



SOMATOM Sensation
Take the Lead in CT

SIEMENS
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SOMATOM Sensation

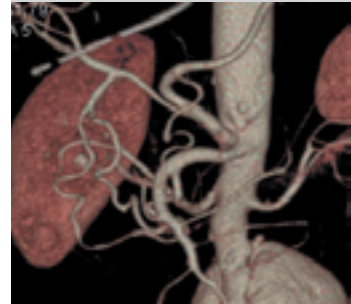
Take the Lead in CT

Siemens Medical Solutions has been a global player in CT for more than 25 years, having set lots of milestones. The SOMATOM® Sensation success story with more than 2100 installed systems worldwide stands for technology and clinical application leadership, customer satisfaction and investment protection.

SOMATOM Sensation and its Speed4D™ Technology perfectly meets today's challenge to harmonize volume coverage, acquisition speed and visualization of fine detail. It combines the examination of large submillimeter ranges with the fastest imaging speed in CT industry in less than a breathhold.

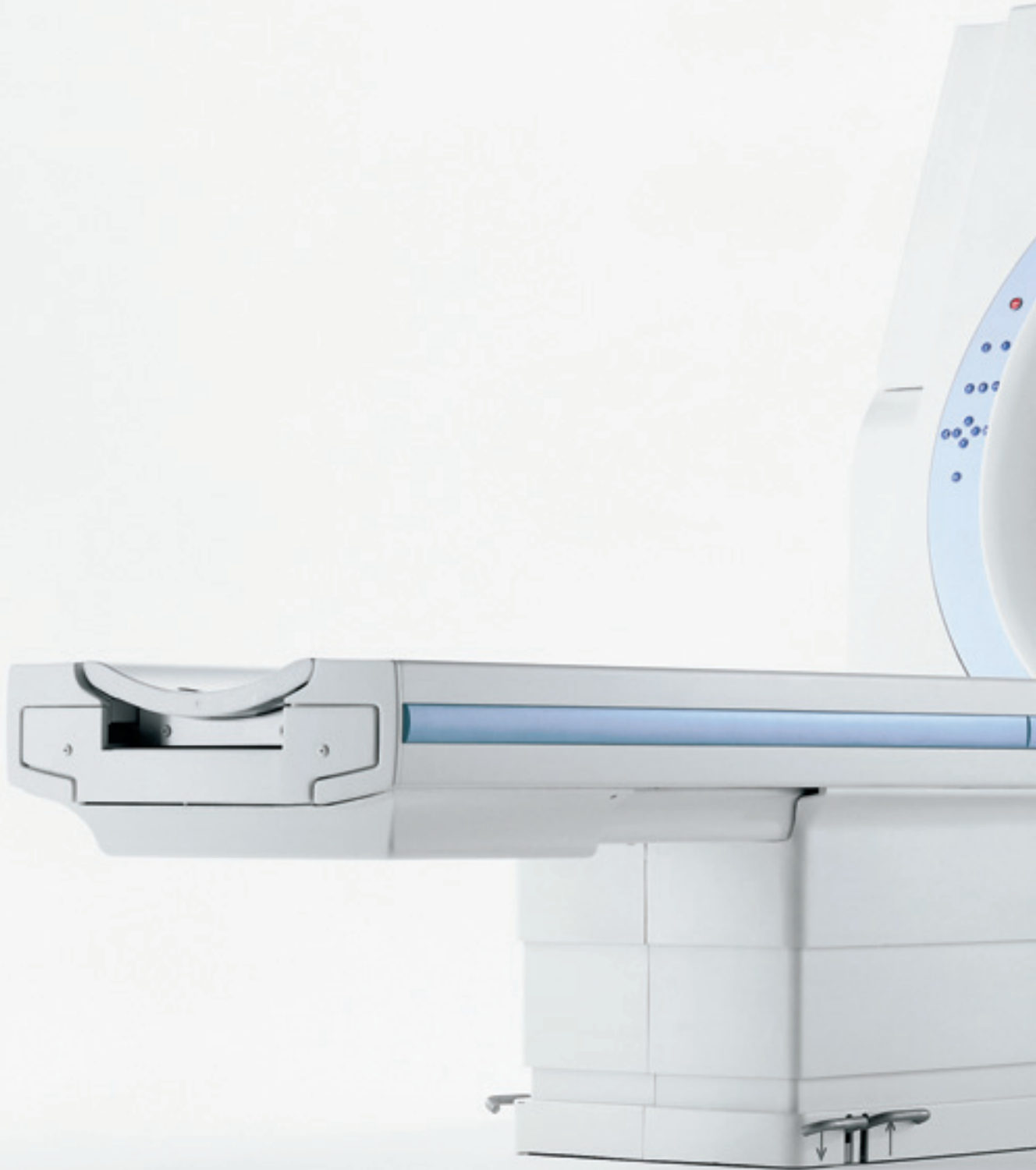
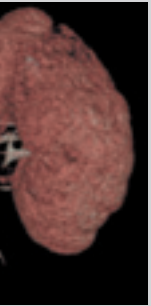
SOMATOM Sensation provides the latest technical capabilities, a wide range of clinical applications and streamlined workflow solutions – leading to brilliant images and outstanding results within a few mouse clicks.

SOMATOM Sensation is designed to help you to stay more competitive, optimize your workflow and improve your clinical performance, while maintaining the patient focus. With SOMATOM Sensation you will always be at the forefront, you will take the lead in CT.



Introduction	6
syngo®	8
Technology and Data	9
<ul style="list-style-type: none"> • SOMATOM® Sensation Product Matrix • Volume Acquisition System • SureView™ Multislice Spiral Image Reconstruction • Topogram • Sequence • Image Quality 	
Speed4D™ Technology	16
<ul style="list-style-type: none"> • STRATON® • CARE Dose4D™ • WorkStream4D™ • syngo InSpace4D™ 	
WorkStream™	20
<ul style="list-style-type: none"> • Patient Handling • Processing 	
Clinical Applications	26
CARE Solutions	28
Life	30
Installation	32







Introduction – Technology and Data

Speed4D Technology*

Speed4D Technology provides significant performance enhancements for the SOMATOM Sensation 16-slice** CT scanners that further fulfils cutting-edge imaging and workflow requirements. Paradigm shifts in CT tube technology, dose optimization, clinical applications and workflow management enables the fastest imaging speed in the CT industry, automation of complex imaging processes and consistent delivery of highest quality results in a minimum amount of time. Speed4D Technology includes STRATON, 0.37 s gantry rotation speed, CARE Dose4D, WorkStream4D, syngo InSpace4D, Wizard, VolPro Graphics Accelerator Card and syngo VRT:

STRATON* – A paradigm shift in X-ray tube technology

- Unmatched 0.37 s gantry rotation speed for cardiac and whole body imaging with premium image quality for all patient sizes
- Elimination of cooling delays maximizes patient throughput
- One year full warranty, reduced cost of a full service agreement including tube coverage by up to 10%

CARE Dose4D – Minimizing dose, maximizing quality – patient by patient

- Achieve the best diagnostic image quality at lowest possible dose, independent of patient size and anatomy
- Fully automated dose management for adults and children with up to 66% dose reduction

WorkStream4D* – A revolution in 3D and 4D imaging workflow

- Maximum examination speed due to elimination of manual reconstruction steps and data reduction up to ten times
- Direct generation of diagnostic quality images in arbitrary planes and pre-programmed multiphase 4D reconstructions with up to 10 images/s
- Full reconstruction functionality at Navigator and Wizard Console and reconstruction performed in parallel to scan acquisition

syngo InSpace4D* – Real-time interactive cardiac evaluation, in space and time

- 4D evaluation of the beating heart with full resolution
- Real-time navigation through moving anatomy in user selectable arbitrary planes
- High performance volume reading for diagnosis and pre-surgical planning in daily clinical routine

* *optional*

** *Speed4D Technology is also available for the SOMATOM Sensation 10, except for the Straton X-ray tube and 0.37 s gantry rotation speed*

Introduction – WorkStream

syngo application platform

Provides easy and intuitive operation, common look and feel and participates in the Siemens unique multi-modality interconnectivity.

Fully integrated WorkStream

Scan protocols extended to exam protocols, customizable Multislice workflow helping to fully exploit the new capabilities and speed. Real-time reconstruction with up to 10 slices/s, virtually true isotropic resolution, instant data access on shared data base for advanced data evaluation and quantification for typical examination times <10 min for routine applications.

Advanced evaluation tools

Rapid 3D-based semi-automated viewing, analysis, quantification and customizable documentation, fully integrated into a seamless workflow.

Introduction – Clinical Applications

HeartView CT* – New Frontiers in Cardiac Imaging

Integrated ECG-device, ECG-synchronized acquisition of the heart, the coronary arteries and the vascular system, dedicated Cardiac CT evaluation (*syngo Calcium Scoring**, *syngo Argus**, *syngo Vessel View**).

Dedicated evaluation and enhanced viewing tools

Real-time interactive volume viewer (*syngo InSpace4D**), rapid 3D-based visualization, rapid 3D-based visualization of pulmonary nodules (*syngo LungCARE CT**), dedicated colon evaluation software (*syngo Colonography**) and semi-automated vessel quantification (*syngo Vessel View**) are just some of the new features that can be added to your clinical routine.

CARE Solutions – Combined Applications to Reduce Exposure

Based on the CARE philosophy we developed a series of technological features – e.g. CARE Dose4D – that have been applied to the SOMATOM CT scanners in order to achieve: excellent imaging results, shorter examination times and the lowest possible radiation exposure.

* optional



syngo – The Revolutionary Software for Medical Imaging

The comprehensive software solution for virtually all medical imaging tasks, applications and systems sets a standard – for Siemens and for the industry.

Easy to use

The *syngo* user interface is extremely intuitive and common to all applications. *syngo* provides a uniform working environment throughout clinical networks and beyond.

Result: your daily routine gets done easier and quicker.

Straightforward to connect

syngo integrates medical imaging seamlessly into the complete clinical workflow from registration to billing. *syngo* puts a universe of information at your fingertips.

Result: your efficiency reaches beyond a single workplace.

Prepared for the future

syngo speaking systems will remain state-of-the-art because new *syngo* applications can easily be integrated into the unique *syngo* architecture.

Result: your workplace grows with your clinical needs.

syngo is a registered trademark of Siemens AG



syngo
speaking



Technology and Data – SOMATOM Sensation Product Matrix

	SOMATOM Sensation 10	SOMATOM Sensation 16
Basic Configuration	0.42 s rotation, Navigator, 60 kW generator	0.42 s rotation, Navigator, 60 kW generator
Speed4D Technology Package (STRATON, 0.37 s gantry rotation speed, CARE Dose4D, WorkStream4D, syngo InSpace4D, Wizard, VolPro and syngo VRT)	○ (except STRATON and 0.37 s gantry rotation speed)	○
Workplaces		
Wizard	○	○
Additional Wizard	○	○
syngo 3D Workstation LEONARDO	○	○
Volume Pro Graphics	○	○
X-ray tubes		
Akron Q	●	●
STRATON (incl. 0.37 s gantry rotation speed)	na	○
Clinical 3D Applications		
Real-time MPR	●	●
syngo 3D SSD	●	●
Volume Measurements	●	●
syngo VRT	○	○
syngo InSpace4D	○	○
Routine Applications		
CT-Angiography	●	●
syngo Dental CT	○	○
syngo Osteo CT	○	○
syngo Pulmo CT	○	○
syngo Perfusion CT	○	○
syngo Fusion	○	○
CARE Applications		
CARE Bolus CT	●	●
CARE Dose4D	●	●
CARE Vision CT with HandCARE	○	○
Advanced Applications		
syngo Fly Through	○	○
syngo LungCARE	○	○
syngo LungCARE NEV	○	○
syngo Colonography	○	○
WorkStream4D		
Recon card Wizard	○	○
3D Recon	○	○
Cardiovascular Applications		
HeartView CT	○	○
HeartView CS (HeartView CT, syngo Calcium Scoring)	○	○
HeartView CI (HeartView CT, syngo Calcium Scoring, syngo Vessel View, syngo Argus)	○	○
syngo Calcium Scoring	○	○
syngo Vessel View	○	○
syngo Argus	○	○

● standard feature

○ optional feature

na: not available

Technology and Data – Volume Acquisition System

Gantry	SOMATOM Sensation 10	SOMATOM Sensation 16
Aperture	70 cm	70 cm
Scan field	50 cm, 70 cm Extended FOV*	50 cm, 70 cm Extended FOV*
Tilt	± 30°	± 30°
Rotational times	0.42, 0.5, 0.75, 1.0, 1.5 s	0.37*, 0.42, 0.5, 0.75, 1.0, 1.5 s
Temporal resolution	down to 105 ms (Heart View CT*)	down to 92 ms (Heart View CT*)

Continuously rotating tube-detector unit with optimized geometry for high-resolution data acquisition across the entire scan field.

Data acquisition system	SOMATOM Sensation 10	SOMATOM Sensation 16
Number of detector rows	20	24
Elements	13440	16128
Channels per slice	1344	1344
Number of projections	up to 2320 (1/360°)	up to 2320 (1/360°)
Max. number of slices/revolution	10	16

- Speed and efficiency based on Ultra Fast Ceramic (UFC™)
- Designed to effectively suppress scattered radiation for precision quantitative CT

High frequency generator	
Max. power	60 kW

* optional





Tube assembly	
<i>Tube</i>	<i>DURA Akron Q</i>
<i>Tube current range</i>	<i>28–500 mA</i>
<i>Tube voltages</i>	<i>80, 100, 120, 140 kV</i>
<i>Anode heat storage capacity</i>	<i>5.3 MHU</i>
<i>Focal Spot size according to IEC 60336</i>	<i>0.5 x 0.7 mm/7° 0.8 x 1.2 mm/7°</i>

- High performance CT X-ray tube
- Computer controlled monitoring of anode temperature
- Multifan principle with Flying Focal Spot

CARE Filter	
<i>Al equivalent</i>	<i>5.5 mm</i>
<i>Beam limiting device</i>	<i>2 mm PTFE, 0.6 mm Ti (body mode) equivalent to 5.5 mm Al</i>



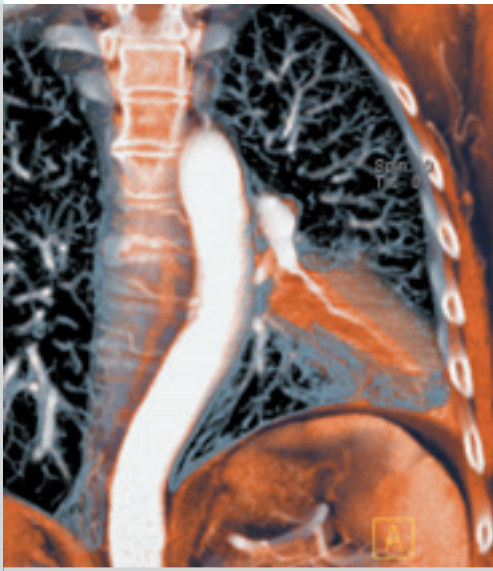
Technology and Data – SureView Multislice Spiral Image Reconstruction

The Siemens patented solution for Multislice CT imaging, designed for no compromises in image quality:

- **Easy-to-use scan protocols**
The user only needs to select scan volume (range), mAs, scan time and slice width. All other parameters – e.g. pitch – are automatically calculated by the scanner.
- **Multiply your clinical performance with SureView**
High-quality imaging at any scanning speed. SureView allows the CT scanner to automatically select the necessary pitch value to achieve the coverage and scan time defined by you, while keeping image quality constant.
- **Up to 20% dose savings in spiral mode**
When employed in spiral scanning, SureView yields a remarkably lower image noise level. Thus, to produce the same noise level of sequential CT images, the spiral scan protocols are created with lower mAs and consequently up to 20% lower dose.

SOMATOM Sensation 10	
<i>Reconstruction time</i>	<i>up to 6 slices/s</i>
<i>Reconstructed slice widths</i>	<i>0.6, 0.75, 1.0, 1.5, 2, 3, 4, 5, 6, 7, 8, 10 mm</i>
<i>Slice increment</i>	<i>0.1–10 mm</i>
<i>Pitch factor (Volume Pitch)</i>	<i>0.5–2.0 (1–20)</i>
<i>Spiral scan time</i>	<i>max. 100 s</i>
<i>Scan length</i>	<i>max. 157 cm</i>

SOMATOM Sensation 16	
<i>Reconstruction time</i>	<i>up to 10 slices/s</i>
<i>Reconstructed slice widths</i>	<i>0.6, 0.75, 1.0, 1.5, 2, 3, 4, 5, 6, 7, 8, 10 mm</i>
<i>Slice increment</i>	<i>0.1–10 mm</i>
<i>Pitch factor (Volume Pitch)</i>	<i>0.5–2.0 (1–32)</i>
<i>Spiral scan time</i>	<i>max. 100 s</i>
<i>Scan length</i>	<i>max. 157 cm</i>



- **Our solution for brilliant volume image quality**
SureView is virtually eliminating the influence of the cone angle effect on image quality coming up with scan modes acquiring equal or more than 8 slices simultaneously. SureView is perfectly transferring the outstanding capabilities of the SOMATOM Sensation scanners in terms of virtually true isotropic resolution to brilliant diagnostic volume image quality in clinical routine. Forget about any clinical compromises in CT volume imaging, SureView is the solution.
- **Excellent for clinical workflow**
Forget about compromises in your clinical workflow. Just specify the slice thickness in your protocols according to your clinical needs. SureView automatically takes care of providing excellent volume image quality – with superior performance.

Technology and Data – Topogram

Length	128–1536 mm
Scan times	1.6–15.6 s
Views	a.p., p.a., lateral

CARE Topo

- Real-time topogram
- Manual interruption possible once desired anatomy has been imaged

* optional

Technology and Data – Sequence

	SOMATOM Sensation 10	SOMATOM Sensation 16
Reconstructed slice widths:	0.6, 0.75, 1, 1.5, 2, 3, 4, 5, 6, 7, 8, 10 mm	0.6, 0.75, 1, 1.5, 2, 3, 4, 5, 6, 7, 8, 10 mm
Scan times full scan (360°)	0.42, 0.5, 0.75, 1, 1.5 s	0.37*, 0.42, 0.5, 0.75, 1, 1.5 s
Partial scan times (240°)	0.28, 0.33, 0.5, 0.67, 1 s	0.25*, 0.28, 0.33, 0.5, 0.67, 1 s
No. of uninterrupted scans per range	100	100
No. of ranges in autorange	9	9
Standard scan cycle time (scan time 0.5–1.5 s)	0.75–60 s (± 10%)	0.75–60 s (± 10%)

- Acquisition with or without table feed
- Automatic clustering of scans



Technology and Data – Image Quality

Low-contrast Resolution

Low-contrast Resolution is the ability to see

- a small object (mm)
- with a certain contrast difference (HU)
- on a particular phantom (\emptyset)
- at a certain mAs value (mAs)
- with a particular patient dose (mGy)

Spiral	
Phantom	CATPHAN (20 cm)
Object size	5 mm
Contrast difference	3 HU
Dose at the surface	19 mGy at 180 mAs
Technique	10 mm 120 kV

Sequence	
Phantom	CATPHAN (20 cm)
Object size	5 mm
Contrast difference	3 HU
Dose at the surface	20 mGy at 190 mAs
Technique	10 mm 120 kV

High-contrast resolution	
0% MTF	30 lp/cm
$\pm 10\%$	0.17 mm
2% MTF	24 lp/cm
$\pm 10\%$	0.21 mm
Technique	150 mA 120 kV 0.75 s 1 mm

Homogeneity	
Cross-field uniformity in a 20 cm water phantom	max. ± 4 HU typ. ± 2 HU

Phantom positioned near center of rotation

Dose, CTDI ₁₀₀ values					
Phantom		kV	kV	kV	kV
\emptyset		80	100	120	140
16 cm	A	6.6	12.3	17.6	24.3
	B	8.2	14.2	20.0	27.4
32 cm	A	1.2	2.7	4.3	6.5
	B	2.9	5.8	8.6	12.3
A: at center	B: 1 cm below surface				
Technique	Slice > 1 mm 360° rotation PMMA-Phantom Absorbed dose for reference material air Max. deviation $\pm 30\%$ Typically less than 15% Values according to IEC 60601-2-44				

Speed4D Technology – STRATON*

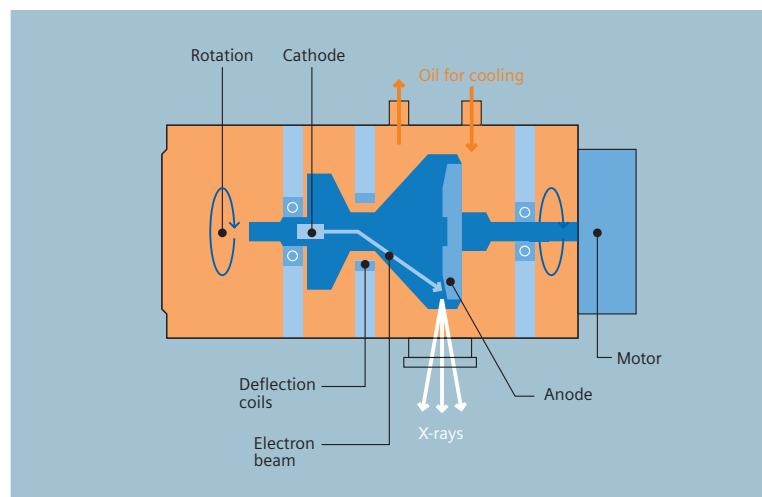
The new STRATON tube provides direct oil cooling of the anode with the ball bearings located outside the vacuum. Similar to Electron Beam CT, an electron beam is shaped and controlled by an electromagnetic field, all within the X-ray tube assembly.

The direct anode cooling and the small and compact design of the anode plate (120 mm diameter) eliminates the need for heat storage capacity (0 MHU*) and enables an unprecedented cooling rate of 5.0 MHU/min*. Even at maximum load, the Straton cools down in only 20 seconds – much less time than needed for positioning the next patient or initiating the next scan.

With a substantially longer tube life, even when operated at much higher G-forces, this new revolutionary design is the key to achieving gantry rotation speeds less than 0.4 seconds per rotation and reduced life-cycle costs.

New benchmarks in clinical applications

- Unmatched 0.37 s gantry rotation speed for cardiac and whole-body imaging
- High-speed sub-millimeter volume scanning (up to 64 mm/s feed at 500 mA for 20 s)
- Fastest coverage for large volume examinations (up to 128 mm/s feed)
- Premium image quality for virtually all patient sizes

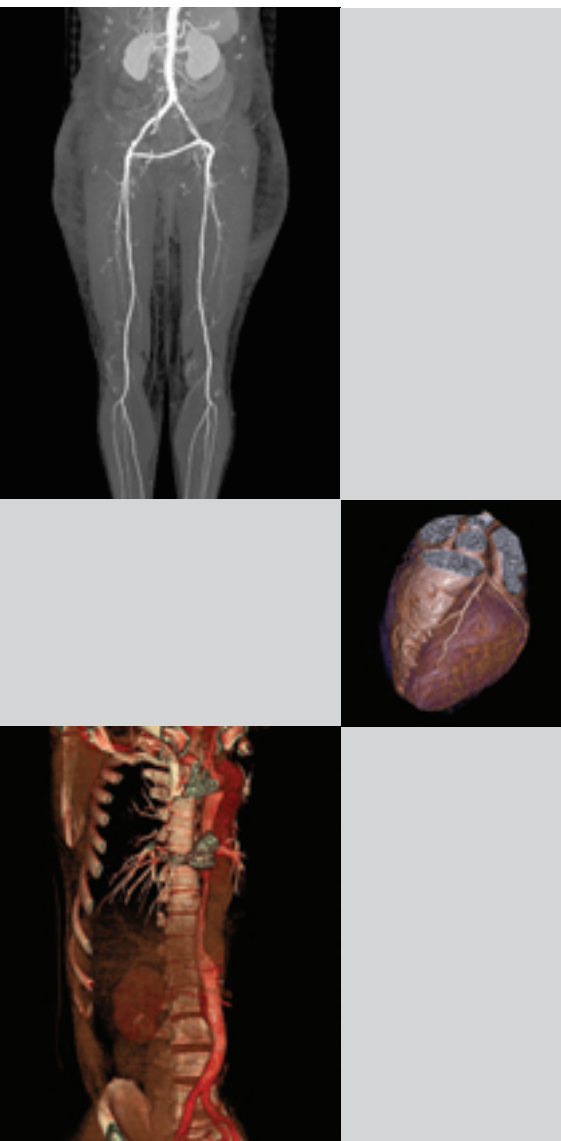


Increased cost efficiency

- Elimination of cooling delays maximizes patient throughput
- One-year full warranty, not limited by scan-seconds or patient volume
- Significantly longer tube life reduces life-cycle costs
- Reduced cost of a full service agreement including tube coverage by up to 10%

* optional for SOMATOM Sensation 16; 0.6 MHU capacity combined with 5.0 MHU/min cooling rate is comparable to the performance of a conventional tube with approximately 30 MHU anode heat storage capacity.

Speed4D Technology – CARE Dose4D



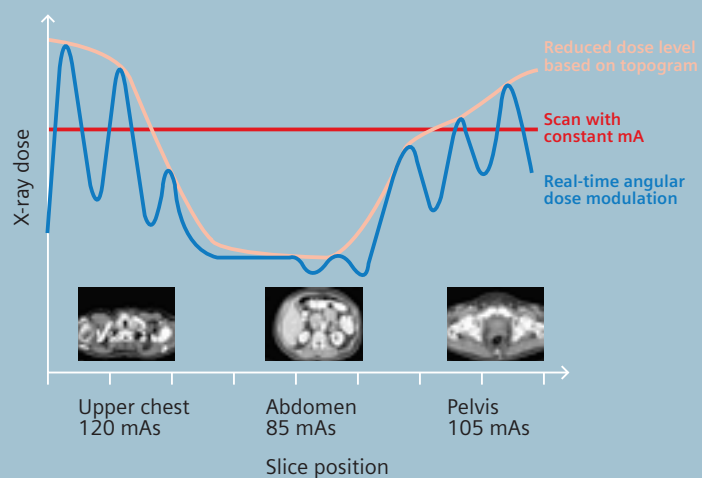
Optimal patient care

- Achieve the best diagnostic image quality at the lowest possible dose, independent of patient size and anatomy
- Fully automated dose management provides up to 66% dose reduction for adults and children

Increased efficiency

- No user time spent on individual protocol selection and optimization
- Efficient scanning of large volumes with one protocol and automated dose adjustment in real-time
- Excellent image quality – first time, every time

CARE Dose4D illustration



Speed4D Technology – WorkStream4D*

Increased diagnostic speed

- Increased SureView reconstruction speed: up to 10 image/s real-time, up to 5 images/s with full cone beam reconstruction
- Virtual elimination of time-consuming, manual reformation of image slices
- Direct generation of axial, sagittal, coronal or double-oblique reconstructions from standard scanning protocols

More efficient data management

- Reduction of data volume by up to a factor of 10, since virtually all diagnostic information is captured in 3D slices
- DICOM transfer speeds up to 5 slices/s (dependent upon network environment)

Maximized workflow flexibility

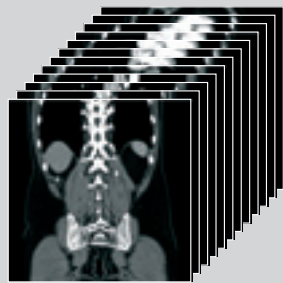
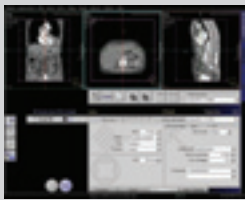
- Full reconstruction functionality at different workplaces (Navigator and Wizard console)
- Image reconstruction performed parallel to scan acquisition

Expanded clinical capabilities

- Easy assessment of complex anatomy through advanced 3D planning of reconstruction ranges
- Pre-programmed, ECG-gated, multi-phase 4D reconstruction in up to 24-phases enabling dynamic evaluation of the heart and thoracic anatomy

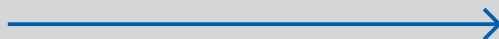
* optional

WorkStream4D

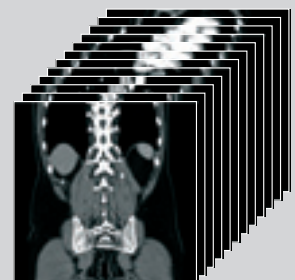
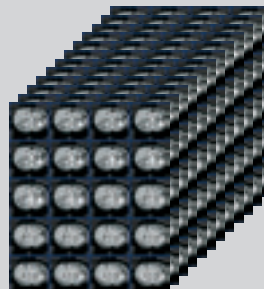


Scan
Time

Read



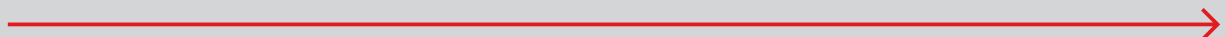
Conventional Workflow



Scan
Time

Reconstruct&Reformat

Read



Speed4D Technology – syngo InSpace4D*

Reading anatomy, not slices

- Physicians' diagnosis and pre-surgical planning directly from thin-slice volume data
- High performance volume reading for daily clinical routine

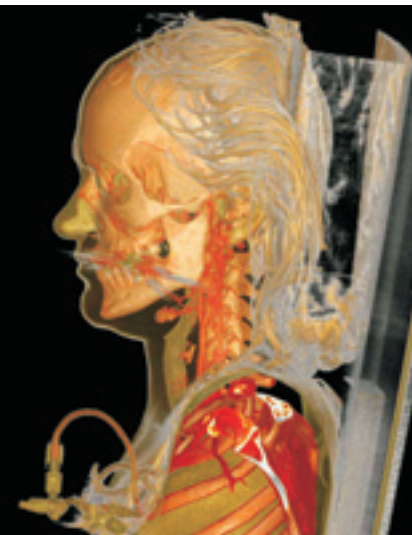
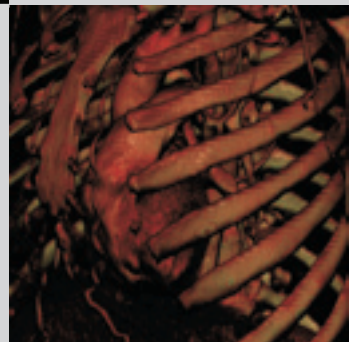
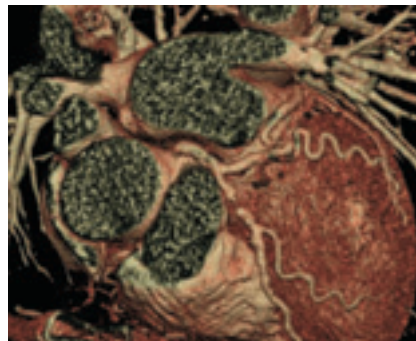
No waiting – no limits

- Real-time volume reading with outstanding performance, even with the largest data sets
- Highest image quality rendering shows the finest anatomical detail
- All reformats immediately available – VRT, MIP, MinIP, MPR

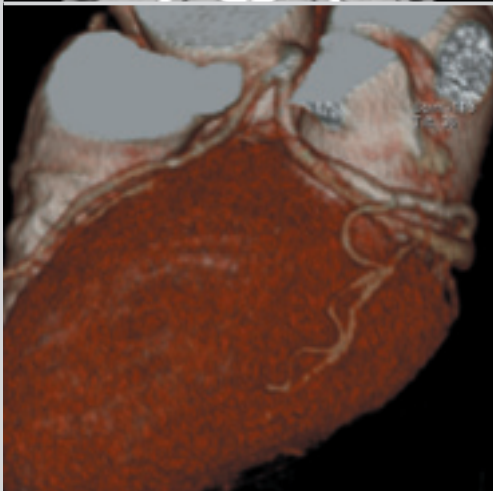
Entering the 4th dimension

- Direct reading of dynamic volume data sets
- 4D evaluation of the beating heart in up to 12*-phases with full resolution and up to 24*-phases with reduced resolution
- Real-time navigation through moving anatomy in user-selectable arbitrary planes

* optional; dependent upon number of images per series



WorkStream



SOMATOM WorkStream is one of the SOMATOM Sensation key features – it consists of two consoles, the Navigator and the Wizard* with fast access to a common data base. Due to this shared data base concept there is no need to transfer large data sets through the local network of the department. Data produced by Volume Scanning can thus be processed smoothly and efficiently. The revolutionary, easy-to-use and intuitive *syngo* application platform helps streamlining clinical throughput by optimizing up-front patient logistics and ensures easy evaluation of complex volumetric images.

Navigator

Primarily in charge of the actual scanning procedure, deals with examination functions such as registration, scheduling, protocol selection, reconstruction and standard evaluation applications including multiplanar reconstructions, 3D, CT-Angio and other advanced software packages.

Wizard*

Primarily takes care of multiplanar reconstructions, 3D, CT-Angio and other advanced software packages for CT-specific post processing evaluations.

* optional

WorkStream – Patient Handling

Patient registration

- Online registration
- Pre-registration of patients
- MPPS (Modality Performed Procedure Step)
- Patient information from HIS/RIS via DICOM Get Worklist
- Fast trauma protocols
- Emergency patient registration

Patient communication

- Integrated patient intercom
- Automatic Patient Instruction (API)
 - Freely recordable
 - 30 API text pairs

Integrated Display Panel

Gantry front display showing current scan parameters such as kV, mA, scan time, table position and gantry tilt.

Patient Table	
<i>Max. table load</i>	200 kg/450 lbs
<i>Table speed</i>	1–150 mm/s
<i>Vertical table travel range</i>	53–102 cm (at table top)
<i>Vertical travel speed</i>	2.5–45 mm/s
<i>Scanable range (metal-free)</i>	157 cm
<i>Distance between Gantry front and Table base</i>	37 cm

Gantry front and rear control panels

For convenient patient positioning (e.g. in case of trauma or interventional exams).

Lateral and sagittal light markers

Horizontal and vertical laser light, which controls the isocentric position of the patient.

Foot pedals

4 pairs of foot pedals are available on the bottom edges of the patient table which allow to higher/lower the table.

WorkStream – Processing



Real-time reconstruction and display (RTR)	
Slice thickness	0.6–10 mm
Scan field	50 cm, 70 cm Extended FOV*
Recon field	5–50 cm, 70 cm Extended FOV*
Recon time – SOMATOM Sensation 10	up to 6 images/s
Recon time – SOMATOM Sensation 16	up to 10 images/s
Recon matrix	512 x 512
HU scale	–1024 to +3071
Extended HU scale	–10240 to +30710

- Freely selectable slice thickness for prospective and/or retrospective reconstruction
- Real-time image reconstruction in 512 x 512 matrix with full image quality parallel to spiral acquisition (e.g. for trauma)

Image display: Flat screen	
Monitor size	46 cm (18")
Monitor resolution	1,280 x 1,024
Image display matrix	1,024 x 1,024
Pixel size	min. 0.28 mm

CINE Display

Display of image sequences

- Interactively with mouse controlled rate
- Or automatically
- Max. image rate >10/s

Windowing

- Window width and center freely selectable
- Single window
- Double window (e.g. bone/soft tissue)
- Multiple window settings for multi-image display
- Organ-specific window settings for soft tissue and bone windows

Filming

- Digital film documentation, connection to a suitable digital camera
- Connection via DICOM Basic print
- Automatic filming
- Interactive virtual film sheet
- Customizable film formats with up to 64 images
- Filming parallel to other activities
- Independent scanning and documentation
- Freely selectable positioning of images onto film sheet
- Configurable image text

Printing

Documentation on postscript printer supported

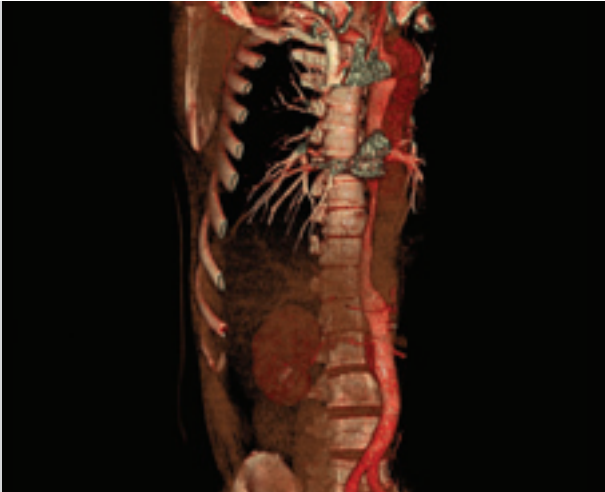


Image Transfer/Networking

Interface for transmitting medical images and information in the DICOM industrial standard. Permits communication between devices from different manufacturers.

- DICOM Storage (send/receive)
- DICOM Query/Retrieve
- DICOM Basic print
- DICOM Get worklist (HIS/RIS)
- DICOM MPPS (Modality Performed Procedure Step)
- DICOM Storage Commitment

Image Storage	
Main storage	146 GB 260,000 images

Raw Data	
Capacity	230 GB

Archiving	
CD-R	650 MB 1,100 images
MOD DICOM*	5.2 GB drive 2.3/4.1 GB cartridge 4000/7500 images

*optional

Evaluation Tools

- Parallel evaluation of more than 10 Regions of Interest (ROI)
 - Circle
 - Irregular
 - Polygonal
- Statistical evaluation
 - Area/Volume
 - Standard deviation
 - Mean value
 - Min/max values
 - Histogram
- Profile cuts
 - Horizontal
 - Vertical
 - Oblique
- Distance measurement
- Angle measurement
- Online measurement of a 5 x 5 pixel size ROI
- Freely selectable positioning of coordinate system
- Crosshair
- Image annotation and labeling

Dynamic Evaluation

- Evaluation of contrast enhancement in organs and tissues
- Calculation of
 - Time-density curves (up to 5 ROI's)
 - Peak-enhancement images
 - Time-to-peak images

WorkStream – Processing

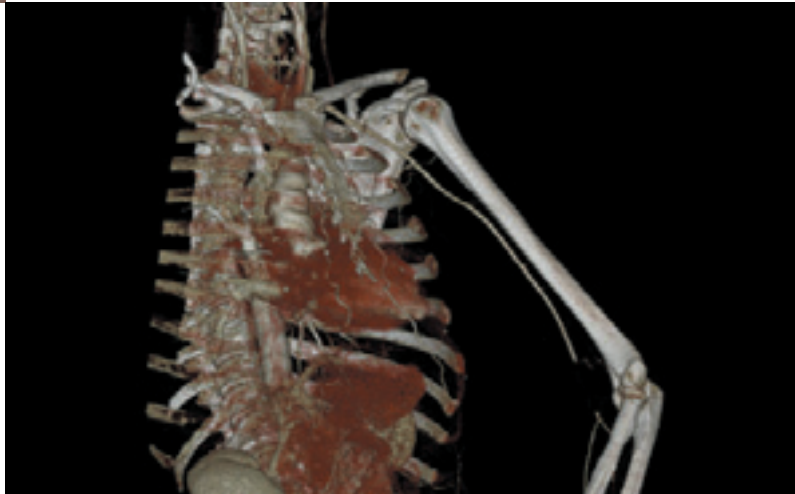
2D post processing

- Image zoom and pan
- Image manipulations
 - Averaging, subtraction
 - Reversal of gray-scale values
 - Mirroring

- Image filter functions
 - PFO: Postero Fossa Optimization for reduction of beam hardening artifacts in head images
 - LCE: Low Contrast Enhancement for improving low contrast detectability
 - HCE: High Contrast Enhancement for increased sharpness of high contrast structures
 - ASA: Advanced Smoothing Algorithm edge preserving smoothing filter, dedicated to Cardiac exams

Real-Time MPR

- Real-time multiplanar reformatting of secondary views
- Variable slice thickness (MPR thick, MPR thin) and distance with configurable default values.
- Viewing perspectives
 - sagittal
 - coronal
 - paraxial
 - oblique
 - double oblique
 - freehand (curvilinear)



syngo 3D SSD

- SSD: Surface Shaded Display
- Three-dimensional display of surfaces with different density values
 - Soft tissue
 - Bone
 - Contrast-enhanced vessels

Volume measurements

- Measurements of various tissues and organs with HU based region growth algorithms and interactive ROI definition.

syngo VRT* (Volume Rendering Technique)

- Advanced 3D application package for the optimal display and differentiation of different organs through independent control of color, opacity and shading in up to 4 tissue classes.

syngo InSpace4D* – real-time interactive cardiac evaluation, in space and time

- 4D evaluation of the beating heart with full resolution
- Real-time navigation through moving anatomy in user selectable arbitrary planes
- High performance volume reading for physician's diagnosis and pre-surgical planning in daily clinical routine

CT-Angiography

- MIP: Maximum Intensity Projection
- Thin MIP function for projection within a small slab to focus on particular vascular structure
- Evaluation of spiral images and display of vessels, vascular anomalies, aneurysms, plaques, and stenoses

** optional*



Clinical Applications

syngo Dental CT*

- Reformatting of panoramic slices and paraxial sections through the lower and upper jaw for analysis in connection with implantation surgery.

syngo Osteo CT*

- Non-invasive method for measuring the bone mineral density (BMD) of the spinal vertebrae.
- Osteo CT measurements is standardized to the ESP Phantom (ESP: European Spine Phantom).
- Includes table mat and reference phantom for Osteo CT studies.

syngo Pulmo CT*

- Quantitative evaluation of lung density and structure using sequential or spiral data sets.

syngo Perfusion CT*

- Evaluation of dynamic data of the brain following contrast bolus injection.
- Assessment of cerebral perfusion.

syngo Fusion*

- Registration and composite display of CT, MR, NM and PET images. Provides optimal diagnosis by fusion of morphological data with functional informations.

syngo Fly Through*

- Virtual Endoscopy software for perspective visualization of vessels and airfilled structures.

syngo LungCARE*

- Software for fast 3D-based visualization of pulmonary nodules, with the lowest possible radiation exposure.

syngo LungCARE NEV*

- NEV (Nodule Enhanced Viewing) is an enhancement to the *syngo* LungCARE software
- Supports the detection of pulmonary nodules
- Offers a computer assisted second reading
- Is designed to automatically displaying markers on possible pulmonary lesions

syngo Colonography*

syngo Colonography is a clinical application dedicated for non-invasive virtual endoscopic colon evaluation

- 10 minute workflow with fully automated pre-planning and path finding
- Highest image quality based on low dose acquisition
- Simultaneous two study reading (e.g. prone and supine)
- Integrated dedicated measurement and reporting tools
- Compatible to CT and MR data

HeartView CT*

- ECG-synchronized volume acquisition using prospective ECG triggered or retrospective ECG gating mode with patented reconstruction algorithms.
- Integrated ECG device at the gantry front cover.
- ECG Pulsing, dose modulated cardiac spiral for dose reduction during the systolic heart phase.
- Patented reconstruction algorithms to achieve a temporal resolution down to 92 cm based on 0.37 s rotation time.
- Basis for 3D Cardiac reconstructions, e.g. CT-Angiography of the coronary vessels and Calcium Scoring.
- Quality control tools enable retrospective ECG-viewing and interactions as well as computer assisted heart phase definition.

The application packages **HeartView CS*** and **CI*** are complete workflow solutions for Calcium Scoring

(**HeartView CS***: HeartView CT, *syngo* Calcium Scoring)

and advanced cardiac imaging

(**HeartView CI***: HeartView CT, *syngo* Calcium Scoring, *syngo* Vessel View, *syngo* Argus)

syngo* Calcium Scoring

- Application for estimating the amount of calcium in CT images obtained with HeartView CT*.
- *syngo* Calcium Scoring calculates different scores (e.g. Agatston scores, Volumetric scores) within user-defined regions for up to four coronary regions.

syngo* Vessel View

- Dedicated software, compatible with CT and MR data, for semi-automated vessel and lesion quantification.

syngo* Argus

- Dedicated software, compatible with CT and MR data, for virtual 4D-viewing and semi-automated quantification of ventricular function.

Extended Field of View*

Software program with special image reconstruction algorithms that allow for visualization of objects using a FOV up to 70 cm. The image quality for the area outside the standard 50 cm scan field does not meet the image quality specifications shown in the technical data sheet and image artifacts may be common, depending on the anatomy scanned.

* *optional*



CARE Solutions – Combined Applications to Reduce Exposure

SureView – Multislice Spiral Image Reconstruction

- Dedicated patented reconstruction algorithm for perfect volume imaging.
- Brilliant image quality and dose savings up to 20% in spiral mode.

UFC – Ultra Fast Ceramic Detector

- **Low patient dose.** Up to 30% dose reduction in relation to conventional CT detectors.
- **More power.** More or longer spirals due to low mAs requirements for best possible image quality.
- **More speed.** Ultra short afterglow. Specially developed for sub-second and multislice applications requiring a higher projection rate.

CARE Dose4D – Minimizing dose, maximizing quality – patient by patient

- Achieve the best diagnostic image quality at lowest possible doses, independent of patient size and anatomy.
- Fully automated dose management for adults and children with up to 66% dose reduction.

Pediatric protocols

- Special clinical protocols with 120 or 80 kV selection and a wide range of mAs settings. The X-ray exposure is adapted to the child's (and small adults) weight and age, substantially reducing the effective patient dose.

CARE Bolus CT

- Scan mode for contrast bolus triggered data acquisition.
- Significant improvement of the planning procedure and diagnosis by enabling an optimum spiral scan start after contrast injection.
- The procedure is based on repetitive low-dose monitoring scans at one slice level and analysis of the time density curve in a region-of-interest (ROI).



ECG Pulsing

- Dose modulated cardiac spiral for dose reduction during the systolic heart phase (Part of the HeartView CT* package with retrospective ECG gating). Up to 50% dose savings for the patient.

CARE Filter

- Specially designed X-ray exposure filter installed at the tube collimator. Up to 25% dose reduction with increased image quality.

CARE Vision CT with HandCARE™*

- Perform interventions at the CT scanner with real-time image guidance.

<i>Image rate</i>	<i>up to 8 frames/s</i>
<i>Image matrix</i>	<i>512 x 512</i>

- **Foot switch.** Radiation release directly at the gantry.
- **Additional monitor.** For parallel image display in the examination room.

<i>Flat screen monitor</i>	<i>46 cm (18")</i>
<i>Distance from host</i>	<i>max. 30 m</i>

- **HandCARE.** Real-time dose modulation during the CT guided intervention. The tube current is automatically adjusted by computer to avoid direct X-ray exposure to the physician's hands. HandCARE yields dose savings of up to 70% for the physician and up to 30% for the patient.

* optional

Customer Care Solution for Computed Tomography – Life

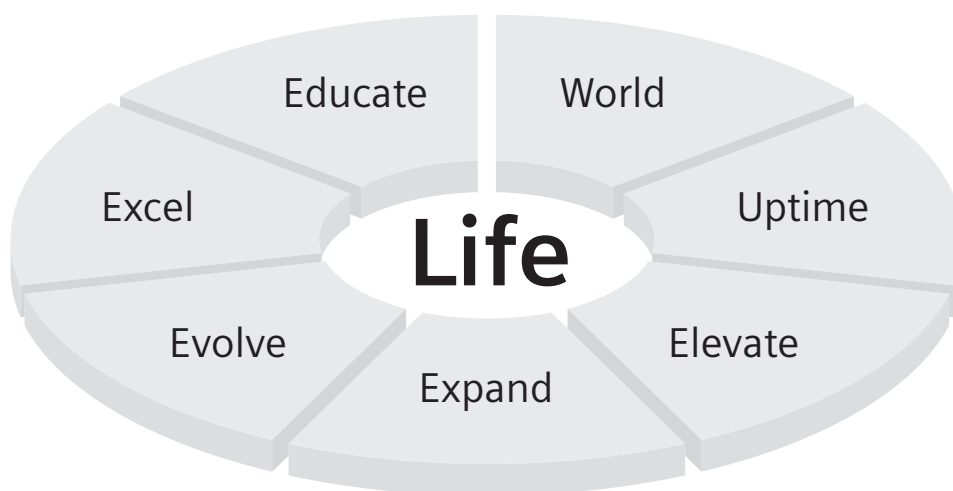


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<http://www.siemens.com/Life>

**Download of trial clinical software is currently only available for new SOMATOM CT systems with Siemens Remote Service as part of their service agreement.*

Installation



Dimensions				
Components	Height mm	Width mm	Length mm	Weight kg
Gantry	≤ 1990	≤ 940	≤ 2280	≤ 2100
Patient table	≤ 850	≤ 690	≤ 2430	≤ 500
Operator's console	≤ 720	≤ 800	≤ 1400	≤ 65
Power cabinet	≤ 1815	≤ 905	≤ 800	≤ 550
Cooling system	≤ 1815	≤ 905	≤ 860 w/w ≤ 900 w/a	≤ 200 w/w ≤ 400 w/a
Image Recon. System	≤ 1530	≤ 610	≤ 610	≤ 120
Computer system				
Navigator, Wizard	≤ 484	≤ 685	≤ 302	≤ 30

w/w = water/water w/a = water/air (optional)

Examination room environment	
Temperature range	15–28° C
Relative air humidity without condensation	15–75%

Cooling	
Heat dissipation to water cooling environment (only water-water cooler)	max. 15 kW
Heat dissipation to outside air (only water air cooler)	max. 26 kW

Electromagnetic compatibility	
This product is in compliance with IEC 60601-1-2 and fulfils CISPR 11 Class A	

Surface area for installation	
System	30 m ²
Emissions class	according to IEC 601-1-2

Power supply	
Nominal voltage 3/N~	380–480 V in 20 V steps
Nominal line frequency	50; 60 Hz
Line impedance	150–240 mOhm (dependent on voltage)
Nominal power connection	66–83 kVA (fuse 100 A, selectivity 1:1.25)

Power consumption	
Computer on	2 kVA
System on standby	
w/w	8 kVA
w/a	10 kVA
Scanning (120 kV, 250 mA, 100 s)	
w/w	50 kVA
w/a	53 kVA

w/w = water/water w/a = water/air

Protection against input power fluctuation	
Interruptions	
X-ray	5 ms
Controllers	20 ms
Image Reconstruction System, Navigator and Wizard	180 s optional with UPS
Fluctuation	
Nominal voltage	± 10%
Nominal frequency	± 5%

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