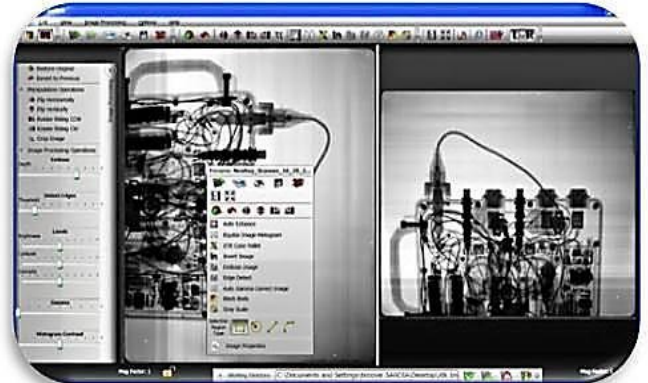


X-Ray Toolkit



X-Ray Toolkit (XTK) is a software program developed by Sandia National Laboratories for the United States Government under funding from NNSA and TSWG. XTK is a radiograph acquisition and processing program designed specifically for Explosive Ordnance Disposal (EOD) technicians.

XTK supports image acquisition from a variety of commercial scanners and provides image enhancement, measurement, and markup tools through a modern and user-friendly interface. Other features include mosaic-stitching, dose prediction, file management, sharing tools, and the ability to create training scenarios and after-action reports. When used in conjunction with Sandia's targeting and aiming kits, XTK can also be used to make 3D measurements and perform precision disruptions.

ADVANTAGES

XTK enables Emergency Responders to quickly capture, analyze, and distribute radiographs of suspect devices and to quickly and precisely aim disablement tools making it an easy to use, multi-function tool. XTK is compatible with most fielded x-ray systems, enabling operators to learn one application instead of one per system. Having one common toolkit reduces training requirements and ensures that the entire Emergency Response Community is able to exchange and process field images quickly and effectively.

XTK is designed to support the natural workflow of the end-user, making it easy to learn and to use. Responders produce significantly improved images with less effort, which increases the frequency in which X-Ray equipment is deployed by Emergency Response Teams.

XTK supports the deployment of X-Ray systems utilizing robotic platforms and the precise targeting and disablement of components. Deploying X-Ray systems with robotic platforms removes the first responder from harm's way and can even save time. Precisely targeting and disabling internal components is possible, even from a robot.

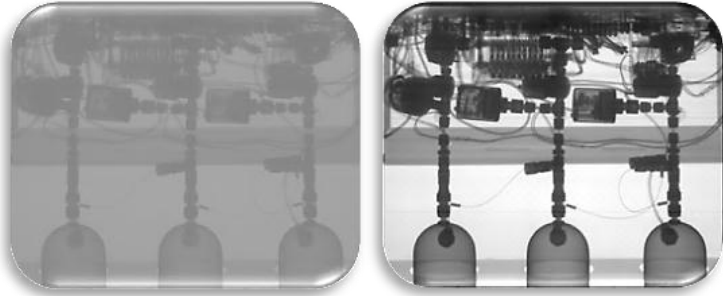
XTK has over 3,000 users and continues to grow daily.



FEATURES

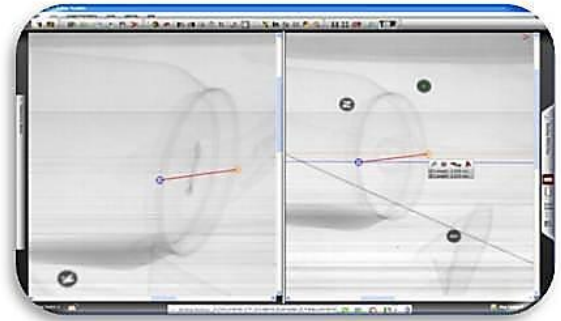
Imaging

XTK can process a variety of image types including TIFF, JPEG, JPEG2000, PNG, BMP, RAW, and CMP. Full support for 16 bit grayscale images is built into XTK. XTK has several built-in x-ray enhancing functions including automatic image enhance enhancements, manual histogram adjustments, histogram equalization, sharpen, XTK colorization, invert, emboss, edge detect, black body, and gray scale enhancement features.



Measuring

XTK allows users to make accurate measurements in a few different ways. One way is for the user to specify “Generator to Imager” and “Target to Imager” distances and XTK will calculate and apply the magnification factor for the image. Users may also select an object of known length in an image and XTK will calculate and apply the magnification factor for the image.



Mosaics

XTK allows users to stitch together multiple images into a single image. The separation (gap) between the images can be set to an exact value, or the user can manually adjust the position and rotation of each individual image that is used in the mosaic.



Pulse Calculation

XTK provides a pulse calculation tool. Dose Calculator users can set up distances and intermediate materials to calculate the number of X-Ray pulses required for a good image. Users have the ability to pick from 5 different X-Ray generators and 3 different digital X-Ray scanners (NEXRAY, ScanX, and Logos)

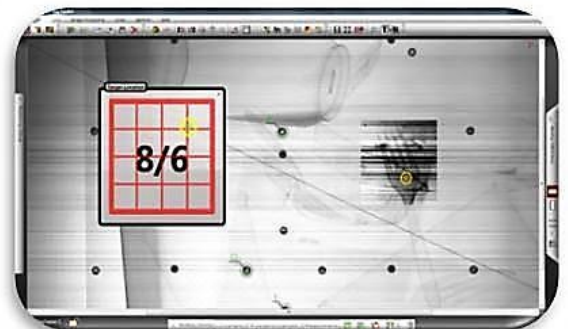


Training

XTK allows the user to create training scenarios, after action reports, and briefings

Aiming

XTK allows the user to aim a disrupter at an identified target through the use of special XTK Grid-Boards and Generator/Disruptor co-location hardware.



Contact Information

xtk-support@sandia.gov

www.XrayToolKit.com

Intelligent Systems, Robotics, and Cybernetics
Sandia National Laboratories