

Canon



Celesteion

PUREViSION Edition PET/CT

Putting Patient
Comfort First



System features that put patient comfort and safety first.

Oncology patients deserve the highest levels of safety and comfort during scans. Our Celesteion ^{PURE}VISION PET/CT system delivers extraordinary 90 cm wide bore and 70 cm true scan field of view for maximum comfort, access, and positioning.

Whether doing PET/CT, CT simulation or diagnostic CT, Celesteion's advanced and cost-effective technology helps allow for ease of use and efficient exams, improving clinicians ability to diagnose and treat oncology patients.

Improved Accuracy and Increased Comfort

Celesteion's unique patient-centric design delivers an enhanced patient comfort and care, without compromising on quality.

70 cm True Field of View

With oncology patients, accuracy is everything. To meet this need, Celesteion offers a true 70 cm PET and CT field of view (FOV). This allows clinicians to overcome the challenges of a small 50 cm FOV, delivering unique access for better image quality and more accurate treatment plans.

90 cm Wide CT Bore

Celesteion's wide bore is built for maximum patient positioning, comfort and peace of mind. The industry-leading 90 cm CT bore and 88 cm PET bore creates a feeling of openness and allows patients to be positioned for optimal treatment planning and setup. By making patients feel more at ease, clinicians can have more confidence in their images and diagnoses.



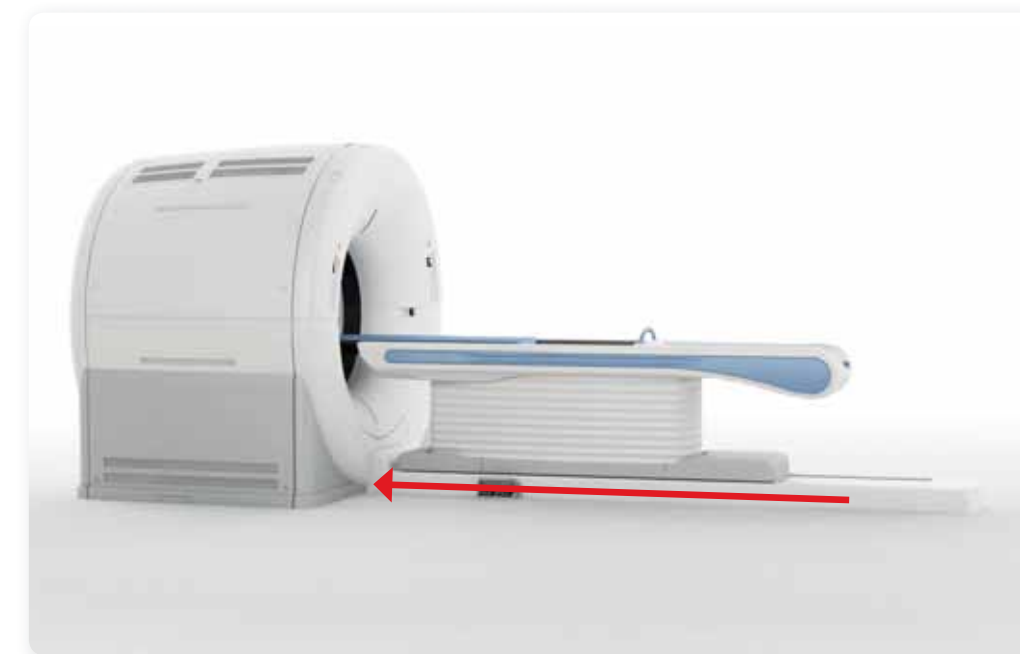
Versatile Couch

Our unique couch design makes it easy and safe to position your patients for a wide range of clinical needs. With the widest couch in the industry, the ability to lower the couch to 47.5 cm from the floor and the unique swift movement from the CT position into the PET position, makes the Celesteion PET/CT a versatile, multi-use scanner.



CT

- 90 cm CT bore
- 70 cm true FOV
- 85 cm EFOV
- 47 cm couch
- 0.5 mm \times 16 ^{PURE}VISION detector
- 32 slice coneXact reconstruction
- 1800 mm scan range
- Adaptive Iterative Dose Reduction (AIDR 3D)
- Single Energy Metal Artifact Reduction (SEMAR)
- NEMA XR-29 compliant



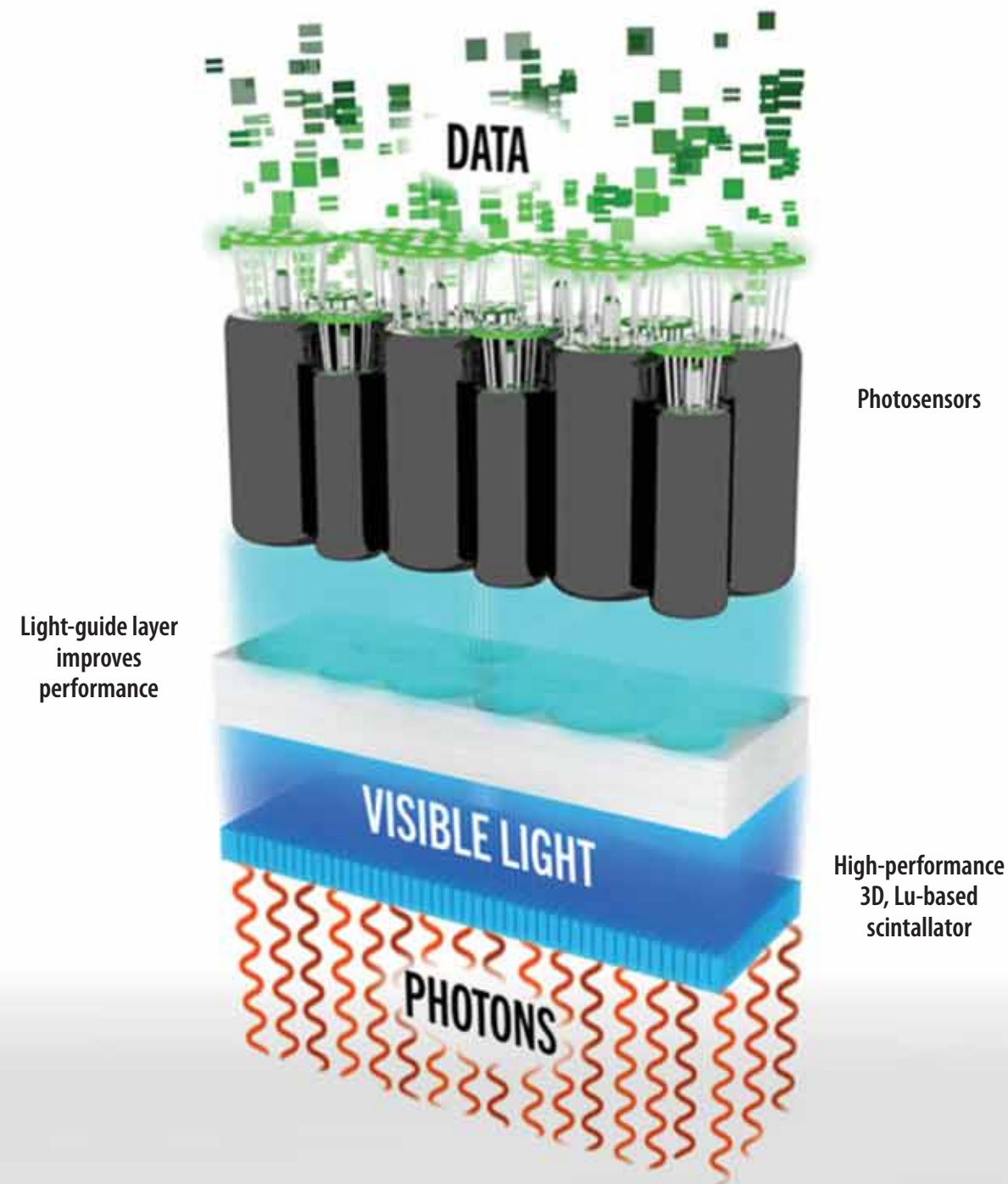
PET

- 88 cm PET bore
- 70 cm FOV
- 196 mm A-FOV
- 1,792 mm scan range
- 394 ps typical Time of Flight (TOF) imaging
- Point Spread Function (PSF) reconstruction

SURETRaCE PET Detector Technology

Celesteion's PET detector is designed specifically for a large-bore PET, creating the ideal conditions for accuracy. This advanced technology allows for:

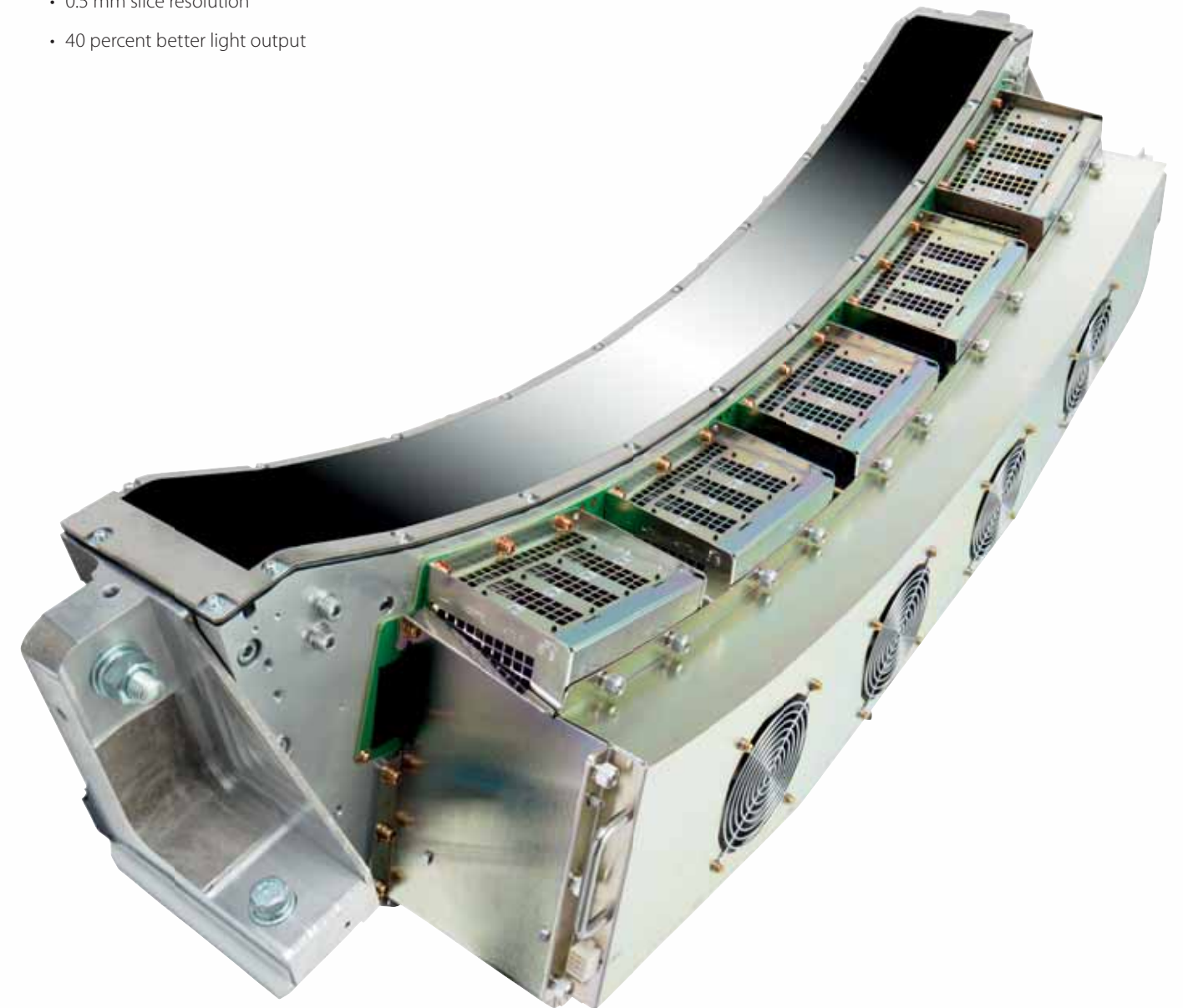
- Optimal use of Lu-based scintillator materials
- Unique module and scalable detector design of mixed PMT sizes
- Provides optimal timing performance
- Delivers high count rate performance with optimal scintillator and a unique mixed PMT design



PUREViSION CT Detector Technology

The PUREViSION CT detector is designed to optimize patient care and acquire high-quality CT images. The 16 row 0.5 mm elements balance image quality, speed and patient dose, delivering isotropic images in all planes. Clinicians and patients alike benefit from:

- More efficient use of X-rays
- 0.5 mm slice resolution
- 40 percent better light output



SURETRaCE Reconstruction Technology

Celesteion's unique imaging means better outcomes for patients. TOF and PSF create the optimal conditions for accurate and reliable scanning.

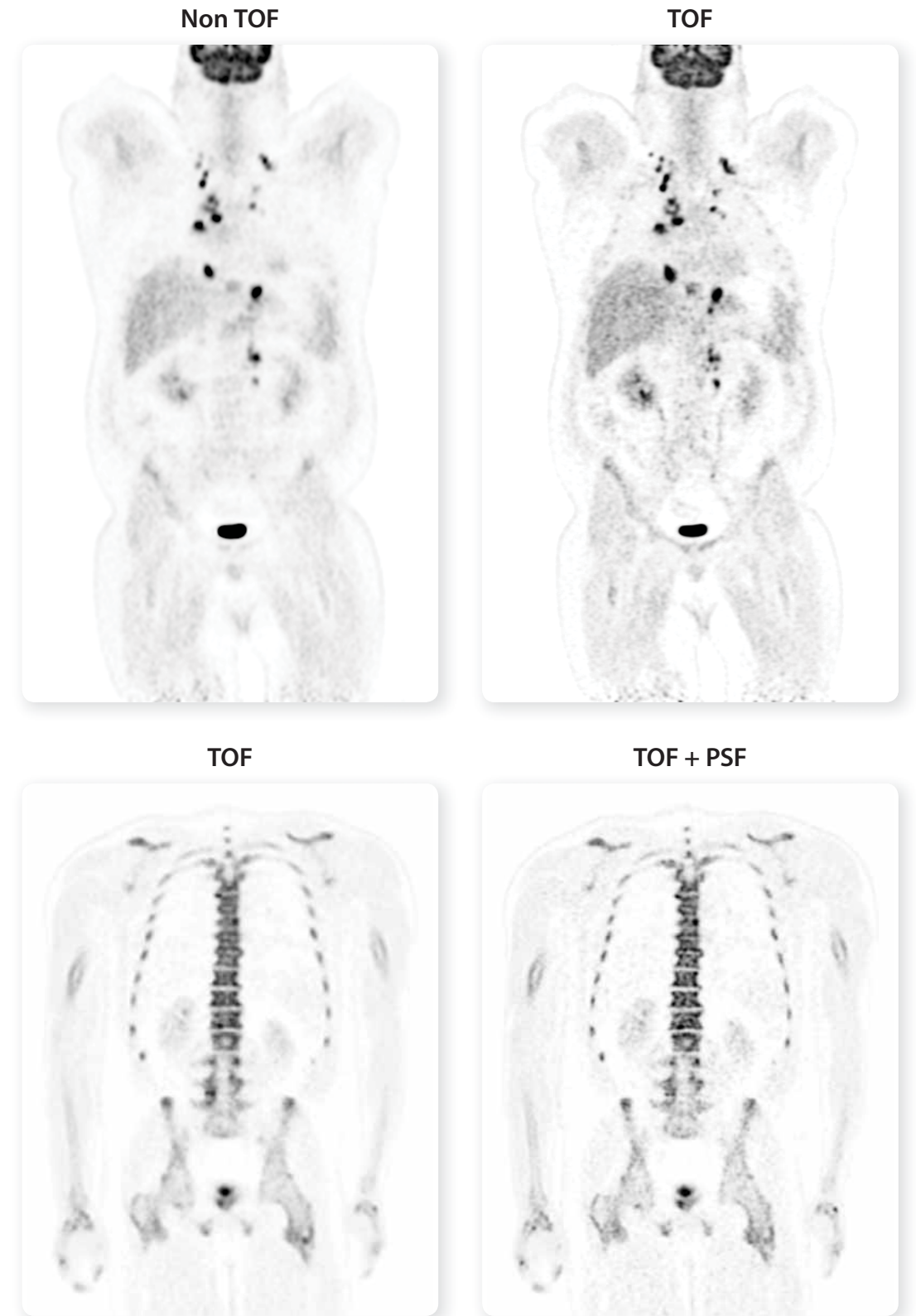
Time of Flight

Our TOF technology delivers 394 ps typical timing resolution, allowing for better visualization of tumors. This is especially useful for large patients, where the IQ deteriorates with non-TOF scanners.



Point Spread Function

PSF reconstruction generates sharper images and higher contrast, allowing for better visualization and more accurate quantification of small tumors in routine clinical studies.



Better Images, Every Time

SEMAR

SEMAR utilizes a sophisticated reconstruction technique to reduce artifacts caused by metal and improve visualization of the implant, supporting bone and adjacent soft tissues.

Original



SEMAR

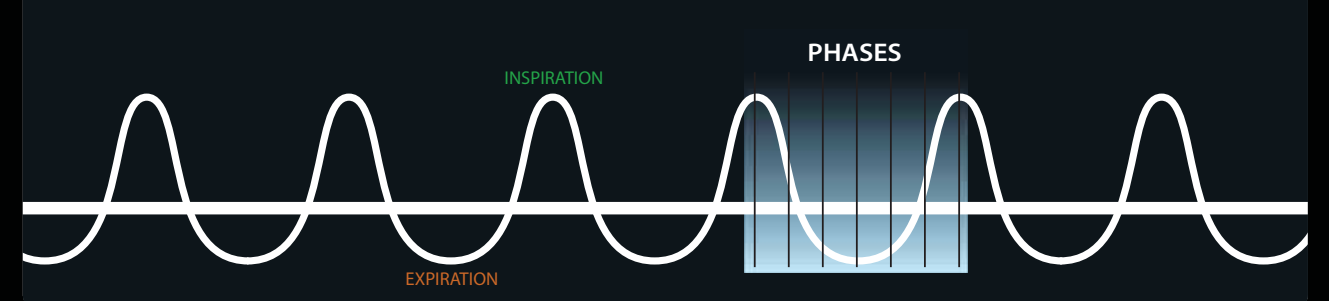


Respiratory Gating

By synchronizing exposure to the patient's breath, gating creates detailed images for lung cancer patients. With these detailed images, clinicians have the information they need for treatment planning.



Respiratory Waveform



^{18}F -FDG Brain Imaging

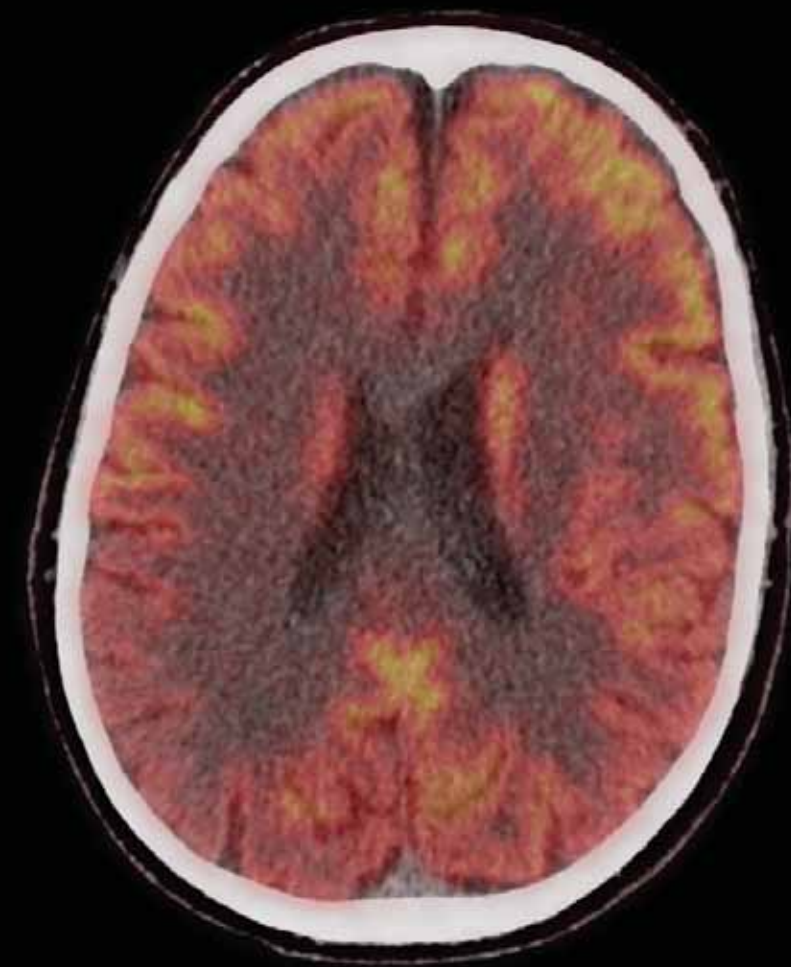
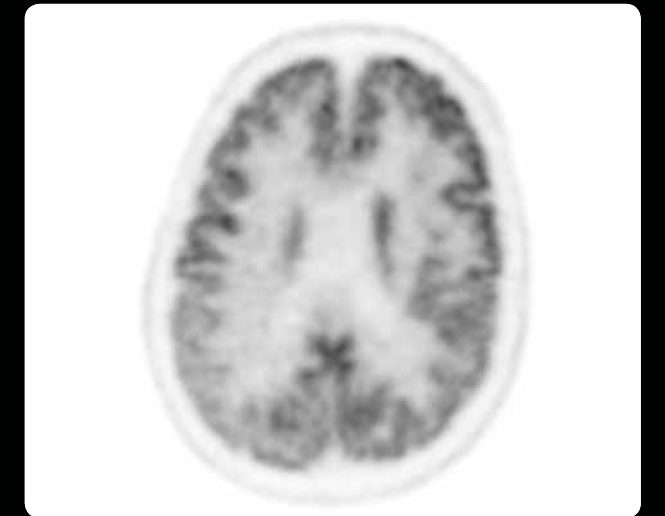
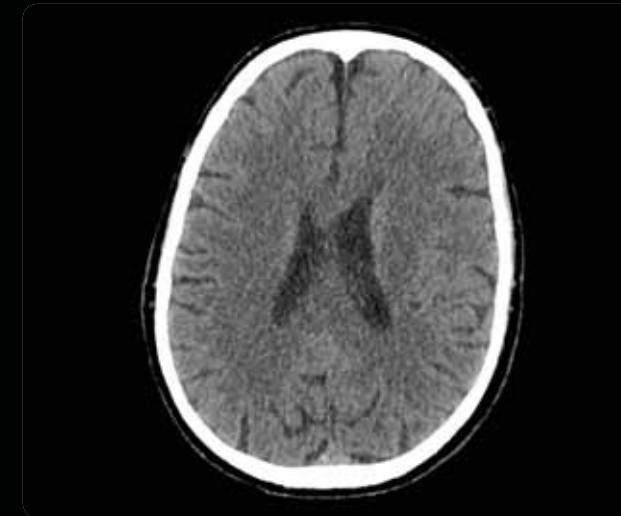
AIDR 3D

Our AIDR 3D is designed to lower radiation and maximize image quality.

Without AIDR 3D



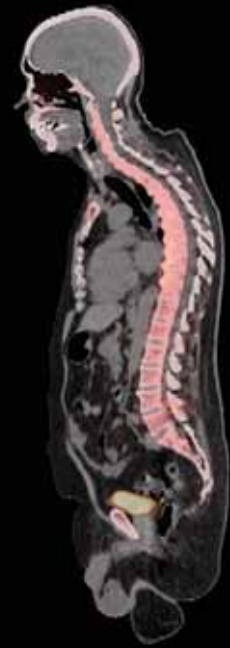
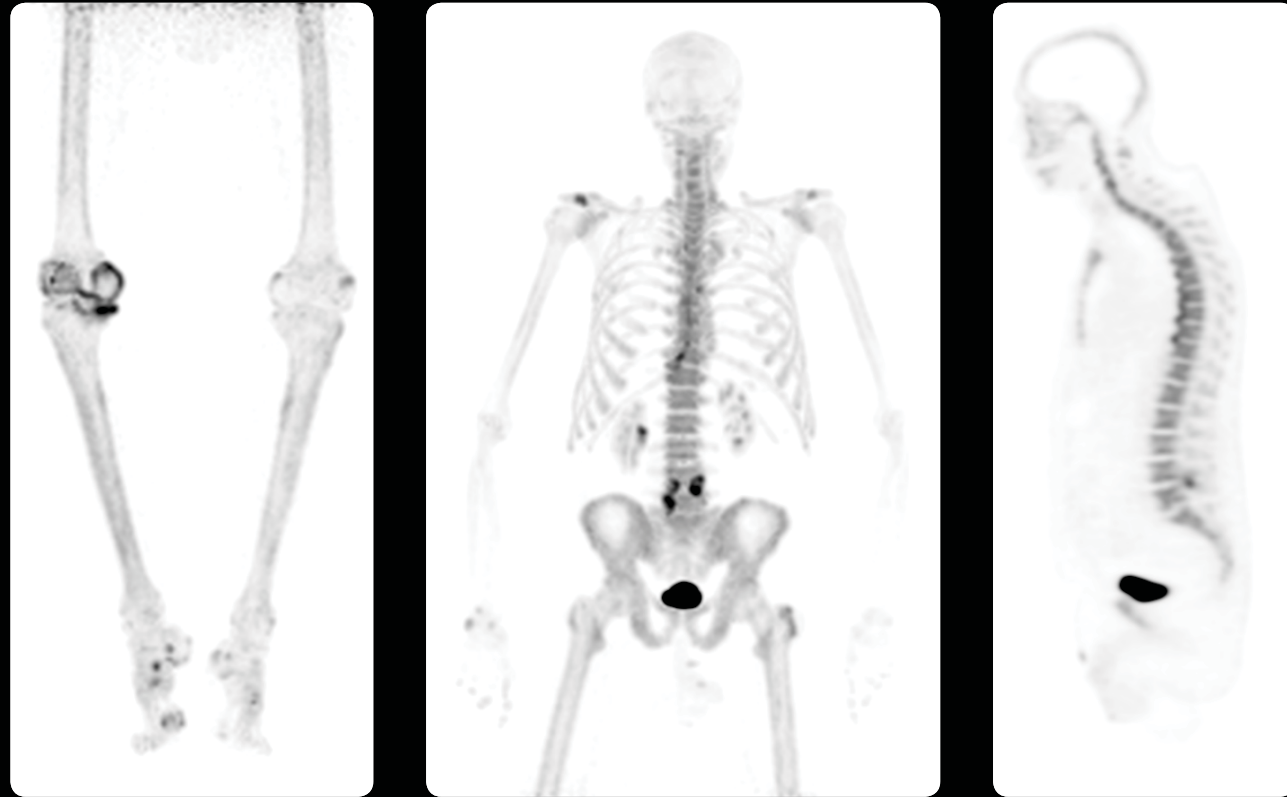
With AIDR 3D



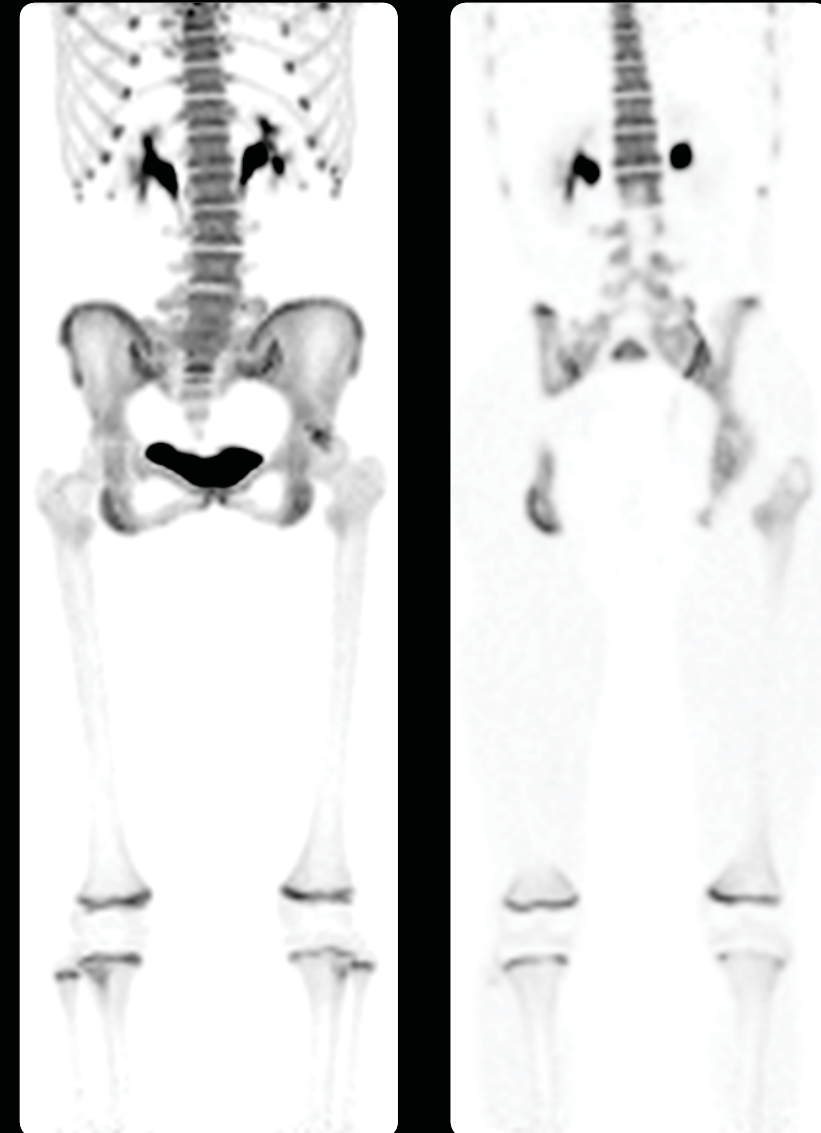
In clinical practice, the use of AIDR 3D may reduce CT patient dose depending on the clinical task, patient size, anatomical location and clinical practice. A consultation with a radiologist and physicist should be made to determine the appropriate dose to obtain diagnostic image quality for the particular clinical task.

^{18}F -NaF Bone Skeletal Imaging

High-BMI with routine dose protocol

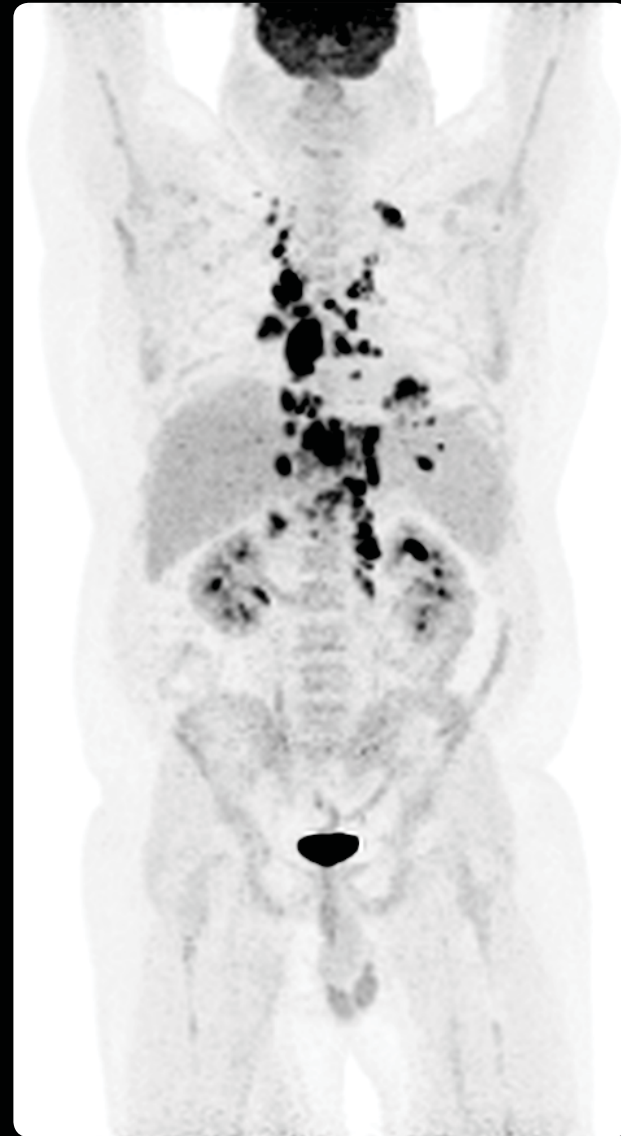
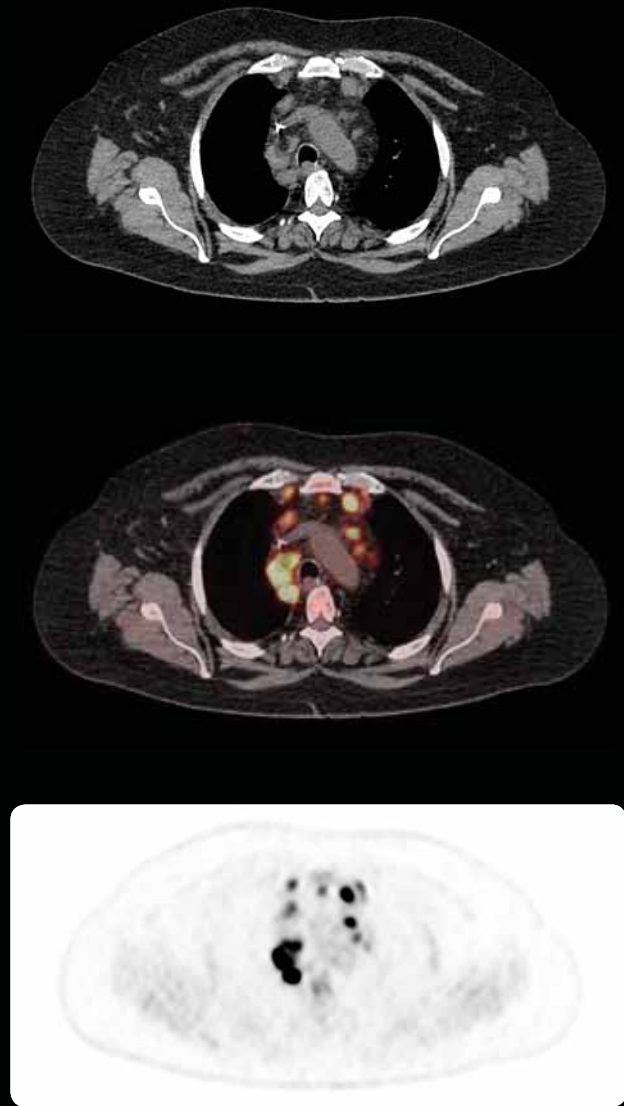


Average-BMI with low dose protocol

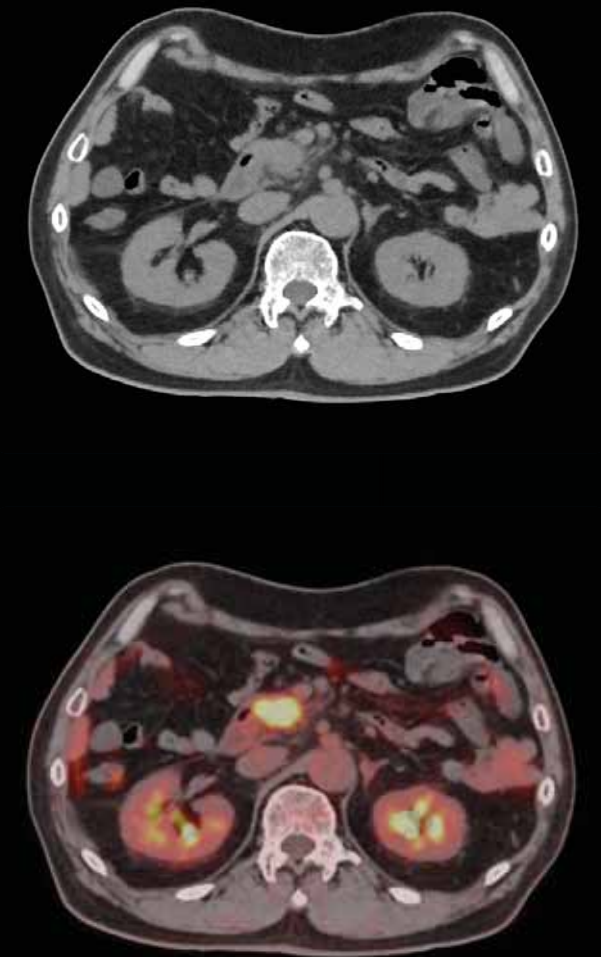


^{18}F -FDG Whole-Body Imaging

High-BMI with routine dose protocol



High-BMI with low dose protocol



An innovative shared system that performs both CT and PET scans, Celesteion puts patient comfort and safety first.

With the widest bore in the industry and a unique FOV, this advanced scanner is a cost-effective way to increase ease, efficiency and accuracy for oncology patients.



Celesteion PET/CT Performance Specifications

PET Performance			CT Performance			
Scan	Number of Crystals	30720	Gantry Aperture	90 cm		
	Crystal Size	4 mm × 4 mm	Scan FOV	70 cm (85 cm Ext. FOV)		
	Crystal Material	Lu-based	Rotation Rate	0.5 sec		
	Gantry Aperture	88 cm	PUREVISION CT Detector	16 row (3.2 cm)		
	Transaxial FOV	70 cm	Scan	Slice Thickness	0.5 mm	
	Axial FOV	19.6 cm	Number of Slices	32 with coneXact		
	System Energy Resolution	11.2% typical	Tube Current Modulation	SUREExposure 3D		
Count-rate	TOF Timing Resolution	394 ps typical	X-ray Tube Maximum Output	72 kW		
	Effective System Sensitivity	13.5 cps/kBq typical (D=20 cm)* 23.7 cps/kBq typical (D=35 cm)	X-ray Tube Heat Capacity	7.5 MHU		
	Effective Peak Noise Equivalent Count Rate (NECR)	≥ 172 kcps (D=20 cm)** ≥ 302 kcps (D=35 cm)	Dose Reduction Functions	AIDR 3D		
Spatial Resolution	NEMA-2012 Resolution FWHM @ 1 cm	≤ 5.1 mm	Dose Management	<ul style="list-style-type: none"> • XR-29 Compliant • Dose Check (NEMA XR-25) • DICOM SC Exposure Summary • DICOM SR Compliant Dose Report 		
	Radial: FWHM @ 10 cm	1.98 mm		Reconstruction Method	<ul style="list-style-type: none"> • Cone Beam • Fan Beam • SEMAR (Single Energy Metal Artifact Reduction) 	
PSF Reconstruction Spatial Resolution***	Radial: FWHM @ 20 cm	1.96 mm	Image Noise (Standard Deviation)		< 0.7%	
	Radial: FWHM @ 30 cm	2.05 mm		Spatial Resolution @ Cut Off	18 lp/cm****	
	Tangential: FWHM @ 10 cm	2.04 mm	High-Contrast Resolution		0.35 mm	
	Tangential: FWHM @ 20 cm	2.02 mm		Low-Contrast Detectability	2 mm @ 0.3% at 14.4 mGy 3 mm @ 0.3% at 7.2 mGy	
	Tangential: FWHM @ 30 cm	2.08 mm				
	Axial: FWHM @ 10 cm	2.01 mm				
Axial: FWHM @ 20 cm	1.98 mm					
Axial: FWHM @ 30 cm	1.93 mm					

NOTE:

* Calculated based on TOF sensitivity gain=(SNR gain)²=D/Δx, D: patient size, Δx: TOF spatial uncertainty.

(Δx=cΔt/2, c=speed of light=3×10¹⁰ cm/sec, Δt=TOF FWHM =394 ps=3.94×10⁻¹⁰sec, Δx=5.91 cm, NEMA sensitivity =4.0 cps/kBq, For D=20 cm, (SNR gain)²=20/5.91=3.4, effective sensitivity =4.0×3.4=13.5 cps/kBq For D=35 cm, (SNR gain)²=35/5.91=5.9, effective sensitivity =4.0×5.9=23.7 cps/kBq System energy resolution, TOF timing resolution, effective system sensitivity and PSF reconstruction spatial resolution are all typical values.

** Effective Peak NECR: based on NEMA (non-TOF) Peak NECR and TOF SNR gain calculated above. (NEMA Peak NECR≥51 kcps, effective peak NECR=NEMA peak NECR × (TOF sensitivity gain) ≥ (51×3.4)=172 kcps with D=20 cm and (51×5.9)=302 kcps with D=35 cm)

*** Option

**** For reference

Disclaimer: Any reference to X-ray exposure is intended as a reference guideline only. The guidelines in this document do not substitute for the judgment of a healthcare provider. Each scan requires medical judgment by the healthcare provider about exposing the patient to ionizing radiation. In clinical practice, the use of the AIDR 3D features 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.

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Celesteion

Canon

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