



*Waygate Technologies Recognized as the*

**2021**

**Company of the Year**

Global Industrial Computed  
Tomography Solutions Industry  
*Excellence in Best Practices*

## Best Practices Criteria for World-Class Performance

Frost & Sullivan applies a rigorous analytical process to evaluate multiple nominees for each award category before determining the final award recipient. The process involves a detailed evaluation of best practices criteria across two dimensions for each nominated company. Waygate Technologies excels in many of the criteria in the industrial computed tomography (CT) solutions space.

AWARD CRITERIA	
<i>Visionary Innovation &amp; Performance</i>	<i>Customer Impact</i>
Addressing Unmet Needs	Price/Performance Value
Visionary Scenarios Through Mega Trends	Customer Purchase Experience
Implementation of Best Practices	Customer Ownership Experience
Leadership Focus	Customer Service Experience
Financial Performance	Brand Equity

### ***Addressing Key Industry Challenges and Unmet Market Needs through Innovation, Quality, and Differentiating Product Capability***

The CT system was introduced for dimensional metrology and inspection applications a decade ago. The CT system’s advantage lies in its ability to combine conventional dimensional metrology with non-destructive inspection of internal parts while providing a three-dimensional (3D) view of the object under inspection.

Frost & Sullivan notes that market adoption of CT systems grows at an average of 4% to 6% annually, which is comparable to the growth of conventional and competing technologies, such as coordinate measuring machines (CMM). However, for a relatively new system that combines the benefits of multiple technologies, the growth is considerably low. Frost & Sullivan’s own research confirms that this

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**– Prabhu Karunakaran, Senior Industry Analyst**

low growth is due to two reasons: the potential of the CT system has not been fully realized, and customers consider a system costly and sometimes challenge the return on investment (ROI). To improve growth opportunities, market participants must focus on extending the capabilities of industrial CT systems. Industrial CT manufacturers are working toward common trends including improving scanning speed, image reconstruction and analysis, and image

resolution; reducing the machine's form factor; and adding automation capabilities to overcome market penetration challenges. These trends can help accelerate market growth by boosting the adoption rate of CT systems on the manufacturing floor, where the addressable market is huge.

In terms of specimen handling capability, most existing CT systems can only accommodate small-sized parts, including chips and printed circuit boards, and midsize parts, such as engine castings. The technological trade-off between speed and measurement resolution inherent in CT technology inhibits metrology and inspection applications in larger samples. Waygate Technologies, a Baker Hughes business in industrial inspection with decades of experience and headquartered in Germany, introduced a high-energy CT system in 2020 that overcomes the challenge of handling larger samples. The company's Phoenix Power|scan HE extends the growth potential of the industrial CT systems market with its 9MeV x-ray source, a capability that few companies in the market offer. The Phoenix Power|scan HE is a linear acceleration (LINAC) CT system that can handle objects of up to 1,000kg in weight and 2m in diameter. The common specimen handling capacity of most CT systems ranges from 2kg to 300kg, yet Phoenix Power|scan HE is among the few CT systems that can handle larger sizes due to its high-energy source.

Few companies venture into the high-energy CT segment because of the resolution and accuracy challenges of cone beam CT technology, which high-energy CT systems commonly employ. More than 85% of existing CT systems operate within the range of 100kV to 450kV. To commercialize a high-energy x-ray source, Waygate Technologies overcomes resolution and speed challenges with in-house technology expertise and multiple patented innovations that the company has built. Among the innovations that Waygate Technologies utilizes in the Phoenix Power|scan HE is its proprietary scatter|correct technology. The technology is quite unique for its ability to measure scatter from the sample and reduce artifacts across every voxel, resulting in a high-resolution image comparable to that of a fan beam CT. In terms of image resolution, the fan beam CT technology has inherently lower number of artifacts, lesser noise, and higher signal-to-noise ratio that produce clear images even with low-contrast object features. However, the fan beam CT is 100 times slower than cone beam CT. By taking advantage of Waygate Technologies' proprietary scatter|correct technology in Phoenix Power|scan HE, customers can get high-definition images at speeds as high as that of cone beam CT technology. Waygate Technologies has essentially combined the best of two technologies using its in-house innovations to succeed in the commercialization of high-energy CT.

With Phoenix Power|scan HE, Waygate Technologies extends the capability of CT systems by measuring and inspecting highly dense materials in high resolution. The solution has an x-ray source with 20 times the penetration power of conventional 450 kV X-ray tubes required for very large and high-energy absorption materials. From an application standpoint, the scanning capability for industrial CT now extends to aviation structural and heat exchanger components, space components, and complex automotive assemblies.

Phoenix Power|scan HE utilizes two detectors to discover defects such as porosity, foreign materials, trapped powder in complex castings, and additive manufactured parts with high-density metal components. At present, the product's scan time for large and dense parts is around 15 hours using

linear diode array (LDA) detectors. Through research and development, Waygate Technologies is attempting to reduce the scan time to 3 hours with digital detector array (DDA) detectors.

Frost & Sullivan analysts feel that these achievements truly demonstrate Waygate Technologies' consistent efforts to capitalize on technology and innovation to differentiate its products in the market while providing highly reliable and high-quality measurements. Frost & Sullivan applauds Waygate Technologies for surpassing its previous achievements by setting a new benchmark and enabling accelerated growth opportunities for the industrial CT systems market.

### ***Next-generation Suite of In-line Products for Smart Factory Digital Transformation***

Waygate Technologies is the market leader in the global industrial CT systems market, constantly at the forefront of industry growth acceleration by breaking boundaries in CT technology while addressing Mega Trends. Digital transformation and smart factory are hot topics in the manufacturing industry - specifically in the automotive vertical (which is the largest and highest growth segment for the industrial CT market). End users require high-throughput tools with automation capabilities that seamlessly integrate into a factory's information technology infrastructure for real-time quality control.

Waygate Technologies is a pioneer in building high-speed CT machines suitable for in-line inspection and metrology. In October 2020, the company introduced Phoenix Speed|scan HD, an in-line CT system that facilitates metrology and inspection activities across the automotive, aerospace, medical device, and electronics industries. The microfocus CT system has a fully automated workflow and can support specimen weight of 2kg to 4kg. Another important feature of the system is its Automated Filter|changer that hosts up to 10 different hardware filters to support product mixing in a high-volume production environment and perform specified inspection tasks without manual interaction, enabling higher throughput. High throughput is a critical requirement in today's manufacturing environment as products become increasingly complex with intricate geometries, and their life cycles become shorter; the manufacturing industry has to manage more products in a particular period of time than ever before. Features such as Waygate Technologies's Automated Filter|changer enable flexibility in quality control for customers, all while meeting future production management requirements.

Phoenix Speed|scan HD offers artificial intelligence (AI)-based battery anode overhang analysis that is critical in ensuring the reliability of batteries. With the proliferation of internet of things (IoT) devices and increasing adoption of electric vehicles, batteries are gaining attention in the market. Waygate Technologies's focus on improving battery analysis capabilities strengthens its competitive position in the market. Phoenix Speed|scan HD is part of Waygate Technologies's broader portfolio of in-line CT products, such as Phoenix V|tome|x M, Phoenix V|tome|x C450 and Phoenix Speed|scan CT64, which are also equipped with automated workflow including robot-based loading/unloading capabilities, AI-based automatic defect recognition, and enhanced scan speed and reliability in inspection and measurement.

Manufacturing applications are expected to create high-growth opportunities in the market in the next five years. Frost & Sullivan analysts firmly believe that Waygate Technologies is well positioned to continue leading the market with its solid product portfolio catering to the industry's advanced needs comprehensively - while addressing the Mega Trends shaping the future of manufacturing.

*“Waygate Technologies places customer success as an essential part of its product development activities. This is reflected in its constant introduction of innovative features that improve image resolution, increase speed, and reduce downtime.”*

**– Prabhu Karunakaran, Senior Industry Analyst**

### **Customer-centric Feature Developments Enhancing Client’s Operational Success and ROI**

Downtimes associated with quality control solutions are quite costly; any delay in inspection or measurement can potentially result in high scrap rates. In the industrial CT systems market specifically, the need to maximize uptime is critical given the high cost required to procure and maintain CT systems.

The market’s current practice in supporting customers is simply offering a team of technical experts to troubleshoot remotely or on site (depending on the issue’s complexity). Waygate Technologies stays one step ahead of the market with its InspectionWorks platform providing remote monitoring and diagnostics features through the Phoenix portfolio. These features allow Waygate Technologies’s experts to constantly track equipment health data digitally with advanced system diagnosis and monitoring to predict failures, resulting in better resource planning and scheduling for maintenance. This increases the CT system’s uptime, helping end users to achieve ROI faster. Eventually, end users will be encouraged to invest in even more CT systems, driving market growth.

Waygate Technologies constantly addresses market challenges with its proprietary solutions such as scatter|correct, advanced detector, faster scanning, defect recognition, and automation integration through robotics. Customer success lies at the heart of the company’s product development activities. Frost & Sullivan commends Waygate Technologies for going beyond improving manufacturing throughput by prioritizing customer standard of care and value.

## **Conclusion**

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Industrial CT is a high potential growth market restrained by technological limitations in speed and resolution to provide the scale of commercial success necessary to attract customers.

Waygate Technologies, the global market leader in industrial CT, extends the capabilities of CT technology with its high-resolution 9MeV Phoenix Power|scan HE. The system’s ability to scan larger samples of high material density at the speed of cone beam CT technology and in the high resolution of fan beam CT technology truly extends market application boundaries. The company also launched the Phoenix Speed|scan HD with innovative features that support smart factory transition - while allowing customers to significantly improve their operational efficiency and ROI. Frost & Sullivan applauds the way that Waygate Technologies consistently leads the industrial CT systems market with technological innovations and value-added capabilities to expand market growth. Its latest solutions are a clear testament to its ongoing efforts to sustain and steer the market.

With its strong overall performance, Waygate Technologies earns the 2021 Frost & Sullivan Global Company of the Year Award.

## What You Need to Know about the Company of the Year Recognition

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Frost & Sullivan's Company of the Year Award is its top honor and recognizes the market participant that exemplifies visionary innovation, market-leading performance, and unmatched customer care.

### Best Practices Award Analysis

For the Company of the Year Award, Frost & Sullivan analysts independently evaluated the criteria listed below.

#### *Visionary Innovation & Performance*

**Addressing Unmet Needs:** Customers' unmet or under-served needs are unearthed and addressed by a robust solution development process

**Visionary Scenarios Through Mega Trends:**

Long-range, macro-level scenarios are incorporated into the innovation strategy through the use of Mega Trends, thereby enabling first-to-market solutions and new growth opportunities

**Leadership Focus:** Company focuses on building a leadership position in core markets and on creating stiff barriers to entry for new competitors

**Best Practices Implementation:** Best-in-class implementation is characterized by processes, tools, or activities that generate a consistent and repeatable level of success

**Financial Performance:** Strong overall business performance is achieved in terms of revenue, revenue growth, operating margin, and other key financial metrics

#### *Customer Impact*

**Price/Performance Value:** Products or services provide the best value for the price compared to similar market offerings

**Customer Purchase Experience:** Quality of the purchase experience assures customers that they are buying the optimal solution for addressing their unique needs and constraints

**Customer Ownership Experience:** Customers proudly own the company's product or service and have a positive experience throughout the life of the product or service

**Customer Service Experience:** Customer service is accessible, fast, stress-free, and high quality

**Brand Equity:** Customers perceive the brand positively and exhibit high brand loyalty



