

TrackVision



Sensor-free football enhancement system



TrackVision is Orad's patent-pending sports graphics enhancement tool that uses revolutionarily tracking technology to superimpose virtual graphics over the playing field. The overlaid graphics remain tied to their exact position regardless of camera motion.

Superimposed virtual enhancements

TrackVision has two modes of operation - live and replay. Switching between modes is instantaneous. During live operations, TrackVision can draw a 9 meter distance indicator for free kick events, as well as precisely measure and display the distance to goal. Additionally team flags or logos can be superimposed and the score can be displayed. While working in replay mode, TrackVision offers the unique capability of overlaying dynamic offside lines, and measuring the speed of the ball.

Dynamic offside lines

Offside calls are undoubtedly the most important enhancement feature to be used during football games. With TrackVision, offside lines are instantly drawn helping the viewer and commentators decide whether the referee was right or wrong.

The offside enhancement offers the option of drawing two lines; one on the last line of defense and the other on the offense player, thereby providing a graphic representation of the offside distance. Furthermore, Trackvision can highlight the players that passed the ball, and can measure the depth of the offside.

Trackvision also allows the operator to measure the speed of the ball while it was shot to the goal.

Advanced sponsorship options

TrackVision offers the ability to easily sponsor all enhancements using a simple and intuitive user interface. Each enhancement feature can superimposed with a graphic logo, thereby whenever one of the enhancements is shown on-air, the sponsor's logo will be shown as well, generating new revenue streams for every broadcast.

State of the art technology

Relying on Orad's sensor-free tracking technology, TrackVision provides perfect results regardless of venue, camera positions and angles, and weather conditions. By monitoring the video feed, TrackVision analyzes the live signal and extracts with precise accuracy the tracking information, negating the need for any physical installation on the camera.

TrackVision analyzes the direct program out feeds and does not require a dedicated "clean feed" for its operation.

Operating TrackVision is extremely fast and simple. With TrackVision, enhanced graphics can be displayed from the main camera as well as from each of the two 16 meter cameras, which provides a perfect angle for drawing the offside lines.

When using the system, an operator can be ready with a drawn offside line within seconds of the call being made, making it ready for the first replay of the action. TrackVision interfaces with EVS and all other common slow motion video servers in the OB Van, with graphics being overlaid during the replay regardless of the speed of the replay playback.

TrackVision supports both HD and SD productions with all major HD formats supported. TrackVision comes with an embedded chroma keyer that allows the graphics to be perfectly displayed on the pitch even in difficult lighting conditions.

Working with TrackVision means minimal setup and calibration time, so in the span of few minutes the system is ready to use. This is particularly important in live production where preparation time may be limited.



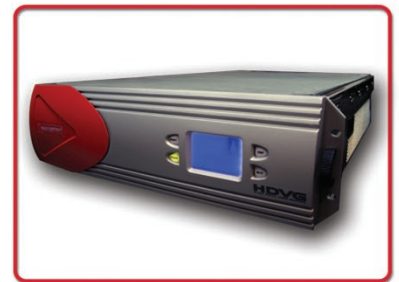
About Orad Hi-Tec Systems

Orad Hi-Tec Systems is a world leading provider of real time 3D broadcast graphics solutions, including; news, channel branding, sports production and enhancement, special events and elections, virtual studios, and virtual advertisement. Orad's compelling solutions streamline production workflow, enhance viewer experience and improve production value. Founded in 1993, Orad is a public company listed on the Frankfurt Stock Exchange (OHT). For more information, visit www.orad.tv

TrackVision

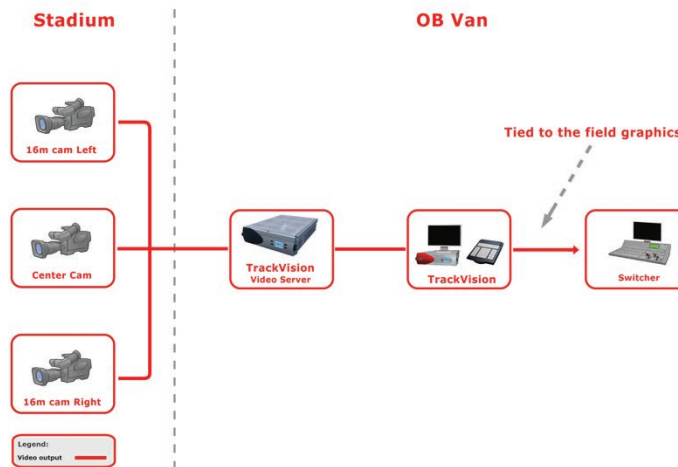
TrackVision Key Features

- Superimposes virtual graphics during football games
- Both live and replay operation modes
- 9 meter distance indicator
- Offside line display from multiple cameras as well as offside depth measurement
- Distance to goal measurements
- Speed of the ball measurement
- Sponsorship options for all enhancements
- Perfect for both live and post productions
- No mechanical installation on the camera is needed
- Extremely fast operation, ready for first replay
- Can generate offside lines even in cases where no lines are visible
- Interfaces for all major slow motion servers
- HD and SD compatible
- Support for multi camera productions
- Minimal setup time - less than 5 minutes
- Embedded chroma key designed for outdoor production
- Minimal delay - 2 frames
- Based on sensor-free tracking technology, provides perfect results regardless of venue, camera positions and angles, and weather conditions

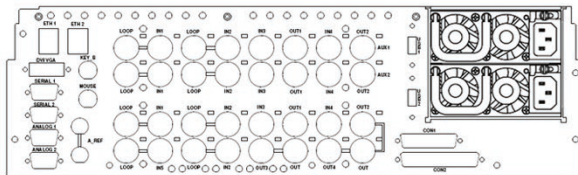


The HDVG video graphics rendering platform

Diagram



HDVG Details



Turnkey System Specifications (constant):

- 2.33 GHz Intel Quad Core Xeon
- Operating systems: Linux
- RAM: 2 GB (up to 4 GB optional)
- Internal storage: 80 GB system disk optional RAID1 with additional HDD
- Storage: DVD
- Ethernet: 2X 1000 BASE-T (RJ-45)
- Ports: 2 serial RS-232 (DB9); 4 USB 2.0 (2 front 2 rear)
- Control interfaces: PS2 keyboard, PS2 mouse, VGA

Physical Dimension:

- Height: 130 mm
- Width: 443 mm
- Weight: 22 kg (approximately)

Redundant Power Supply:

- 100-240 V
- 47-63 Hz
- 2X 460W (max)

Supported Video Standards:

- HD: SMPTE 260, SMPTE 295, SMPTE 274, SMPTE 296
- SD: SMPTE 259 ITV-R BT.601

Video Output:

- 2/4 SDI outputs
- Internal chroma and linear keys
- 2 monitor outputs: 10 bit component YUV (SD/HD); SVHS, composite (SD only)

Video Reference:

- Bi/Tri level Sync with passive loop

Audio Processing:

- Embedded audio 20-bit/48 KHz in SD and 24-bit/48 KHz in HD
- Support for additional audio playback and mix from .wav files, clip sources, and video insertions

ANC Data:

- Preservation of all VBI data though downstream keyer
- Preservation of Dolby E, 32 KHz and 44.1 KHz PCM embedded audio through downstream keyer