

# Experience reality

## Visualization solutions for simulation and training





# A trusted partner

in the simulation and training industry  
for over 25 years

Esterline's display systems are widely used as the core part of a broad range of simulators. Pilots, helmsmen, drivers, and air traffic controllers rely on Esterline products for the realism needed in training for highly complex scenarios. Thanks to our focus on many aspects of professional visualization, we have the in-house knowledge to develop the high-quality products that the simulation and training industry needs. Furthermore, with our expertise in markets related to simulation and training – such as avionics, air traffic control and defense – we have acquired a level of market understanding and technical expertise superior to that of competitors.





- **Best-in-class** products and visualization systems
- **Low-risk**, turnkey training solutions
- On-time delivery by **certified** professionals
- Long-term dedication to **continuous improvement** of training
- **Largest** product portfolio on the market

- **1967:**  
Esterline is founded
- **1979:**  
Pioneering CRT projection technology for airplanes
- **1985:**  
The prime choice for a diverse field of applications, including simulation
- **2004:**  
Introduction of the Small Environment Enhanced Reality (SEER) mini-dome
- **2006:**  
First CD-series cross-cockpit system becomes available
- **2008:**  
Advanced, realistic NVG stimulation in simulation visual systems
- **2010:**  
Introduction of the RP-360 full immersive dome using the first 10 million pixel LCoS projector
- **2014:**  
Introduction of the TD-series, compact transportable dome displays
- **2015:**  
With the acquisition of the former Barco Training & Simulation business by Esterline and the creation of the TREALITY® brand, Esterline is able to offer the largest simulation visual systems portfolio on the market.

### Skills and expertise around the world

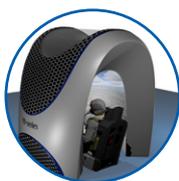
Esterline has the necessary experience and global reach to handle projects in all corners of the world. We are always ready to respond quickly and effectively to customer support requirements. With such a large worldwide presence, we are able to minimize downtime and maximize customer satisfaction, regardless of where our systems are installed.



2008



2010



2014

**Esterline**  
Simulation Visual Systems  
Featuring **TREALITY** Products

2015

# Dedicated technology for simulation and training



Esterline has a long-standing tradition of developing leading-edge visualization solutions for the simulation and training market. We continuously invest in innovative technologies to further push the quality and performance of our simulation systems. The objective is to keep improving the level of realism so that an increasing part of the training can take place in simulators, thereby reducing cost and enhancing safety.

## Optimized projectors

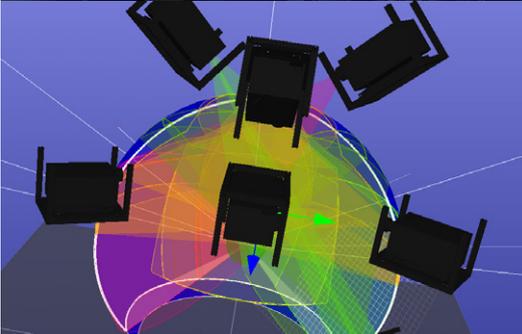
Esterline markets projectors that are optimized for the simulation and training markets with such key specifications as ultra-high resolution up to 10 million pixels, contrast ratios up to 10 million to 1, integrated warping and edge blending, NVG stimulation, and multi-channel auto alignment.



SIM 10

## Designed for systems

At Esterline we see the entire picture. All products and concepts are designed to be seamlessly integrated into larger systems that can be perfectly tailored to your needs.



### Developed for night mission training

The TREALITY® visualization systems are designed to realistically stimulate night vision goggle (NVG) equipment in a manner that achieves real world effects. Through a number of innovative optimizations of both projectors and screens, our systems produce deep black levels and high contrast without impairing overall image quality.

### Lower complexity, higher performance

TREALITY® display systems are designed with fewer, but higher performing components which means less integration time, increased reliability, and easier upgrades. Our systems have a higher MTBF, a shorter learning curve, and a lower operating cost – all without compromising quality.

### Easy to maintain

All TREALITY® simulation systems are designed to be maintenance friendly: projectors are accessible and easy to replace, settings are easily backed-up and quickly restored, consumables can be included in a TREALITY® preventive maintenance program, and long-term service is guaranteed.

### Industry leading design tools and test procedures

All TREALITY® systems are designed with SimCAD, our custom 3D software specifically developed for simulation. SimCAD allows our engineers to optimize the system configuration, calculate critical performance parameters, and accurately predict final system performance. We also export this set-up information to the projectors which shortens field installation time and prevents costly problems during integration and testing.

### Lower risk

Our dedicated solutions for simulation give the most life-like training experience possible and reduce the risk of negative training. Some of the unique features of our projectors include:

- **Edge blending:** creates one seamless composite image
- **DynaColor:** automatic color calibration across channels
- **Linked constant light output (CLO):** brightness equalization across channels
- **Warping:** precise geometry correction for curved surfaces
- **Smearing reduction:** effortlessly handles fast-moving imagery



eRACU

# The TREALITY® turnkey visual system approach

TREALITY® is the only independent turnkey display system provider, and as such we focus on the complete solution for our customers. We handle projects from conceptual design through all stages of engineering, manufacturing, installation and integration. We then provide maintenance support long after a product's end of life. By tailoring the system to your requirements and assuming responsibility through every step of the system's lifecycle, we guarantee not only optimal visual quality, but also maximum reliability at the lowest total lifecycle cost.





### Innovative products, designed for systems

Our turnkey visualization systems are built using high-quality TREALITY® products. From our broad portfolio, we select the components that best match your requirements to build exactly the systems you need. Our product range consists of:

#### High-quality projectors for simulation

- Projectors designed specifically for simulation markets
- Both LCoS and DLP technology projectors in the portfolio

#### Auto-alignment suite

- Assures consistent quality across multiple channels over time
- Compensation for drift and aging
- Brightness, color and automatic geometric re-alignment
- Perfect blending of projected images

#### Various screen technologies

- Screens available for brightness, contrast and viewing angle optimization
- No visible seams

#### Display management systems

- User-friendly hardware and software
- Windows-based for user familiarity
- Higher stability and reliability with efficient control architecture

#### Mechanical structures

- All structures designed by Esterline
- Guaranteed quality of the complete system



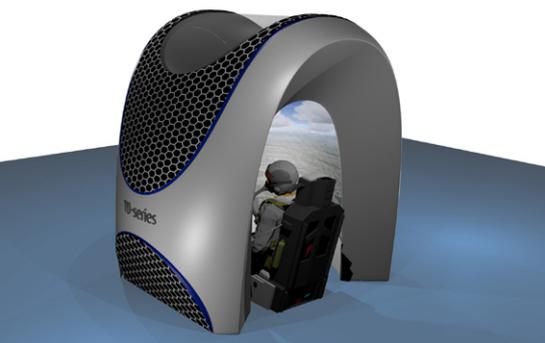
*Acuras  
Automated color & brightness  
re-alignment system*

# The most advanced simulation systems



## TD-Series: Transportable Displays

Developed for fast deployment with an absolute minimum of adjustment and to fit and operate in a standard ISO container, this new series brings realistic flight, ground, vehicle or mining simulation as close as possible to the actual operations or mission center.

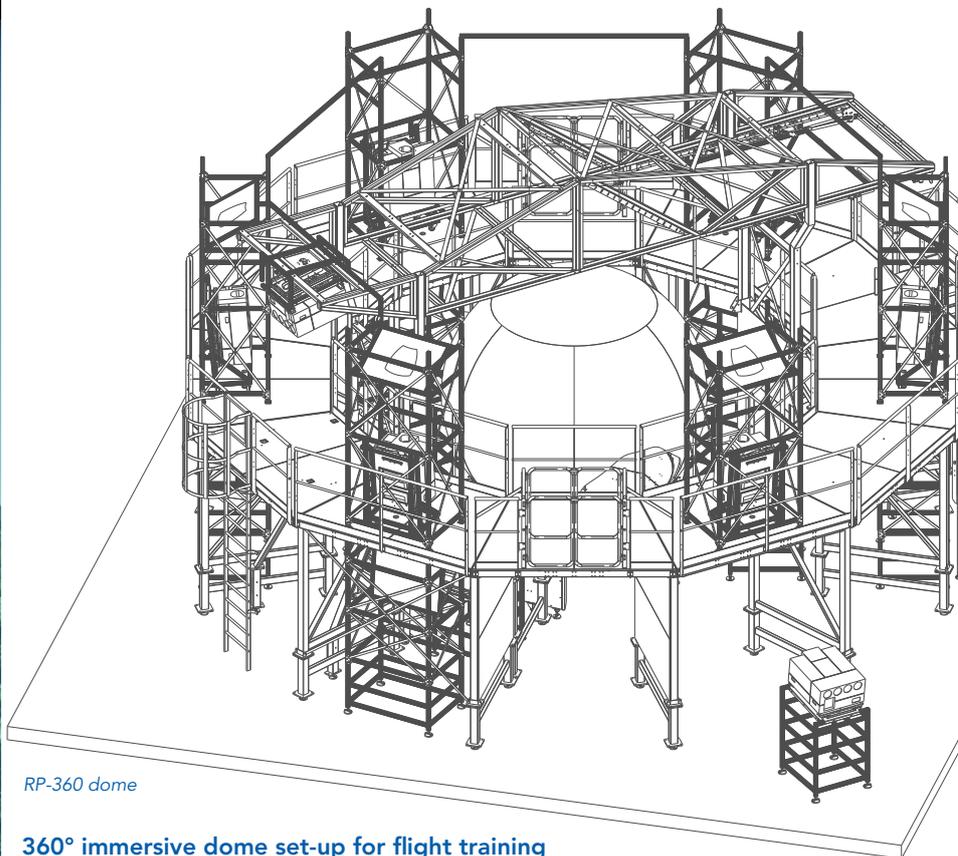


## Cross-cockpit collimated display

The TREALITY® CD-series of collimated displays offers a variety of fields of view that meet the requirements of fixed-wing or helicopter training. Our displays are designed using a unique closed-loop process that accurately predicts system performance and allows our engineers to optimize the various system parameters to achieve unmatched collimating performance. CD-series systems meet or exceed the most stringent certification levels of aviation administrations around the world.



CD-2260 collimated display



RP-360 dome

### 360° immersive dome set-up for flight training

The TREALITY® RP-360 offers full 360° immersion in a rear projected configuration. The high-quality projection system incorporates only 13 projectors and delivers ultra-high resolution with the industry's highest contrast ratio. The system's seamless spherical shape provides the pilot with constant eye relief and facilitates the use of modern helmet-mounted cueing systems.

In addition to the classic RP-360 dome with 13-14 projectors and 360° immersion, Esterline can customize the system for specific training requirements. Such optional designs include domes with reduced fields of view or different resolutions.

### SEER mini-dome

TREALITY® Small Environment Enhanced Reality (SEER) systems consist of a spherical screen with a small footprint and, depending on the specifications, from four to nine projectors. These multi-channel display systems for flight simulation provide constant eye relief and offer networking possibilities for group training and distributed mission operations.

### Large dome training system

For extremely wide viewing areas for tandem and side-by-side seated cockpits, Esterline offers the Large Training and Simulation Dome (LTSD). Consisting of 10 or more projectors, the LTSD creates one complete ultra-high performing image.



SEER mini-dome

# Solutions at home in all markets



## Flight simulation

TREALITY® display systems are widely used as the core component of civil or military flight simulators. Our multi-projector systems – including the RP-360, the CD-series of collimated displays, SEER and LTSD – offer the benefits of integrated high-resolution imagery and ensure the realism needed to train the highly complex, full-mission scenarios of modern military or commercial aircraft.

## Air traffic control simulation

TREALITY® visualization solutions are deployed around the world in both civil and military air traffic control centers. We apply our knowledge and expertise in real-world air traffic control to our simulation solutions, in which replicating reality is critical for effective training.





### Maritime simulation

Effective naval training and ship-bridge simulation, whether civilian or military, requires display systems with sufficient fidelity to reproduce important details of real-world port, river and ocean scenes, and that accurately depict changes in time of day and weather conditions. TREALITY® maritime solutions can be used for a variety of such training requirements.

### Driving simulation

Visually reproducing real-world roadways, realistic car movements and various lighting or weather conditions is crucial for accurate driving simulation. TREALITY® visualization systems offer the highest level of detail, the deepest contrast, and the most robust smear reduction for fast-moving objects. Furthermore, our systems can be designed for motion compatibility which makes them ideally suited to the driving simulation market.



# Experience TREALITY®

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