



APPLICATIONS

TrackEye RX3D

Analyzing plasma droplets in three dimensions.

The overall test purpose is to measure the behaviour of plasma strings.

X-ray flashes are used to create shadows on film of the plasma string individual elements.

Flashes are fired at two (sometimes three) different times and in two dimensions.

The plates (previously film) are mounted behind aluminum plates, vertically and horizontally. The plates are invisible to the X-ray flashes but covering the plates to protect from physical damage.

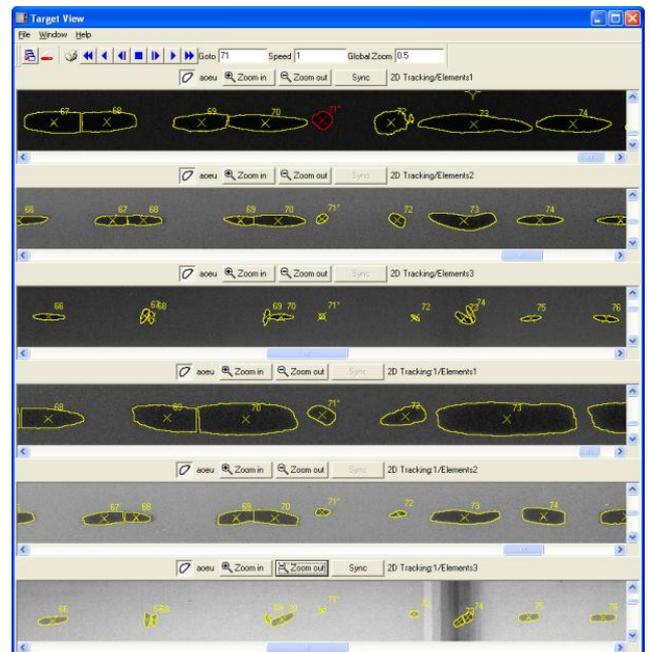
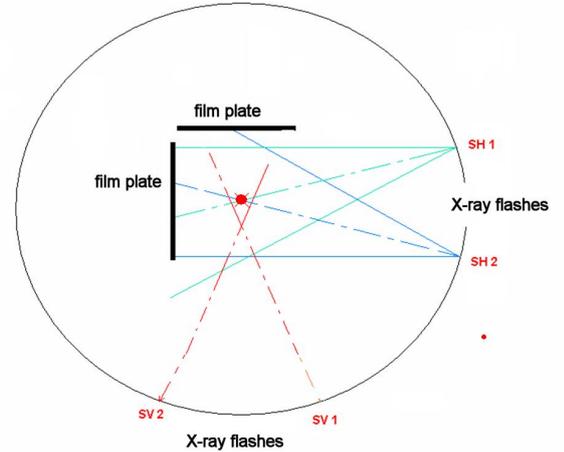
Reference crosses are engraved in the aluminum plates, with an even distribution along the horizontal axis.

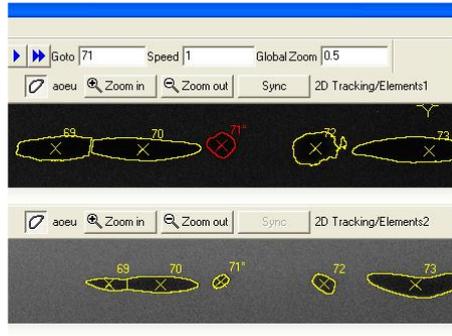
The distances are in the region of a couple of meters from the flash to the plates, as well as for the total length of the film plates.

The X-ray light source is assumed to be point shaped, the scaling is different depending on distance from illumination axis, this is calculated automatically.

Prior to the actual test the 3D positions of the reference crosses are surveyed together with the exact 3D position of the X-ray sources.

Accuracy of this measurement is estimated to be $\pm 1\text{mm}$.





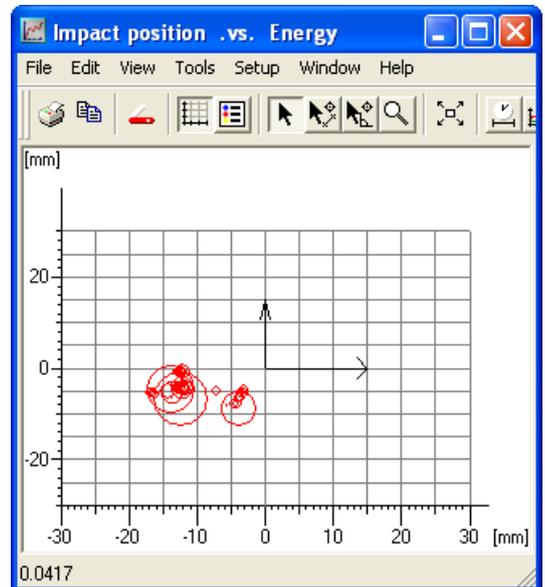
The test is executed, during which the plasma droplets are exposed at different times, creating shadows on the film plates.

The plates are scanned/digitized, creating image files, which are transferred to the RX3D application.

The image files, together with the 3D coordinates of the crosses and the X-ray sources, are the base for the analysis together with contour/position of each droplet generated during the tracking process.

Typical output data from TrackEye RX3D is

- droplet volume
- droplet velocity
- droplet rotation
- estimated impact position



TrackEye software modules required

- TrackEye Basic
- RX3D