

HSX: HIGH SPEED X-RAY



TNO innovation
for life

DYNAMIC X-RAY SYSTEM

TNO has developed a dynamic X-ray system that can visualize X-ray images in combination with a high speed video and is called High Speed X-ray (HSX).

It combines an ultra-high speed camera (up to 1 million fps) with a continuous X-ray source. Through a scintillator screen and an image intensifier the X-ray image is converted to a visible image that can be recorded with the camera.

BALLISTIC APPLICATIONS

The combination of a high speed video and X-ray is the ultimate solution that combines the best of both worlds. It not only opens new research opportunities but also analysing and understanding real time impact phenomena can give insight in the validity of current FE-models. Normal means for capturing high velocity phenomena like a bullet impact on a target, are a high speed camera or flash X-ray. When only using a high speed camera much of the information that is

important to study is obscured by light (impact flash), smoke, parts of the armour that are ejected during the projectile impact, or just because the bullet has completely entered the armour.

Flash X-ray can be used to get around these obstacles. But multiple flashers have to be used in order to be able to visualize the bullet deformation or breaking process in real time. Whereas multiple flash X-ray recordings would have to be combined by doing several tests, it now can be done by only one experiment capturing 100 images of one and the same experiment and thus improving the quality of the test results.

SPECIFICATIONS

High Speed Camera:
Up to 1 million fps, 100 frames

X-ray source:
Continuous X-ray of 150 KeV, 80 kW.

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