

Barco Simulation



Innovative simulation display solutions



Thales • BMW • Marin • Tiger • Ford • Helisim • Linx • Nimrod • NLR • Gurug • Faspa • Mitags • Raytheon • Shymaywa • Saab • Cubic • CAE • Evans and Sutherland • Nasa • Norcontrol • Bell • Glass Mountain Optics • Flight Safety International • Hitachi Denshi Ltd. • Lockheed Martin • SGI • SEOS • Star Center • STN Atlas • Boeing • Thales • BMW • Marin • Tiger • Nimrod • NLR • Gurug • Faspa • Shymaywa • Saab • Cubic • CAE • Nasa • Norcontrol • Altheon • L3 Communications • Hitachi • Lockheed Martin • VW • Bell • Star Center



Photo courtesy of South Tyneside Maritime Training College, UK

Ship bridge simulation



Photo courtesy of the National Air and Space Laboratory, The Netherlands

Air traffic control



Photo courtesy of Thales Training & Simulation

Flight simulation



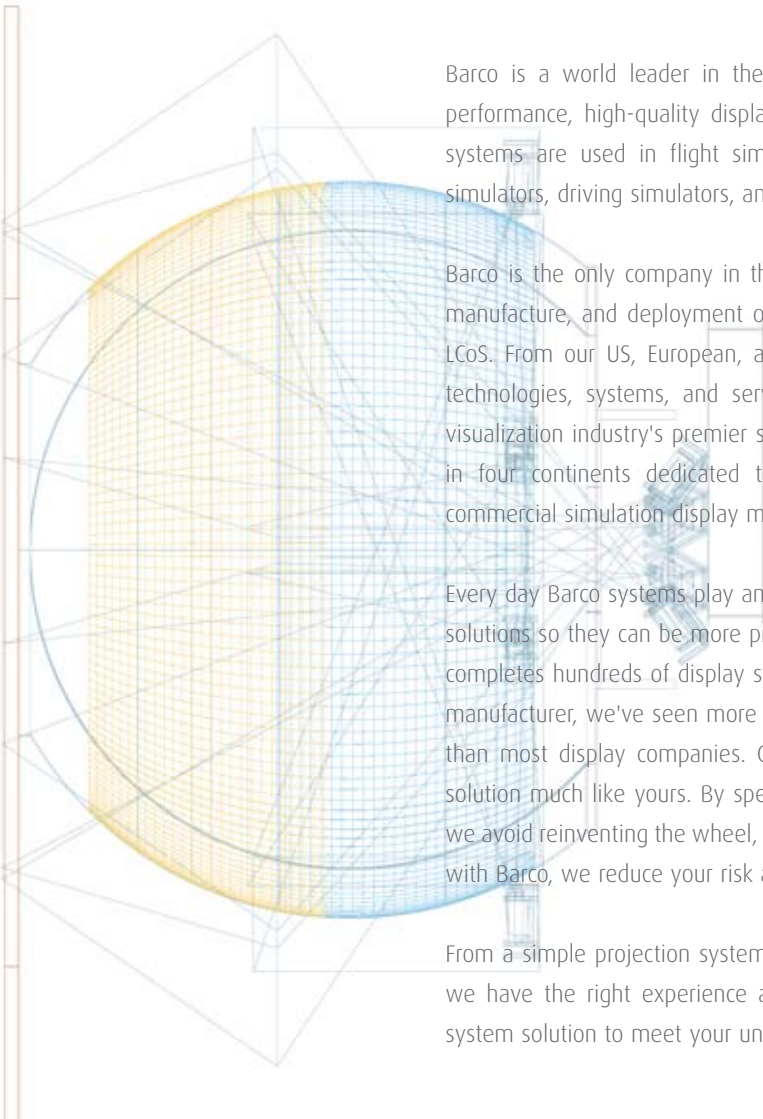
Photo courtesy Rheinmetall Defence Electronics

Drive simulation



Photo courtesy of Thales Training & Simulation

Innovative simulation display solutions



Barco is a world leader in the design, development, and manufacture of high-performance, high-quality display systems for simulation applications. Our display systems are used in flight simulators, ship bridge simulators, mission rehearsal simulators, driving simulators, and firearms training simulators.

Barco is the only company in the industry involved in the research, development, manufacture, and deployment of all visual display technologies: CRT, DLP, LCD, and LCoS. From our US, European, and Asian headquarters, we continue to offer new technologies, systems, and services that constantly confirm our position as the visualization industry's premier system solutions provider. We have five laboratories in four continents dedicated to serving the visual needs of the military and commercial simulation display markets.

Every day Barco systems play an important role in helping companies visualize their solutions so they can be more productive and realize bottom-line advantages. Barco completes hundreds of display system projects each year. As an original equipment manufacturer, we've seen more situations and have been involved in more projects than most display companies. Chances are we've already implemented a display solution much like yours. By specifying the best possible display system or service, we avoid reinventing the wheel, which saves you time and money. When you partner with Barco, we reduce your risk and you realize bottom-line advantages.

From a simple projection system to complex immersive visualization environments, we have the right experience and proven resources to deliver a complete visual system solution to meet your unique simulation application needs.



Photo courtesy of Aéroport de Paris (ADP)

Proprietary projector development

With more than 1000 engineers worldwide and five field laboratories, Barco invests in proprietary simulation dedicated projector development for **all available projection technologies**, including: CRT raster and raster/calligraphic, LCD and DLP™ light valve projection systems, and LCoS (Liquid Crystal on Silicon).



Application specific optimizations through R&D expertise

- Optics and opto-electronics
- Colorimetry
- Electronics and image-processing
- Embedded software
- Customized precision mechanics

Unique capabilities for unique customer advantages



Mechanical engineering

With a **wide range of versatile modular off-the-shelf structures** based on Barco's proprietary aluminium profile components, **state-of-the-art CAD tools** allow Barco to design innovative concepts to meet your immediate needs. In-house mechanical engineering facilities include an advanced model shop and comprehensive **mechanics and plastics departments**.



BARCO offers a wide range of CRT and light-valve projector lenses

Dedicated screen technology

Barco evaluates and develops the **optimal screen technology for multi-channel displays**. Barco screens can be optimized for diffusion with different gain factors.

A full line of lenses for all simulation applications

Barco interfaces custom lenses for the customer's unique applications. A full line of CRT lenses are available - from high definition hybrid lenses to color corrected hybrid liquid-coupled lenses - providing unprecedented visual fidelity for flat, cylindrical, and spherical screens of many radii. Barco's light-valve projectors are complemented by a wide range of projection lenses of various focal lengths, enabling the projector to be positioned at almost any distance from the screen.

Own manufacturing facilities

As a testament to our **own ASIC design, thick film, bonding, prints, coil winding and fibre optics capabilities**, Barco is known worldwide for developing and manufacturing unique projection platforms with the highest quality standards, ensuring optimum results that are focused on customer needs.



Stringent quality control

With a strong technological foundation **focused on customer needs**, Barco has developed a dedicated methodology, a **strong quality management** program and a global service organization to partner with you from consulting through manufacturing, implementation and full **service and maintenance**.

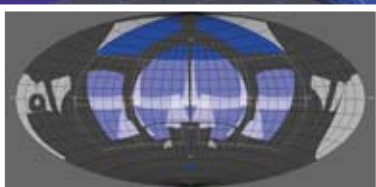
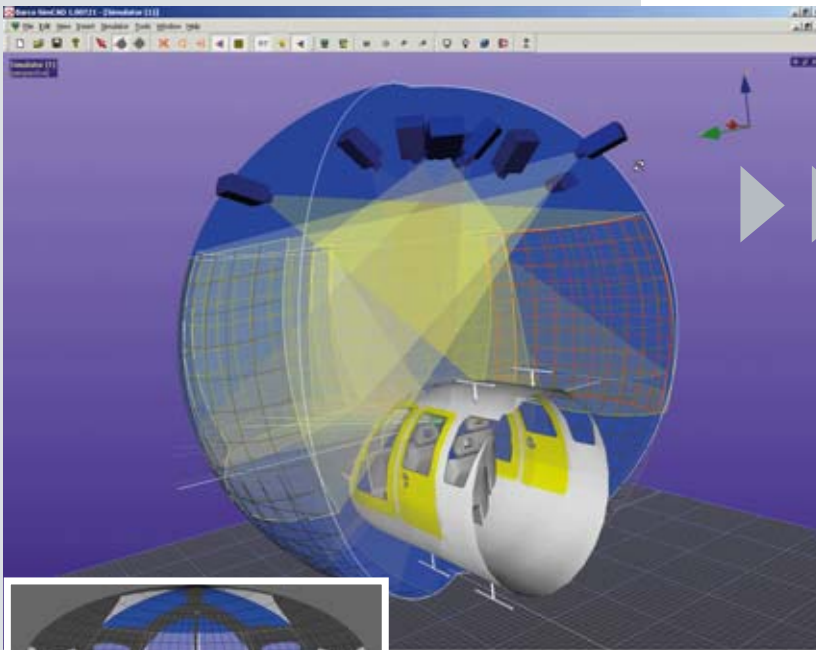


Barco's quarterly "Quality Award", rewarding the teams with the best quality initiatives.

Barco SimCAD™: the all-in-one design and installation tool

Design analysis and prediction

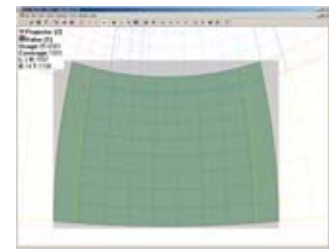
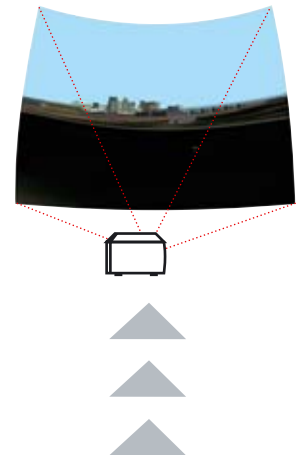
Using SimCAD™, Barco's proprietary simulator design and optimization tool, all display parameters and customer requirements are easily translated into a highly detailed ray-tracing based model. SimCAD™ offers **auto-optimization of projector placement and orientation** (including obstruction analysis) and yields accurate real-time predictions of brightness, contrast and resolution, including Mercator and Aitoff plots of the channel coverage for even the most complex tiled layouts. SimCAD™ designs can be exported to common CAD/CAM packages.



Aitoff plot of the pilot's view in the simulator generated by SimCAD™

Configuration and optimization

SimCAD™'s ray-tracing accurately calculates the **geometry distortion and edge blending** required for each projector channel. These parameters can be downloaded into the **WARP™** processor of the projectors through the intermediate **xRACU™** communication capabilities, automatically and accurately pre-aligning them for use in the designed display position.



Installation and calibration

At the installation site, a computer-driven laser theodolite and distance measuring tool automatically creates a 3D model of the display system, including coordinates for the theodolite and eye points. Next, it **marks reference points on the display surface that are subsequently fixed using Barco's patented Laser Diode Array Tool (LDAT™)**. The projectors are then carefully calibrated to these geometric references using test patterns generated by **POLARIS™**, through the fast and accurate alignment capabilities offered by **xRACU™** and **AUTOALIGN™**.

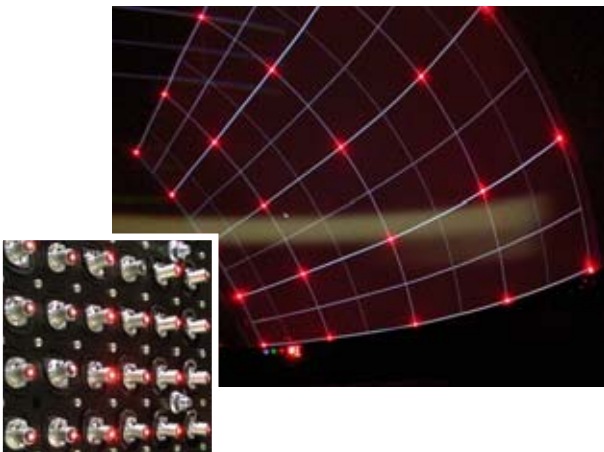
Tools for fast and accurate installation and easy maintenance

Laser Diode Array Tool: LDAT™

Barco's LDAT™ marks reference patterns to effectively align display channels. The LDAT™ provides a solution for up to 30 dedicated laser light sources which can be independently directed to points on the screen. **Multiple arrays are used to mark a complete multi-channel system.**

Barco's LDAT™ is a permanent maintenance tool to verify the proper alignment of the display system.

Polaris™, Barco's own pattern generating program, generates the necessary test patterns projected by the display system to match the geometry onto the fixed reference pattern provided by the LDAT™.



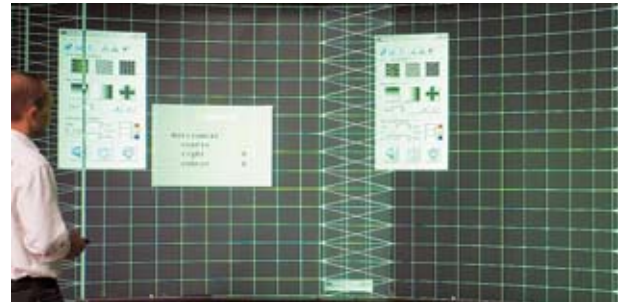
POLARIS™: Barco's expert projector alignment software

For fast, easy alignment of complex multi-screen projection system, Barco has developed its own proprietary dedicated software.



With an intuitive user interface, Barco's POLARIS™ software is driven by multiple, multi-channel image generators to **calculate and generate user-specified pre-distorted test patterns.**

The POLARIS™ software is available IRIX, Windows, HP, SUN and Linux platforms.



xRACU™: multi-system Remote Alignment and Control Unit

The Barco xRACU™ is the most flexible projector control system available. As a world's first, it **allows you to operate, calibrate, configure and diagnose multiple Barco projectors (any mix of CRT, LCD, DLP and LCoS) from a single hand-held controller.**

The Barco xRACU™ reduces set-up and maintenance time. It automatically detects the projector type and location, and automatically downloads its parameters (video timings, etc). The system uses a common interface across all projector types and technologies and allows the simultaneous control of all projectors.

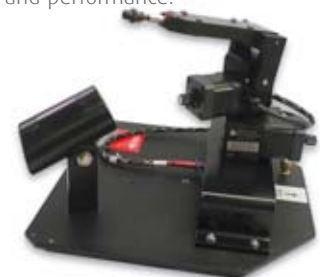
For flexible operation, the xRACU™ can store multiple Time of Day modes, with calibrated interpolation between modes. The centralized storage of parameters considerably reduces MTTR.



AutoAlign™ suite

Barco's AutoAlign™ suite of products represents a breakthrough in the automated alignment or re-alignment of multi-channel display systems. Barco's original **Automatic Alignment** system allows you to quickly and easily perform routine alignment tasks, such as geometry and convergence adjustments, to a Barco CRT-based projection system. Barco's **ACURAS™** enables you to perform fast, accurate, and repeatable brightness and color adjustments to a Barco SIM 6 Ultra II LCD projection system.

Barco's AutoAlign™ suite of products are designed to work hand in hand with Barco's xRACU™ control system and dramatically improve system operation and performance.



Intensive customer involvement throughout your project

Concept engineering and design

Application and development engineers dedicated to your project work as a team to develop a display solution that meets your demanding specifications.



We can include audio, switching, cabling, and the automation and control system for the display. **By coordinating with our partners, complete turnkey solutions can be created.**

Project management

A certified project manager works with you and oversees the production, final installation, and on-site training of the project. All details of the project are checked in order to maintain Barco's **high benchmark for quality in outstanding individual turnkey solutions.**



Project management

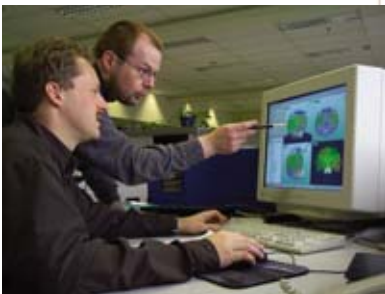
Concept engineering & design



Contract

Analysis

Pre sales



Analysis

Application engineers work out customized solutions, analyzing all parameters of the application including **technological, architectural, environmental and ergonomic factors.**



Pre sales

Whether you're located in Korea, Japan, China, France, Germany, U.K, Italy, Spain, Sweden, U.S.A. or Brazil, Barco has a **local team to help you achieve your goals.** Headquarters in the USA, Europe, and Asia offer a **global backup with specialist assistance.**



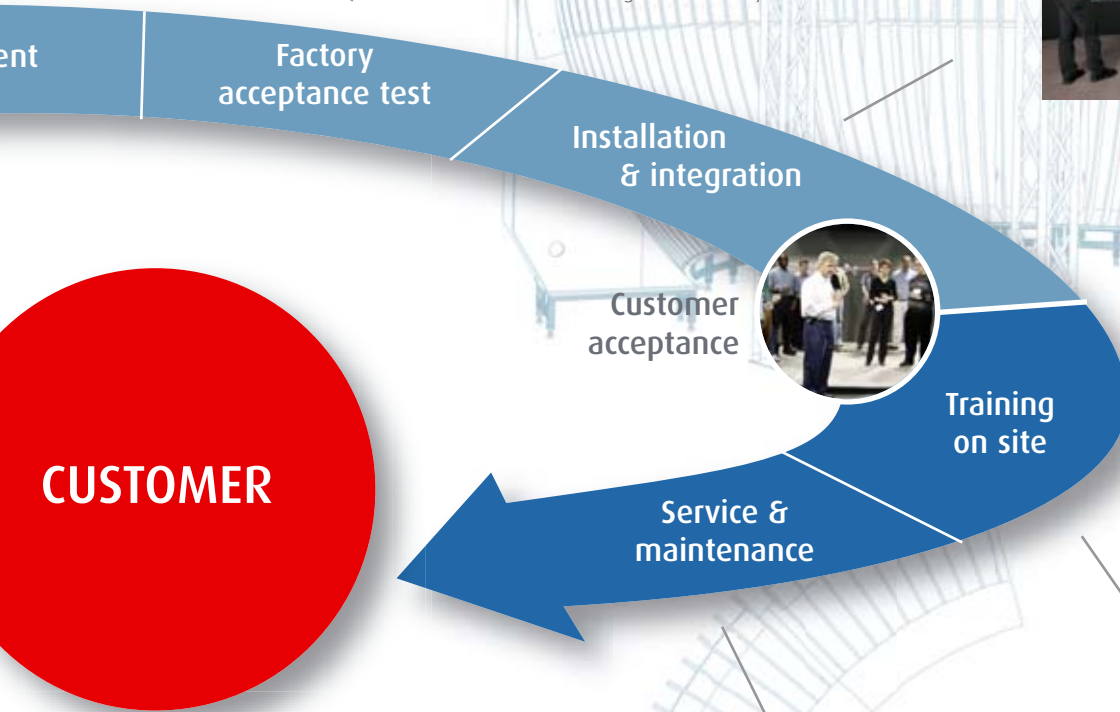
Factory acceptance test

Customer evaluation of the implemented system at the Barco facility.



On-site installation and integration

Specialized technicians with global experience, **dedicated alignment tools and software** carry out the implementation efficiently and with the highest accuracy.



Installation & integration

Customer acceptance



Training on site

Service & maintenance



Service & maintenance

- Worldwide, local service teams assist you if an urgent problem arises.
- Different levels of service can be covered with **dedicated maintenance agreements for Priority Care, Premium Care or Premium Plus Care.**

Training on site

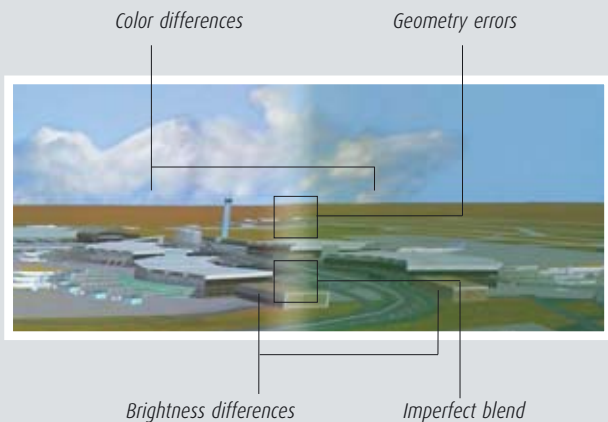
The staff operating the system receives a comprehensive training that enables them to **use the system at its full potential**. Barco offers a choice from simple to extensive training programs.

Dedicated problems call for

The requirements for large field-of-view, high-resolution displays are diverse. Simulation applications may require a number of different system configurations such as front or rear projection; different screen shapes from spherical to cylindrical, to conic, to flat. Screen sizes may range from 3' x 3' (1 x 1m) to 9' x 60' (3 x 20m) flat to a 90' (30m) diameter hemispherical dome. Users may require high brightness, high contrast or both. The system may be single user or for multiple simultaneous users.

On single-channel systems, projected images appear very good and design compromises are virtually unnoticeable to even the trained observer. In multi-channel applications the most casual observer will notice when the image channels do not align, the brightness across channels is different and the colors do not match. Geometric distortions in large multi-channel displays can be caused by projector misalignment, imperfect lenses and folding mirrors and those from displays themselves. The uncorrected images will have luminance and color variations both between and within each projector channel.

Blending with non-optimized projectors:



Dedicated solutions

The first step in designing a solution for multi-channel applications is to select projectors with the appropriate features and optimizations. **Since no single projector technology is the best in all circumstances, Barco offers all the major projection technologies available – CRT, LCD, DLP™, and LCoS – each optimized with a broad range of Barco features to fit specific application needs.**

Color uniformity

Complete uniformity of color and color through out and between all screens is very crucial to the image quality. To eliminate channel-to-channel color variations, Barco has integrated **DynaColor™** and **Linked DynaColor™** for its LCD, DLP™, and LCoS projectors, in addition to chromatically matching optical components.

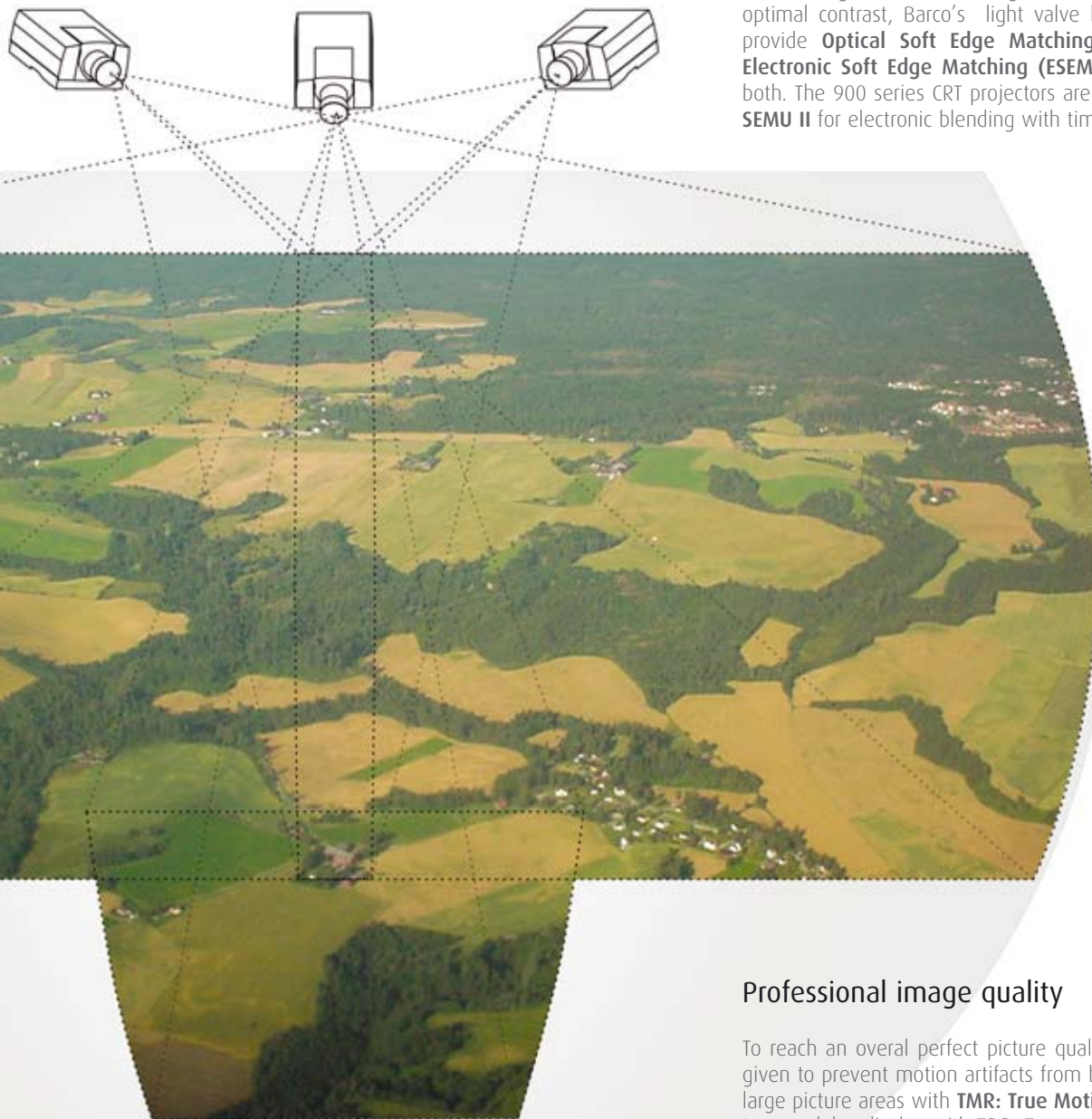


Brightness uniformity

The brightness has to be constant throughout the entire image area and constant over time. Barco light valve projectors attain and maintain brightness uniformity with **Constant Light Output (CLO)** and **Linked CLO**.

Invisible blend

Transitions between projection channels in a multi-channel system should be invisible. To be able to offer a perfect blend for all configurations and all brightness levels, while maintaining optimal contrast, Barco's light valve based display systems provide **Optical Soft Edge Matching (OSEM)** as well as **Electronic Soft Edge Matching (ESEM)** or a combination of both. The 900 series CRT projectors are equipped with **digital SEMU II** for electronic blending with time-of-day tracking.



Professional image quality

To reach an overall perfect picture quality, special attention is given to prevent motion artifacts from becoming obvious over large picture areas with **TMR: True Motion Reproduction**, and to zero delay display with **TDR: Transport Delay Reduction** to allowing full mission rehearsal simulation.

Perfect geometry

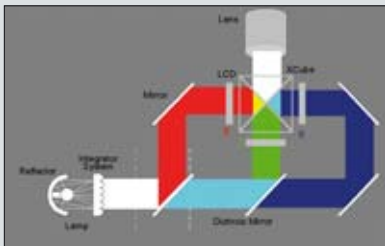
Image shift and geometric distortion must not be visible over the entire image area. Barco's **Digital Waveform generator** enables you to eliminate distortion for CRT projectors. Digital control over geometry correction is accomplished with Barco's exclusive **WARP™** technology on SIM 5R, SIM 6 Ultra II, and SIM 7 projectors.



NLR Tower Research Simulator - Photo Courtesy of the National Air and Space Laboratory, Amsterdam, The Netherlands

Why LCD?

LCD technology separates the light source from the modulator, enabling you to reach far higher light outputs. The delay commonly associated with image processing, makes standard off-the-shelf LCD projectors unfit for full mission rehearsal simulators.

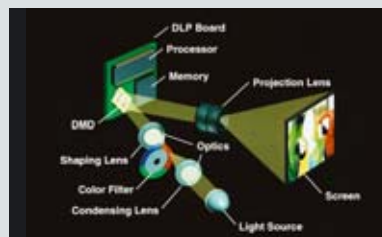


Barco LCD projectors provide:

- "Zero Delay" through TDR and WARP
- Well-established and stable technology
- Compact, rugged, portable
- UXGA resolution available
- Integrated WARP 6™ geometry distortion
- DynaColor™ for perfect primary color matching
- Extended Contrast Ratio (ECR) dimmer for enhanced night-time contrast
- High-quality optical blending
- User-friendly maintenance
- Quick internal projector alignment and easy setup

Why DLP™?

DLP™ technology uses a small mirror for each pixel to manipulate light digitally and is used when high light output combined with a good contrast ratio is indispensable. DLP™ processing requires a full frame time before the image is displayed. A total system latency due of 33ms at 60Hz confines DLP™ based projectors to applications where interaction to the projected image is less critical, such as air traffic control and ship bridge simulators.

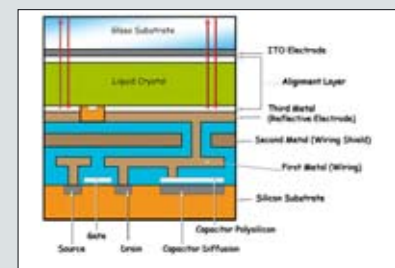


Barco's DLP™ projectors provide:

- Superior DLP™ picture quality
- Optimized optical engine components
- Minimized frame delay using Flex 4 geometry predistortion
- Linked CLO and DynaColor™ for cross-channel color and brightness control
- Extended Contrast Ratio (ECR) dimmer for enhanced night-time contrast
- Full installation flexibility through lens shift & Scheimpflug
- User friendly maintenance

Why LCoS?

LCoS (or Liquid Crystal on Silicone) is the latest in reflective light valve technology that works by light passing through a liquid crystal layer and bouncing off a reflective surface. LCoS offers several advantages for flight simulation, such as high resolution, fast switching speeds for low smearing, high-contrast ratio, and longer lifetime over transmissive light-valve technologies. Its large pixel aperture results in smooth, continuous realistic images.



Barco's LCoS projectors provide:

- Optimized results for multi-channel visualization
- Smear-free operation
- Advanced, zero frame delay warping
- Extended Contrast Ratio for accurate night/dusk training
- Full-brightness operation when options are disabled
- Motion-base simulator compatibility
- Stimulated NVG capability

Proprietary optimizations for light-valve technology

DynaColor™

High-precision digital "color space transformation" **eliminates channel-to-channel color variations**. Direct control of the primary and secondary colors guarantees accurate color matching and provides **maximum addressable color space** across the whole dynamic range of the display.



A graphical representation of the color triangle provides an excellent visualization of the color corrections being applied.

Linked DynaColor™

Linked DynaColor™ automatically aligns the projector to a common color triangle. This ensures that all projectors in the entire system have exactly the same primary and secondary color coordinates. **The system auto-senses the addition of a new projector to a system and updates the common color triangle as required.**

The linked DynaColor™ option is included with the linked CLO option.

Gray Level Definition

(for SIM 6 Ultra II and SIM 7 projectors)

Tracks and controls the grayscale levels of each projector to ensure gradient definitions match across the multi-channel system.

CLO: Constant Light Output

This feature **continually monitors and adjusts the brightness of the projector**, eliminating the effect of lamp brightness evolutions. In its linked configuration, CLO ensures that all projectors in a multi-channel system maintain the same brightness, independent of lamp life!

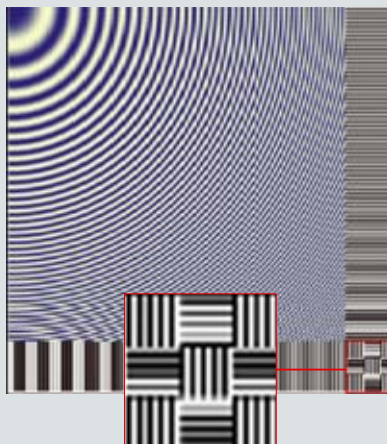
Linked CLO

Monitors and adjusts the brightness of all linked projectors to the lowest value.

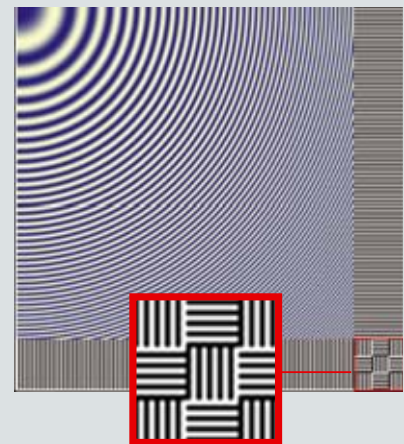


WARP 6™ is the most advanced geometry distortion technology using **proprietary bi-cubic interpolation**. It is specifically optimized to preserve fine detail in the image and suppress resampling artifacts - **without processing delay**. Thanks to WARP 6™, fixed matrix and DLP™ projectors like the the SIM 6 ULTRA II and SIM 5R can be used in a wide variety of curved-screen applications, ranging from straightforward cylindrical displays to the most severe distortions.

Test chart scaled using generic bilinear algorithm



Test chart scaled using WARP 6™ algorithm



Adjustable Scheimpflug Correction

A modified lens mount has been developed that allows the lens to be tilted in both horizontal and vertical direction. This ensures perfect focus on tilted screen configurations, thereby increasing the installation flexibility of the SIM 6 Ultra II to a level unique for light valve projectors.

Gamut Expansion & Matching for SIM 6 Ultra II

All projectors of a multi-channel system are carefully matched using unique optical components, raising the color accuracy throughout the application. GEM at the same time improves the primary color uniformity within the separate images. This technology also increases the addressable color gamut of the combined multi-channel system.

Barco's seamless 3-channel image thanks to:

- DynaColor™ for color uniformity
- CLO for brightness uniformity
- OSEM for an invisible blend

Picture courtesy of Evans & Sutherland

TDR: Transport Delay Reduction

(for Barco's SIM 6 Ultra II projector)

For simulation applications, it is imperative that **no processing delay occurs inside the projector**. For this purpose, Barco has developed optimized digital processing algorithms, which ensure that the sum of all possible image corrections (including de-interlacing) amounts to an imperceptible delay corresponding to less than three lines on-screen! This ensures that the SIM 6 Ultra II projector will not be the bottleneck in your display system.

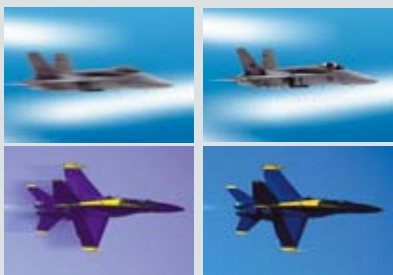


(for SIM 6 Ultra II and SIM 7 projectors)

Thanks to TMR, the sharpness of moving images is preserved by adjusting motion compensation, detail and edge enhancement, and motion-adaptive noise reduction.

In addition, the processing speed can be adjusted to avoid overshoots that manifest themselves as smearing in the reversed polarity, such as when the tail of a dark moving object on a lighter background appears whiter than the background.

Motion blur



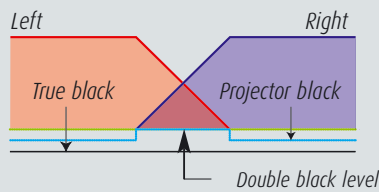
Smearing

TMR

TMR

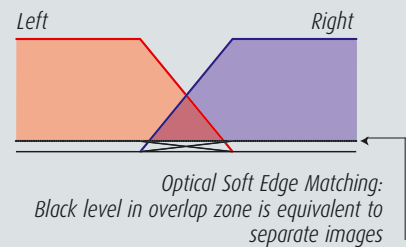
ESEM: Electronic Soft Edge Matching

In multi-channel setups, the nonzero black level of light valve projectors normally leads to brighter overlap zones, especially in night scenes. Barco's standard ESEM technology allows to adjust edge blending without black-level correction on all Barco simulation projectors.



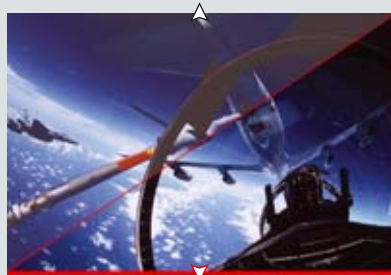
OSEM: Optical Soft Edge Matching

With Barco's proprietary OSEM, blending filters in the optical path maintain the black level in the overlap zone to that of the separate images. This results in a seamless image with invisible blends, also in night sceneries, with complete control over the full dynamic range.



ECR: Extended Contrast Ratio

Barco's sophisticated ECR technology eliminates extraneous light rays that limit the dark level to greatly increase the contrast ratio and considerably improve picture quality.

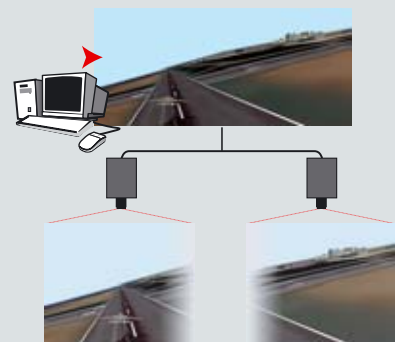


NVG optimization

Barco's ECR technology and night vision goggles (NVG) optimization lets you use the SIM 5R and SIM 7 projectors for true, realistic NVG stimulation with ultra realistic blooming and halo night vision effects.

i-Stereo

From a single high-bandwidth PC or workstation output (>170 MHz), i-Stereo produces two channel pictures with blend, without intermediate interfaces.



Simulation dedicated digital light-valve projectors



Barco's LCD projectors offer extremely high light output for the most demanding applications. They can be equipped with a wide range of Application Specific Optimizations, making them very flexible to install in the widest range of applications.

Barco's **SIM 6 Ultra II** provides longer lamp life and reduces operation costs (up to 40% in economy mode) through a unique illumination system based on a compact and economical 250 W UHP lamp in conjunction with optimized filtering. By pre-distorting the image inside the projector, Barco's WARP 6™ technology achieves a correct geometry on curved screens, without requiring additional computational power from the Image Generator. The SIM 6 Ultra II also boasts an excellent contrast ratio and can be ruggedized to withstand 3g forces for motion-base operation.



Barco's LCoS (Liquid Crystal on Silicon) projectors push the envelope of visual display technology to provide extremely realistic simulation. Specially developed to meet the demands of commercial and military flight training and mission rehearsal scenarios, the Barco's LCoS projectors can be easily integrated into simulation systems with spherical, curved, or flat projection surfaces.

The new **SIM 7 series projectors** are equipped with the industry's latest and **fastest switching LCoS technology** that delivers nothing less than **razor sharp, no-smear images** for high-speed motion and other simulation applications. They are optimized for multi-channel visualization to provide exceptional contrast, unmatched dynamic range, seamless image blending, and outstanding performance. The SIM 7 series is also equipped with the industry's most advanced geometry distortion technology to preserve fine detail images and suppress resampling artifacts without adding any frame delay.

Barco's DLP™ projectors combine exceptional light output and high resolution with advanced signal processing to deliver a remarkable performance break-through for large-screen projection. The DLP™ projectors can be combined in multi-screen displays using advanced optical blending.

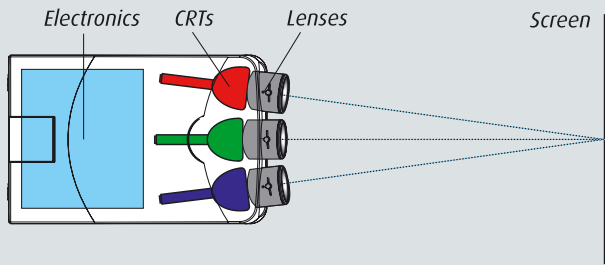
The **SIM 5R** is Barco's **network-centric, dual lamp, single-chip DLP™ projector**. It integrates Barco's unique WARP 6™ geometry correction technology and an impressive range of dedicated simulation functionalities ensure that all units in a multi-channel display system operate together seamlessly: DynaColor™, Constant Light Output (CLO), Electronic Soft Edge Matching (ESEM), Optical Soft Edge Matching (OSEM), and Extended Contrast Ratio (ECR) capability. The native SXGA+ resolution of the SIM 5R delivers the visual fidelity needed for optimal target details and training accuracy, while **picture-in-picture display** enlarges the capabilities for briefing and debriefing.



CRT technology is here to stay!

For most demanding realistic applications, the ultimate visual fidelity is obtained with CRT projectors. This unprecedented visual fidelity makes object and detail recognition at a distance very close to real world situations.

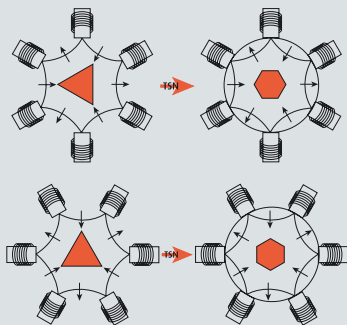
- Resolution up to 3,200 x 2,560
- Excellent contrast: black is black!



- No image latency through "direct drive" of the CRT's
- Easy geometrical correction & flexibility
- Color matching and uniformity
- Digital soft-edge matching
- Unbeatable video and data image quality
- Long lifetime of picture tubes
- Proven technology

TSN™: Triangular Spot Nullifying™

Digitally controlled 6-poles offer advanced digital beam correction. Barco's TSN™ beam spot uniformity enhancement guarantees superb focus quality across the entire projected image.



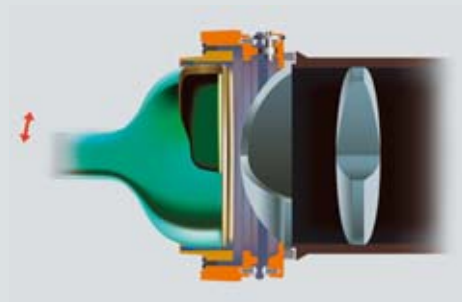
TSN™ Digital 6 poles beam correction

SEMU: Soft Edge Modulation Unit

Adjacent images projected onto a common screen can be "blended" at the edges to create a seamless and immersive environment. This remarkable result is achieved by modulation of the signal intensity, combined with gamma correction within the blend zone. Barco's digital **SEMU Advanced now offers a real-time interface, allowing you to set up and adjust blend zones and bows** on the fly, combining the known SEMU blend quality with an unprecedented flexibility and ease of use.

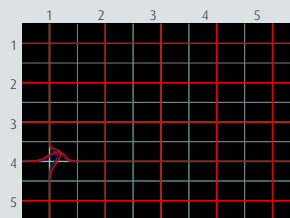
Scheimpflug correction

Barco's built-in Scheimpflug optical correction offers ultimate flexibility for projection under non-standard angles. Stepless adjustments are easily made by two convenient screws. It guarantees optimal optical focus from left to right and top to bottom for projection under non-standard angles.

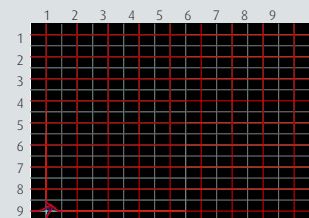


Proprietary Digital Waveform Generation Geometry & Convergence Correction

This unique feature offers digital control over all geometry, convergence, focus and astigmatism adjustments. The (patented) morph-interpolation algorithm enhances the digital waveform by suppressing all artifacts and generating smooth transitions. Convergence is adjustable in 81 independent zones as well as 25.



Convergence adjustment in 25 independent zones



Convergence adjustment in 81 independent zones

Unequaled versatility, highest resolution

The standard in high resolution projection

The BARCOREALITY 909 offers a maximum addressable **display resolution of 3,200 x 2,560 pixels**. Unique digital image adjustments provide exceptional performance in multi-channel setups, on curved screens as well as on flat screens.

The same architecture is found in the BARCOGRAPHICS and BARCOREALITY 908, featuring 8" tubes.



BarcoReality 908 and 909 high-resolution CRT projector

Split-Pack CRT projector series

The SPLIT-PACK CRT projector series incorporates leading-edge technology into a **rugged design for optimal flexibility** in demanding limited-space applications.

The projector head can be placed 6.5 feet from the electronics chassis. This separation concept allows a lower center of gravity making the projector ideally suited for motion-base platform installation.



909 Electronics chassis with Barco 908 (high-resolution 8") or Barco 909 (high-resolution 9") Split Pack's Optical Head

HUDView



HUDView™ produces clear, bright, **high-resolution data images on top of projected raster images** at twice the brightness of the background projectors. The HUDView is designed to be easily integrated into your simulation system. It can be installed off-axis by up to 15 degrees vertically and 8 degrees horizontally. The HUDView also features a small footprint with separated electronics for installation flexibility.

Truck-Tram-Bus Simulator - Photo Courtesy Rheinmetall Defence Electronics





Photo courtesy of CAE Electronics Ltd.

Raster/calligraphic projection for FAA and JAA highest level of certification

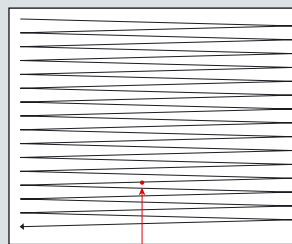
Barco's wide range of high-end raster/calligraphic projectors combine raster scan (projection of TV-like images) with calligraphic scan (projection of light points and lines).

Calligraphic light points are two to three times brighter than the background raster, are more than two times greater resolution than the best raster scan systems, and can be positioned with extreme accuracy. These light points are used for pilot recognition of airfields and for cultural lighting, providing effective training for take-off and landing in various weather conditions.



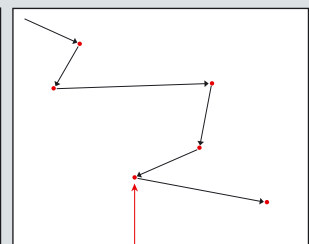
Calligraphic light points on a simulated runway.
Photo courtesy CAE Electronics Ltd., Montreal, Canada.

Raster image
1280 x 1024 @ 60 Hz



Pixel remains on screen for 10 ns

Calligraphic mode
1280 x 1024 @ 60 Hz



Pixel remains on screen for 1.5 μs

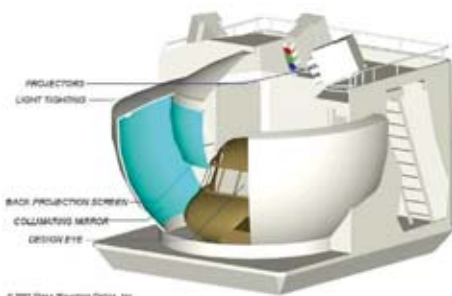
Raster and raster/calligraphic projection

Genesis series

Barco's Genesis series provide the ultimate in digital, high-performance raster/calligraphic projection. The Genesis series delivers a level of performance and dependability unmatched by any other system. 2X increase in pixel count translates into increased calligraphic performance in day/night/dusk/NVG modes. Feature-for-feature, the Genesis series projectors offer outstanding value and performance for a broad range of Level C and Level D commercial full-flight simulation applications.



Barco Genesis series

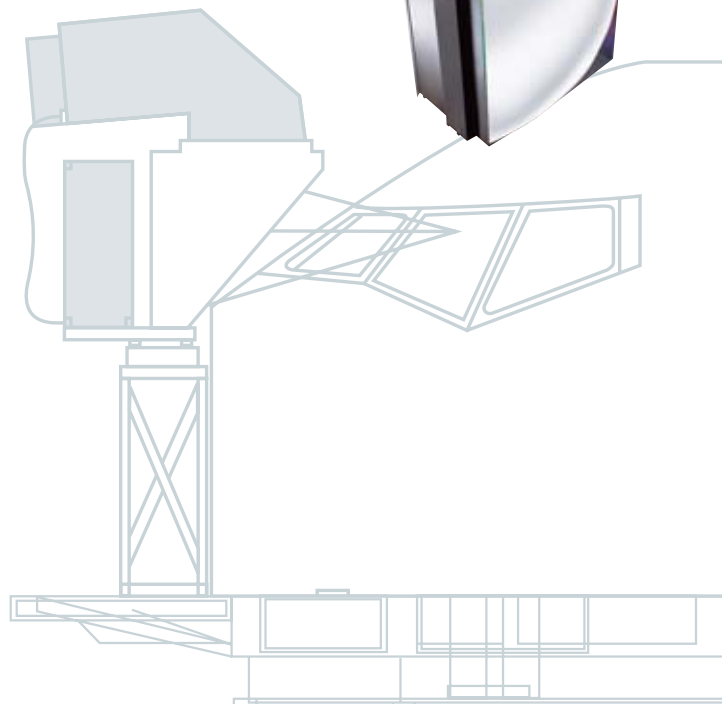
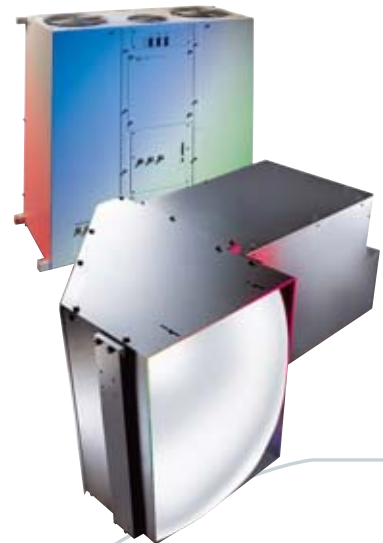


Key benefits include:

- All digital calligraphic interface
- Superior image definition
- 2x increase in lightpoint drawing capacity
- Calligraphic performance with dynamic range far exceeds any other projection technology
- Dynamic multi-level, four-sided edge blending
- Extreme distortion capability with superior geometry alignment performance results in highest picture quality with no pixel loss
- Interlaced and non-interlaced operation with frame/field extension
- Liquid- or air-coupled lens compatibility
- Industry-standard, 9-inch projection CRTs
- CE/UL compliant
- Advanced architecture offers unparalleled image stability
- Lens focus adjustment and Scheimpflug adjustment for optimum focus
- Enhanced diagnostics for remote monitoring and support
- Simplified alignment requiring less training and support
- Exceeds all full-flight, motion-based requirements
- 1-year warranty

Retrofit of older collimated simulators

Barco's Raster-Only Monitor Replacement Projector (MRP) is a full-featured projection system designed specifically to replace obsolete 25" CRT based monitors used in Wide Angle Collimated (WAC) window optical systems. The Raster-Only MRP is designed to enable the simulator visual system to be upgraded using the original optics, facility and motion base, where upgrades to cross-cockpit visual systems are cost prohibitive and may not fit due to facility constraints and motion base limitations. The Raster-Only MRP is proven and approved for Level C simulators.



System solutions

Barco offers total display solutions to meet your unique simulation training needs. Systems can be equipped with Barco's sophisticated alignment and control tools. Every system is backed by pre-eminent project management to ensure your system solution is implemented from start to finish on-time, on budget, and to specification. Whether you need a single system at a single facility, or several systems at multiple facilities, Barco has your complete solution.

Barco SEER™ mini-dome simulator

Barco's compact, space-saving solution provides constant eye relief over the entire spherical surface to optimize out-of-window scenes, enabling pilots to experience full immersive training. Several mini-domes can be networked together to maximize fighter training. The SEER™ mini-dome is currently fielded for the USAF's SIMAF Simulation & Analysis Laboratory, BAE Systems Eurofighter program, and the Grippen PETRA system for the Swedish Airforce, to name a few.



Global network for system support

Barco is committed to providing world-class, worldwide service and support, including after-sales technical support, product and application training, and documentation services. Our customer support specialists provide professional, accurate, and timely responses seven days a week, 24 hours a day, every day of the year.

Ref. n°: R599738 - November 2006



Barco Presentation & Simulation Division is ISO 9001 certified. The information and data given are typical for the equipment described. However any individual item is subject to change without any notice. The latest version of this product sheet can be found on www.barco.com/simulation

DLP is a trademark of Texas Instruments. Other, non-Barco product names appearing in this brochure are trademarks/registered trademarks of their respective owners.

Barco Simulation division
is represented in more than
30 countries around the globe.

US Headquarters:

600 Bellbrook Avenue - Xenia
OH 45385-4053
Phone +1 (937) 372-7579
Fax +1 (937) 372-8645
E-mail: simulation.us@barco.com

European Headquarters:

Noordlaan 5
B-8520 Kurne, Belgium
Phone +32 56 36 82 11
Fax +32 56 36 86 51
E-mail: info.simulation@barco.com

BARCO

Visibly yours