



Enhanced Vision System

Superb Technology Certified to Deliver Top Safety

The ClearVision Enhanced Vision System (EVS) product family provides a superior visual solution augmented with real-time synthetic information, designed to expand the safety and operational capabilities of your HUD system. With its advanced real-time visual processing, EVS merges the input of high-definition visual cameras, Near IR sensor, and Long-Wave IR sensor into one perfectly fused picture, expanding your situational awareness like never before. This 4th generation high-resolution, uncooled multispectral EVS detects incandescent and LED runway lights with provisions to support color display. With its brighter and clearer image, ClearVision EVS will make any taxi, takeoff, cruise, or landing easier, clearer, and safer.

The top-of-the-line EVS-5000 multispectral camera provides a complete gate-to-gate experience, covering the full flight envelope. The complement of six sensors - from visible light to longwave infrared (IR) - allows the pilot to overcome extreme weather conditions and low visibility situations, day and night. The compact EVS-4000 multispectral EVS camera features two sensors, visible-Near IR and Long-wave IR, that provides an excellent EVS solution for smaller fixed wing aircraft and rotorcraft.

ClearVision EVS is designed to increase platform efficiency and safety, with the latest visual-processing technology, meeting all FAA/EASA/ICAO/CAAC EVS or EFVS civil certification requirements.

For utmost flexibility, the EVS interfaces with a variety of display options: traditional fixed HUD system, head-down flight display systems; or a wearable device like the 'near-to-eye' (NTE) SkyLens wearable display.



Natural vision



Enhanced vision

Intuitive Head-Up Avionics Suite

ClearVision is a complete Enhanced Flight Vision System (EFVS) solution providing head-up capability combined with enhanced vision (EVS) and synthetic 3D terrain display (SVS). It features a large field-of-view, with the brightest and highest resolution HUD for commercial aircraft in the market. It's unique pilot-friendly split screen display allows the user to change between the two background imagery areas for optimal control. With the ClearVision system, overcome extreme weather conditions and low visibility situations – both day and night. Intuitive out-of-the-window flying is now possible.

The ClearVision suite is the market's proven solution, selected by leading Part 25 platform manufacturers around the world.

Features

- Highly integrated solution
- Forward-fit and retrofit platforms
- Lightweight
- Easy installation & integration

Components

- Enhanced Vision System (EVS)
- Synthetic Vision System (SVS)
- Combined Vision System (CVS)
- Overhead-Mounted Head-Up Display (HUD)
- SkyLens™ Wearable HUD

Full Landing Procedures with No Natural Vision

As part of the NextGen roadmap, ClearVision aligns with Federal Aviation Regulation (FAR) 91.176 released by the U.S. Federal Aviation Administration (FAA), enabling the operator to perform a full landing procedure with no natural vision, where the reported visibility is as low as 1000'. The ClearVision system offers unmatched capabilities, providing dispatch and landing approach priority as well as Low Visibility Landing regardless of the destination airport's infrastructure.

Features

- Multispectral technology for improved imaging details
- High-resolution, high-contrast
- Terrain awareness video
- LED and incandescent runway light detection in low visibility

Benefits

- Minimized dependency on ILS
- Equivalent visual operations
- Unprecedented situational awareness in all weather conditions, day and night, during take-off, approach, and landing phases



EVS-5000



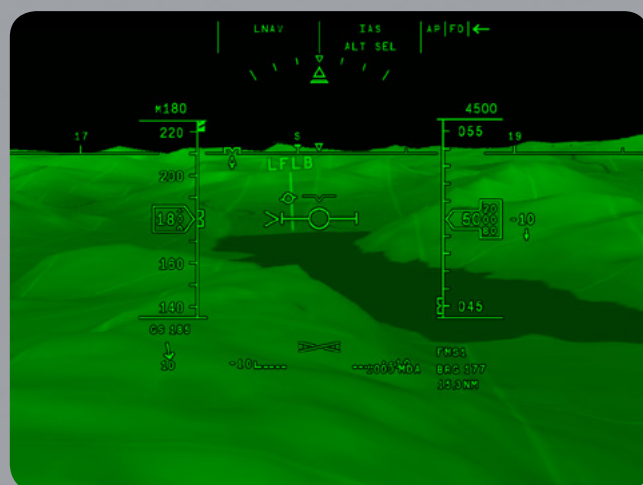
EVS-4000

Synthetic Vision System

Terrain and Obstacle Images

The ClearVision Synthetic Vision System (SVS) provides synthetic 3D images generated from a database of runways, obstacles, terrain, and flight plan information. Ready to be displayed on-time and on-need, the SVS offers enhanced terrain awareness throughout the flight operation.

- Extended centerline symbology
- Threshold markings
- Worldwide airport database
- Accurate visualization



3D SVS with HUD Symbology

Combined Vision System

EVS + SVS

ClearVision's Combined Vision System is a unique and optimized solution for commercial aviation. Setting a new standard, the CVS combines both EVS and SVS, providing a high-fidelity view of the outside world even when actual visibility is close to zero. It enables the operator to see the runway lights better in conditions impairing the visibility of unaided approach. This improves the pilots' ability to execute precision and non-precision approaches and safely land, reducing the risks of Controlled Flight Into Terrain (CFIT) accidents.

Clearly divided into upper and lower windows, pilots can adjust the split between SVS on the top and EVS on the bottom to obtain the most useful imagery as weather and visibility conditions change. SVS and EVS image brightness are individually adjustable as well as EVS contrast and overall HUD brightness. A CVD on/off button quickly clears the HUD of anything that might distract from the view out the windshield.

- 3D perspective view of topography
- Video mixed with thermal and camera imaging
- Constant daytime view of flight path
- Intuitive situational awareness cues



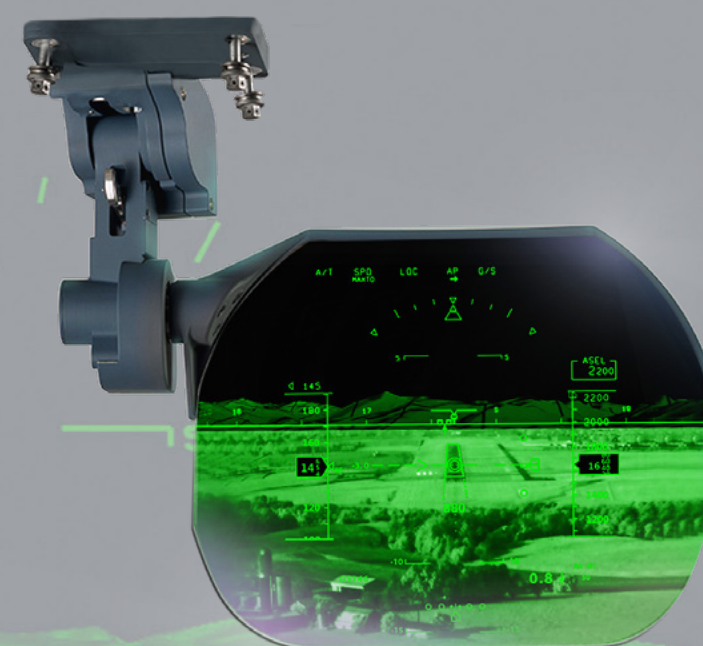
Combined EVS and SVS

Head-Up Display

Overhead-Mounted Digital HUD

The ClearVision Head-Up Display (HUD) is an electro-optic device presenting aircraft data over a transparent glass (combiner), located in front of the operator. The presented data collimates to infinity, enabling the pilot to operate the aircraft using out-of-the-window views during critical phases of flight. With eyes focused in front of the aircraft and viewing the aircraft flight path vector, attitude, visual glideslope, and runway aim point on the HUD, operators can achieve greater precision and situational awareness, increasing safety. In addition, the HUD can present external video such as EVS video and support the benefit of lower landing minima.

- Wide and tall Field Of View (FOV)
- Bright and high-resolution
- Flight guidance symbology and runway highlighting
- Precision guidance for take-off and landing
- Flight path vector, speed deviation, and acceleration cues
- Remove non-essential content during low workload phases of flight



Overhead-Mounted Digital HUD

SkyLens Wearable HUD

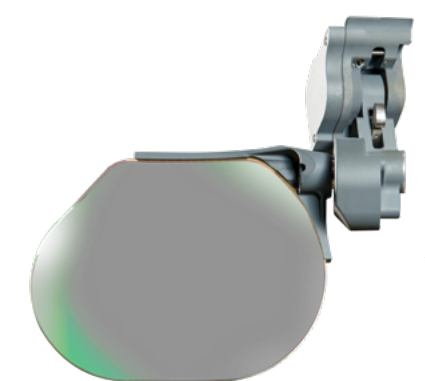
Retrofit 'Near-to-Eye' Display

SkyLens is a revolutionary Head-Wearable Display (HWD), ideal for smaller cockpits or anyone seeking an easy-to-install, retrofittable, and flexible HUD solution. High-resolution symbology, SVS, and EVS are presented on a high-transparency visor, as intuitive as wearing a pair of sunglasses. The easy-to-wear device provides superior see-through transmission in all weather conditions, day and night, and unlimited field of view. The wide-viewing angle allows the pilot to look 180 degrees to the left or right to view SVS imagery for unprecedented visibility. In addition, the pilot is not constrained to sitting in a specific position as is necessary with a traditional HUD.

- Lower cost / minimally invasive install
- Retrofit into many types of cockpits
- Space-efficient
- Allows pilot movement without losing field of view like a traditional HUD
- Lightweight and comfortable



SkyLens HWD



Overhead-Mounted HUD



SkyLens Head-Mounted Display



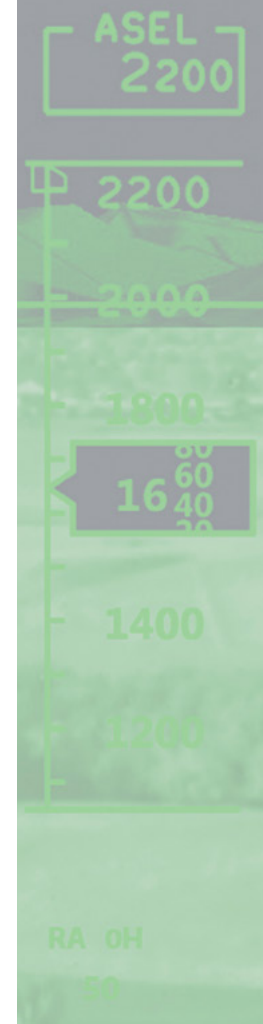
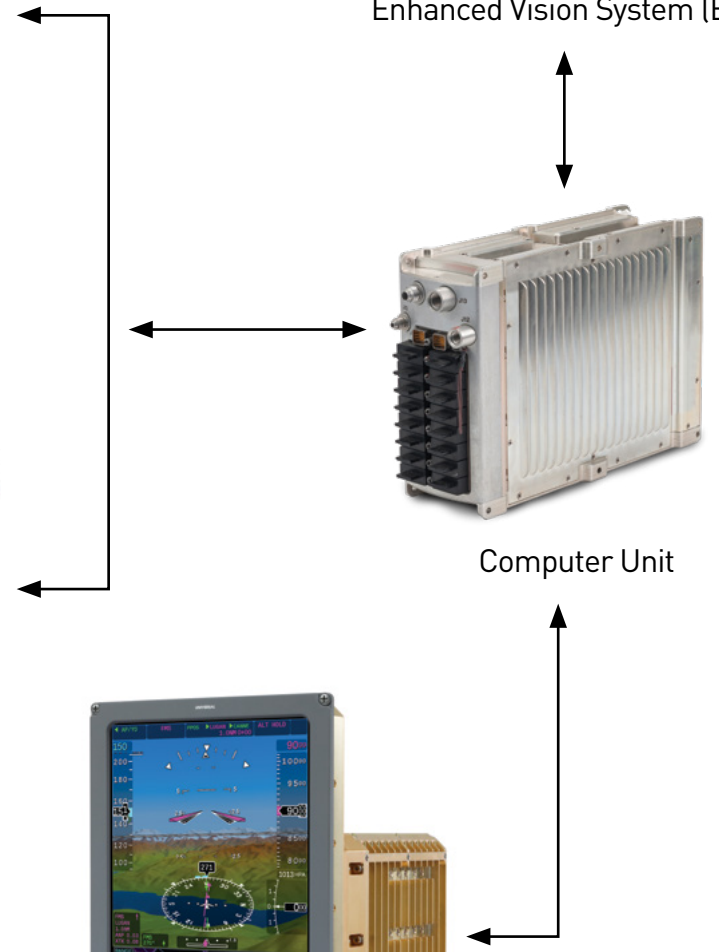
Enhanced Vision System (EVS)



Computer Unit



Flight Instruments
i.e. InSight Display System
EFI-890R Advanced Flight Display
or Third Party Flight Instruments



System Architecture

UNIVERSAL™ AVIONICS

an *Elbit Systems* Company

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