TrackEye Tracking Mount 3D - TSPI

Many military test ranges worldwide deal with the measuring of position and attitude of moving objects using dedicated tracking mounts which can follow objects at large distances.

The purpose is to study the behaviour of a missile or any other types of flying objects.

Time
Space
Position
Information

The main feature to be measured for these studies is the 3D position of the object(s) at different times.

Using the 3D position data all kinds of analysis can be performed, e.g. calculating the distance between a missile and a target.

Normally, several tracking mounts are utilized, positioned at different locations. Recording the direction to the object from different angles will give high accuracy when calculating the final 3D position.

The requirements are extremely high, this requires high quality sensors, cameras, optics and tracking mount mechanics directing the cameras toward the object(s).

Even more important is the software calculating the position. The program should track objects in images automatically, deal with the positions of the tracking mounts, handle very many different calibrations and corresponding corrections, transform coordinate systems and of course calculate the 3D position for all objects.

The TrackEye system from Image Systems AB handles all steps in this process from recorded image sequences and data to final presentation of 3D position and attitude of the object(s).

TSPI analysis consists of five steps

- Calibration of mount systematic errors (star calibration, reference markers, etc.)
- Calibration pre test. (reference markers)
- Image & Data recording.
- Data analysis (including corrections for systematic and other errors like refraction)
- Result presentation (text, 2D & 3D diagrams, reports, etc)

Historically, some of these steps have been performed in different software modules in different environments. The major advantages using

TrackEye is that the software is fully integrated; one program, one interface, one computer.

The operator has full control from input to output, changes in input are immediately reflected to the output.

From the test there are image sequences from one or multiple tracking mounts available for processing. It is also possible to calculate 3D data from one tracking mount, only range (distance) data has to be added.

TrackEye will use all available data to calculate the 3D data, including but not limited to images and range information.
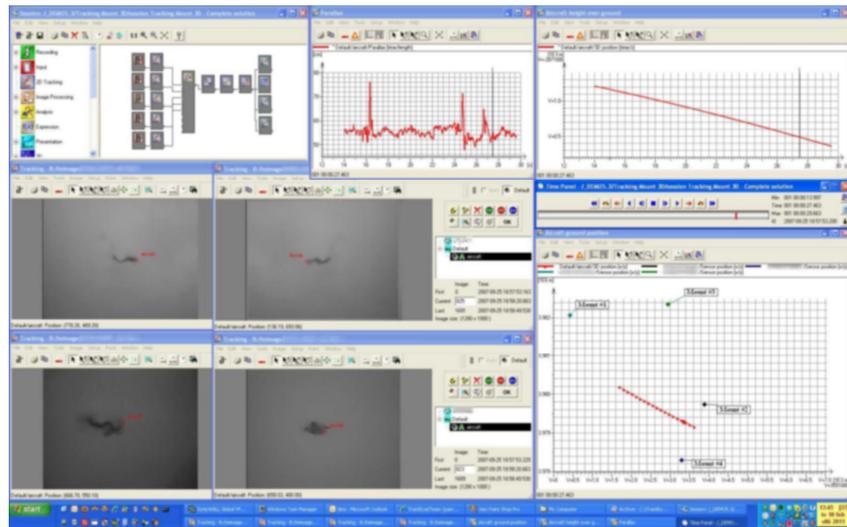
Screen shot from a typical Tracking Mount 3D session in TrackEye

With the complete process, including 2D tracking, in one GUI you can immediately view the chain of results, from the 2D tracking to final TSPI output data.

TrackEye software modules required
- TrackEye Basic
- 3D
- Mount calibration
- Mount correction
- Refraction
- Coordinate

TSPI 3D from tracking mounts is one of the most demanding applications at a test range from a motion analysis perspective.

The TrackEye Tracking Mount 3D TSPI is the perfect tool.