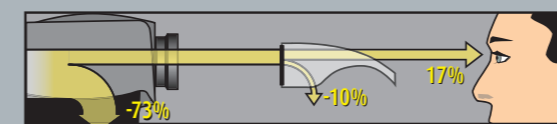
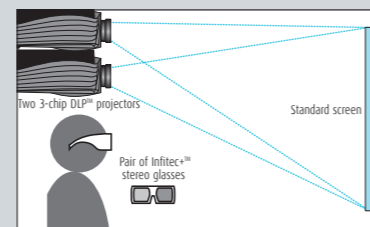
Typical stereo separation ratio **10.000:1\***

*\*both front and rear (perpendicular viewing on the screen +/- 10i)*



### With two 3-chip DLP™ projectors

- based on internal Infitec+ color filter technology
- simultaneous display of left/right information
- superior stereo separation without ghosting
- full freedom of motion, no flickering
- screen independent
- lightweight Infitec glasses

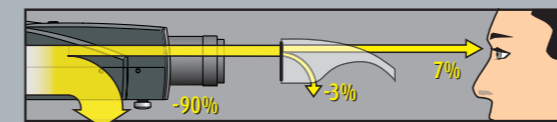
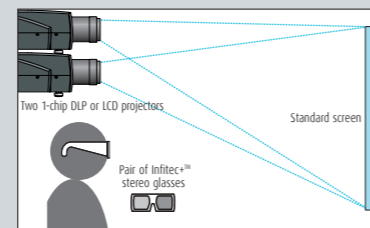


**17%**

Infitec color filters divide the primary color bands into two separated regions. As the total spectrum needs to be split into two separate complimentary parts, a maximum theoretical efficiency of 45% is obtained after Infitec+™ optimization. Keeping practical implementation and color optimization into account, **27% efficiency is achieved after Infitec+™ optimization**. The two Infitec+™-optimized images are viewed through the matching filter with some associated reflection and absorption loss, so the **final efficiency rate is about 17%**.

### With two 1-chip DLP™ or LCD projectors

- based on internal Infitec+ color filter technology
- simultaneous display of left/right information
- superior stereo separation without ghosting
- full freedom of motion, no flickering
- lightweight Infitec glasses

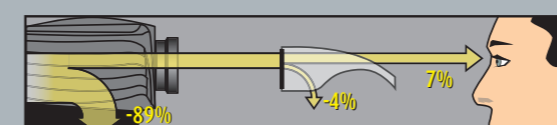
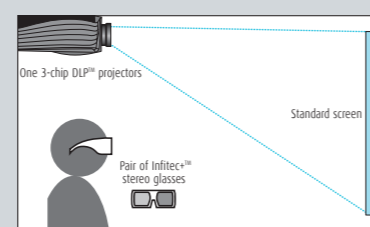


**7%**

Infitec color filters divide the primary color bands into two separated regions. As the total spectrum needs to be split into two separate complimentary parts, a maximum theoretical efficiency of 45% would be possible. Taking the metal-halide lamp spectrum characteristics and color optimization into account, **8% efficiency is achieved after Infitec+ optimization**. The two Infitec+™-optimized images are viewed through the matching filter with some associated reflection and absorption loss, so the resulting **final efficiency is about 7%**.

### Active Infitec+ with one 3-chip DLP™ projector

- based on internal Infitec+ color filter technology
- sequential display of left/right information
- superior stereo separation without ghosting
- full freedom of motion, no flickering
- lightweight Infitec glasses



**7%**

Similar to active stereo described above, the images are projected sequentially with some extra blanking between the images, resulting in a **duty cycle** of about 45% per eye. Next, the light is **modulated by the Infitec filters** and viewed through the matching Infitec glasses. After color correction, a **final efficiency of about 7% per eye is obtained**.

The influence of the screen has not been taken into account in the pictures. Indicative average values depend on materials used. yellow = polarized resp. color filtered light