TEMA DEFENCE

The obvious solution to image analysis when motion counts

TEMA is the market-leading software suite for advanced Motion Analysis for Defence applications and testing. Thanks to its high accuracy, modular structure, process speed and intuitive user interface - TEMA is used by Defence industry and professionals across the globe in a wide range of applications.

Key benefits

- Easy to use, modular
- Unlimited number of trackable points
- Wide range of tracking algorithms
- Most accurate software on the market
- Possibility of creating templates
- Various table & image export formats
- Compatible with all major HS cameras

From images to results

From loading an image sequence, executing the tracking algorithms, applying the chosen analytics and logic to presenting the derived data - TEMA offers a straightforward workflow. Menu bars, tool bars and key bindings all provide a easy access to features and functions. 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.

A powerful tool tailored to your needs

The operator has full control of the tracking in TEMA with many options and possibilities to tailor TEMA to specific applications and needs. New features and functionality are added continuously. TEMA has a very powerful set of different tracking algorithms available such as Correlation, Outline, Quadrant Symmetry, Center of Gravity etc. By using the integrated lens calibration tool, data accuracy can be kept at a maximum and the results are traceable. Tracking can be analyzed in 2D, 3D and 6D. Our proprietary TEMA Static survey technology allows for 6D Motion Analysis of a rigid body using a single camera.

Applications

- Ballistics
- Store release
- Explosives characterization
- Fragments spatial/angular repartition
- Deformation of material under impact
- Land/Air platforms stabilization performances

Ballistics

TEMA Defence allows the complete analysis of the position, speed, acceleration, impact angles and fragmentation of various projectiles through a set of dedicated algorithms. 3D ballistics tests can be analyzed as well as the behaviour of objects like helmets under impact in 6D using only one camera.
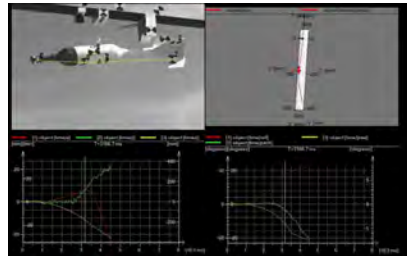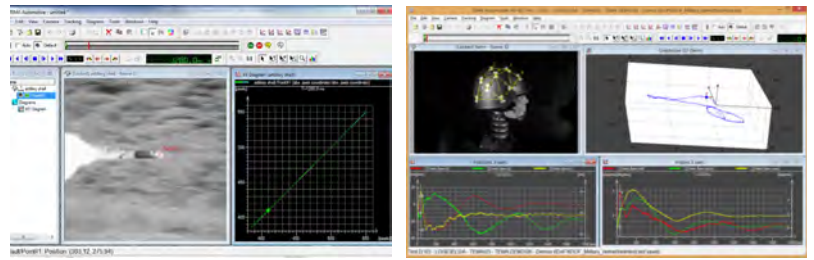

Air Platforms & Land Platforms

TEMA Defence can be used to Investigate wing deflections, flight behaviours, landing gear dynamics, impact effects and 6DOF of stores releases with one or several cameras. On the ground, it can analyze dynamics and stabilization performance of land platforms, vehicle behaviour, impact effects, active defence system efficiency.

## Explosives/fragments characterization (Outline & ARENA)

TEMA Defence allows the analysis of shock wave propagation, fragmentation effects, secondary effecs, circumferences, shrapnel and splinter dynamics and characterization.
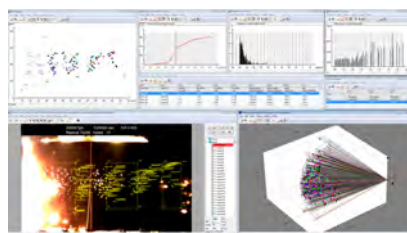
The ARENA module has been developed to study exploding devices through the tracking of fragments impacting calibrated panels monitored with high-speed cameras. The outputs calculated are the number of fragments, the average and instant velocity of any element of the cloud of fragments, spatial distribution of fragments, collateral effects along time.

Gelatine tests

For gelatine tests, the length and rotational volume of the cavity created by the penetration of a projectile can be analyzed. The decreasing speed of the bullet is calculated and the areas of the sliced part of gelatine can be determined with sub-pixel accuracy. 3D profile of the residual damages can be established using the small gel tears along the propagation of the bullet inside each slice. The penetrating cone of the bullet inside the gel can be also analyzed and displayed in various diagrams (XY position, area, relative distance).
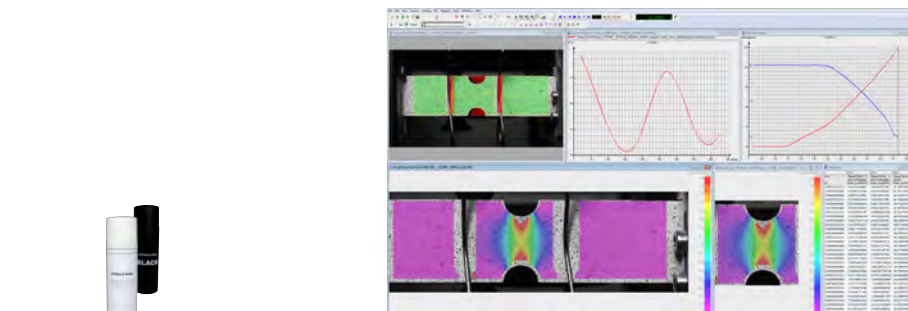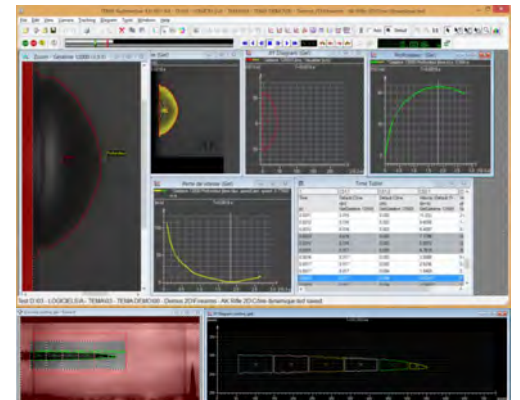
Strain analysis

TEMA Digital Image Correlation allows to follow in large field and without any contact the behavior of any material under constraints in 2D or stereo. By following the deformation of a contrasted speckle pattern applied on the surface of the material, displacement, strain analysis and the mechanical properties of the tested object can be determined with 0,01 pixel accuracy.