MIRROR TRACKER

The obvious solution to wide field of view tracking when resolution and motion counts

Mirror Trackers provide images of ballistic and non-ballistic projectiles using a high speed camera in combination with a rotating mirror to follow the flight path without sacrifying the resolution. Mirror Trackers in combination with the TrackEye Mirror Tracker module allow for detailed visual observation of the projectile as well as advanced analysis of the data derived.

Key benefits

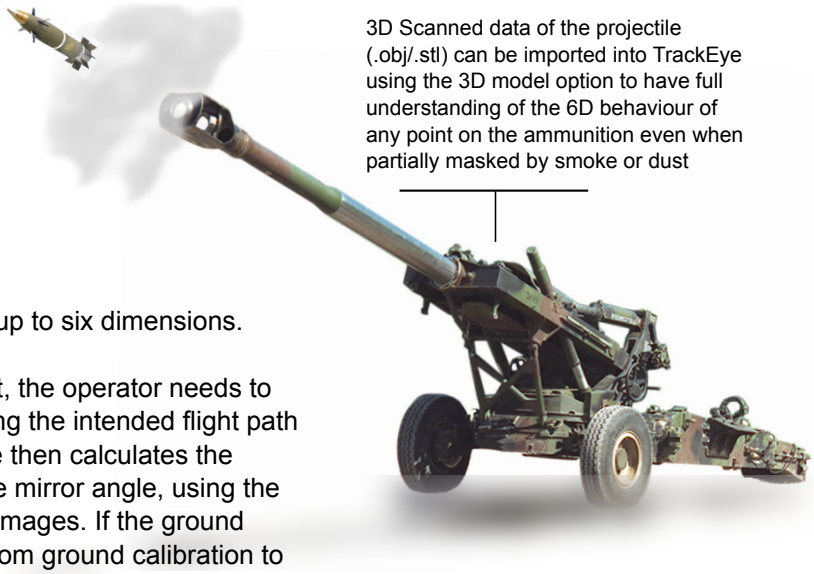
- Easy to use, modular
- Full 6D behaviour analysis
- Unlimited number of trackable points
- Wide range of tracking with high accuracy
- Only solution on the market
- Possibility of creating templates
- Various table & image export formats
- Compatible with most leading HS cameras

From images to results

TrackEye is the market leading motion analysis software and is used as a standard reference in many countries throughout the world. From loading an image sequence, executing the tracking algorithms, applying the chosen analytics and logic to presenting the derived data - TrackEye offers a straightforward workflow. The user interface is fully synchronized: any change of parameters or set-up will directly effect all parts of the tracking session, updating results, graphs and tables.

Full analysis of the ammunition behaviour

By combining the image sequences from the cameras with the exact angle of the mirror it is possible to visualize the flight path and analyze the motion of the projectile; typically 2D/3D position, attitude (pitch and yaw), roll rate, velocity and acceleration.



3D Scanned data of the projectile (.obj/.stl) can be imported into TrackEye using the 3D model option to have full understanding of the 6D behaviour of any point on the ammunition even when partially masked by smoke or dust

When two mirror trackers are used, data can be calculated up to six dimensions.

To calibrate the cameras and mirror trackers prior to the test, the operator needs to record a single sequence of surveyed reference targets along the intended flight path by rotating the mirrors. The TrackEye Mirror Tracker module then calculates the effective camera position and orientation as a function of the mirror angle, using the tracked x and y positions of the reference targets in the 2D images. If the ground artillery is then elevated, a correction module allows to go from ground calibration to the required firing angle without the need of a new calibration sequence and optimizing the data processing.

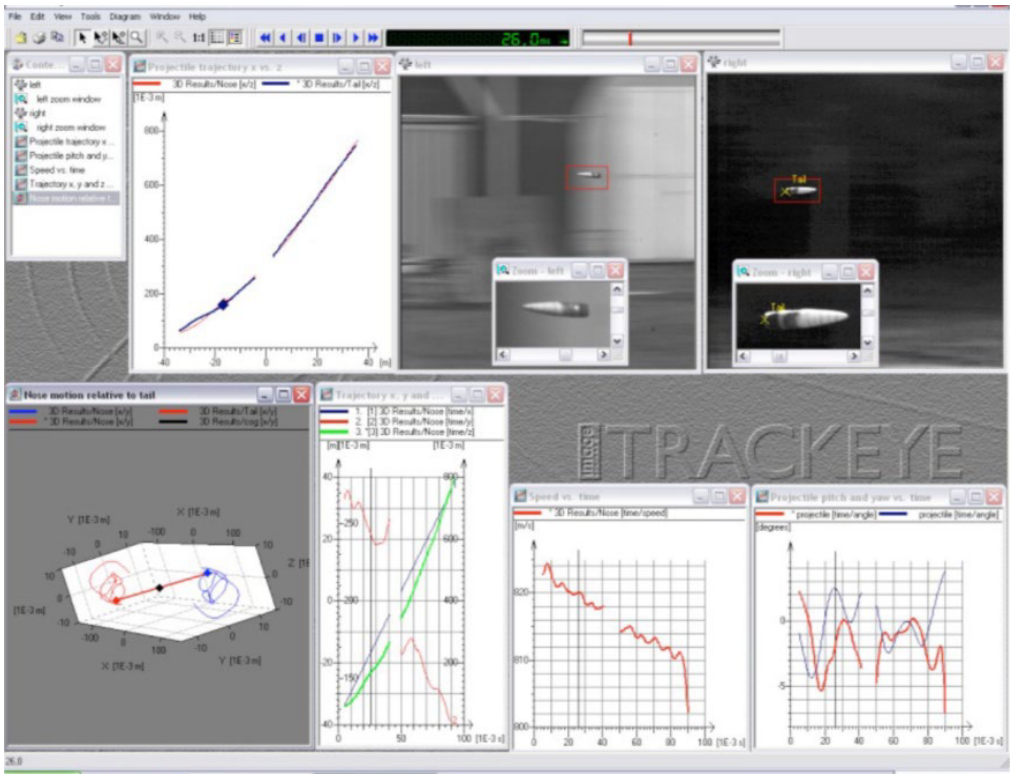
When the projectile is fired, a trigger is used to provide a common time base and, knowing the mirror angle for each camera used, the tracked 2D x and y position of the projectile can be measured. From the operator point of view prepared templates will be used. A template contains all the setting, connections and graphs needed for a repeatable test.

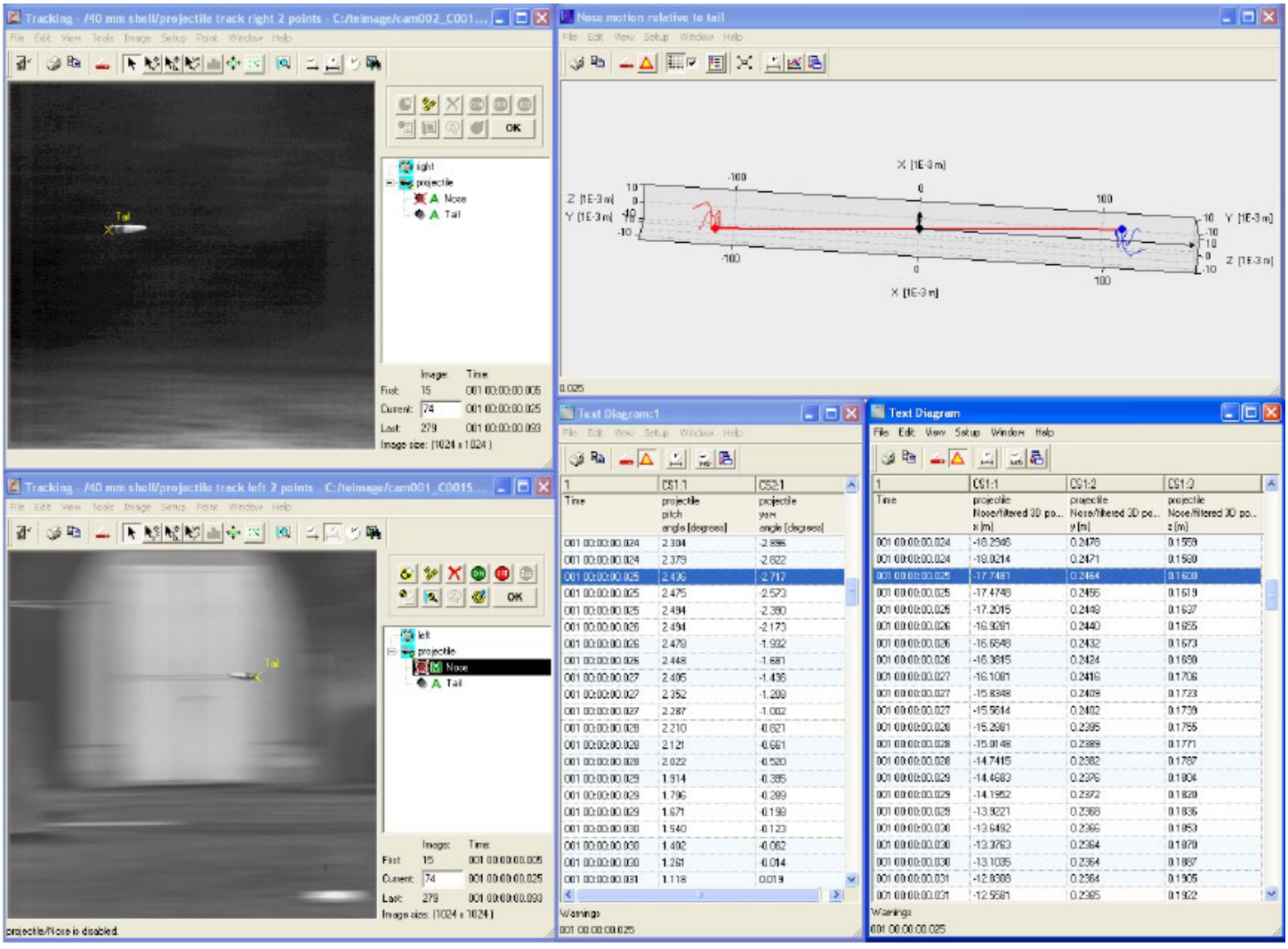
	1 Mirror Tracker	2 Mirror Trackers
2D	✓	✓
3D		✓
Pitch		✓
Yaw		✓

APPLICATION EXAMPLES

Modern artillery cannon

In this application, two mirror trackers have been used to record an artillery ammunition flying parallel to the ground over around 80 meters. The nose and the tail of the projectile have been tracked in both sequences in order to provide 3D position of the projectile as well as the attitude angles pitch and yaw as a function of time. Using a particular pattern on the body of the ammunition and the average luminance node in TrackEye, the evolution of the roll frequency (number of rotations per second) can be calculated versus time. Results have been presented in various diagrams and tables and the use of templates has considerably reduced the processing time of the data.





Learn more

www.imagesystems.se

image systems

info@imagesystems.se