# TECHNOLOGY LEAPS IN PRODUCTION READINESS OF COMPUTED TOMOGRAPHY TECHNOLOGY AND SOLUTIONS

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**Abstract**

As the complexity of aerospace components and manufacturing processes continue to increase, so does the need to move beyond the capabilities of traditional inspection methods, such as 2D radiography and ultrasound. Computed tomography (CT) enables the visualization of indications and internal geometries that traditional methods cannot.

Visualization of indications and internal features using CT has been utilized in research and development environments for years, however has rarely been used as a production tool, especially in casting environments. Inspection speed, image quality of dense parts, data workflow, operator visualization and training have been some of the challenges to bringing the benefits of this technology to casting manufacturing. As the need for CT in the factory environment increases, so has the pressure on the industry and technology providers to solve some of these big challenges.
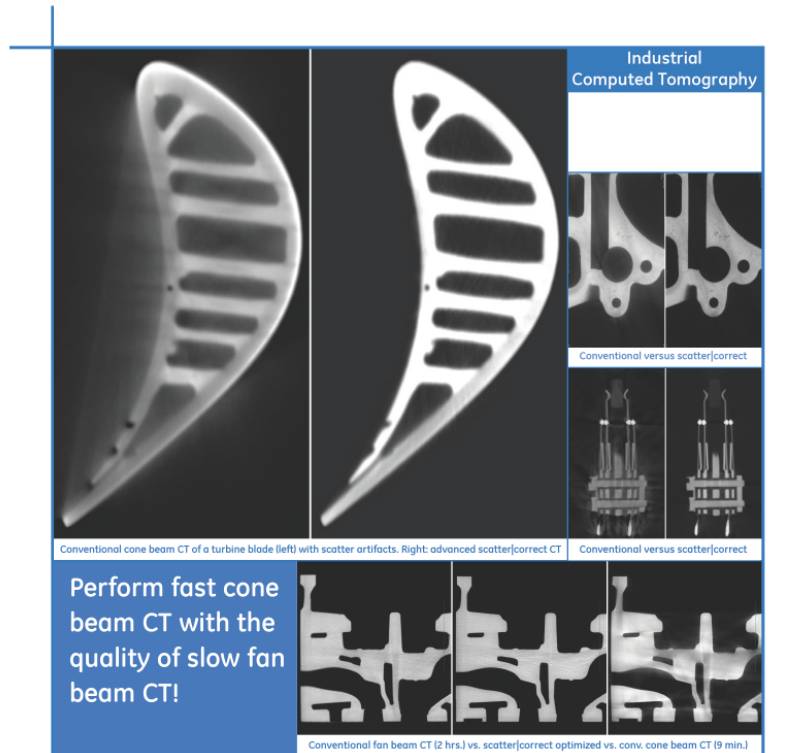
Over the past year, giant leaps in CT technology have resulted from the increased pressure and industry collaboration to close the gaps and move closer to implementation in casting environments. Technology improvements have been realized to increase volumetric data collection by factors of over 10x, while maintaining and even improving image quality. System and data workflows have been modified from traditional expert R&D use cases to now allow for production workflows with various user levels and enabled DICONDE data management. CT training courses have also been developed to assist in the training and certification of operators.

Keywords:

Data Management, DICONDE, Radiography, CT, Productivity, Image Quality, Workflow, 3D Visualization, Training

*Boosting CT inspection speed and precision*

# High quality high throughput industrial CT scans:
## scatter|correct



Industrial Computed Tomography

Conventional cone beam CT of a turbine blade (left) with scatter artifacts. Right: advanced scatter|correct CT

Conventional versus scatter|correct

**Perform fast cone beam CT with the quality of slow fan beam CT!**

Conventional fan beam CT (2 hrs.) vs. scatter|correct optimized vs. conv. cone beam CT (9 min.)

- GE's breakthrough scatter|correct functionality allows customers to gain CT quality never before reached with flat panel based cone beam CT

- Low artifact high precision performance of fan beam CT combined with up to 100 times faster* inspection speed of cone beam CT

- Provides significant quality improvement not only for high scattering materials such as steel and aluminium, but also for composites and multi material samples

*) While a typical fan beam CT scan of 1000 slices requires 1 minute per slice = 1000 minutes, a cone beam CT scan requires only approx. 10 minutes

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