NSI
NORTH STAR IMAGING

Industrial X-ray & CT Systems | Scanning Services
Software | Training & Support

Industrial X-ray & CT Technology

What is Digital Radiography?

Digital radiography (DR) is a nondestructive 2D X-ray inspection method using a digital X-ray detector in place of X-ray film. DR allows for real-time X-ray inspection of your part or object - no more waiting for film to process! You can make scan adjustments on the fly and also apply digital image enhancements quickly and easily – saving you time. Real-time product analysis will help you to identify the configuration, integrity and quality of internal components, all without destroying your part.

DR detectors are designed to be used time after time, helping to eliminate the cost of consumables – saving you money.

Our DR systems are designed to make your business and your team as efficient as possible. Programmed and repeatable inspection sequences, easy to use software, and superior image quality, lets you focus on monitoring your product quality while also increasing throughput.
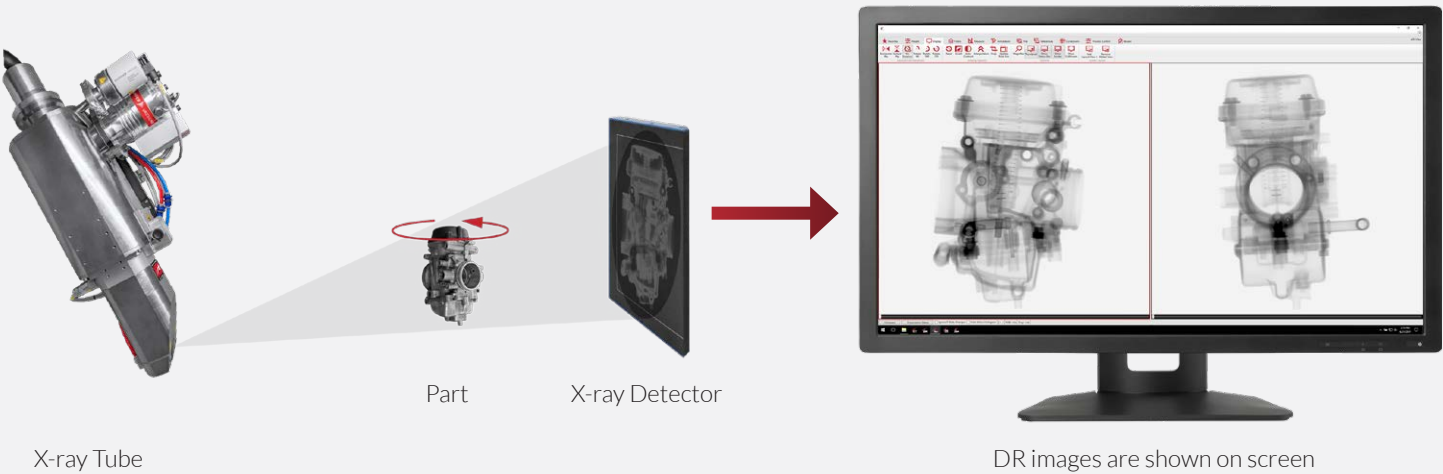
What is Computed Tomography?

Computed tomography (CT) is a nondestructive 3D X-ray inspection method that allows you to view and inspect the internal and external structures of an object in 3D space. CT works by taking hundreds or thousands of 2D digital radiography projections around a 360 degree rotation of an object. Proprietary algorithms are then used to reconstruct the 2D projections into a 3D CT volume, which allows you to view and slice the part at any angle.
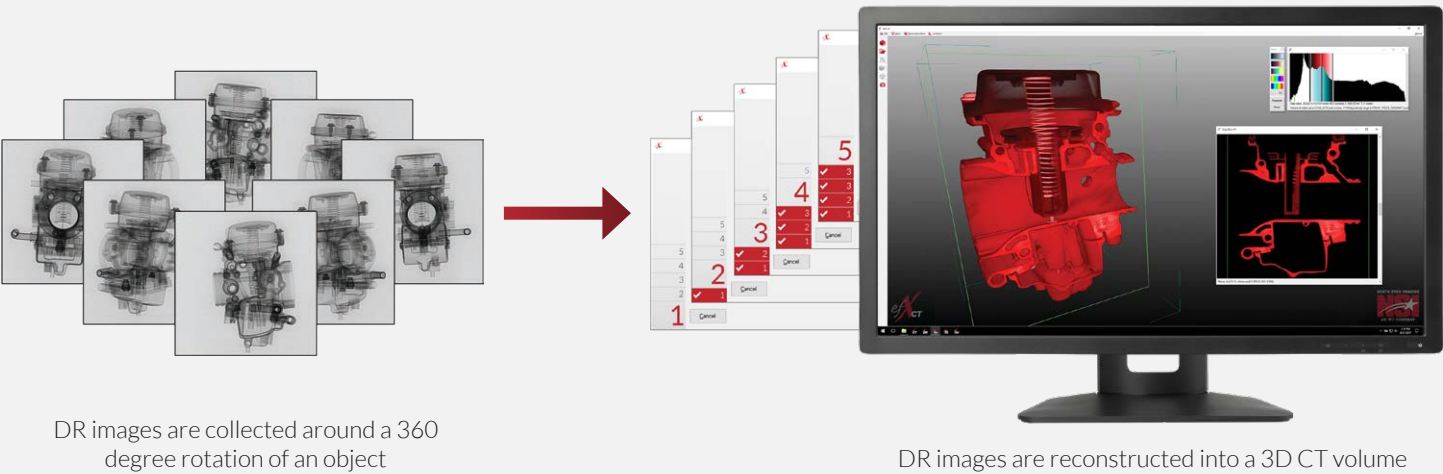
CT helps eliminate interpretation errors and introduces capabilities that are not available with any other technology.

Our CT systems are the easiest to use in the industry. efX-CT software uses five simple steps to guide you through the CT scanning process, this allows you to quickly start inspecting your product – increasing your quality and efficiency.

Digital Radiography Process

X-ray Tube

Part

X-ray Detector

DR images are shown on screen

Computed Tomography Process

DR images are collected around a 360 degree rotation of an object

DR images are reconstructed into a 3D CT volume

Scanning Services

Owning and operating X-ray CT systems can be expensive and require highly trained personnel. Our scanning services get you access to the most advanced equipment and industry-leading experts through hiring us by the hour (DR), per scan (CT), or on a project basis.

We are often called upon to be a part of our client's research & development (R&D) and quality assurance (QA) teams. North Star Imaging is renowned in the aerospace and defense industry for obtaining the best quality image possible for mission-critical parts.

You can also rely on us to develop new imaging techniques and make determinations on standards conformance (e.g. ASTM E2698/E3375, AWS D20.1, SAE AMS2175, or similar internal standards)
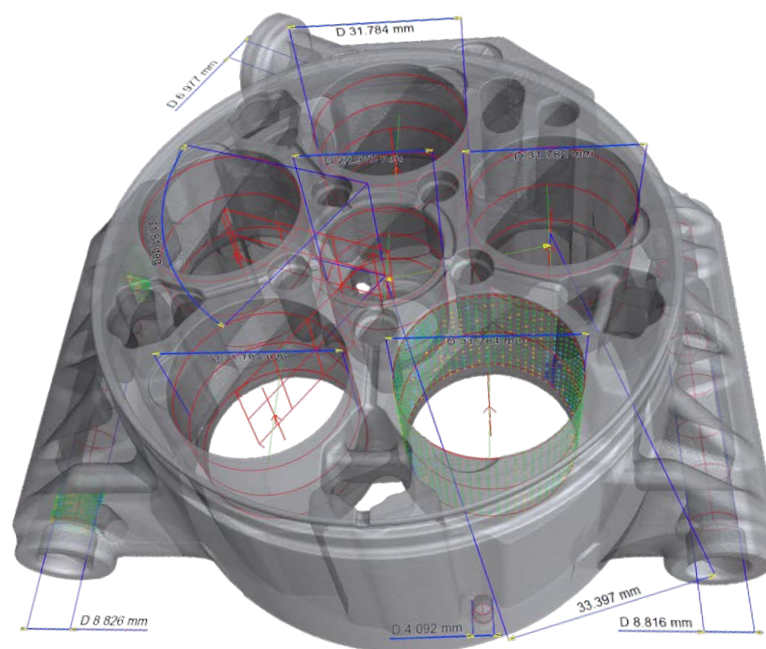
- Failure analysis
- Assembly verification
- 2D and 3D metrology
- Internal and external measurements
- Research and development (R&D)
- Product quality compliance
- Product contamination
- Weld and braze quality analysis
- High energy (MeV) inspection

- Plastic welding/bonding quality verification
- Additive manufacturing system qualification
- Additive manufacturing process monitoring
- Reverse engineering
- Density analysis
- In situ monitoring
- Advanced material analysis

- Museum artifact digitization
- Aluminum and steel castings inspection
- Medical and pharmaceutical device inspection
- Electronic component inspection
- Additive manufacturing product inspection
- And much more
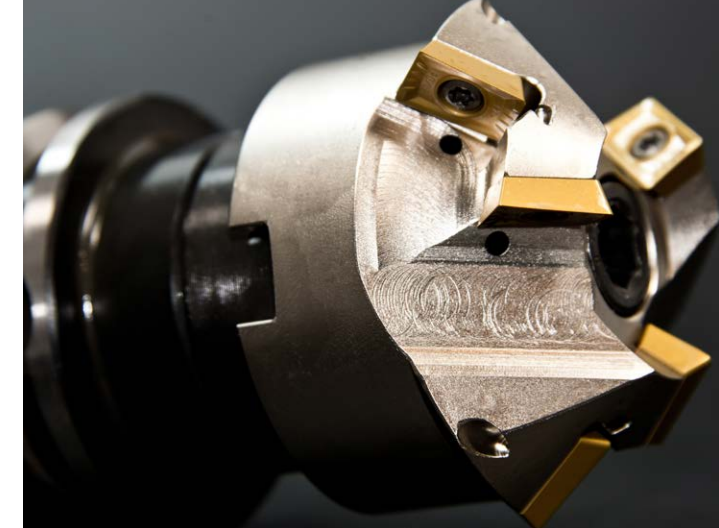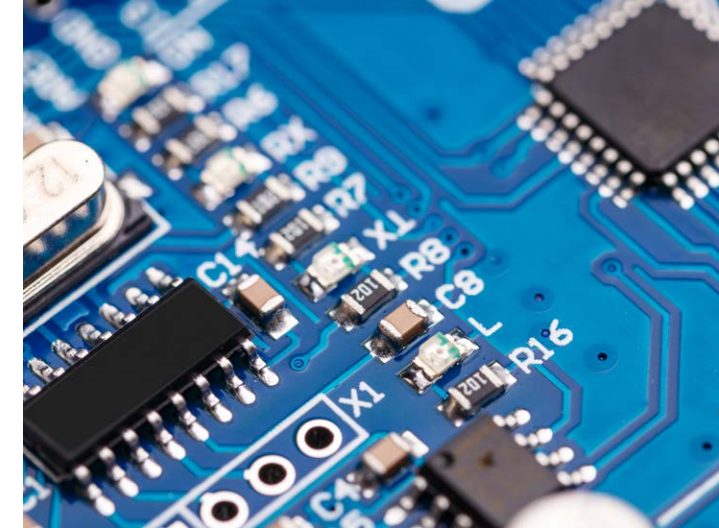
Systems

North Star Imaging offers a full range of systems to meet your digital radiography, computed tomography, and metrology needs. All of our industrial X-ray & CT systems are modular, giving you the flexibility to select the best combination of features for your specific application.

Our systems are designed with superior resolution and accuracy while maintaining an easy to use interface. Whether it's high speed 3D scanning, failure analysis, or reverse engineering, our systems are built for efficiency and repeatability to ensure your components function safely and correctly each and every time.

Ranging in size from compact to large vault options, you can seamlessly acquire full internal and external details of your components.

X25
Compact & Efficient

The X25 is suited for small to medium sized objects. It offers the same features as our larger systems while being able to fit through a standard size door.

160 kV	42 in	9 x 6 in
Maximum X-ray Energy	[106 cm] Maximum Focal Distance	[22 x 15 cm] Nominal Part Envelope

X3000
Dynamic & Precise

The X3000 is the best option for customers needing a compact system with capabilities that are typically only available on a larger X-ray or CT system. This system has the versatility needed for inspecting small or large components.

240 kV	53 in	19.5 x 24 in
Maximum X-ray Energy	[134 cm] Maximum Focal Distance	[50 x 61 cm] Nominal Part Envelope

Systems

X5000

Versatile & Configurable

The X5000 has a large scanning envelope for larger parts while maintaining the ability to inspect small components. This system also has an ergonomic loading feature to be able to easily load large parts.

450 kV	47 in	32 x 48 in
Maximum X-ray Energy	[119 cm] Maximum Focal Distance	[81 x 121 cm] Nominal Part Envelope

X7000

Robust & Scalable

The X7000 has the largest scanning envelope and longest focal distance of our standard systems. This system allows you to scan large parts while maintaining the ability to inspect small components.

450 kV	90 in	60 x 60 in
Maximum X-ray Energy	[228 cm] Maximum Focal Distance	[152 x 152 cm] Nominal Part Envelope

Standalone Manipulators

X3500, X5500, & X7500

Standalone manipulators offer the flexibility to reuse an existing cabinet or vault. These manipulators offer the same great functionality of our other systems while taking advantage of your existing resources.

Our standalone manipulators feature the same system specifications as our cabinet systems.

Modular Construction

X3000, X5000 & X7000

The modular cabinet design allows the system to be installed in an area where a standard cabinet installation cannot be accommodated. During production, the cabinet is manufactured so that it may be disassembled into sections and reassembled on-site.

Systems

MevX
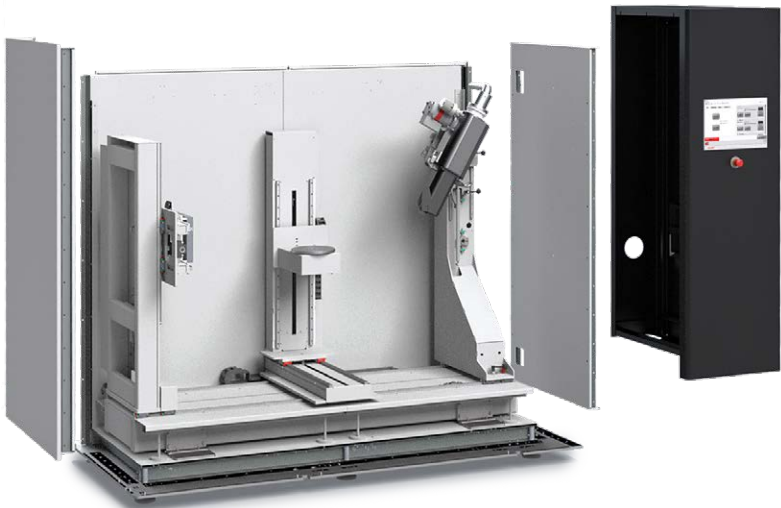
High Energy Systems

Our high energy systems are designed with proprietary methods of scatter reduction that when combined with our specialized techniques and modalities have repeatedly proven to produce the highest image quality in the industry. Offered with energies up to 9 MeV, the MeVX Series of systems provide the same ease of use as our low energy systems in a high energy format. Utilizing our current efX Software Suite, along with the superior service, support, and training that we are known for, puts these systems in a class of their own.

Reduce Artifacts with High Energy

When inspecting large, dense, or thick materials, X-ray penetration can be difficult with energies of 450 kV and less. Noise, scatter, and beam hardening artifacts may also contribute to the image fidelity. Our high energy X-ray systems allow inspection of extremely dense and critical parts to not only improve penetration, but also measurement accuracy, feature clarity, and overall image quality.
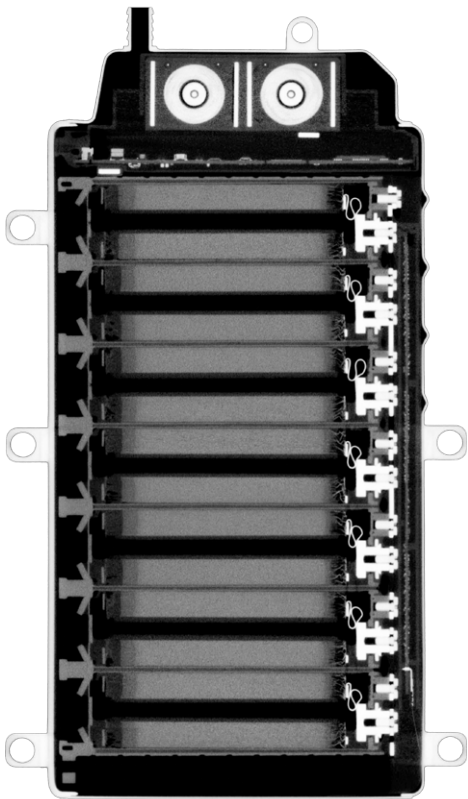
Accurately represent your true data with our MeVX Series systems. Remove the questionable interpretation and gain insight into better data.
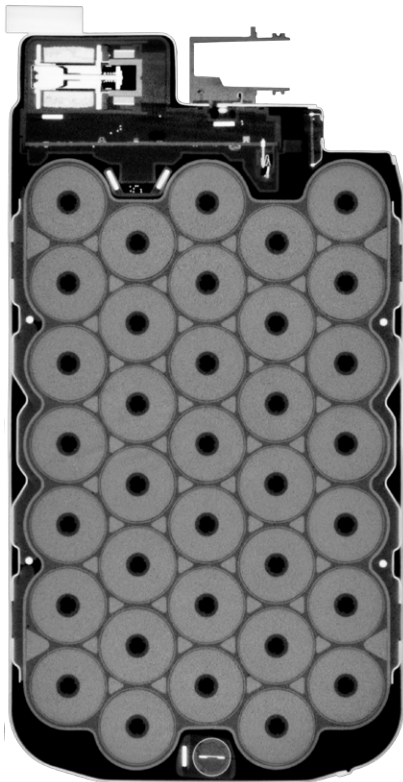
9 MeV   450 kV

Steel Turbo Pump

9 MeV
Maximum X-ray Energy

25.8 ft
[7.86 m] Maximum Focal Distance

3,000 lb
[1,360 kg] Maximum Capacity
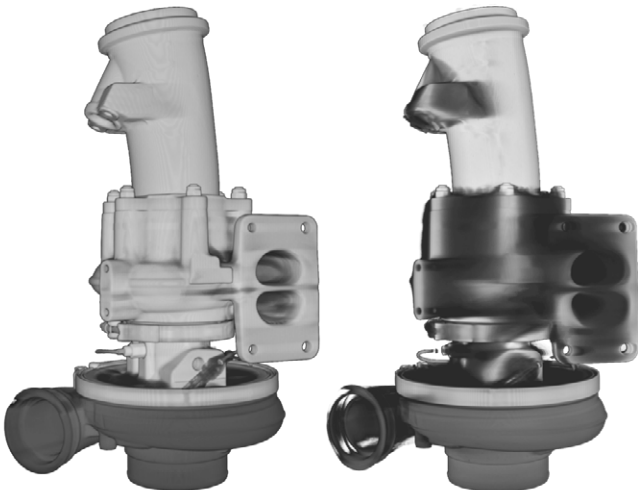
9.25 in

Electric Vehicle Battery

Systems

RobotiX

Autonomously Operating Systems

RobotiX technology makes automatic part loading, unloading, and manipulation effortless through a simple programing interface that allows the end-user to easily create new robotic motion programs. RobotiX is offered on all systems, allowing for seamless integration with efX-DR and efX-CT software. This means your operators don't have to learn another software program, which saves your company valuable time and money.

Adding RobotiX to a system reduces cycle time, increases productivity, and allows for more efficient use of the equipment. Our RobotiX solutions, when combined with our Assisted Defect Recognition software, can significantly automate the X-ray inspection process.

Benefits

- Automatic part loading and unloading for autonomous operation
- Automated part manipulation
- Reduced cycle time for increased productivity
- Simple user interface with sub-routines
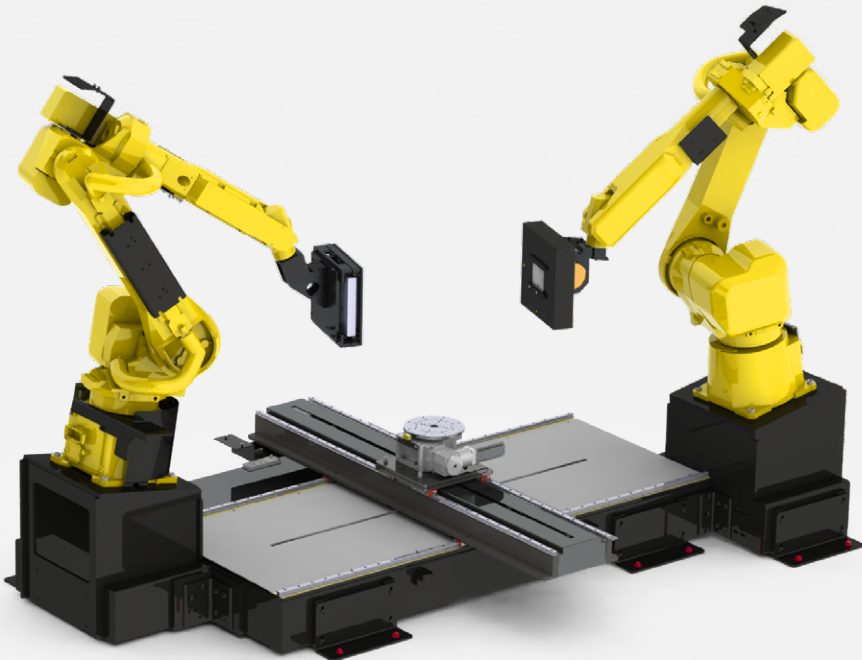- Seamless integration with efX-DR and CT

Features

- Available on all systems
- Dual RobotiX source and detector manipulation available on the X7000
- Reach and capacity dependent upon application
- Up to ±0.00079 in (± 0.02 mm) repeatability
- Safety fence included with applicable systems
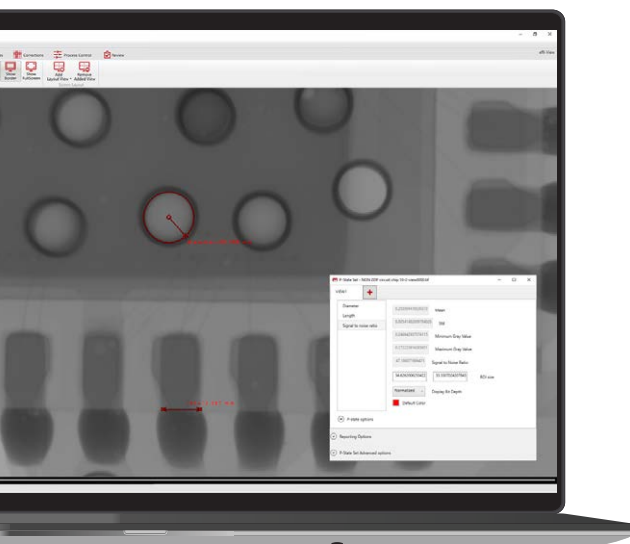
RobotiX Part Loader
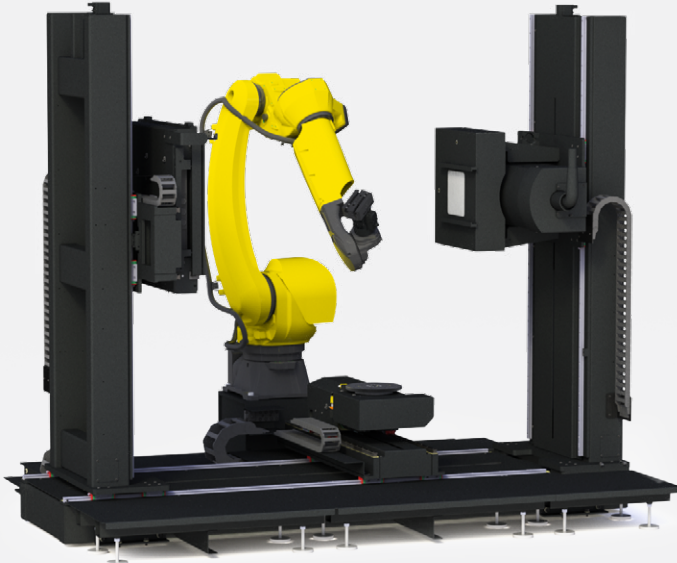
RobotiX Part Manipulator

Dual RobotiX System

Software

From simulation to evaluation, the efX Software Suite offers the tools necessary to execute your entire X-ray imaging process. All of our software is exclusively designed & developed at North Star Imaging.

The i4.0 compatible efX suite includes everything you need to be successful with DR & CT with additional modules to expand your capabilities and tailor the software and system to your products, processes, and people.
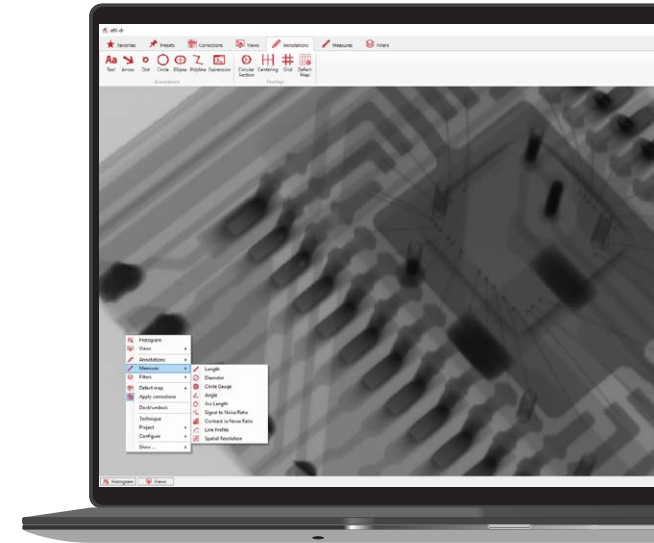
efXDR

Digital Radiography Acquisition

Easily acquire continuous, step, fan beam, and proprietary SubpiX, MosaiX, and VorteX scans for a wide range of applications. Features include seamless integration with the efX software suite, motion programming for precise control, hardware ring reduction for improved image quality, and full DICONDE compliance for standardized data management.

efXVIEW

2D Image Analysis

Analyze your data with extensive image enhancement functions, measurement, and analysis tools for DR images and CT slices. Features include the efX user-friendly interface for streamlined workflows, easy 2D image evaluation for faster decision-making, and process control data integration to ensure consistency and traceability.

efXCT

Computed Tomography Reconstruction & Visualization

Reconstruct and visualize CT scan data for in-depth analysis and inspection using a simple 5-step wizard. Features include advanced control over reconstruction parameters, full-resolution viewing for maximum detail, and a comprehensive toolbox for precise slice measurement and analysis.
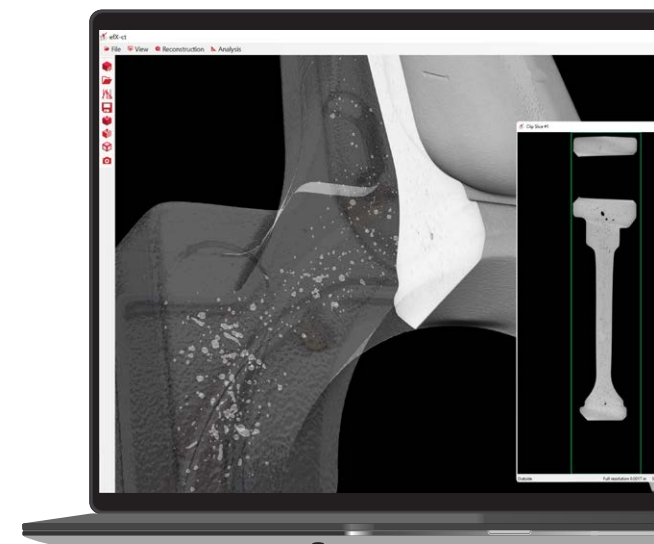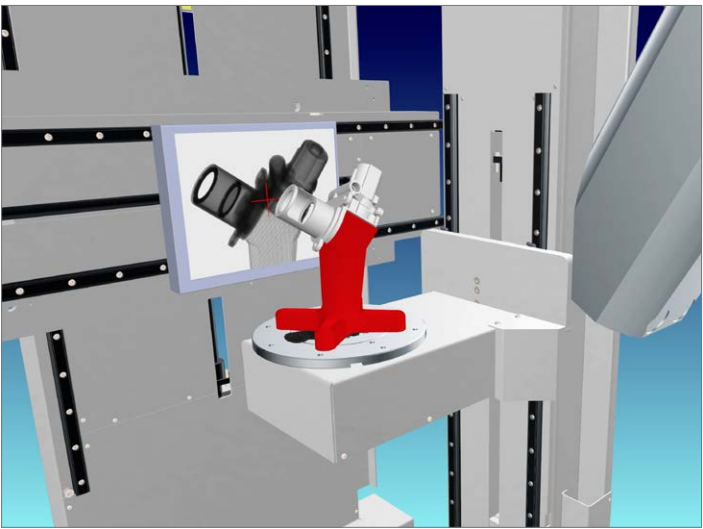
Software

efXADR

Assisted Defect Recognition

efX-ADR offers a simple and intuitive user interface that easily integrates into production workflows for automatic processing. Our software can help increase throughput, repeatability, and can reduce costs. Users can select from a wide range of defect-detection mechanisms to find what works best for their parts.
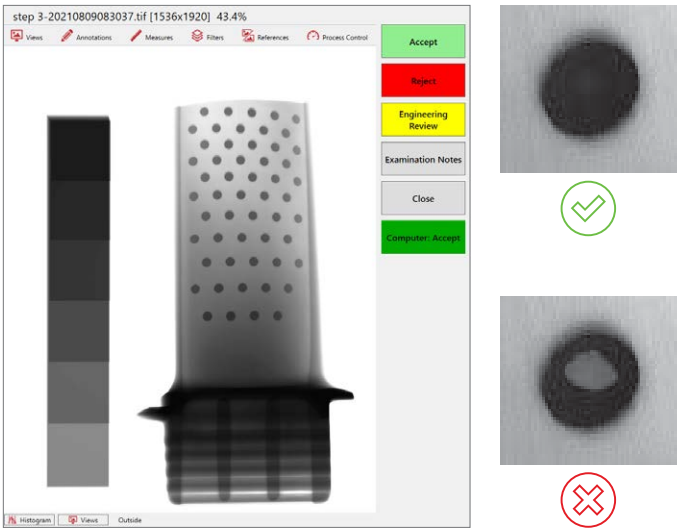

efXSIM

System Simulation & Offline Programming

efX-Sim uses a sophisticated X-ray algorithm that simulates how a polychromatic X-ray beam interacts with parts, alloys, and even multiple materials at once. Any change to the system or parts being simulated will update the final detector image immediately. efX-Sim can be configured as a digital twin to all of our standard systems, this enables technique development without occupying a physical system.

efXDCM

DICONDE Management

Our efX software suite is fully DICONDE compliant. Produce, view, and store DICONDE compliant files with compatibility between vendors. efX-DCM allows for easy retrieval through searching metadata such as part information, technique information, user information, image status, and more.
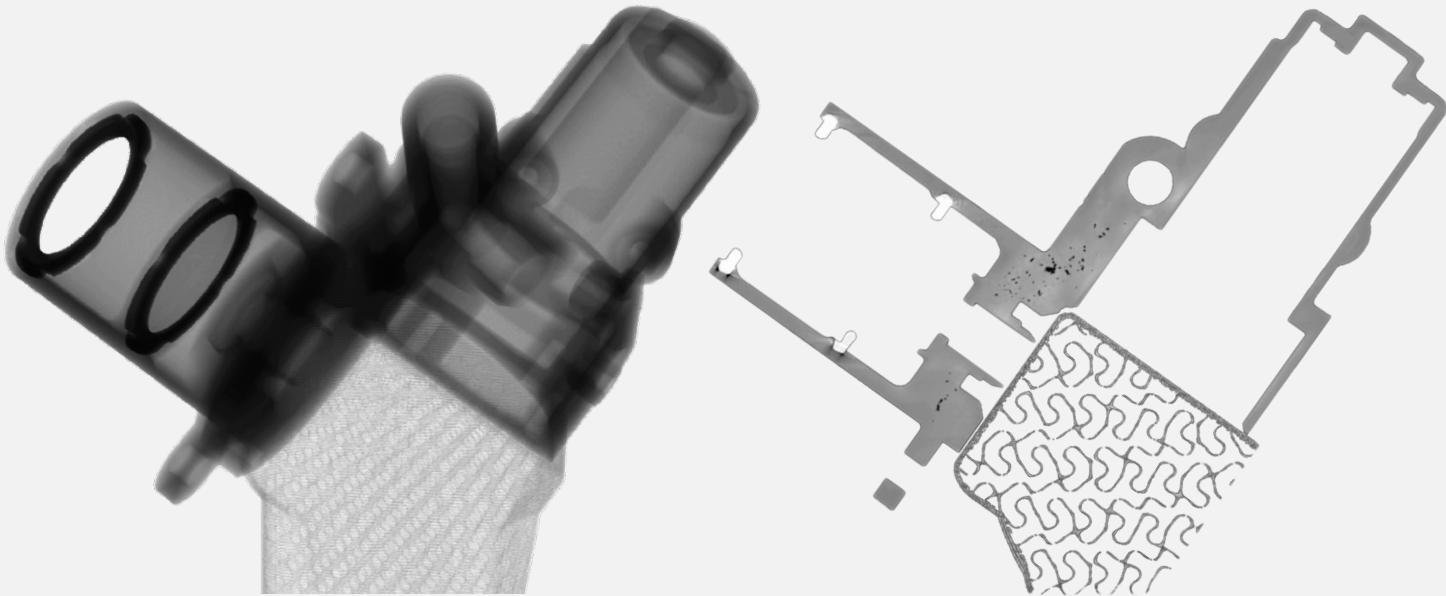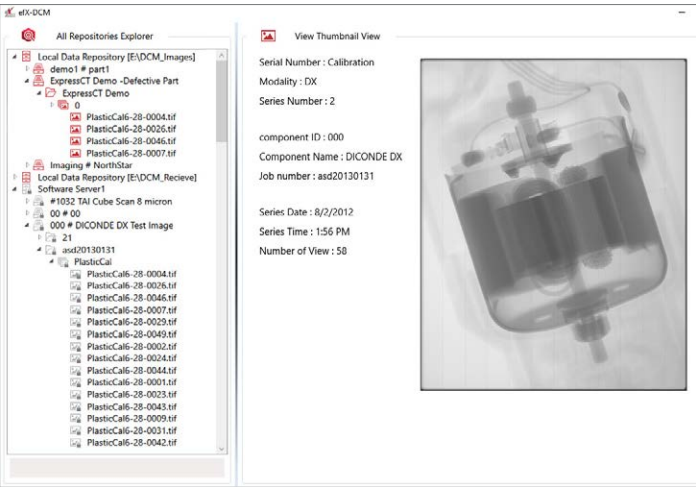

Simulated Radiograph   Simulated CT Slice
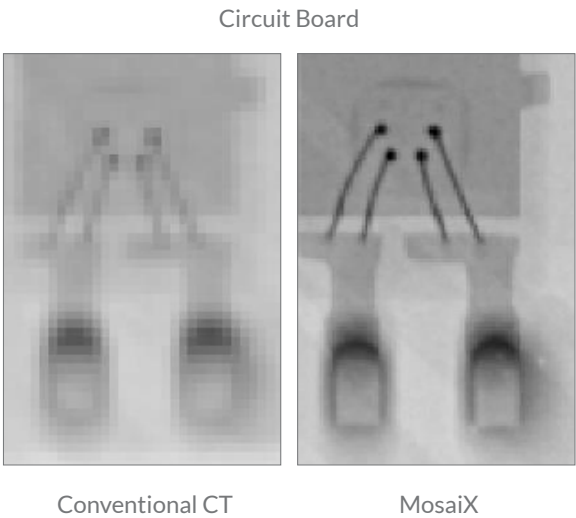
Software Add-on Modules

subpiX

Higher Resolution, Same Detector

SubpiX is an imaging technique that generates images with improved resolution that is typically double the detector resolution. SubpiX provides a larger field of view for a given resolution, better signal-to-noise and contrast-to-noise ratios, and faster acquisitions due to a larger focal spot.

Line Pair Gauge

EN462-5
C 100

Conventional CT   SubpiX
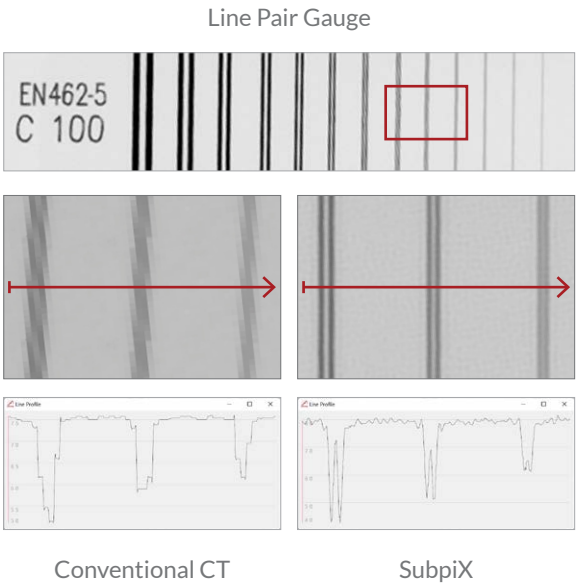
mosaiX

Larger Parts, Same Detector

MosaiX is an imaging technique that stitches multiple images to form one seamless image. The effective imaging field of view is no longer limited by the detector panel size, allowing for higher part magnification and an increase in resolution.

Circuit Board

Conventional CT   MosaiX

vorteX

Elongated Parts, Single Scan

VorteX is a CT technique that allows for scanning elongated objects that cannot fit into a single exposure, enabling higher magnification and increased resolution. VorteX also reduces cone beam artifacts that can be present on conventional CT scans.

Lithium Battery

Conventional CT   VorteX

Focal Spot Measurement

Focal Spot Measurement provides a live focal spot measurement for your specific Ug tolerances. This can provide more than 2X improvement of measured spatial resolution, and up to a 90% measurement accuracy improvement on product features.

Additevely Manufactured Gyroid Lattice Structure

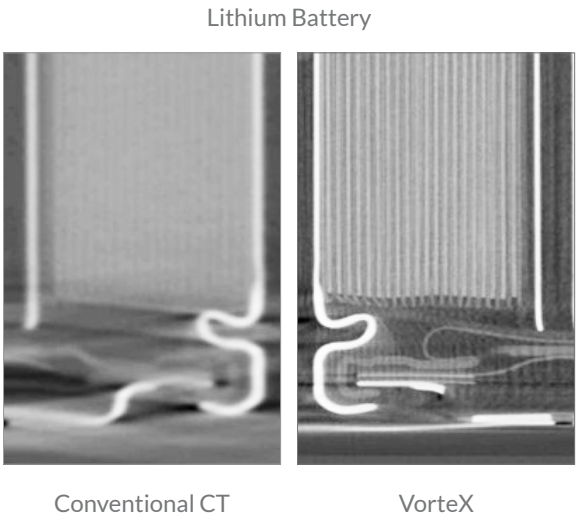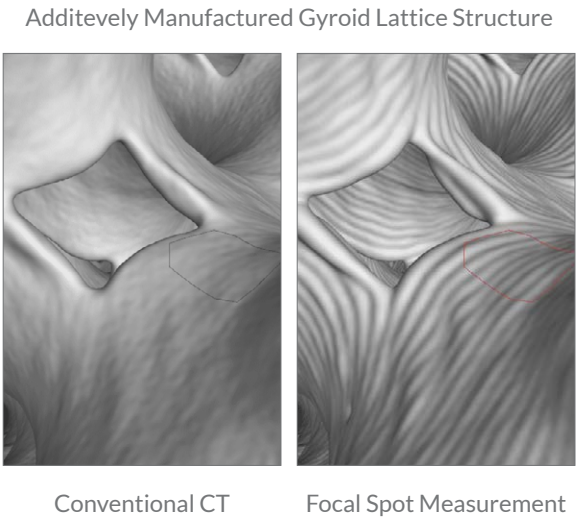Conventional CT   Focal Spot Measurement

Production Module

The Production Module enhances DR and CT workflows with image traceability, customizable file naming, and process controls to ensure consistent, reliable results. It simplifies production imaging while supporting DR rework cycle management, making it easier to track, re-inspect, and maintain quality across high-volume environments. For CT, it also offers automated reconstruction to streamline production imaging workflows.

Ring Reduction

Ring Reduction compensates for the irregular response of the detector pixels during a CT scan. This increases quality by reducing artifacts that can mask indications or be misinterpreted as an indication. Ring Reduction can also improve volume surface quality.

Conventional CT   Ring Reduction
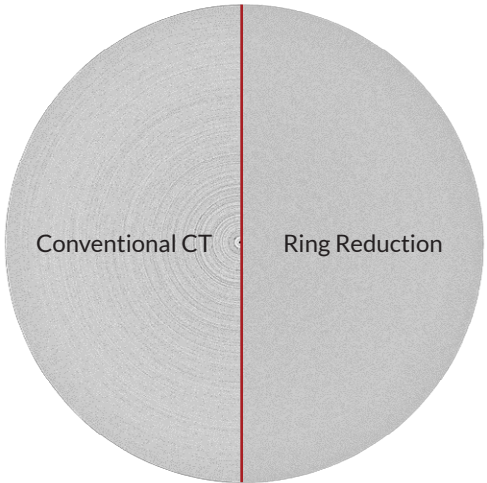
Service & Support

Industrial X-ray systems require routine maintenance to deliver consistent performance, remain free from contamination, and ensure long-term reliability. Regular servicing, combined with timely software updates, helps maximize production output.

Our preventive maintenance packages are designed to keep your system operating at peak efficiency. By investing in one of our maintenance agreements, you can reduce unplanned downtime, extend the lifespan of your system, enhance performance, and lower overall maintenance costs.
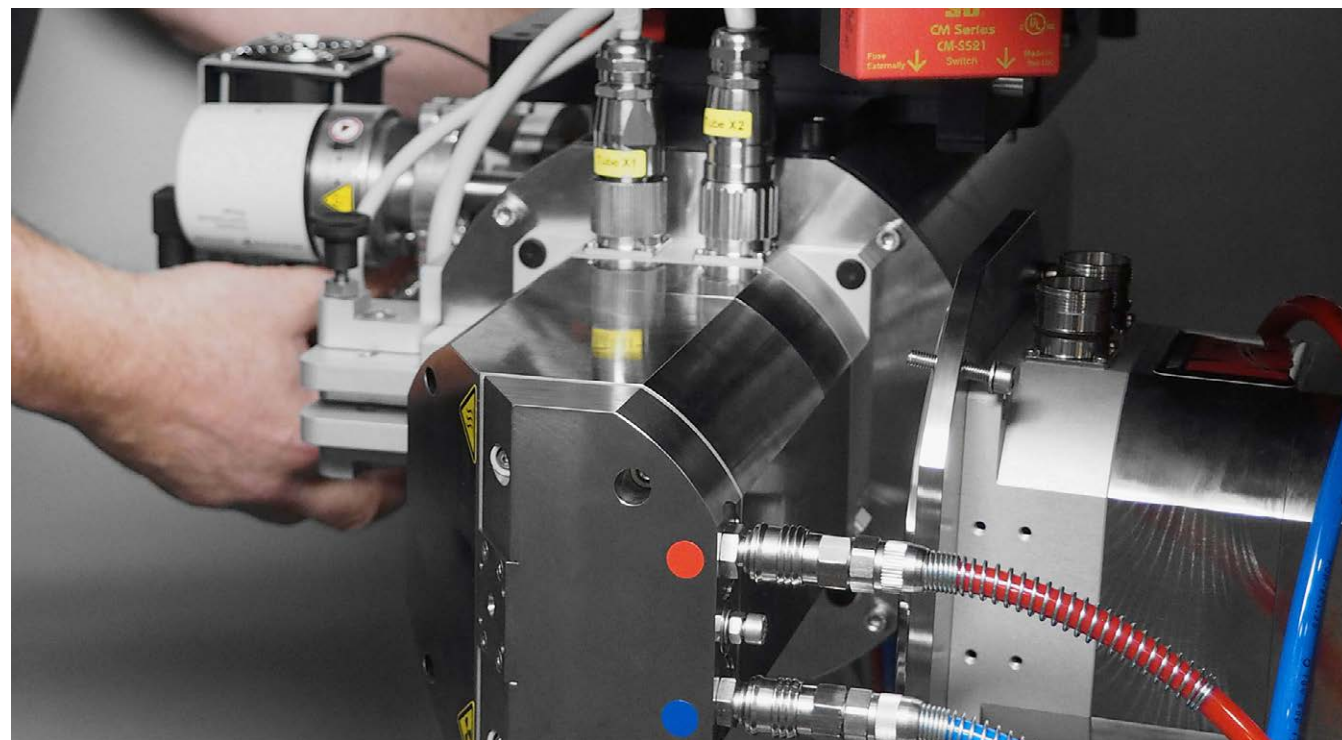
Support Services

Our factory trained and authorized system specialists are highly qualified to offer a full range of support:

- Emergency on-site support
- Software maintenance and support
- Phone and remote access support
- Replacement parts
- Electrical / Mechanical
- X-ray tubes
- Generators
- High voltage cables

Preventative Maintenance Packages

Preventative maintenance will minimize your chances of downtime while saving you money.

AVERAGE CUSTOMER SAVINGS*

NON-CONTRACTS	SILVER	GOLD	PLATINUM
Full Retail Price	30%	40%	50%+
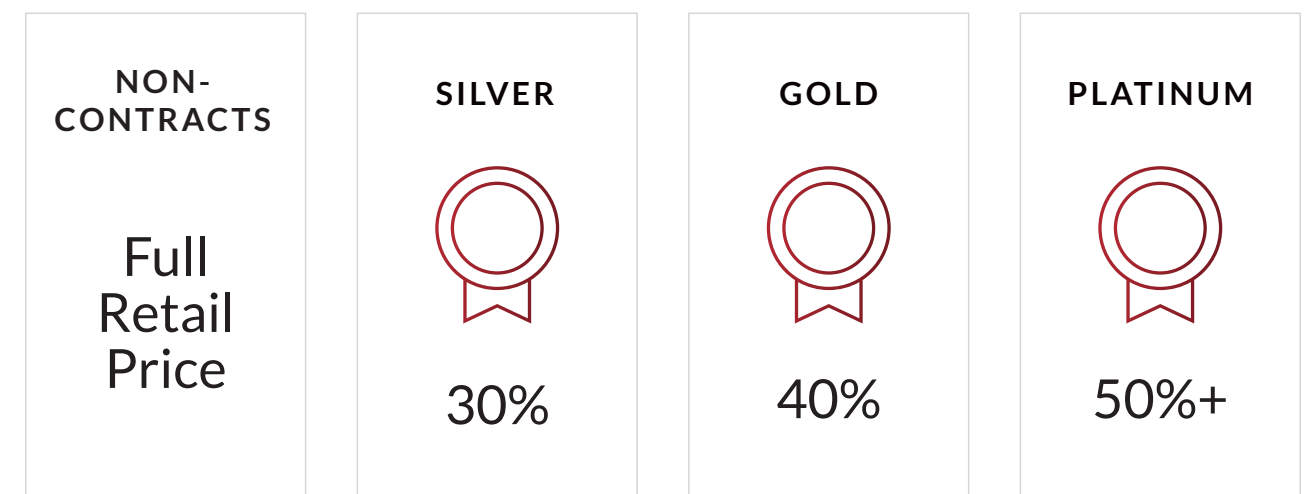
*Based on analysis of average system agreements

Technical Training

X-ray University provides the technical training you need for industrial digital radiography and computed tomography. New operator training packages give you the flexibility to select when, where, and how you learn to operate your North Star Imaging X-ray system. This training will cover everything you need to know to get started on your new system.

X-ray University classroom courses allow you to learn in-person or through our self-paced online training platform. Our classroom courses provide the required education to achieve Level 1, 2, or 3 certifications in accordance with The American Society for Nondestructive Testing, Inc. (ASNT) Recommended Practice No. SNT-TC-1A.

X-ray University also offers advanced coursework and hands-on learning at your site. This is a great way for you to learn the application of our technologies for your specific needs and requirements.
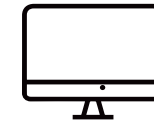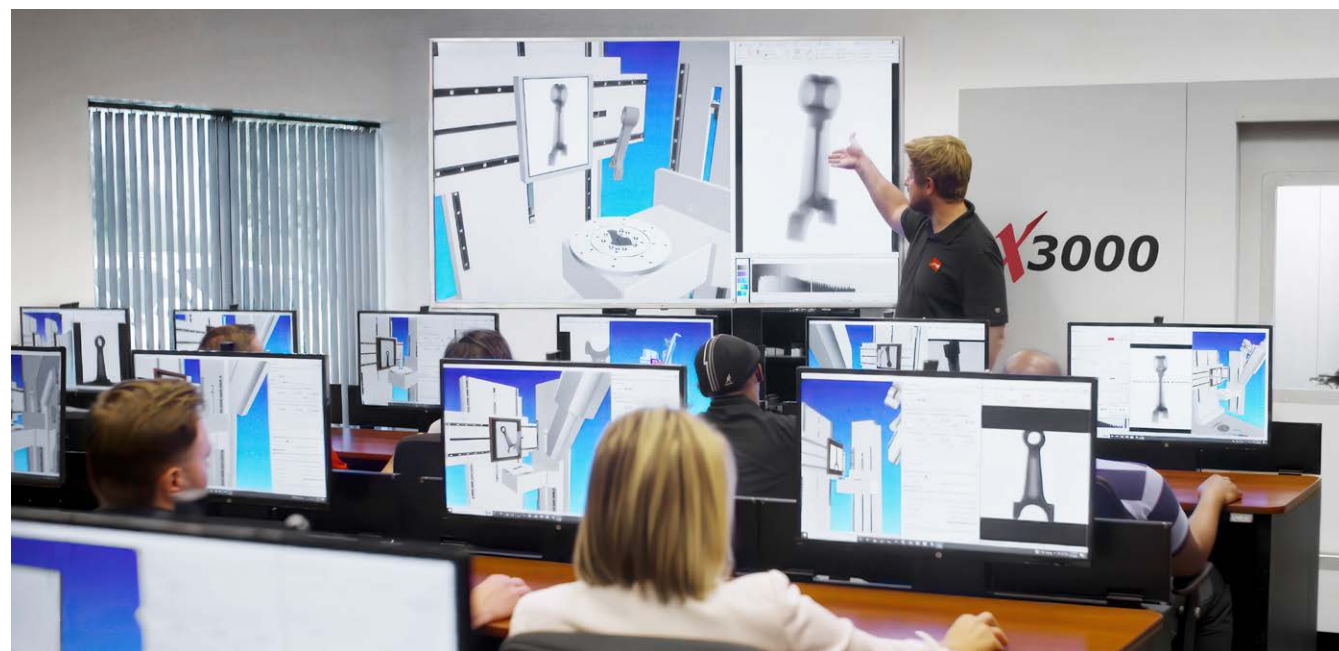
New Operator Training

- System safety features and operation
- Proper system startup and shutdown
- Equipment walk around / explanation of components and location
- Software suite review covering efX-DR, efX-View, efX-CT and production module
- System motion control and programming
- DR acquisition review; covering tube, rotational stage, and detector attributes
- Basic imaging of components and attributes
- CT acquisition and reconstruction attributes
- And more
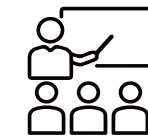
Classroom Courses

- Interactive classroom settings help promote the exchange of ideas between the instructor and participants.
- Practical hands-on training helps verify that the participant thoroughly understands the theory, principles, and application.
- Adherence to a structured and ASNT-validated class schedule ensures that training takes place in a short, set time frame while meeting ASNT requirements.
- DR / CT Level 1, DR level 2, Expert CT
- General radiography and CT theory
- General and specific technique development process
- Basic and advanced use of North Star Imaging hardware and software
- System performance optimization
- Data analysis and Trouble shooting

X-RAY UNIVERSITY™

ISO 9001:2015
ISO 14001:2015

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