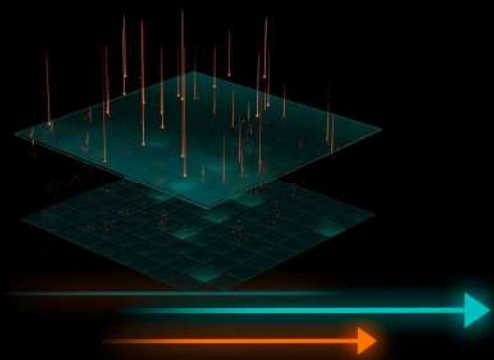


The NAEOTOM Alpha class

Unstoppable

siemens-healthineers.com/naeotom-alpha-class

SIEMENS
Healthineers



Patient-centered innovation is at the core of Siemens Healthineers. We have made an unstoppable commitment to transform medical imaging with photon-counting CT systems designed to enhance clinical practice and help radiologists make a difference in patient lives. Photon-counting CT offers profound insights that are unattainable with conventional CT technology.¹

[siemens-healthineers.com/photon-counting-ct](https://www.siemens-healthineers.com/photon-counting-ct)

The NAEOTOM Alpha class

Unstoppable



The NAEOTOM Alpha class: Three versatile systems, united by proven Quantum Technology, are dedicated to creating a new standard in medical imaging. This new standard provides detailed insights and conclusive results to optimize patient pathways. Discover the profound clinical impact enabled by AI-powered productivity that can accelerate workflows.

Profound clinical impact

*If you can't see it, you can't diagnose it.
If you can't diagnose it, you can't treat it.*

Quantum HD offers down to 0.2 mm slice thickness, delivering anatomical details at a high level of clarity. Quantum Spectral Imaging overcomes the limitations of conventional CT in tissue characterization.



See the unseen with Quantum HD

The visualization of small anatomical details that could be missed with conventional CT technology supports conclusive insights for clinical decision making without an increase in dose and with the potential to streamline patient pathways. Quantum HD makes a difference, for example, in evaluating stent patency, detecting and characterizing tumors, and confidently analyzing resectability.

14x more UHR scans used
in clinical routine²

Be conclusive in every scan with Quantum Spectral Imaging

Detailed spectral maps in every exam enable functional evaluation with high precision and conclusiveness even in patients previously not eligible for spectral CT, such as patients who cannot hold their breath. There are no compromises between speed, coverage, and spectral information. Studies have documented the use of Quantum Spectral Imaging to increase diagnostic information in thoracic imaging.³

No scan mode preselection
necessary



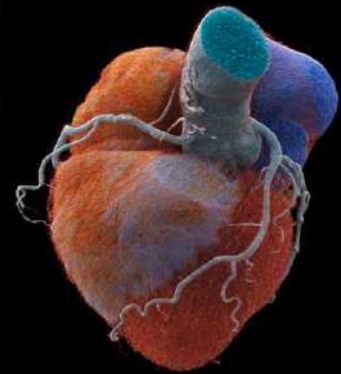
NAEOTOM Alpha.Prime

140 kVp

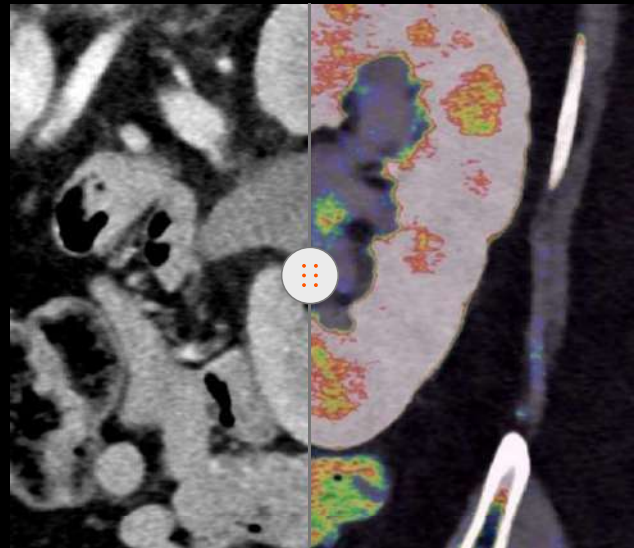
Average HR 53 bpm

MPR | 0.4 mm

cVRT



Courtesy of Diagnostikum Graz, Graz, Austria



Non-spectral reconstruction Iodine map

120 kVp

MPR | 0.4 mm

Courtesy of University Hospital Pilsen, Pilsen, Czech Republic

AI-powered productivity

Staff shortages, more patients, and manual processes complicate healthcare delivery.

myExam Companion, our intelligent workflow solution, is one of many AI-powered technologies in the NAEOTOM Alpha class. These solutions automate processes, save time, and increase efficiency, for example, in patient positioning, scanning, result creation, and reading.



Speed up workflows with intuitive design

myExam Companion guides users through a patient and procedure optimized reading workflow to help achieve consistent results. Automated preparation and acquisition workflows provide critical time-savings. For example, multiphase procedure preparation can be included without duplicating protocols, streamlining oncology procedures, and resulting in 74% faster workflows and 87% fewer clicks for abdomen acquisitions, and 82% time savings and 91% fewer clicks for brain acquisitions.⁴

AI guidance reduces burden on staff

Optimize productivity with automated processes

The solutions in myExam Companion support user- and patient-friendly experiences that help improve the quality of care. Even inexperienced operators profit from a fast and easy-to-use workflow. One-touch patient positioning, accurate isocenter, and zero-click postprocessing for PACS-ready evaluation all help easily optimize productivity and enable using the scanner to its full potential. On top, Fleetlink connectivity helps leverage the power of our digital offerings that connect people, data, and technology to improve efficiency, consistency, and quality of care.

Precise positioning, quick data processing

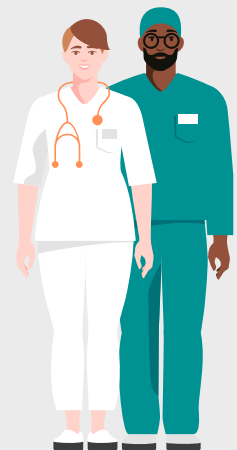
myExam Companion



Up to

74%

faster workflow with myExam Companion even for inexperienced users⁵

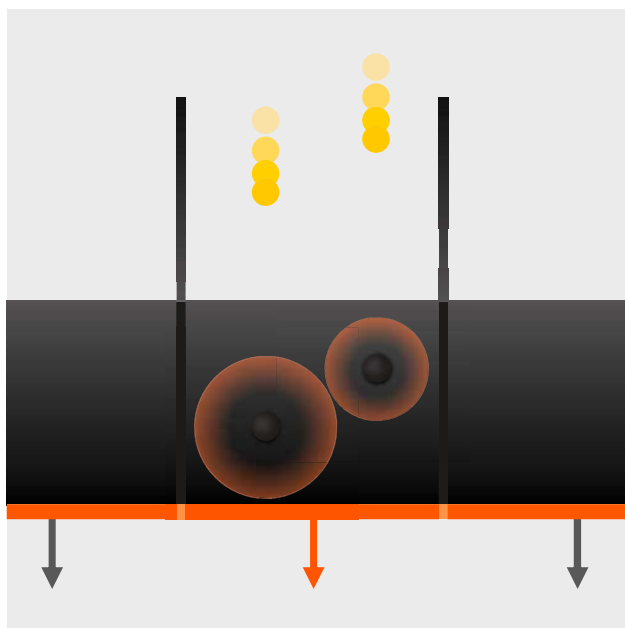


Quantum Technology

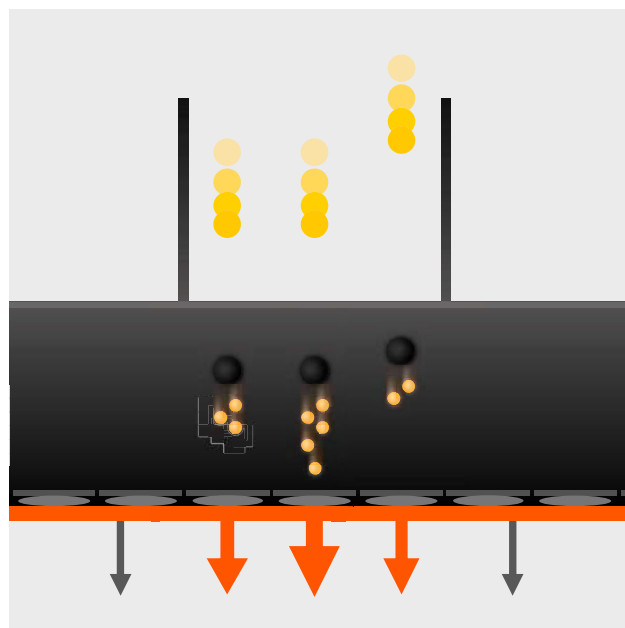
The QuantaMax detector at the core of Quantum Technology is equipped with a crystal semi-conductor that enables direct signal conversion by generating an electrical charge instead of light. Each X-ray photon is measured in a single projection. The absorbed X-rays create electron-hole pairs in the semiconductor, and the charges are separated in a strong electric field between the cathode at the top and the pixelated anode electrodes at the bottom of the detector.



Learn more
about Quantum
Technology



In conventional CT, an energy-integrating detector (EID) accumulates and records the total energy of X-ray photons that interact with it over a given period, providing a measurement of the total energy received.



The QuantaMax detector directly converts X-rays into an electrical signal. The energy of each X-ray is measured, so spectral information is available for every scan, and the images are contrast-rich with high spatial resolution at the same dose.

Case collection

Photon-counting CT creates images at high spatial resolution, without electronic noise, and with an improved contrast-to-noise ratio, intrinsic spectral information, and at a low radiation dose. Clinicians can detect and evaluate small structures precisely and with fewer artifacts, increasing the diagnostic information and accuracy, often at lower radiation doses. The benefits of photon-counting CT and its impact in a wide variety of clinical fields is well documented in hundreds of publications and hundreds of thousands of cases.

See for yourself.



Cardiology

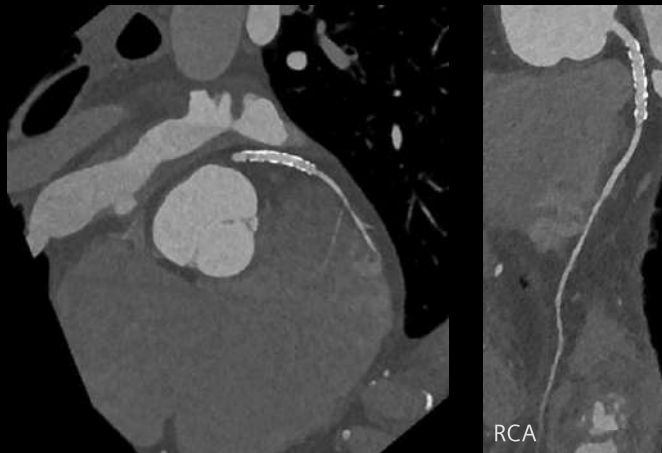


120 kVp | $CTDI_{vol}$ 13.9 mGy | MPR | 0.2 mm | Bv72
Quantum HD Cardiac imaging of a patient with stents
with NAEOTOM Alpha



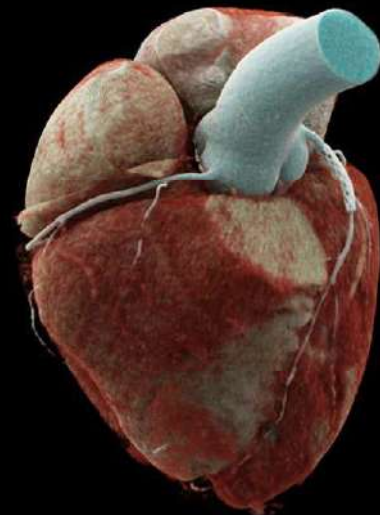
cVRT

Courtesy of Semmelweis University, Budapest, Hungary



MPR | 0.4 mm | Bv56 | 60 keV | ZeeFree

90 kVp | $CTDI_{vol}$ 8.46 mGy | Average HR 54 bpm
Coronary CTA evaluation after stenting with NAEOTOM Alpha.Pro



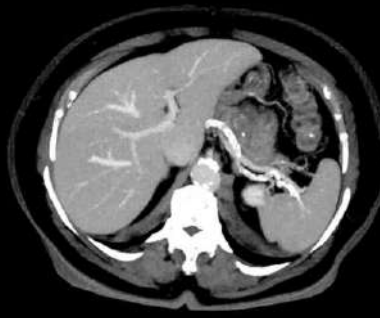
cVRT

Courtesy of University Hospital Pilsen, Pilsen, Czech Republic

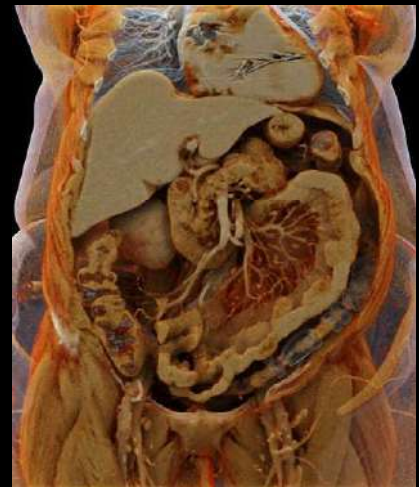
Oncology



MPR | 0.4 mm | Qr44 | 65 keV



MIP



cVRT

120 kVp | $CTDI_{vol}$ 13.7 mGy (arterial), 13.1 mGy (venous), 12.1 mGy (portal)
Pancreatic imaging of a patient with high BMI
with NAEOTOM Alpha.Prime

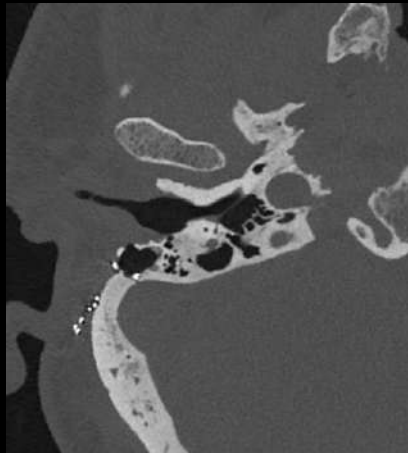
Courtesy of Semmelweis University, Budapest, Hungary



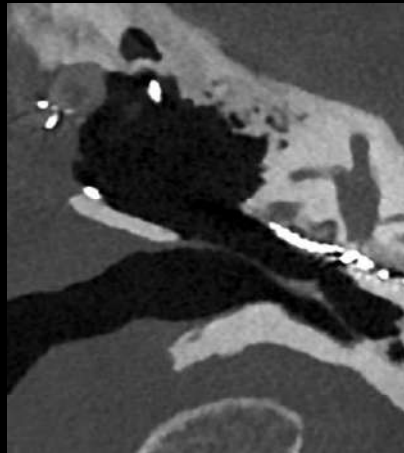
120 kVp | $CTDI_{vol}$ 8.3 mGy | 0.4 mm | Br36
Applying Quantum Spectral Imaging for challenging lesions
with NAEOTOM Alpha

Courtesy of University Hospital Pilsen, Pilsen, Czech Republic

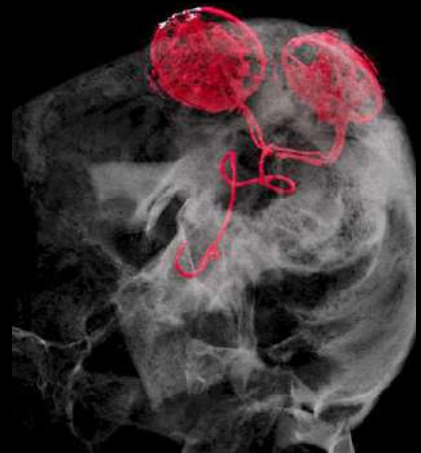
Neurology



Hr76



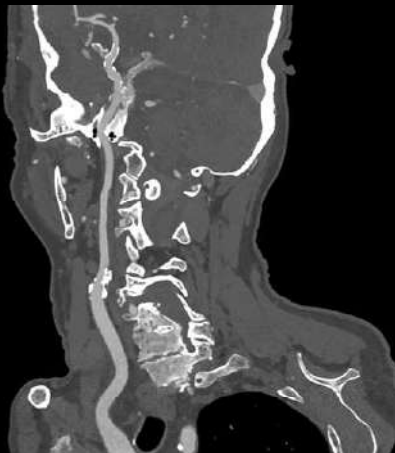
Hr76



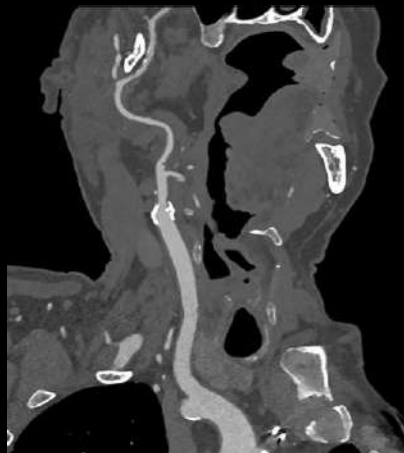
cVRT

120 kVp | CTDI_{vol} 18.9 mGy | MPR | 0.2 mm
Cochlear implant imaging with Quantum HD
in NAEOTOM Alpha.Prime

Courtesy of Diagnostikum Graz, Graz, Austria



Curved MPR | 0.4 mm (R. Int Carotid)



Curved MPR | 0.4 mm (R. Ext Carotid)

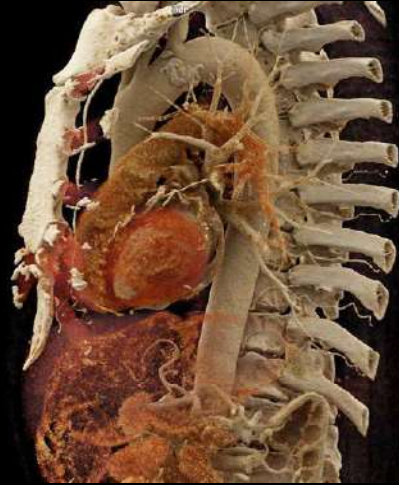


cVRT

140 kVp | CTDI_{vol} 7.83 mGy | MPR | 60 keV | Hv48
Head-neck imaging with NAEOTOM Alpha.Pro

Courtesy of University Hospital Pilsen, Pilsen, Czech Republic

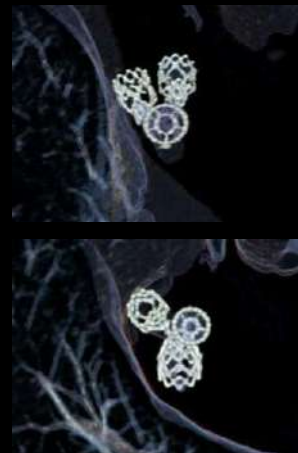
Pulmonology



140 kVp | $CTDI_{vol}$ 5.1 mGy | MPR | Bv48 | 55 keV
 CM enhanced thorax evaluation with NAEOTOM Alpha.Prime
 High-resolution reconstruction with 0.4 mm

cVRT

Courtesy of Diagnostikum Graz, Graz, Austria



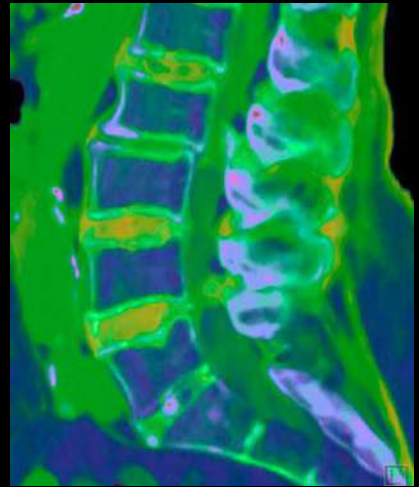
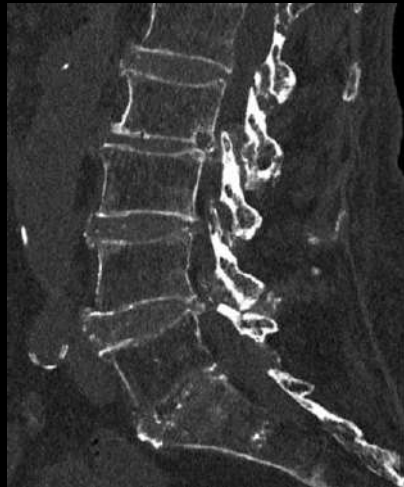
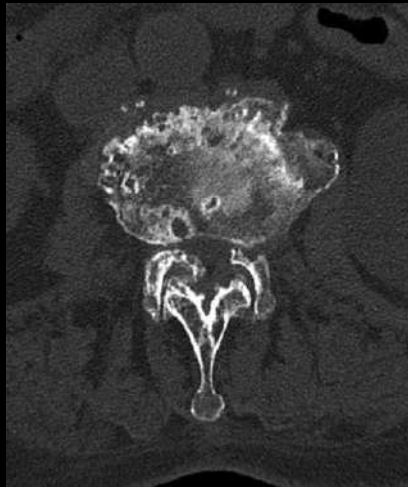
Pre-placement

Post-placement

Sn140 kVp | $CTDI_{vol}$ 1.98 mGy | MPR | 0.2 mm | BI60
 Quantum HD on NAEOTOM Alpha
 Pre- and post-endobronchial valve treatment

Courtesy of Centre Hospitalier Universitaire de Lille, Lille, France

MSK



120 kVp | $CTDI_{vol}$ 20.3 mGy | MPR | 0.4 mm | Br68 | 70 keV
L-spine imaging with NAEOTOM Alpha.Prime

VNCa | 3 mm

Courtesy of Diagnostikum Graz, Graz, Austria



$CTDI_{vol}$ 6.07 mGy | 0.2 mm | Br84 | 1024 matrix
Foot-fracture evaluation acquired with Quantum HD
0.2 mm slice thickness and high in-plane resolution
on NAEOTOM Alpha

cVRT

Courtesy of Dr. Jones & Partners – SAHMRI, Adelaide, Australia

Pediatrics



MIP | Bv48



MPR | Bv44



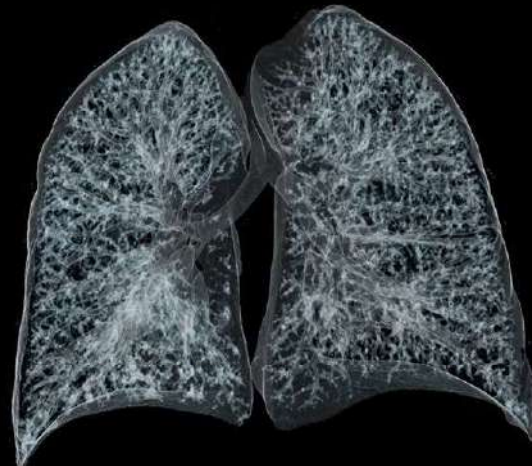
70 kVp | $CTDI_{vol}$ 0.53 mGy | 0.6 mm | 53 keV
 Pediatric truncus arteriosus communis (TAC) – A very rare congenital heart defect imaged with a low-dose scan on NAEOTOM Alpha

Courtesy of Uniklinik RWTH Aachen, Aachen, Germany



0.6 mm | BI60 | 73 keV

Sn100 kVp | $CTDI_{vol}$ 0.93 mGy | Pitch 3.2
 Low-dose lung imaging – Sub-second imaging in pediatrics on NAEOTOM Alpha



cVRT

Courtesy of Semmelweis University, Budapest, Hungary

NAEOTOM Alpha.Prime

The new benchmark – built for versatile performance, this clinical all-rounder brings Quantum Technology into clinical routine with a single source photon-counting CT system for the first time.



For all clinical fields



Transition to photon-counting CT



More details and consistent findings

NAEOTOM Alpha.Prime supports an easy transition to photon-counting CT to help meet the needs of more institutions. Proven Quantum Technology sets a new standard for lesion detection, characterization, and treatment planning. AI-powered workflows speed up processes in diagnostic and interventional procedures. Patients with high calcium scores can now be scanned with photon-counting CT and benefit from cardiac imaging with reduced stack artifacts enabled by ZeeFree.

Combining the proven high-resolution, Quantum Spectral Imaging, and low dose of photon-counting CT with automated AI-driven workflow solutions in a single source CT system delivers high impact in a wide range of clinical scenarios.



"I think in 10-15 years all the CTs will be photon-counting, equipped with a photon-counting detector, because this is a superior technology. It's that the detector is much more efficient, so you reach better spatial resolution with lower dose."



Pál Maurovich-Horvat, MD, PhD, MPH
Professor of Cardiology and Radiology, Head of
Medical Imaging Centre, Semmelweis University,
Budapest, Hungary

NAEOTOM Alpha.Pro

The accelerator – its combination of photon-counting CT with Dual Source CT speeds up diagnostic performance, addressing the challenges of sensitive patient groups.



Include new patient groups in CT



Accelerate high-precision scans



Rethink cardiac CT

NAEOTOM Alpha.Pro accelerates diagnostic performance with conclusive images and offers improved clinical capabilities for challenging patients. The ultra-high spatial resolution enables better diagnostic evaluation of coronary vessels than conventional CT with moderate radiation dose, and Dual Source temporal resolution provides enhanced insights into heart valves.

Potentially scan cardiac patients without betablockers, accelerate pediatric imaging, and perform free-breathing scanning for pulmonology patients. Quantum HD Cardiac with 0.2 mm slice thickness delivers high accuracy in detecting CAD, which can boost clinical efficacy and patient management.



"I like to say that photon-counting CT is not a CT scanner, it is a different imaging modality, and we should treat it like that. In terms of capability, it's not just a better version of CT: it does so many other things that are not possible with conventional CT technology."



Filippo Cardemartiri, MD, PhD
Clinical Radiologist Expert of High Tech Imaging
and Cardiology, CDI Centro Diagnostico Italiano,
Milan, Italy

NAEOTOM Alpha.Peak

The pioneer – this scanner delivers the highest clinical performance of any Siemens Healthineers photon-counting scanner, and provides the clinical information you need in only one exam.



**High performance
in all exams**



**See impressive
details fast**



**Extra care for
vulnerable patients**

NAEOTOM Alpha.Peak pushes the boundaries of medical imaging with its sharp anatomy depiction that supports conclusive diagnoses. Relevant CT information is provided in a single scan, helping to improve patient pathways. Combining the precision of Quantum Technology with the speed of Dual Source CT delivers enhanced image quality for high diagnostic confidence in clinical use and for research. Plus, high resolution, low dose, and Quantum Spectral Imaging in every scan.

The combination of 66 ms temporal resolution with a scan speed of up to 737 mm/s in NAEOTOM Alpha.Peak may reduce the need for sedation in vulnerable pediatric patients. The elimination of electronic noise enables high dose efficiency for examining sensitive patient groups.



"Calcium is the enemy of CT imaging in cardiology. And while many CT methods were previously not possible or aborted if a lot of calcium was present, we now have the possibility to precisely delineate the calcification."



Herwig Schuchlenz, MD, PhD
Cardiologist and Head of Internal Medicine,
Landeshospital Graz, Graz, Austria

NAEOTOM Alpha class solutions



Large 82 cm bore

All NAEOTOM Alpha class scanners are equipped with an 82 cm bore. This patient-friendly design helps patients and users relax, and is ideal for patients with a high BMI. The large bore size is also ideal for trauma, orthopedic, and interventional procedures.



FAST 3D Camera

The world's first photon-counting scanners in clinical use also boast the world's first FAST 3D Camera (optional). Designed for automated and precise patient positioning, it also safeguards the correct scan direction and aligns the anatomical position with the protocol.



myNeedle Laser

The integrated laser guidance system (optional) in the NAEOTOM Alpha class scanners visualizes the needle entry point and angle, with the aim of increasing efficiency and enabling consistent results. It also monitors the progression of the planned needle path.

The products/features (mentioned herein) are not commercially available in all countries. Their future availability cannot be guaranteed.

The statements by Siemens Healthineers' customers described herein are based on results that were achieved in the customer's unique setting. Because there is no "typical" hospital and many variables exist (e.g., hospital size, case mix, level of IT and/or automation adoption) there can be no guarantee that other customers will achieve the same results.

On account of certain regional limitations of sales rights and service availability, we cannot guarantee that all products/services/features included in this brochure are available through the Siemens Healthineers sales organization worldwide. Availability and packaging may vary by country and are subject to change without prior notice.

The information in this document contains general descriptions of the technical options available and may not always apply in individual cases.

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- 1, 3 Data on file
- 2 Based on data of 1,097 CT systems in June 2021. Data on file.
- 4, 5 Results from case studies are not predictive of results in other cases. Results in other cases may vary. Study source: Testing bay environment study, Forchheim, Germany



NAEOTOM
Alpha class

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