



# Sustainable computed tomography solutions for a resilient tomorrow

Revolution™ Frontier Gen 3







# Creating a more sustainable future requires we care for the planet and its inhabitants.

It is essential that we continue to drive progress toward early, precise, and accessible diagnosis and treatment of more patients. For the planet, it is critical that we do so with a reduced impact on precious and rare resources that are imperative to life. We believe that the advancement of precision health, greater digitization of healthcare, and increased access to quality care are fundamental to accomplishing this goal.

We support carbon policies that reduce greenhouse gas emissions and promote sustainable development. We are committed to achieving net zero by 2050 and are part of the UN-backed “Race to Zero,” with a goal of reducing emissions based on the Paris Agreement. We’ve also set a public goal to achieve a 50% reduction in our own operational emissions by 2030. As a result of these efforts, we want to enable a more sustainable health system by addressing not only the environmental impacts of our products but also the challenges healthcare professionals and their patients face with resilient, digital options.



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**We deliver sustainable,  
intelligently efficient  
solutions for a resilient  
tomorrow.**

Building a healthier world to  
help improve access to care and  
enable better patient outcomes.



**Green**

Using fewer resources for a healthier planet.

**Digital**

Transforming healthcare through innovation.

**Resilience**

Building flexibility and dependability across healthcare systems.





## Revolution™ Frontier Gen 3 helps create a resilient tomorrow

Our Revolution™ Frontier Gen 3 CT and its services help ensure that radiology professionals and the patients they serve have the technology necessary to create a sustainable and resilient tomorrow.

### Reducing environmental impact

- >87% of materials used in the system are recyclable.
- Our CT systems are built in scalability and upgradability to advance clinical capability and help prevent technology obsolescence.
- 94% to 96% of most systems are reused, refurbished, or recycled, extending the lifetime of each product.
- 25.4% of this product's service spare parts are harvestable or repairable.

### Improving outcomes

- Elevate the entire imaging chain powered by deep learning.
- Meet your needs today and in the future with efficiency and sustainability.
- Go beyond dual energy with Spectral CT.





# Contributing to a healthier planet

**More than half of the healthcare sector’s climate footprint, approximately 53%, is attributable to energy use.**<sup>1</sup> As a result, we have strengthened our commitment to environmentally conscious design and sustainable practices across our product manufacturing, sourcing, distribution, installation, and service operations. This includes improving energy efficiency, optimizing the use of limited or rare materials, providing digitally enabled and remote predictive and maintenance service throughout the product lifespan, and offering refurbishment and recycling options at the end of product life.

**GE Healthcare environmental management system is ISO 14001 certified**

Our production and service operations align to ISO 14001 standards.

## Materials

GE Healthcare reviews the environmental aspects of the material supply used within our products to increase recyclability and decrease the use of hazardous substances, when possible.

### Recyclable

We’re committed to high recyclability of our products and reuse when possible.

>87% of materials used in the system are recyclable.<sup>2</sup>

When we build a replacement X-ray tube for the Revolution Frontier Gen 3, 47% of the mass of the X-ray tube is reused, enabling savings on energy and natural resources.

### Reduce the use of hazardous substances

EU RoHS directive 2011/65/EU

REACH (EC) 1907-2006

The Revolution Frontier Gen 3 gantry design does not use lead material as counterweight, but instead uses steel.

This product contains other similar design features with the goal of improving production worker safety and reducing environmental impact.

## Manufacturing

Through our environmental reviews, we also focus on implementing renewable energy and reducing waste.

### Renewable energy

More than 1858 MWh per year of energy is generated with GE on-site solar renewable energy at the Waukesha, Wisconsin, CT production facility. This large solar array is located on both the roof and surrounding grounds.

<sup>1</sup> Health care climate footprint report | Health Care Without Harm (noharm-uscanada.org)

<sup>2</sup> Data on file.



## Packaging and distribution

GE Healthcare imaging equipment has a robust and multi-sourced supply chain for systems and spare parts across all product portfolios.

### Improved packaging

The packaging materials consist of wooden pallets with cardboard overpack and plastic vibration absorbers.

Wood: 73%

Cardboard: 24%

Plastic: 3%

Total package weight: 445kg

### Product transportation<sup>3</sup>

Air transport: 47%

Ocean transport: 10%

Truck transport: 43%

Rail transport: Also supported for Revolution Frontier



**53% product transportation utilizes low environmental impact modes<sup>3</sup>**

## Product utilization

Our imaging products are designed to help enable energy efficiency through dedicated features and advanced applications to reduce the environmental impact.

### Ergonomically designed

#### Patient setup and positioning

Revolution Frontier Gen 3 simplifies the entire patient setup process. Innovative auto centering technology is at the core of our improved scan experience, but it starts with related protocol recommendations. With the click of a button, automatically position your patient at the start location of the scan with AI-based Auto Positioning.

#### Reduce staff burden

Ensure consistency and ease of use for the technologists by enabling them to select protocols in the CT scan room, while the landmark detection accurately maps landmarks and defines the scan range. Auto Positioning and Auto Center can help free up your technologists, so they can focus on making your patients feel more comfortable.

For flexible options, the Remote Control Panel allows the technologist to make table position adjustments or set a landmark from the console. The feature is achieved through three additional in-scan-room cameras and can also be used to minimize the risk of contamination by avoiding unnecessary trips to the scan room during a pandemic.

<sup>3</sup> The values provided are based on product transportation and distribution during 2021.



## Product utilization (Cont.)

### Guidance for product utilization

Instructions are provided for use of the equipment to minimize the environmental impact during installation, use, and operation.

### Reduce energy consumption during use

Revolution Frontier Gen 3 is designed for less heat generation: up to 80% in one DAS/Detector.<sup>4</sup>

Turning off the system after daily use may save energy consumption by up to 40%.

### Power consumption<sup>5</sup>

Scenario – Off: 41 kWh  
Scenario – Idle: 68 kWh

<sup>4</sup> Compared with previous generation system.

<sup>5</sup> Per COCIR 2015 self-regulatory initiative for medical imaging equipment per a 24-hour period, with 12 hours of active day and 12 hours night scenario as noted (Off, Idle).



## End of product life

We are increasingly putting our retired products' materials back into the supply chain to maximize efficient use and minimize unnecessary waste. This circularity model enables our imaging products to extend their clinical impact through longer lifespans while reducing the environmental footprint. Additionally, we offer our customers partnered support for upgrades and services throughout a product's lifespan to maintain optimal performance and help drive better patient outcomes.

Our refurbishment programs involve an extensive inspection and testing process, designed to bring equipment back to its original certified manufacturing specifications. If the system is not suitable for refurbishment, eligible parts are harvested for reuse after quality and performance testing, while the rest are returned to dedicated recycling facilities.

### Guidance for end of lifecycle

Equipment instructions are provided to minimize the environmental impact for disposal or recycling.

### Upgradeable hardware and software options are provided as a solution to extend the product lifespan.

Revolution Frontier Gen 3 offers multiple upgrade options to extend the lifespan of the system, including upgrading from 64 to 128 slices.<sup>6</sup>

Software upgrades are also available, such as TrueFidelity™, our deep learning image reconstruction. Utilize Smart Subscription to help keep your software up to date.

Console upgrades introduce the latest hardware into our scanner, like NVME SSD and RTX GPUs, to build the most advantaged hardware platform for smooth workflow and AI software.

Accessories like Bar Code Reader and Child Positioner also can be integrated to meet extending requirements.

### Parts harvesting and refurbishment options are provided to reduce waste and environmental impacts while extending imaging access to less advantaged regions.

CT system parts are eligible for assessment through the refurbishment program, in which they are assessed for refurbishment, harvesting, or recycling at the appropriate time in the lifespan.<sup>7</sup>

94% to 96% of most systems are reused, refurbished, or recycled, extending the lifetime of each product.

25.4% of a product's service spare parts are harvestable or repairable.

### Waste reduction

This system is in accordance with Waste Electrical and Electronic Equipment (WEEE) regulations.

<sup>6</sup> The 128 slices is achieved by software feature overlap recon.

<sup>7</sup> Products within MR, CT, Nuclear Medicine, and PET/CT are eligible for refurbishment, although whether a system is actually refurbished versus harvested for parts or otherwise recycled or reused is dependent on the state of the system when GE Healthcare takes possession of it. Data on file.





## Ge Healthcare product stewardship commitment

For more than 20 years, GE Healthcare's GoldSeal program has played a vital role in reducing medical imaging equipment waste by promoting and enabling the reuse of equipment and parts from de-installed imaging systems. After undergoing an extensive inspection and testing process, GoldSeal equipment is refurbished to meet the original system specifications. Buyers of GoldSeal MRI, CT, or PET/CT products can save on the acquisition costs associated with buying new equipment. Machines deemed unsuitable for GoldSeal refurbishment are dismantled at end of life, and after successfully passing acceptance testing criteria, specific parts are harvested for reuse. Where harvesting is not appropriate, GE Healthcare recycles about 94% to 96% of most systems. In a typical year, GoldSeal refurbishes approximately 8,000 pieces of imaging machines and ultrasounds.

### NEW PRODUCT PURCHASE OR LEASE

#### GOLDSEAL PROGRAM: LEASE RETURN PRODUCT OR BUYBACK

- Comprehensively refurbished and/or remanufactured
- Updated with new software
- Recertified following all FDA requirements
- Equipment backed with 1 year, same-as-new equipment warranty

#### RECLAIM FOR PARTS AND MATERIALS

Identify parts for refurbishing and/or repurpose

#### END OF LIFE

About 94% to 96% of most systems are recycled, substantially reducing the volume of waste en route to landfills.



## Digitizing healthcare through transformative innovations for a resilient tomorrow

We are committed to investing in digital capabilities that help accelerate clinical decision making, optimize imaging operations, and drive efficiencies in exam workflows, all of which can improve patient outcomes. Enabling digital transformation will further enhance our predictive and maintenance service operations for the life of your products.

**We are also dedicated to driving a more resilient and sustainable future in healthcare.** Many factors, including the pandemic, climate-related weather disasters, and supply-chain issues amplified this need. Managing operations through these challenges requires resilience and perseverance.

### Advancing clinical outcomes

Advanced applications and cutting-edge AI tools provide personalized data to drive actionable insights, helping healthcare professionals make fast, accurate clinical decisions for care pathways.

#### **Gain actionable clinical insights quicker for earlier diagnosis**

Whenever there is residual motion in the coronary arteries, let SnapShot Freeze 2 go to work in further reducing the motion within the vessel. Minimize the motion within the structures of the heart and further improve image quality of anatomy that is constantly in motion.

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A reproducible method for segmenting the liver guided workflow, DL Hepatic VCAR can help in assessing the complete liver anatomy to assist in surgical planning and lesion evaluation.

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Musculoskeletal studies are made simpler with automated spine labeling feature DL Bone VCAR.

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Automate detection of lung nodules thanks to Lung VCAR.

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Review all CT series acquired for acute stroke workup with exceptional flexibility and simplicity with the comprehensive workflow solution FastStroke.





## Advancing clinical outcomes (Cont.)

### Keep your imaging equipment up to date with advanced clinical applications

Smart Subscription helps you avoid obsolescence by providing the latest upgrades and updates to your CT capabilities as soon as they're available. Instead of a CT that starts to "fall behind" technologically from the time you order it, you get a CT that's always getting better.

### Help improve patient outcomes with improved image quality

Up to 82% lower patient dose with ASiR-V™ with the same image quality.<sup>8</sup>

### Drive advancements with precision health

A powerful, high-performing, reliable CT designed to maximize every step of the CT workflow from referral to report, setting a new standard in CT operations with breakthrough one click AI-based Auto Positioning.

<sup>8</sup> Compared to standard filtered back projection (FBP) reconstruction. In clinical practice, the use of ASiR-V may reduce CT patient dose depending on the clinical task, patient size, anatomical location, and clinical practice. A consultation with a radiologist and a physicist should be made to determine the appropriate dose to obtain diagnostic image quality for the particular clinical task.



## Optimizing imaging operations

Our AI-based and advanced digital solutions are designed to increase efficiencies across the radiology spectrum without increasing the administrative and training burden on radiologists and technologists.

### **Increase productivity and consistency**

Remotely upload, edit, and monitor protocols for multiple service lines, including CT and MR, to deliver consistent image quality and optimal patient care with Imaging Protocol Manager.

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Imaging Insights — data intelligence and actionable insights across your radiology department to increase productivity

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Reduce repeat scans and ensure accuracy through live support by leveraging centralized expertise and standardizing care across the enterprise with Digital Expert.

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Remote diagnostics and predictive analytics solutions to streamline your needs:

- Enable software updates, reducing the need for on-site support.
- Secure serviceability, review, and system troubleshooting
- Training and support





## Optimizing imaging operations (Cont.)

### Reduce downtime

OnWatch™ and Tube Watch™ enable predictive services, which digitally track key system metrics and detect any anomalies. It sends proactive alerts to a remote engineer who either makes the repair online or schedules a service call.

- 75% reduction in tube-related downtime
- 41% reduction of overall system unplanned downtime
- 36% of total onsite labor is planned<sup>9</sup>

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Utilizing a partial system UPS and RAID 1 Disk Array in system hard drivers, RAID 10 Disk Array in scan data storage can help maintain user productivity and improve system reliability. It can also help to reduce service costs and prevent system downtime.

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### Cybersecurity

GE Healthcare's Design Engineering Privacy and Security (DEPS) process follows GDPR, HIPAA, NIST 800-53, NIST 800-30, ISO 27001, and NIST CSF requirements.

<sup>9</sup> Based on a study made out of 2535 systems across Japan, EU, and USCAN during 2020. Results may not be typical of every customer's performance. For more detail, refer to CT Predictive Service Brochure, GE Healthcare JB15760XX.



## Enabling intelligent exam workflows

Intelligent automation features help to drive consistency, enable fast, easy exams, and improve workflow with fewer resources, all while achieving similar or improved outcomes.

### Reduce setup time

Streamline the patient setup with Auto Positioning. Starting with smart protocol selection and automated centering, simply click a button to automatically position your patient at the start location of the scan.

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### Ease of use

Auto Positioning provides consistency and ease of use for the technologists with one-click, hands-free automation.

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### Cleanability

Our equipment is designed to be cleaned and disinfected easily. We continue to test and approve new cleaning and disinfecting agents. Visit [Cleaning.GEHealthcare.com](https://www.gehealthcare.com/cleaning) for updates.





**Building a healthy world to help enable better patient outcomes.**

GE Healthcare is a member of COCIR, the European Trade Association representing the medical imaging, radiotherapy, health ICT, and electromedical industries.<sup>10</sup>

<sup>10</sup><https://www.cocir.org/about-cocir/members.html>

*Not all products or features are available in all geographies. Check with your local GE Healthcare representative for availability in your country.*

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