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# uMI 550

**Digital.  
Attainable.**

## ABOUT UIH

United Imaging Healthcare Co., Ltd. develops and produces a full portfolio of advanced medical imaging and radiotherapy equipment and offers medical IT and intelligent solutions. Founded in 2011 and headquartered in Shanghai, the company has subsidiaries and R&D centers across China, US, and other parts of the world. Half of its 3,300 employees work on research and development. To date, more than 3,000 hospitals worldwide are using UIH products.

To learn more, visit <https://www.united-imaging.com>

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# uMI 550

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uMI 550 makes the state-of-art digital PET technology attainable to more customers. With the unique Integrated Light Guide Digital PET detector, uMI 550 achieves both high resolution and high sensitivity. The 80-slice CT system with Z-Detector enables diagnostic CT images with high spatial resolution and improved low contrast detectability.

| *Clarity for Imaging*

| *Intuitive Workflow for Efficiency  
and Personalized Care*

| *Reduced TCO for Operation*



# 24cm Axial FOV PET with Integrated Light Guide Digital Detector



## ILG (Integrated Light Guide)

Improves light collection efficiency and time resolution to achieve exceptional image quality.



## SiPM (Silicon Photomultiplier)

Increases quantum efficiency to reduce signal loss and improve image quality.



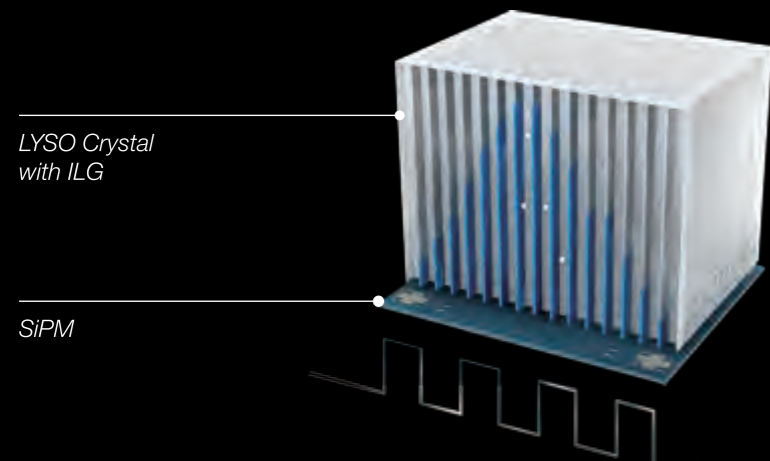
## Industry Finest Crystal Pixels\*

Enhances image resolution. LYSO crystal material increases the light yield and, along with ILG, enables Time-of-Flight for better image clarity and less scan time.



## Modular Design

Remarkable improvements in system reliability and serviceability.



\* Based on competitive literature and internal measurements available at time of publication

# 80-slice CT with Z-Detector



## Fully Integrated Design

Innovative Through-Silicon-Via (TSV) Technology.

Centimeter to micron level signal conducting path shortening.

Ultra-low noise signal output.

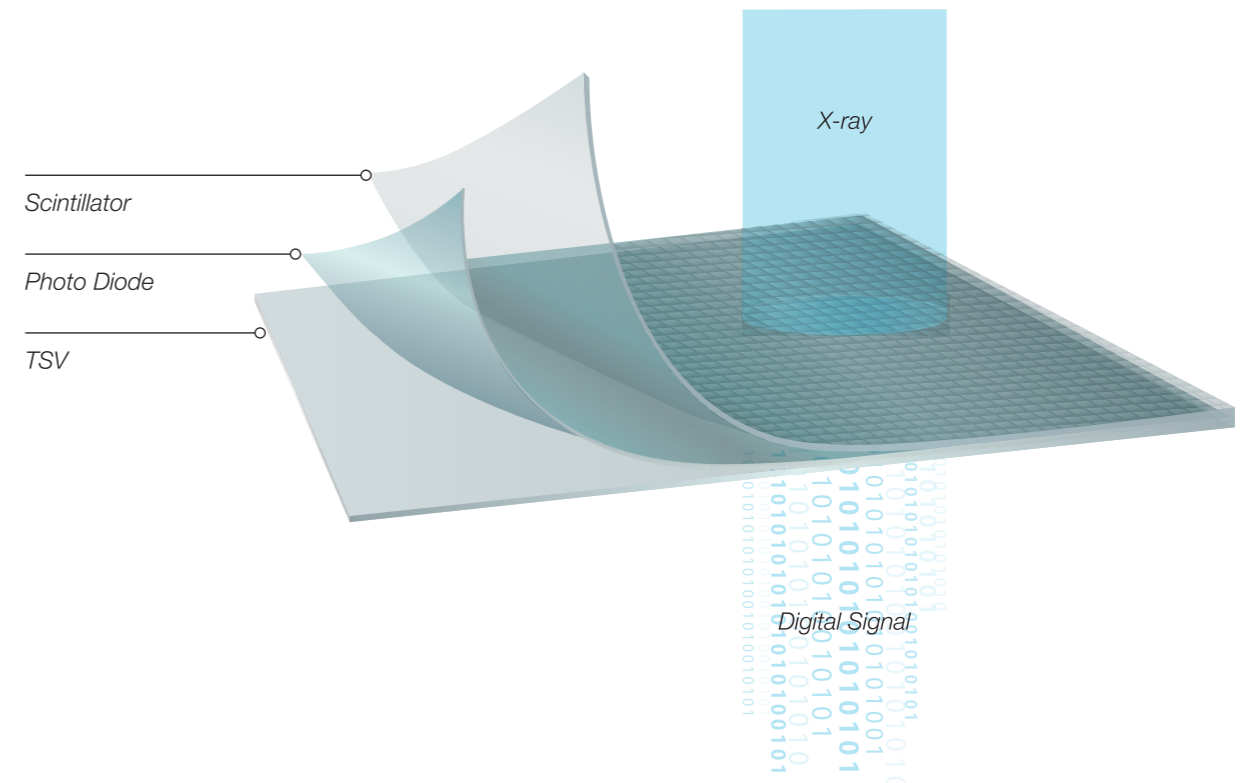


## 0.55mm Pixel Size

0.55mm high resolution acquisition in all FOVs and collimations.

22mm coverage in Z-plane.

34560 large number of detector elements.

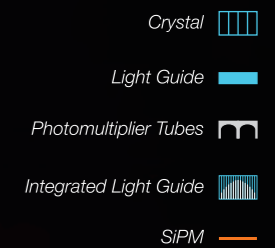
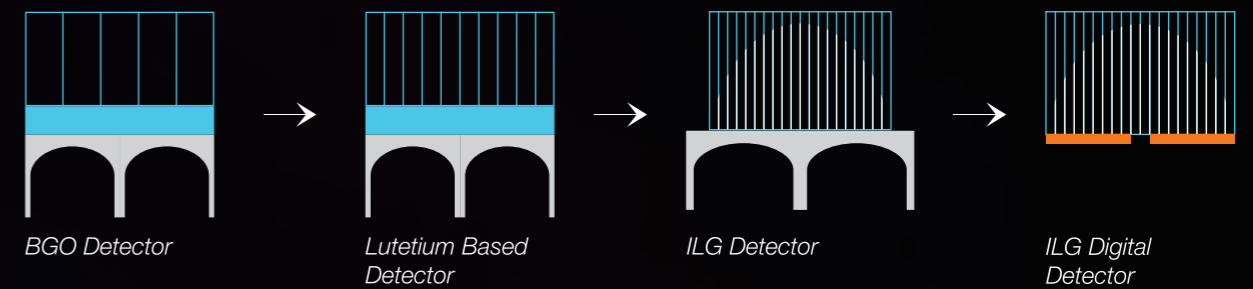


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# Clarity for Imaging

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## PET Detector Milestones



## Clarity for Imaging · PET

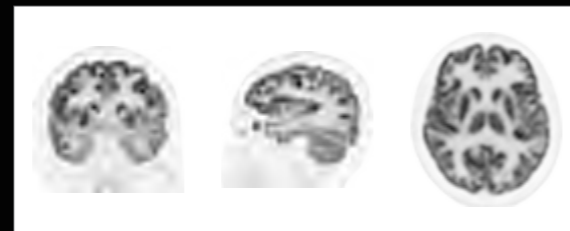
### 2.76mm Crystal Pixels & 2.9mm NEMA Resolution

Improved quantitative accuracy and enhanced detectability of small lesions.

With point spread function (PSF) high-definition iterative reconstruction technique, uMI 550 is able to further enhance spatial resolution to 1.4mm.



conventional resolution PET-CT



uMI 550

### 600x600\* Full FOV Reconstruction Matrix

Full FOV high-resolution reconstruction. Reduce partial volume effect for improved quantitative accuracy.



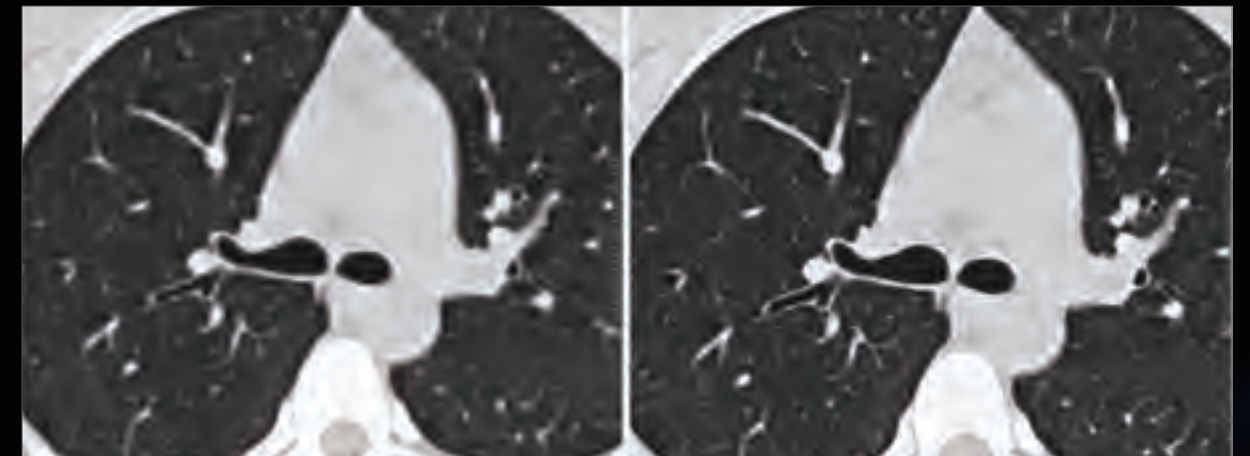
3.5mm lesion (arrow)



## Clarity for Imaging · CT

### 0.55mm Acquisition Element & 1024x1024\* HD Reconstruction Matrix

The fine acquisition element and high-definition reconstruction matrix reveal the fine details of distal vessels, inner ear, small joints and detailed lung structure, etc.

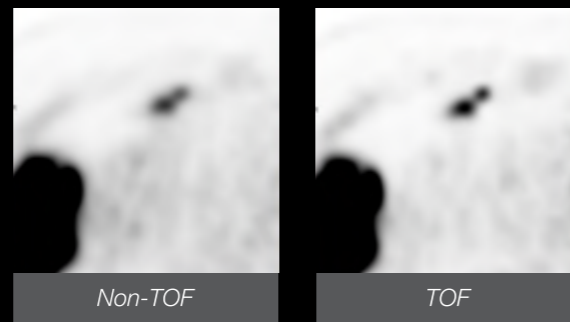


Lung images reconstructed with different matrices (FOV: 180mm)  
Left: 512x512 matrix. Right: 1024x1024 matrix.

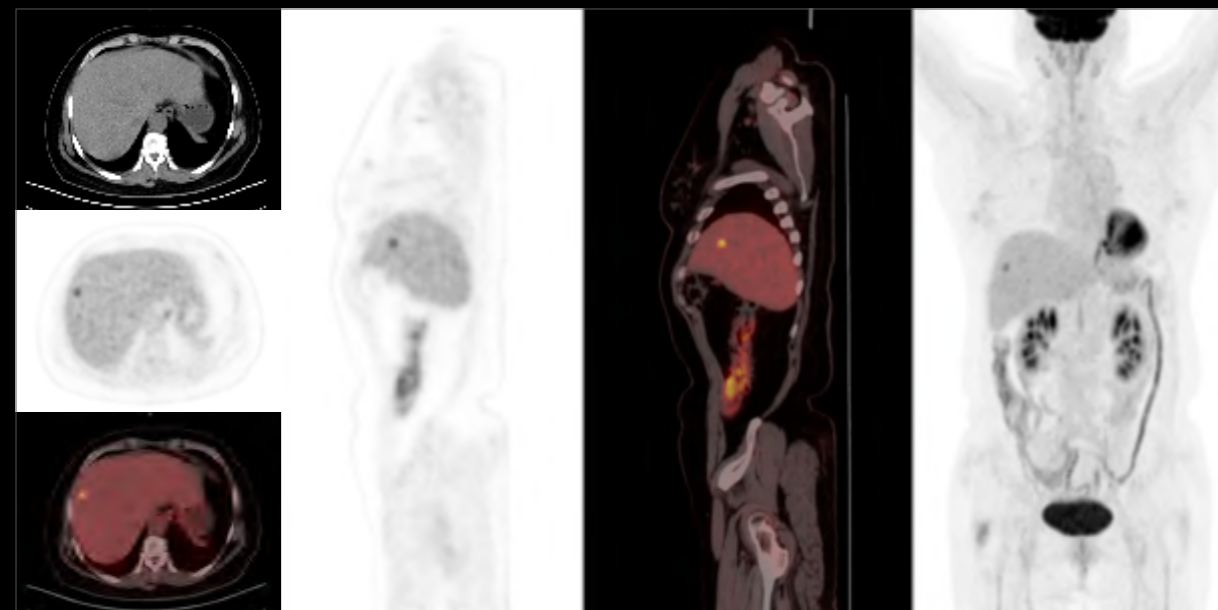
## Clarity for Imaging · PET

### HYPER UVT\* TOF Technique

With more precise localization of annihilation photons, the Time-of-Flight (TOF) technology accelerates the image convergence with better contrast and reduced image noise.



Better clarity for TOF image

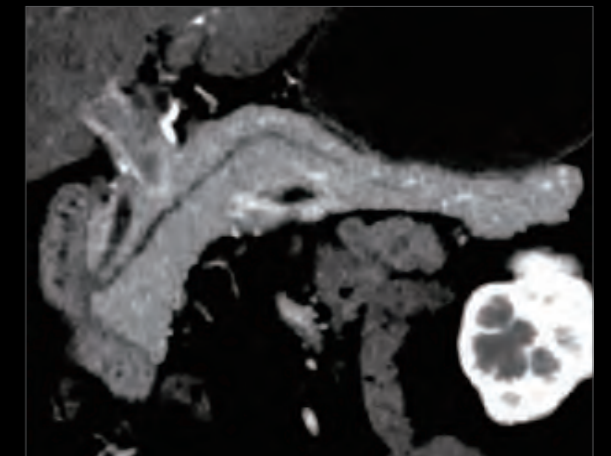


Small metastatic lesion

## Clarity for Imaging · CT

### Ultra-low Noise Design

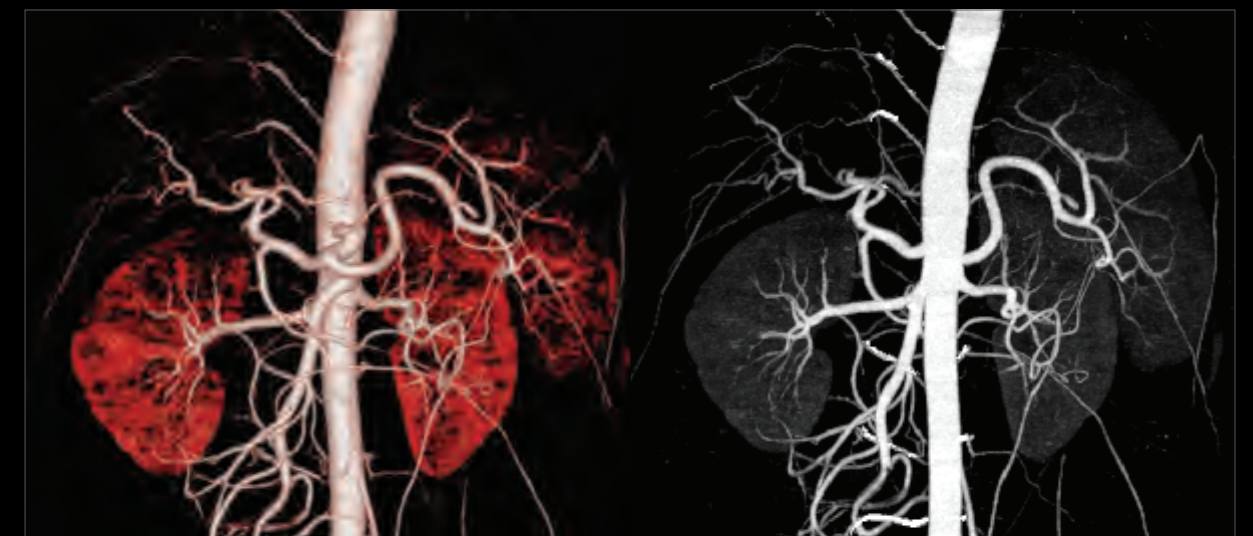
The ultra-low noise detector design enables improved low-contrast-detectability (LCD) of the CT images, such as better visualization of the grey-white matter differentiation and low contrast lesions.



Clear pancreatic duct and pancreas boundary

### 70kV Scan Mode

The low kV scan mode combined with high-performance Z-Detector provides exquisite details of vascular structure in CT angiography.



Contrast enhanced vascular details seen with 70kV scan mode

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# Intuitive Workflow for Efficiency & Personalized Care

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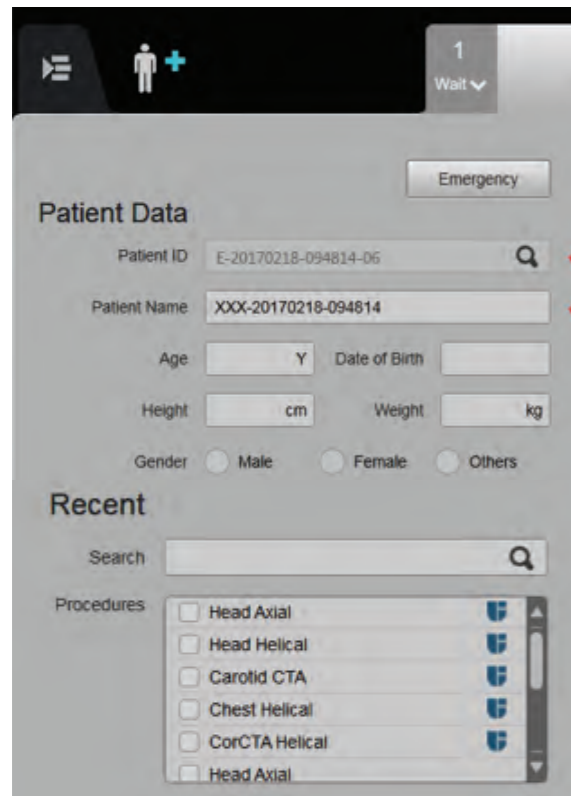
# Intuitive Workflow

The intuitive workflow of uMI 550 not only improves the efficiency of routine PET-CT scans but also provides individualized solutions for different body parts, body sizes and scan protocols.

## Fast Patient Registration

Fast protocol selection based on frequency of use.

Complete patient registration within a few clicks.



## EasyScan

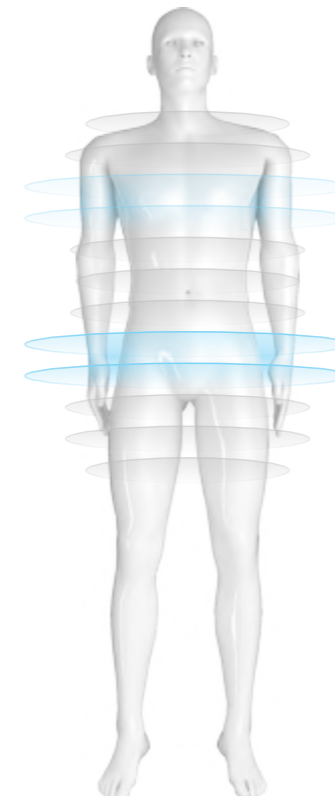
Intelligently plan the exam for individual patients.

Automatically adjust the CT scan range, recon FOV and PET bed number /overlap.



## uDose

Automatically generates an optimized 3D dose distribution plan based on anatomic information.



## EasyLogic

Anticipates the operator's needs and prepares itself to reduce delays.

Minimize wait time between operations.

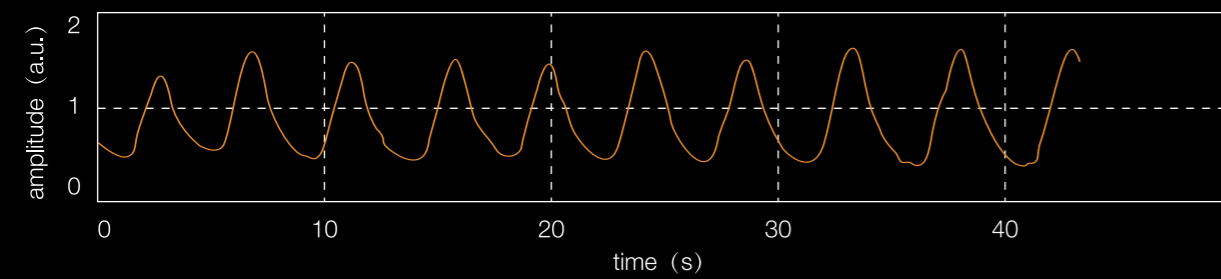


# Intelligent Artifact Reduction

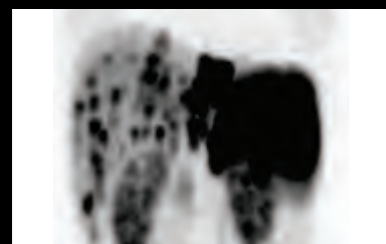
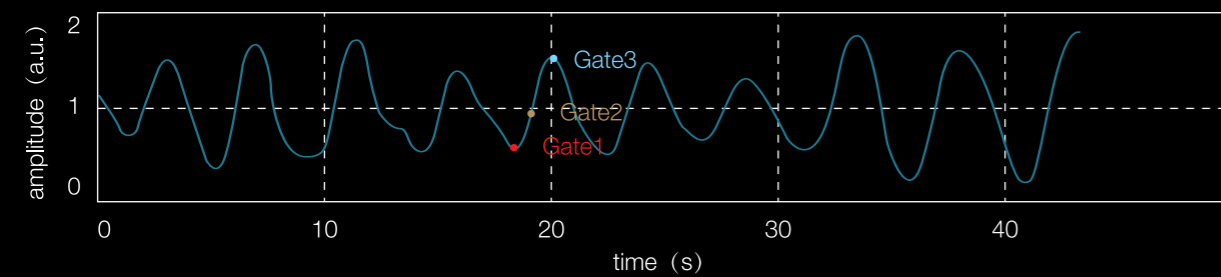
## Digital Self-gating Technology\*

Without external gating device, the intelligent digital self-gating technology automatically detects respiratory motions.

Device-gated acquired respiratory curve



Data-driven respiratory curve



Static



Device-assisted Gating



Digital Self-gating

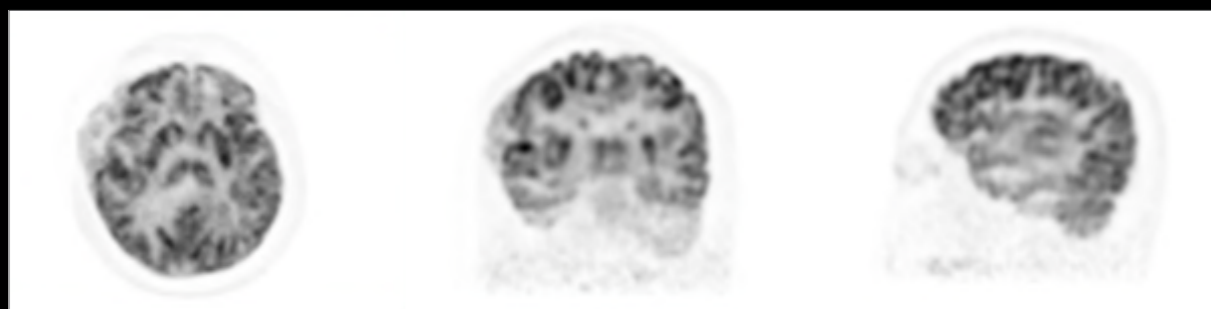
\* Optional



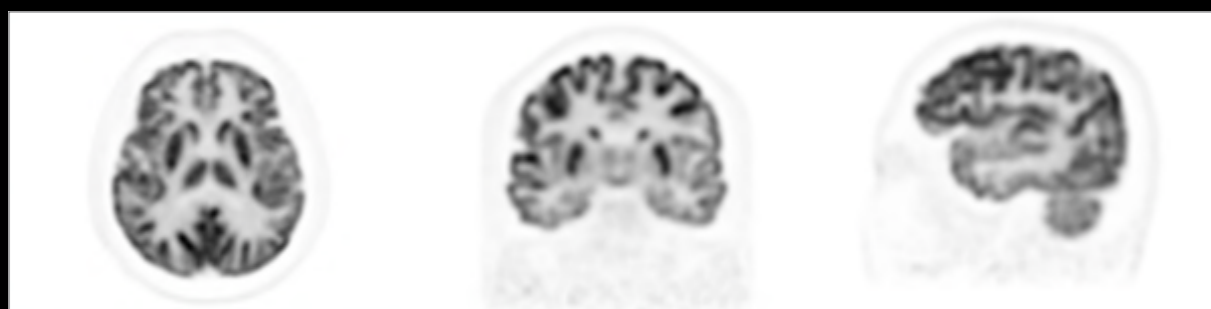
# Intelligent Artifact Reduction

## Head Motion Compensation\*

Without external devices, data-driven motion correction algorithm detects motion from list-mode data during data acquisition and corrects motion blurring accordingly.



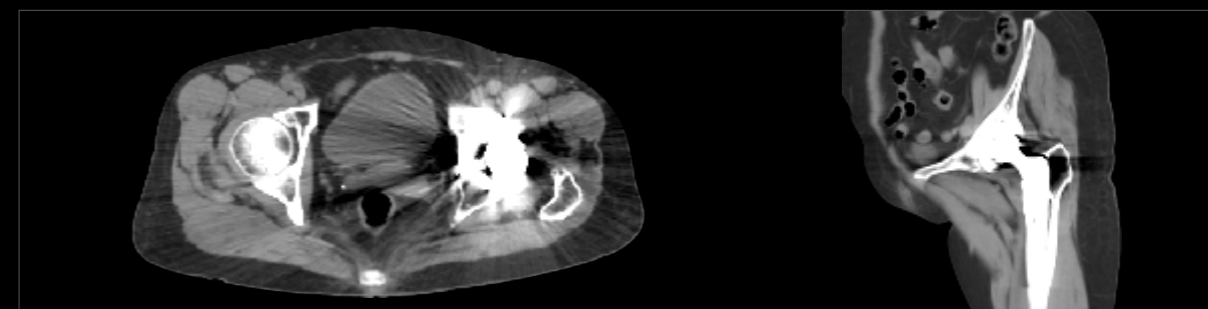
*Before motion compensation*



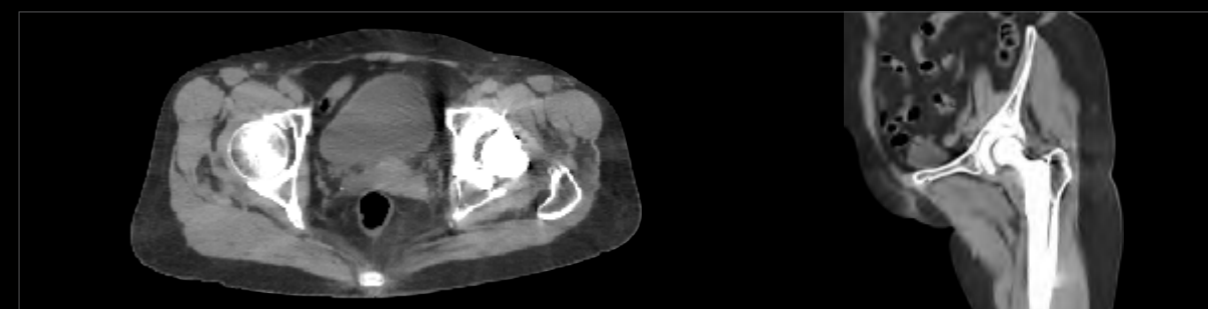
*After motion compensation*

## Retrospective MAC\*

Metal Artifact Correction (MAC)\* reduces metal artifact when imaging patients with metal implant while preserving diagnostic details. It also contributes to more accurate attenuation correction during PET reconstruction.



*Before MAC*



*After MAC*

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# Reduced TCO for Operation

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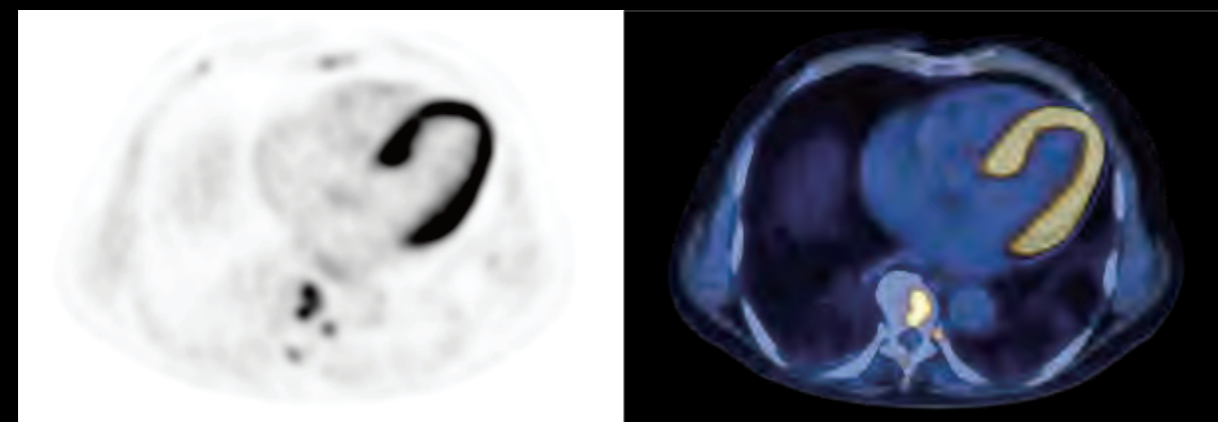
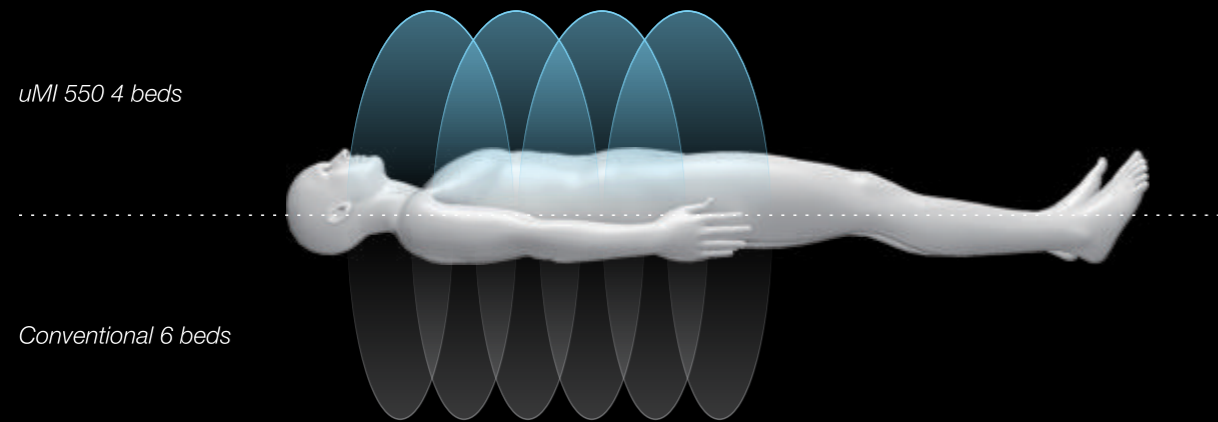


## Increase Patient Throughput

### 240mm Axial FOV & 11cps/kBq System Sensitivity

To make our partner succeed in running a long-term business in a competitive healthcare market, uMI 550 offers a comprehensive solution package to bring down TCO (total cost of ownership).

With large axial FOV and high system sensitivity, uMI 550 can finish a whole-body scan in 4 beds within 8 minutes. High speed scan increases patient throughput and system utilization rate while high sensitivity boosts data acquisition performance and enables low dose PET scans.



0.085mCi/kg

## Automated Quality Control Programs



### Automatic Daily QC

No radioactive source required.

Automatically scans for background count rate, voltage power supply, temperature and humidity.

Single-click for CT detector channel check and air calibration.

Reduces staff's exposure to radiation sources.



### Easy-to-use NEMA Tool

Workflow-driven NEMA testing with automated analysis and report generation.



### Convenient Periodic Full QC

Supports both liquid  $^{18}\text{F}$  and solid  $^{68}\text{Ge}$  sources.

Lower storage condition requirement for sources. The thorough calibration procedures help to ensure accurate and consistent clinical performance over time.

User-oriented design improves the efficiency and success rate of the workflow. Parameters including spatial resolution, sensitivity, noise equivalent count rate, scatter fraction, accuracy and IQ.

## Design for Operational Excellence



### Robust Thermal Environment

Built-in dual-zone cooling system maintains a stable temperature environment for consistent detector performance.



### Low-voltage Power Supply

The SiPM based detector design with low voltage power is more reliable than traditional PMT based design with high voltage power.



### Less Downtime

Modular detector design improves system reliability and reduces service time. Less system downtime with the redundant power supply design.



### uECO Green Mode

The energy-saving mode minimizes power consumption of the CT and cooling system without compromising the system performance.



### Integrated Oncology Application\*

uMI 550 offers a comprehensive solution package for tumor diagnosis and post-therapeutic evaluation on the operation console.



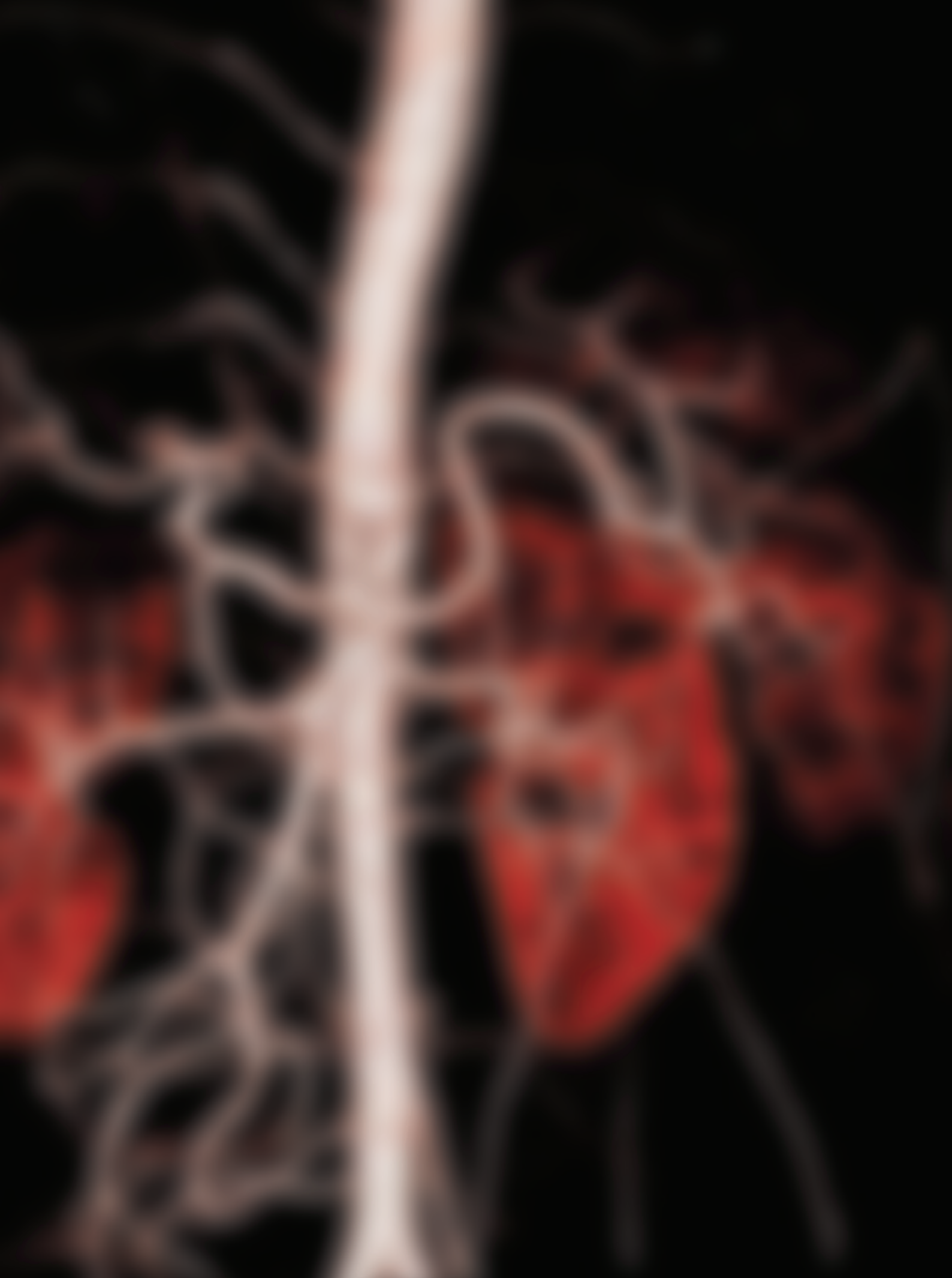
### Integrated Dynamic Analysis\*

Based on information from static, dynamic and gated scans, the console-integrated dynamic analysis tool enables efficient and accurate quantitative analysis on region of interest over time.



### Integrated Reporting Tools on Console

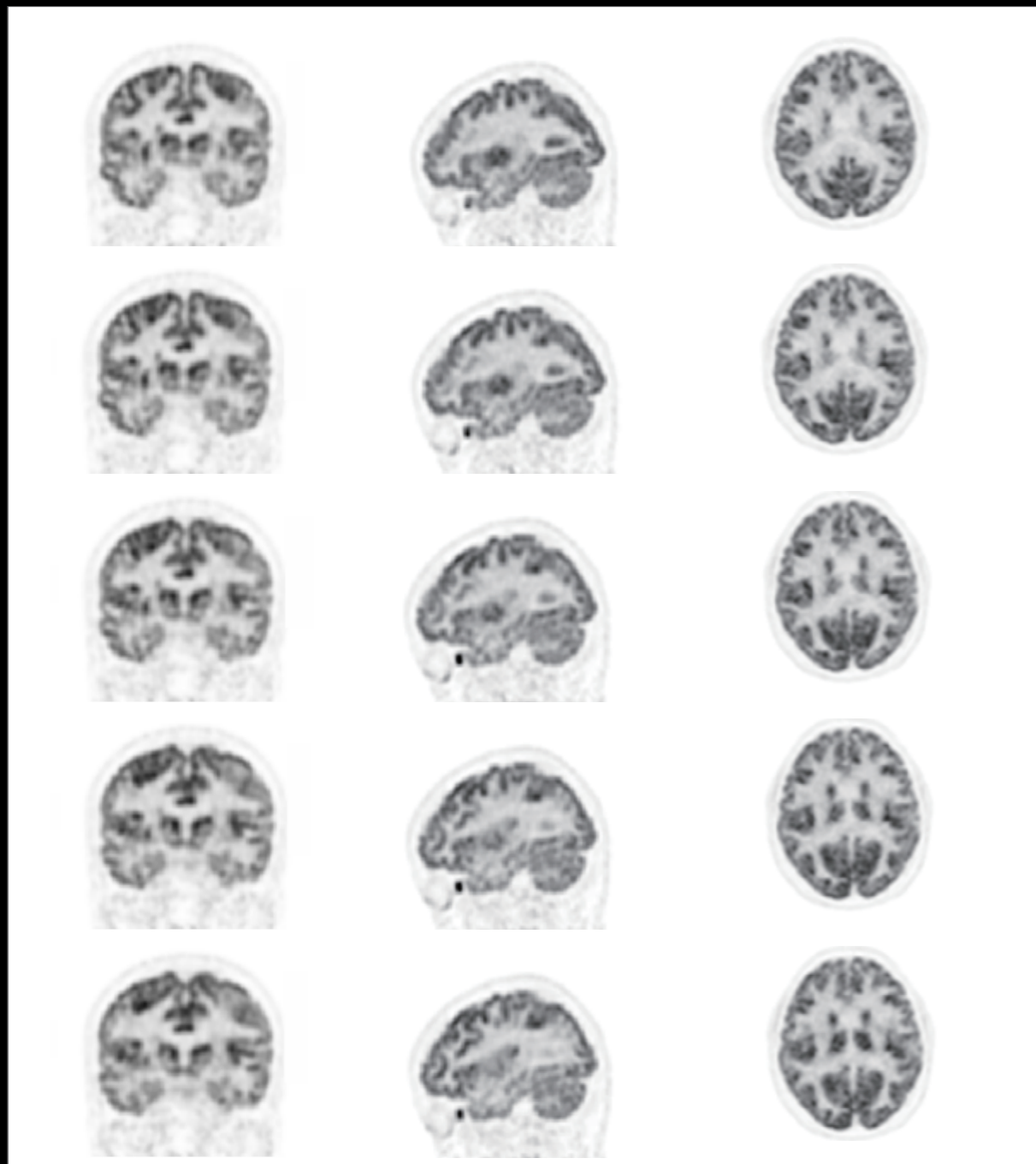
To assist healthcare providers manage reporting workload in an effective way, uMI 550 offers customizable report system with a comprehensive set of documenting and archiving tools. It reduces manual and duplicated operation procedures, shortens report turnaround time and fosters productive daily routines.



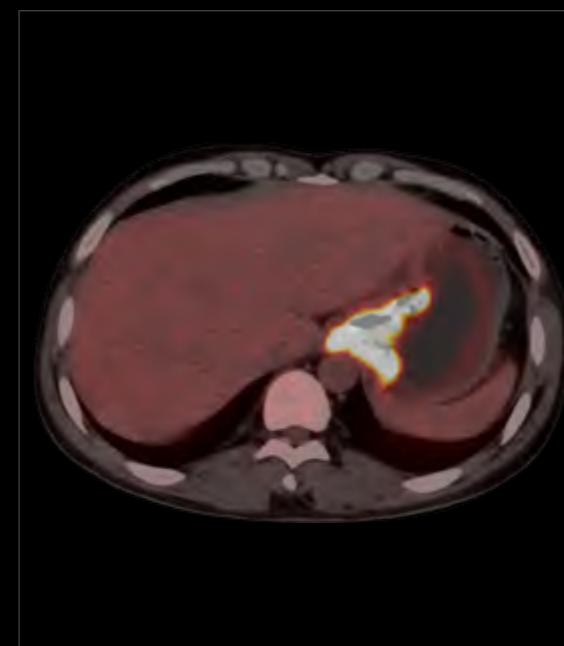
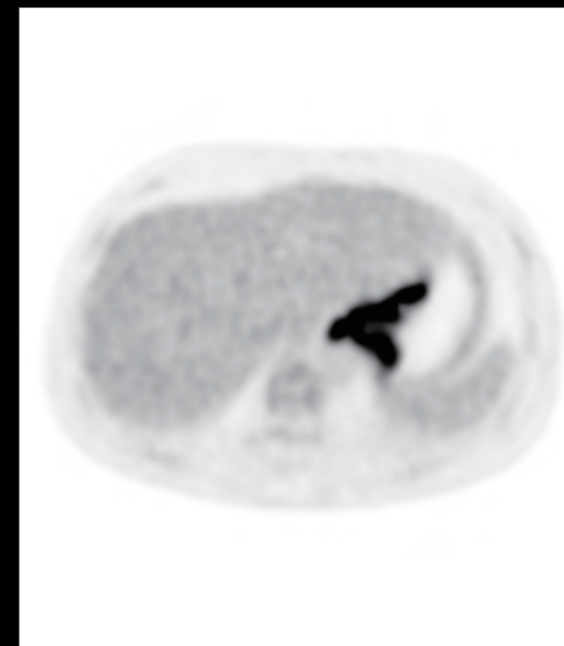
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## Clinical Images

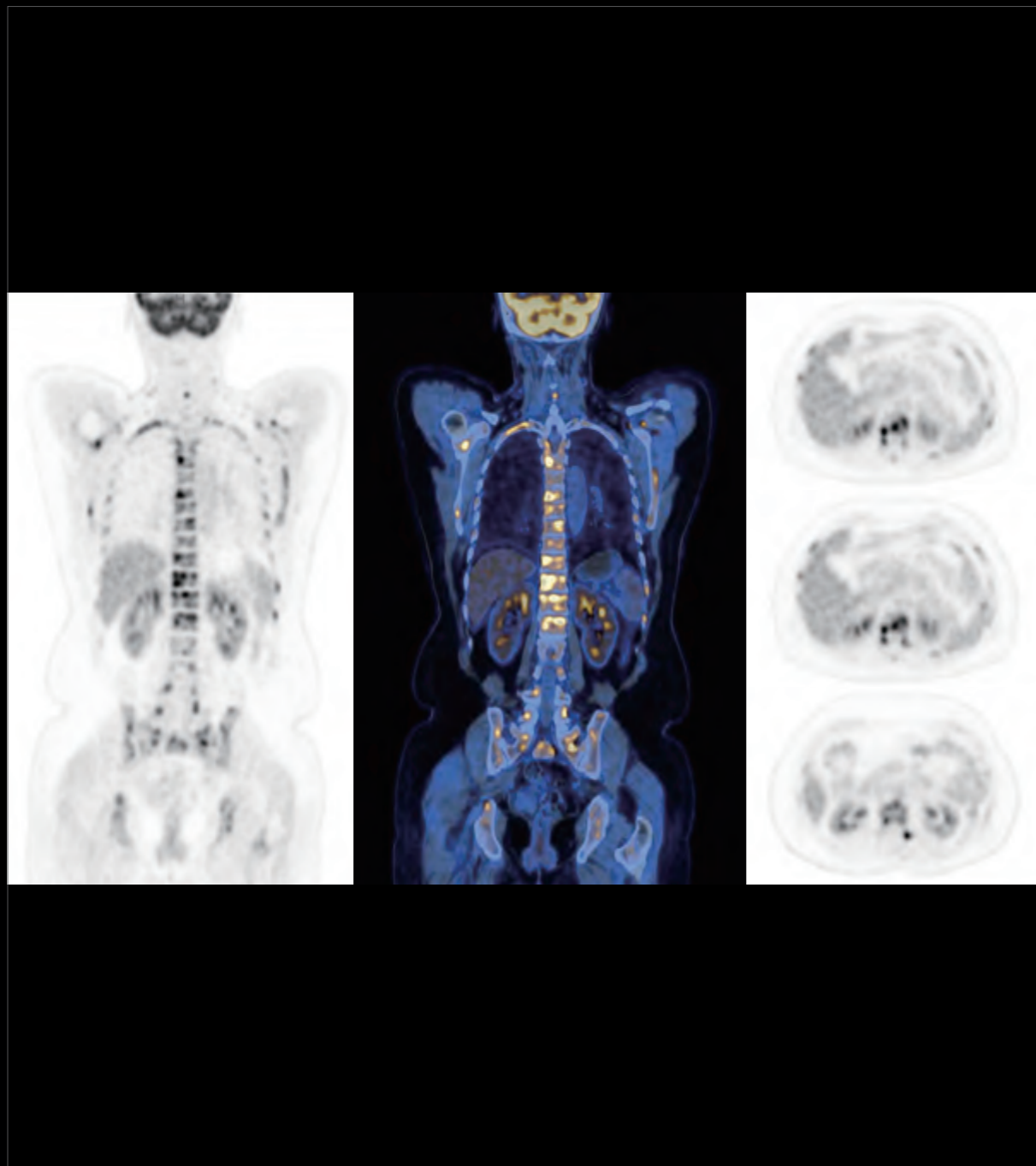
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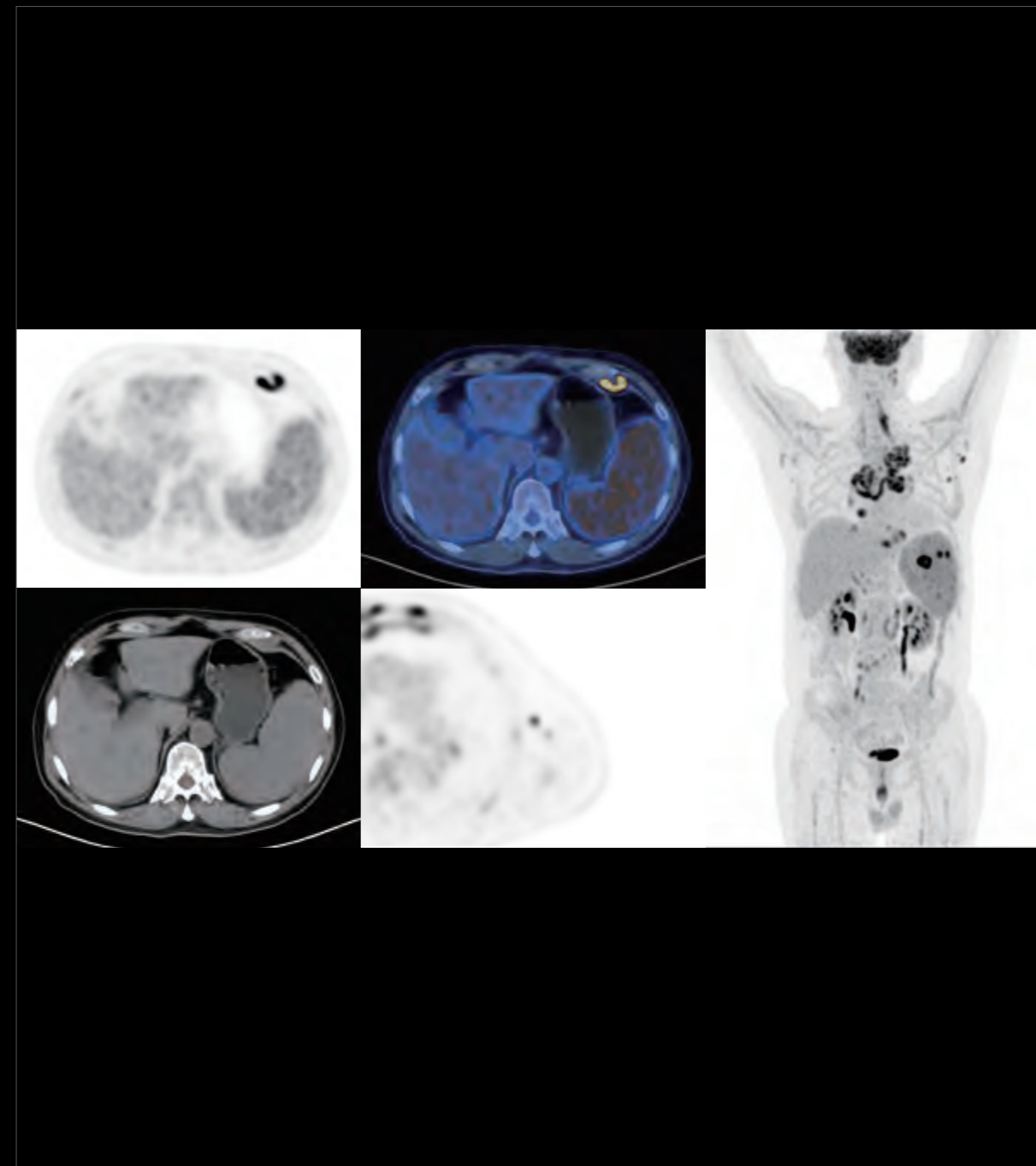
$^{18}\text{F}$ -FDG, 5.1mCi, BMI 19.9



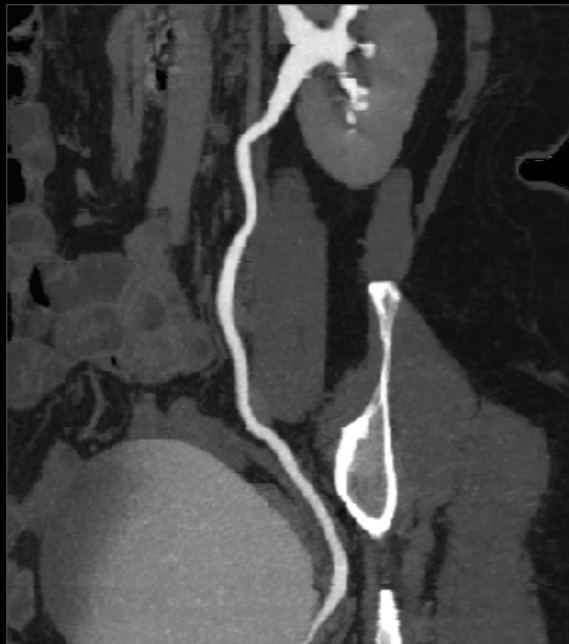
$^{18}\text{F}$ -FDG, 9.2mCi, BMI 25.0



*<sup>18</sup>F-FDG, 8.5mCi, BMI 27.3*



*<sup>18</sup>F-FDG, 5.9mCi, BMI 22.2*



CTU



Large Range CTA

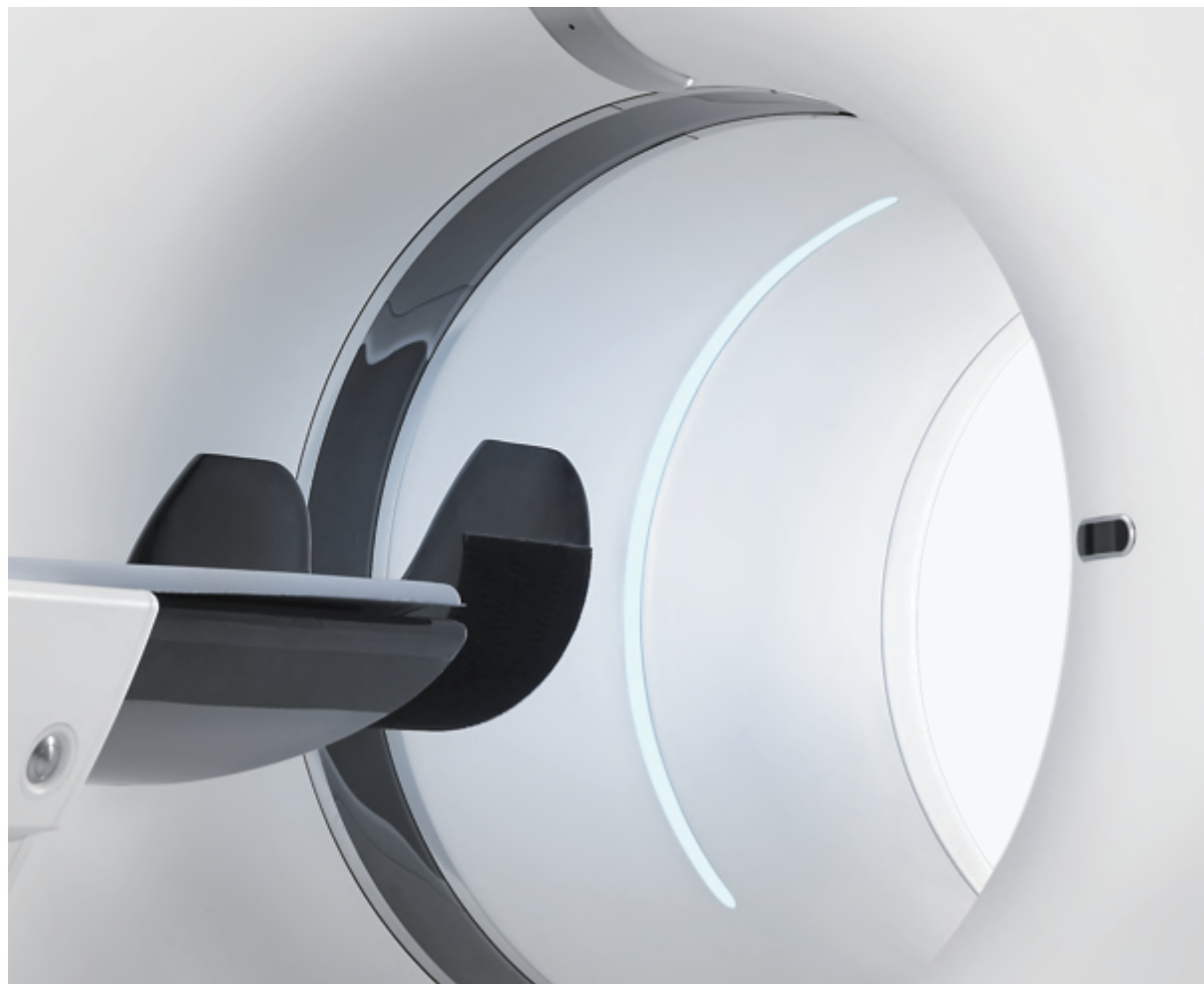


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# User in Mind Design

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Focusing on user experience, uMI 550 combines precise operation with a lightweight and artistic design. We bring aesthetic enjoyment and ease of use to the technology, delivering care, trust and respect through our design.



## Aesthetic Pleasure

Our design scheme integrates eastern aesthetics with minimalism, presenting a seamless fusion of traditional and modern styling.

## User-friendly Design

Our product design ultimately aims to deliver comfort, safety, efficiency, and ease-of-use. By applying ergonomic principles, we combine innovative design with perfect functionality in order to provide the best possible user experience, optimizing patient comfort during every examination.

## Sophisticated Craftsmanship

Driven by the tenets of lightweight and precision design, we fine-tune every technological detail to embody the spirit of craftsmanship in every product.